ION. ANT.—2

IONOSPHERIC DATA AT SYOWA BASE (ANTARCTICA)

August 1959—January 1960

Issued in October 1962

Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
TOKYO, JAPAN

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CONTENTS

MAIN CHARACTERISTICS OF THE IONOSONDE USED AT SYOWA BASE

Item	Specification
Frequency Range	1–20 Mc/s
Transmitting Power	5 kW (peak value)
Duration of Sweep	15 sec and 30 sec
Transmitted Pulse width	40–120 μsec (variable)
Recurrence Frequency of Transmitted Pulse	50 c/s (by power frequency)
Frequency Scale	Every 1 Mc/s
Height Range	1100 km
Height Scale	Every 100 km
Total Receiver Gain	140 db
Noise Figure	About 9 (at 5 Mc/s)
Time Constant of Differential Circuit	50 μsec
Recording Method	35 mm film running and 16 mm movie picture
Power Supply	100 V AC, 3 kVA
Transmitting Antenna	20 m high vertical delta terminated by 600 Ω
Receiving Antenna	15 m high vertical delta terminated by 600 Ω

SYMBOLS AND TERMINOLOGY

All symbols and terminology in the table of ionospheric data are used in accordance with the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, September 2, 1956, and the Second Report of the Committee, May, 1957, supplementary to the First Report.

Terminology

f_0F2, f_0F1, f_0E — The ordinary-wave critical frequency for the $F2$, $F1$ and E layers respectively.

f_0E_s — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

f_bE_s — The ordinary wave frequency at which the highest blanketing E_s layer becomes effectively transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

f-min — That frequency below which no echoes are observed.

$(M3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$(M3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e. g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'E_s$ The lowest virtual height of the trace used to give the f_0E_s.

$hpF2$ The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to 0.834 f_0F2.

$ypF2$ The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at 0.969 f_0F2).

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example E_s.

B Measurement influenced by, or impossible because of, absorption in the vicinity of f-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the nomal frequency range. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density is too small compared with that of a lower thick layer.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced by or impossible because the trace has no sufficiently definite cusp between layers.

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.

O Measurement refers to the ordinary component.

R Measurement influenced by, or impossible because of, absorption in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

D *greater than.....*

E *less than.....*

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magnetoionic component.

c. **Description of Standard Types of E_s**

The nine standard types of E_s are identified by small (lower case) letters: *l*, *c*, *h*, *q*, *r*, *a*, *s*, *f*, *n*. These letters are suggestive of the names low, cusp, high, equatorial, retardation, auroral, slant, flat and unclassified, respectively; it is strongly emphasized that these names are suggestive, not restrictive. The standard types are:

l At flat E_s trace at or below the normal E layer minimum virtual height. Use in daytime only.

c An E_s trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal E trace though, when the deviative absorption is large, part or all of the cusp may be missing. Use in daytime only.

h An E_s trace showing a discontinuity *in height* with the normal E layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the E_s trace lying clearly above the high frequency end of the normal E trace. Use in daytime only.

q An E_s trace which is diffuse and non-blanketing over a wide frequency range. The spread is 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 which is non-blanketing 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 at present from true group retardation (a blanketing thich layer included in the E layer tables: f_0E, $h'E$) by the lack of group retardation in the F traces at corresponding frequencies.

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 exceed over several hundred kilometers of virtual height.

s A diffuse E_s trace which rises steadily with frequency. This usually emerges from another E_s trace which should be classified separately. At high latitudes the slant trace usually starts to rise from a horizontal E_s trace, *l*, *h* or *f*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, *q*, at frequencies near the E region critical frequency.

f An E_s trace which shows no appreciable increase of height with

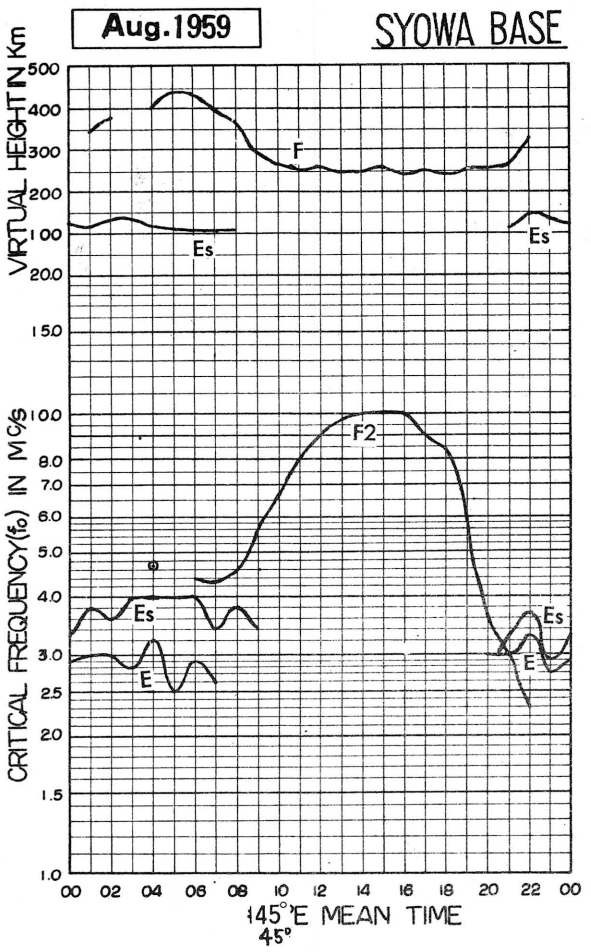
frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat E_s traces observed in the daytime are classified according to their virtual height: h or l.

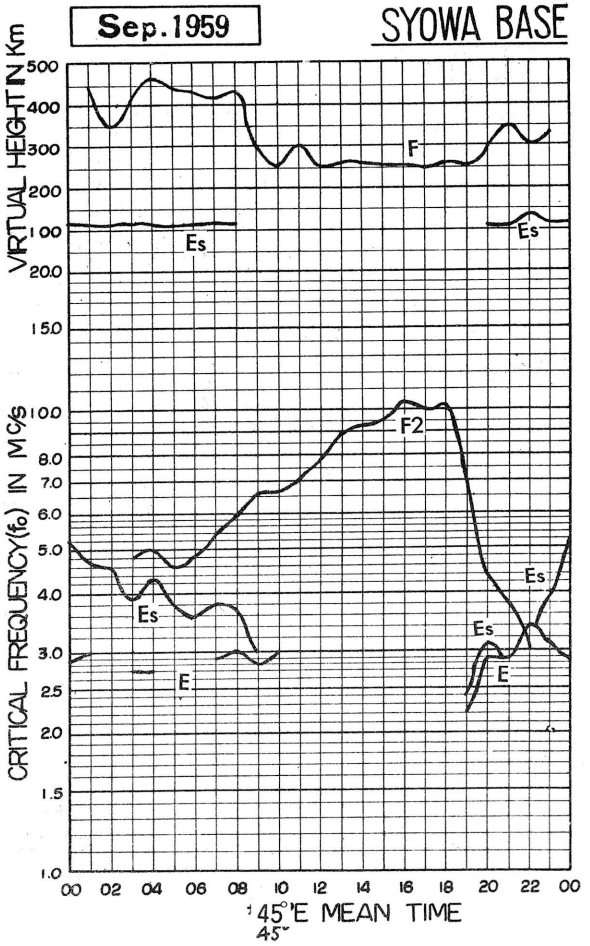
n An E trace which cannot be classified into one of the standard types. This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.

d. Multiple Reflections from E_s

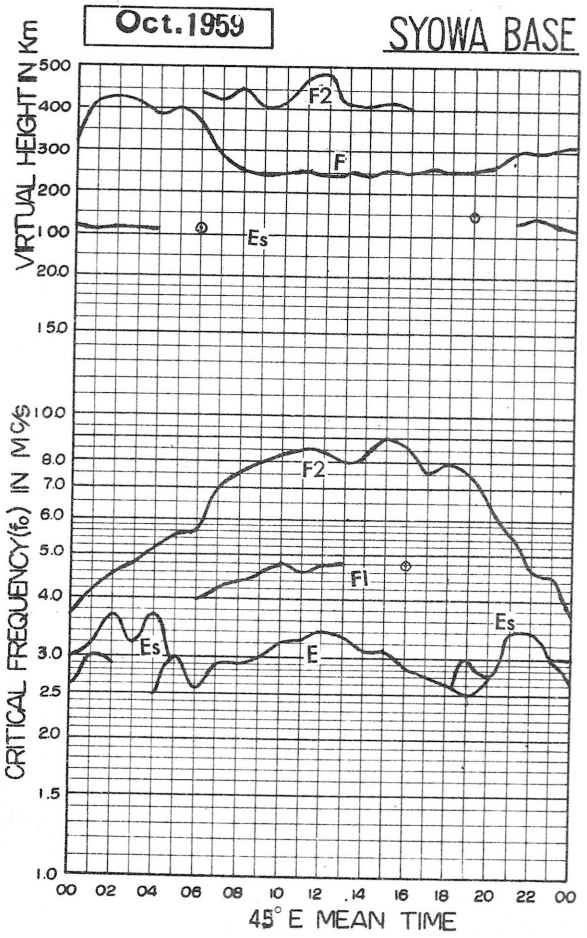
When the ionogram shows the presence of multiple reflections from E_s, the number of traces seen should be recorded after the letter indicating the type.

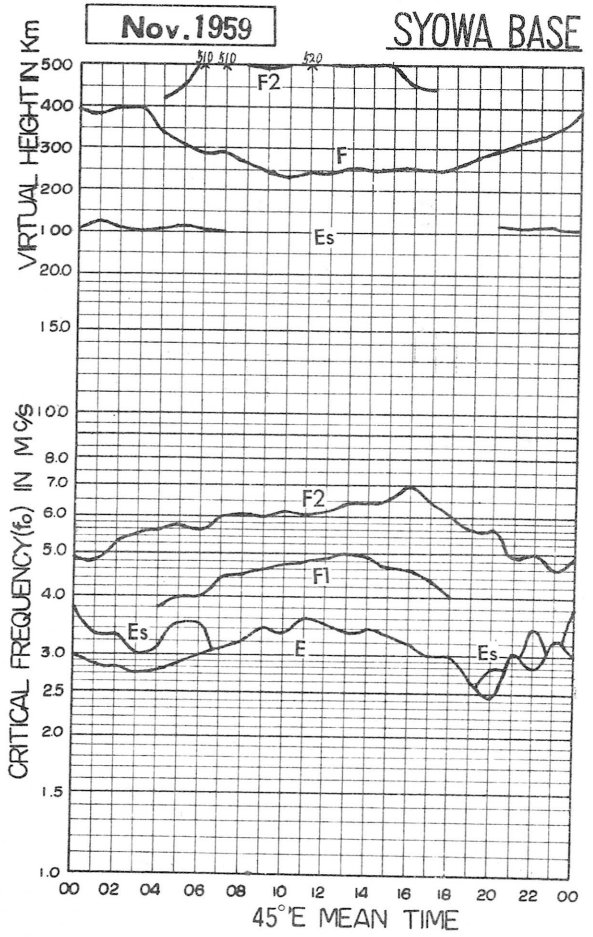
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



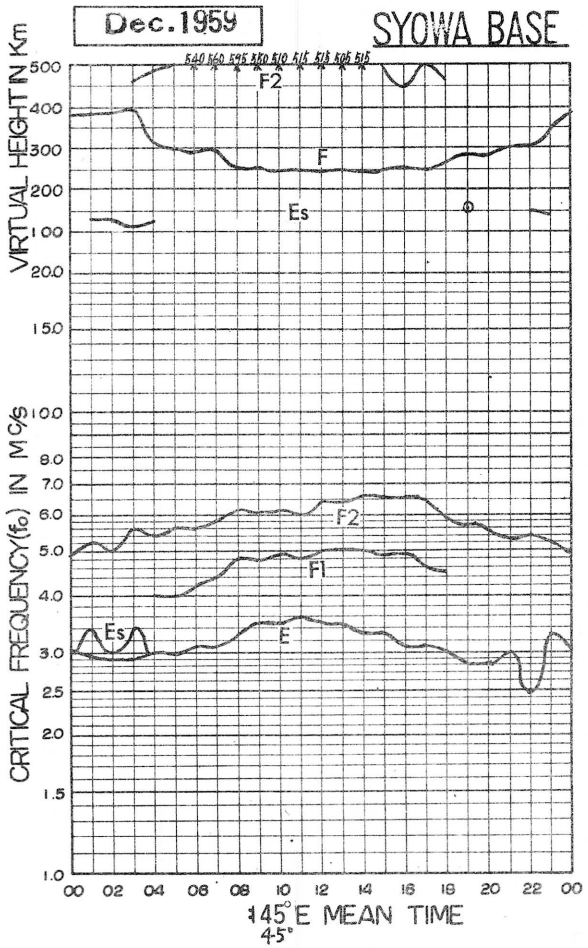


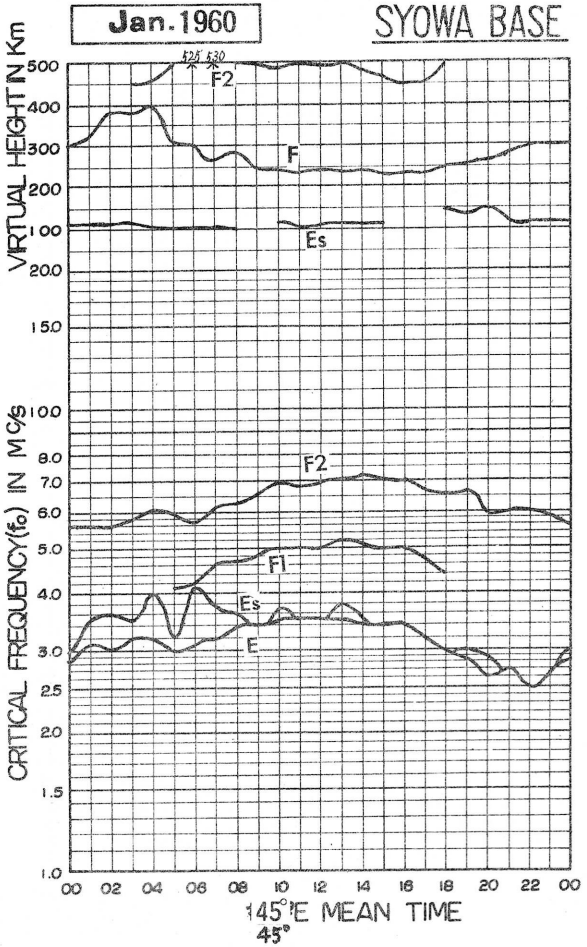
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

Aug. 1959 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	3.0	F	B	B	A	4.7^{F}	F	F	B	5.7	B	7.1	8.2	8.0	C	C	9.0	F	2.7	R	A	A	R
2	A	F	F	3.6^{F}	A	A	4.4	F	B	B	B	5.8	6.2^{R}	7.6^{F}	8.4^{F}	8.3	9.2	8.3	6.0	3.1	2.9	A	A	3.5
3	A	R	A	F	4.7^{F}	4.5	B	5.3	A	5.5	B	B	F	9.9	10.0	10.0	10.0^{R}	F	F	F	$^{U}3.7^{F}$	2.4	A	A
4	3.5^{F}	3.7^{R}	F	A	4.3^{F}	F	A	A	4.2	4.5^{F}	5.6	B	$^{J}8.2^{F}$	9.0	8.3^{F}	10.0	10.0	R	$^{D}9.3^{R}$	B	B	2.6	A	A
5	R	6.7^{R}	B	A	A	2.8	3.0	2.8	3.2	4.2^{F}	6.0	8.5	9.3	10.2	11.0	10.2	8.8	7.8	8.3	6.0	2.1^{F}	A	2.0	A
6	A	R	A	A	A	A	A	B	A	4.8	B	7.3	8.4	B	11.0	10.0	10.8	B	10.8^{R}	6.3^{F}	R	F	F	A
7	A	A	A	B	A	B	4.9	F	A	S	5.6	6.2	7.0	7.9	7.8	8.1	9.3^{F}	9.8^{S}	F	$^{J}5.6^{F}$	A	A	A	A
8	A	A	R	4.3^{R}	$^{U}5.7^{F}$	F	A	4.3	4.6	5.5	B	8.0	9.1^{R}	9.5	10.0^{F}	10.0	$^{U}10.7^{F}$	10.5^{R}	F	$^{U}6.7^{R}$	B	B	B	R
9	A	A	A	A	$^{J}4.7^{R}$	B	$^{J}6.4^{F}$	5.6	4.6	5.3	6.3	R	B	10.0^{R}	10.1	$^{U}10.0^{R}$	F	F	8.6	R	A	F	A	A
10	A	F	A	A	A	3.7	A	A	4.6	R	6.0	7.0	7.7	8.6	10.0^{Z}	9.8	9.7	8.5	8.3	6.0	F	F	A	A
11	5.0	3.5	F	A	R	A	5.0	A	A	B	B	9.2	11.2	11.0	10.3	10.4	10.8	9.0	9.2	3.4	F	B	B	B
12	R	4.1	F	A	A	A	4.2	4.4^{F}	4.8	6.0	6.8	7.9	9.0	10.0	10.0	10.0^{R}	11.3^{R}	8.5^{F}	7.7	4.8^{F}	2.6^{F}	2.1	1.8	1.7
13	F	F	R	B	A	3.7	3.8	3.9^{F}	3.7	5.3	6.5	8.6	8.6	F	10.0^{R}	10.3	9.5	7.4	8.0	6.3	3.6	2.2	1.5^{R}	5.0
14	F	F	5.3	4.0	3.3	4.6	4.5	A	4.6	5.6	6.7	8.2	9.8	9.2	10.2	10.8	10.0	8.2	8.0	5.4	3.6	B	2.0	A
15	R	3.7	3.6	F	F	F	A	A	4.0	5.6	6.7	7.8	8.0	9.0	9.5	10.2	10.2	9.4	7.5	6.8^{F}	F	A	5.3	F
16	F	B	A	3.8^{F}	F	F	4.0	4.8	4.6	4.9	B	B	B	B	3.0	5.2	5.2	B	B	F	A	A	A	A
17	A	A	B	A	A	B	A	B	B	B	B	B	3.5	3.3	B	4.3	3.8	2.8	B	A	A	R	R	R
18	A	B	A	A	R	F	F	B	B	B	B	B	B	B	R	6.0	5.0	6.3	7.8^{R}	5.6	R	R	A	R
19	A	A	B	B	R	B	A	B	B	B	B	B	B	B	B	5.8	R	5.9	5.2	F	B	B	A	B
20	B	B	B	B	A	B	B	B	B	B	B	B	B	4.6	5.7	5.5	6.2	6.7^{R}	5.4^{F}	4.0^{F}	2.6	B	A	R
21	R	R	F	B	A	R	B	B	B	B	B	B	B	B	R	6.0	7.3	7.4	6.5	F	R	A	A	A
22	B	R	R	A	4.2	B	4.3	R	B	B	B	B	6.0	6.5	B	7.0	6.9	7.7	7.5	6.0	B	R	R	F
23	A	R	R	F	B	B	A	4.1	B	B	B	B	B	8.0	9.5	9.7	F	$^{J}11.4^{R}$	F	F	A	A	R	F
24	R	A	F	B	B	3.7	B	4.1	B	B	B	5.3	B	B	F	8.9	9.0	10.2	9.4	7.5	B	B	B	R
25	A	A	B	A	F	B	4.1	4.2	3.8	$^{U}5.7^{R}$	6.7	7.5^{R}	8.9	10.0	10.7^{R}	$^{J}11.9^{R}$	$^{J}11.7^{R}$	10.5	10.2	3.0	B	B	F	R
26	R	A	A	B	5.2	5.4	5.5	4.6^{F}	F	C	8.3^{F}	B	10.4	10.9	12.0	$^{J}12.1^{R}$	$^{J}11.6^{R}$	10.8	10.3	8.7	5.3	3.7	2.3	F
27	A	A	R	5.5	B	B	5.4	5.4	6.2^{R}	6.8	8.0	9.1	10.5	$^{J}11.9^{R}$	12.0	$^{J}11.5^{R}$	$^{U}11.5^{R}$	$^{D}8.9^{R}$	9.2	8.7	5.5	3.2	F	1.5^{R}
28	R	F	3.0	2.7	F	F	F	F	5.5^{F}	7.3^{F}	9.2	$^{J}11.5^{R}$	$^{J}12.1^{R}$	11.6^{R}	12.3	$^{J}12.0^{R}$	11.0	10.0	$^{U}9.8^{R}$	8.0	5.0^{R}	4.3^{F}	2.8	2.3^{F}
29	1.8	1.8	R	B	5.3^{F}	F	F	F	6.0^{F}	6.2^{F}	7.1	8.2	9.8	10.8	$^{J}11.7^{R}$	R	$^{U}12.0^{S}$	$^{J}11.7^{R}$	$^{J}11.7^{S}$	$^{J}9.7^{R}$	$^{J}8.4^{R}$	4.0	2.5	R
30	A	F	4.2	4.6	3.6	F	4.2^{F}	4.3	5.3^{F}	S	7.8	8.0	9.2	9.9	10.5	$^{J}11.9^{R}$	$^{J}12.6^{S}$	13.0^{F}	9.3^{F}	5.6	$^{D}3.9^{R}$	3.0	3.2	R
31	R	A	R	R	R	3.5	5.7^{F}	F	6.1^{F}	8.3^{F}	$^{D}10.0^{D}$	9.8	10.9	12.2	$^{J}11.9^{R}$	R	13.8	$^{J}12.2^{R}$	$^{J}12.2^{R}$	F	6.2	F	R	A
No.	3	7	4	7	9	8	16	13	16	16	17	18	22	24	25	28	27	25	24	22	13	9	9	5
Median	3.5	3.7	3.9	4.0	4.7	3.7	4.4	4.3	4.6	5.6	6.7	8.0	9.0	9.7	10.0	10.0	10.0	9.0	8.4	6.0	3.6	3.0	2.3	2.3
U.Q	4.2	4.1	4.8	4.6	5.2	4.6	5.2	5.0	5.4	6.1	8.0	8.6	9.8	10.5	11.0	10.4	11.3	10.5	$^{D}9.6$	6.8	$^{D}4.4$	3.8	3.0	2.9
L.Q	2.6	3.0	3.3	3.6	3.9	3.6	4.2	4.1	4.1	5.1	6.0	7.3	7.7	8.1	9.0	7.6	8.7	7.6	7.6	3.8	2.8	2.3	1.9	1.6
Q.R	1.6	1.1	1.5	1.0	1.3	1.0	1.0	0.9	1.3	1.0	2.0	1.3	2.1	2.4	2.0	2.8	2.6	2.9		3.0		1.5	1.1	1.3

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

IONOSPHERIC DATA

Aug.1959 | foF1 | 45° E Mean Time (G.M.T.+3h.)

Syowa Base | Lat. 69° 00.4′ S | Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										B		B				C	C	L						
2										B	B						L							
3											B	B			L									
4												B						L						
5																								
6											B			B										
7										S						L								
8											B													
9													B											
10																								
11										B	B				L									
12																								
13														L		L								
14																								
15																								
16											B	B	B	B										
17										B	B	B			B	B								
18										B	B	B	B	B										
19										B	B	B	B	B	B									
20										B	B	B	B	3.6L										
21										B	B	B	B	B										
22										B	B	B			B									
23										B	B	B	B											
24										B	B		B	B		L	L							
25																								
26										C		B			L	L	L							
27																	L							
28											L			L	L				L					
29																								
30										S			L	L	L	L								
31													L											
No.														1										
Median														3.6										

foF1

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S ?

IONOSPHERIC DATA

Aug. 1959 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							2.90	2.30	3.80	B	B	B	B	B	B	C					2.00			2.80
2	3.00									B	B	B	B	B	B	B						3.10		2.40
3	2.90H	3.20	3.00							A	B	B	B	B	B	B						2.20	2.40	3.20
4	2.50	2.40		3.40	2.90					A	B	B	B	B	B	B			2.80			2.00		2.70
5	2.50				2.60	2.50			2.00	B	B	B	B	B	B	B							1.70	2.70
6										A	B	B	B	B	B	B						2.55	3.30	3.20
7	3.60		2.50		4.00					S	A	B	B	R	1.80	B							3.40	3.10
8		3.70	3.30	3.00	4.00			3.30		B	B	B	B	B	B	B								1.70
9	2.00	3.00			3.20			2.60		1.90	B	B	B	B	B	B			2.60	3.40	3.20			3.70
10	3.10	3.00		3.80	3.10	3.00				B	B	B	B	B	B	B	1.60	2.00	2.00	1.40	1.60			
11	3.30		3.00		4.00					B	B	B	B	2.60	B	B					1.60			
12	1.50	2.80	3.20	4.00	3.20		3.60	2.60		B	B	B	B	B	B	S								1.35
13	2.50	2.80	4.00		3.20		T2.10R			B	B	B	B	B	B	B	R							3.30
14				2.80	2.45	3.30				2.20	2.40	B	B	B	B	B								1.50
15	3.10	3.00	T3.10R	2.90						B	2.30	B	2.30	B	B	B					3.10		"4.20A	3.90
16				2.20			3.70	T3.80R		B	B	B	B	B	B	B								
17		3.60								B	B	B	B	B	B	B				2.60		3.80	3.50	4.00
18					3.00	2.00	2.00			B	B	B	B	B	B	B					3.20	3.20		3.50
19	3.60				3.50					B	B	B	B	B	B	B								
20										B	B	B	B	B	B	B								2.60
21	4.00	3.60	3.00							B	B	B	B	B	B	B					3.00H			
22			3.80		3.60					B	B	B	B	B	B	B						3.00	3.55	3.40
23			3.90	2.70				3.20		B	B	B	B	B	B	B							3.30	
24	3.20							3.30		B	B	B	B	B	B	B							2.00	2.30
25	3.20									B	B	B	B	B	B	B				2.20				1.60R
26	2.70	3.00						2.05		C	B	B	B	B	B	B								2.40
27	2.20	2.50	2.70							B	B	B	B	B	B	B								
28		1.60	1.50	1.50				1.65H	2.00H	2.30	B	B	B	B	B	B								
29			2.10					1.70H	2.00H	B	B	B	B	B	B	B								2.50H
30	2.40	3.50H	2.50							S	B	B	B	B	B	B							2.00	2.50
31	2.30	2.10	2.80	2.60	2.70	2.00				2.60	B	B	B	B	B	B							2.70H	
No.	19	15	15	10	14	5	5	10	4	4	2		1	1	1		1	1	3	4	7	7	11	22
Median	2.90	3.00	3.00	2.80	3.20	2.50	2.90	2.60	2.00	2.25	2.35		2.30	2.60	1.80		1.60	2.00	2.60	2.40	3.00	3.00	3.30	2.70

foE

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S

IONOSPHERIC DATA

Aug. 1959 | foEs | 45° E Mean Time (G.M.T.+3h.)

Syowa Base | Lat. 69° 00.4′ S | Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	T3.9	T5.4	T7.0	B	B	T4.1	T7.0	G	G	B	4.3	B	B	B	B	C	C	B	B	B	G	T3.3	T4.0	G
2	3.4	3.5	4.8	T6.8	T7.1	4.2	T4.8	T4.4	B	B	B	B	B	B	B	B	B	B	B	B	B	3.3	T4.0	G
3	3.6	G	3.7	T2.9	T8.2	T4.1	B	T4.7	4.9	T4.3	B	B	B	B	B	B	B	B	B	B	2.4	2.9	3.2	3.9
4	G	T7.9	1.8	4.0	G	T5.0	T4.8	T5.0	T4.8	3.9	B	B	B	B	B	B	B	B	G	B	B	G	T2.8	T3.2
5	G	B	B	3.6	2.9	G	2.8	2.8	G	B	B	B	B	B	B	B	B	B	B	B	B	T3.2	G	2.9
6	3.3	T3.3	T4.0	4.5	4.2	T5.8	4.5	B	T5.2	T4.0	B	B	B	B	B	B	B	B	B	B	B	T4.4	G	3.7
7	3.9	T3.7	T5.5	B	4.5	B	4.5	4.2	T5.1	S	T3.8	B	B	G	G	B	B	S	B	B	3.0	T3.4	T4.7	4.5
8	T4.1	4.1	T3.3	T4.1	T4.4	T7.1	4.7	G	T3.2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
9	3.0	T4.2	T8.2	3.8	G	B	T4.6	T3.8	B	G	B	B	B	B	B	B	B	B	3.4	G	3.8	T5.8	T5.0	T3.2 G
10	T3.8	G	T6.3	P10.0 D	T4.0	3.4	T2.6	T4.6	T3.8	4.5	B	B	B	B	B	B	2.0	G	G	G	G	T3.1	T4.9	T6.0
11	2.3 G	T5.3	4.2	T5.1	3.9 G	T3.9	P10.0 D	T5.0	T5.4	B	B	B	B	G	B	B	B	B	B	B	G	B	B	B
12	G	G	3.9	T4.4	4.0	T4.7	G	G	B	B	B	B	B	B	B	S	B	B	B	B	B	B	B	G
13	2.9	3.0	G	B	4.4	3.1	G	T2.9	T3.3	3.3	B	B	B	B	B	B	2.3	B	B	B	B	B	B	G
14	T6.4	T5.3	T3.2	T6.0	T2.7	3.8	4.4	4.5	T5.0	G	G	B	B	B	B	B	B	B	B	B	B	B	B	3.0
15	G	G	G	3.3	3.4	3.8	T3.1	T4.0	B	B	G	B	G	B	B	B	B	B	B	T2.9	G	4.4	T4.9	T5.2
16	T7.2	B	3.9	G	T4.0	T6.6	G	G	4.0	3.4	B	B	B	B	B	B	T5.6	B	B	T3.5	T6.7	T6.5	4.6	4.3
17	T4.5	T5.8	B	3.3	T6.4	B	4.6	B	B	B	B	B	B	B	B	B	B.	B	B	T8.1	9.0	G	G	G
18	2.7	B	4.3	3.4	G	G	G	B	B	B	B	B	B	B	B	B	B	B	B	3.1	G	G	3.9	G
19	T5.5	T6.6	B	B	G	B	4.6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	5.8	B
20	B	B	B	B	4.3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.3	G
21	G	G	4.2	B	5.2	T3.1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	T3.7	T3.8	T4.5
22	B	T5.6	G	4.4	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	G
23	T4.9	4.2	G	T4.8	B	B	4.5	G	B	B	B	B	B	B	B	B	2.4	B	2.5	B	T3.7	T5.2	T3.7	T5.2
24	G	4.6	2.9	B	B	2.8	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
25	4.0	T4.7	B	4.0	3.0	B	T3.6	T3.9	3.6	B	B	B	B	B	B	B	B	B	B	T2.9	B	B	G	2.0
26	3.2	T3.8	T7.8	B	3.7	4.4	2.8	3.0	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	T3.3
27	T3.0	3.1	G	T4.2	B	B	T3.7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	G	G	G	B	B	B	G	G	G	B	3.7	B	3.1	2.3	B	2.9	B	B	B	B	B	B	B
29	B	B	G	B	T4.0	T4.7	2.6	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
30	T3.4	G	T3.5	T3.9	T3.0	B	B	T3.4	B	S	B	B	B	B	B	B	B	B	B	B	B	2.0	2.7	2.9
31	2.7	2.6	G	2.7	2.9	2.3	T3.3	T3.7	3.3	G	B	B	B	B	B	B	B	B	B	B	B	B	G	T6.3
No.	27	26	26	22	26	20	24	23	16	10	4	1	1	3	2		5	1	4	7	12	17	21	27
Median	3.3	3.8	3.6	4.0	4.0	4.0	4.0	3.4	3.8	3.4	G	3.7	G	G	G		2.4	G	G	2.9	G	G	G	2.9

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

S 4

12

IONOSPHERIC DATA

Aug. 1959 | f-min | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.60	1.50	1.80	B	B	2.80	1.80	1.70	3.20	B	3.70	B	3.20	4.30	2.80	C	C	4.00	2.10	1.80	1.70	1.30	1.70	1.70
2	1.60	1.60	1.70	1.70	2.20	3.70	2.70	3.20	B	B	B	4.40	4.20	2.80	2.70	2.60	3.10	2.80	2.70	1.50	1.60	1.30	1.55	2.00
3	1.60	1.60	1.50	1.20	2.10	2.10	B	2.80	2.70	2.40	B	B	4.10	3.60	3.00	2.70	7.80	2.70	6.20	2.30	2.20	1.40	1.40	2.10
4	1.50	1.70	1.60	2.40	2.10	2.10	2.20	2.30	2.00	2.50	3.90	B	4.00	3.40	4.00	5.00	2.70	4.00	2.20	B	B	1.60	1.65	1.65
5	1.75	5.60	B	2.20	2.10	1.80	2.10	1.60	1.65	2.10	5.20	2.80	2.50	2.80	2.10	2.30	2.10	2.00	1.50	2.30	1.70	1.30	1.50	1.40
6	2.50	1.70	1.80	2.10	2.10	2.10	2.20	B	2.50	2.30	B	1.60	4.30	B	4.70	3.80	7.00	B	5.00	2.60	5.60	1.70	3.00	2.20
7	2.30	2.00	1.70	B	2.20	B	2.30	3.10	3.00	S	2.30	4.30	4.60	1.30	1.30	2.00	3.00	3.30S	1.80	1.50	1.20	1.20	1.70	2.80
8	1.50	2.20	1.70	1.70	1.70	2.10	2.00	1.50	1.65	3.50	B	5.30	4.80	2.80	4.50	3.10	8.20	5.20	3.30	5.20	B	B	B	1.30
9	1.20	1.40	3.00	3.60	1.70	B	2.20	1.30	1.40	1.65	2.10	4.70	B	5.00	3.80	7.50	5.00	2.80	1.50	1.30	1.80	1.20	2.50	1.70
10	1.20	1.30	1.20	2.00	1.70	1.40	1.70	2.20	2.30	3.90	3.40	2.50	2.50	3.00	3.20	2.00	1.35	1.70	1.10	1.00	1.20	1.25	1.30	1.30
11	1.70	1.70	1.20	3.10	2.10	2.20	2.10	2.10	2.00	B	B	4.00	3.00	2.30	2.80	2.00	2.20	1.80	1.80	1.20	1.30	B	B	B
12	1.20	1.20	1.30	1.50	1.80	2.20	2.10	1.90	2.30	2.10	2.60	3.50	4.20	4.70	3.30	E480S	2.30	2.50	2.30	1.80	1.70	1.20	1.20	1.20
13	1.20	1.70	1.90	B	1.60	1.85	1.70	1.80	1.80	270S	4.60	2.85	2.30	2.40	2.30	2.20	1.75	1.90	1.50	1.60	1.60	1.20	1.30	1.30
14	1.30	2.30	1.80	1.90	1.80	2.00	2.20	2.20	2.00	1.80	2.10	1.40	2.20	2.60	1.60	2.40	2.30	1.30	2.00	1.70	2.20	B	1.50	1.20
15	1.20	1.30	1.70	1.50	2.10	2.00	2.00	2.30	2.30	2.00	2.10	2.60	2.00	3.00	2.50	3.20	2.00	2.10	1.20	1.70	1.80	1.40	1.60	1.50
16	1.80	B	2.20	1.80	2.10	2.00	1.90	2.10	2.10	2.70	B	B	B	B	2.10	3.40	2.20	B	B	1.20	3.20	1.90	1.50	3.20
17	2.20	2.20	B	2.30	2.30	B	3.70	B	B	B	B	B	2.70	2.70	B	3.70	2.60	2.20	B	1.60	1.90	2.20	2.10	1.80
18	1.30	B	2.50	1.80	2.30	1.70	1.70	B	B	B	B	B	B	B	4.70	4.00	3.50	2.80	2.50	2.10	1.90	1.75	2.20	2.60
19	2.20	2.30	B	B	2.40	B	3.50	B	B	B	B	B	B	B	B	4.45	5.00	3.50	3.60	2.30	B	B	5.00	B
20	B	B	B	B	3.30	B	B	B	B	B	B	B	B	3.00	3.20	2.70	2.35	1.80	1.80	2.20	1.70	B	2.70	2.10
21	2.20	2.40	2.00	B	1.20	2.30	B	B	B	B	B	B	B	B	4.70	3.20	2.50	2.90	2.40	2.10	1.40	1.40	1.70	1.50
22	B	1.90	2.30	3.00	2.30	B	3.60	4.20	B	B	B	B	4.30	3.50	B	5.80	3.20	2.10	2.00	2.50	B	1.40	1.40	1.40
23	3.60	3.30	2.30	2.25	B	B	4.00	2.20	B	B	B	B	B	4.25	3.60	3.10	2.20	2.00	1.70	2.00	1.50	1.70	1.80	1.20
24	2.20	3.60	2.40	B	B	2.20	B	2.60	B	B	B	4.10	B	B	8.10	4.10	5.10	3.80	2.20	2.00	B	B	B	1.50
25	2.60	2.20	B	3.70	2.15	B	1.80	2.80	2.70	4.00	3.50	5.65	5.00	5.30	8.00	5.40	4.30	3.00	2.00	1.20	B	B	1.60	1.30
26	1.40	1.40	2.70	B	2.60	2.40	2.20	1.70	2.90	C	3.70	B	4.50	3.80	5.40	4.00	4.10	2.40	2.10	1.80	1.60	1.40	1.50	1.20
27	1.60	1.65	1.40	3.35	B	B	2.00	2.20	2.10	2.30	3.80	2.90	3.00	3.50	3.00	3.00	3.10	2.50	1.80	1.40	1.80	1.40	1.40	1.30
28	2.80	1.20	1.30	1.20	1.50	1.60	1.70	1.50	1.80	2.05	3.20	3.20	3.60	2.70	3.10	2.55	2.40	2.10	1.80	1.50	1.75	2.25	1.40	1.25
29	1.35	1.40	1.70	B	1.80	2.00	1.60	1.40	1.70	2.20	3.10	3.10	5.10	3.00	7.10	7.30	2.10	2.10	1.50	2.00	2.00	2.80	1.90	1.80
30	1.70	1.80	1.40	1.75	2.00	1.90	2.20	1.25	1.60	S	3.60	4.00	5.10	5.00	3.20	2.90	2.00	3.00	4.50	2.70	2.20	1.80	1.70	1.35
31	1.15	1.30	2.60	1.60	1.40	1.65	2.30	2.40	2.80	2.20	2.70	3.00	3.00	4.80	3.10	5.00	3.40	8.00	7.80	3.10	2.50	2.70	1.40	1.80
No.	29	28	26	22	27	22	27	25	22	17	17	19	23	25	28	29	30	29	29	30	25	24	28	29
Median	1.60	1.70	1.75	1.95	2.10	2.05	2.10	2.20	2.10	2.30	3.40	3.50	4.00	3.00	3.20	3.20	2.65	2.50	2.00	2.80	1.75	1.40	1.60	1.50

f-min

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 5

IONOSPHERIC DATA

Aug.1959 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										B		B				C	C	L						
2										B	B						L							
3											B	B			L									
4												B						L						
5																								
6											B			B										
7										S						L								
8											B													
9													B											
10																								
11										B	B				L									
12																								
13														L		L								
14																								
15																								
16											B	B	B	B										
17										B	B	B			B	570								
18										B	B	B	B	B										
19										B	B	B	B	B	B									
20										B	B	B	B	L										
21										B	B	B	B	B										
22										B	B	B			B									
23										B	B	B	B											
24										B	B		B	B		L	L							
25																								
26										C		B			L	L	L							
27																	L							
28											L			L					L					
29																								
30										S			L	L	L	L								
31													L											
No.																1								
Median																570								

h'F2 Sweep 10 Mc to 200 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

Aug. 1950 | h'F | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	320	320	B	B	A	290	370	405	B	350	B	280	250	250	C	C	250	225	290	540	A	A	R
2	A	315	F	F	A	A	620	F	B	B	B	365	285	235	250	220	255	250	240	260	280	A	A	3.0
3	A	R	A	F	F	365	B	570	A	380	B	B	280	260	225	250	320	255	280	280	F	480	A	A
4	300	250	380	A	460	F	A	A	E500A	400	290	B	240	270	250	295	235	305	270	B	B	370	A	A
5	R	E680B	B	A	A	480	500	410	380	300	300	250	225	245	220	220	205	205	250	220	305	A	380	A
6	A	345	A	A	A	A	A	B	A	300	B	270	270	B	260	265	300	B	240	270	390	F	F	A
7	A	A	A	B	A	B	390	500	A	S	305	325	290	255	250	225	235	240	220	265	A	A	A	A
8	A	A	A	490	400	F	A	420	370	325	B	E300B	265	250	235	265	315	280	240	430	B	B	B	R
9	A	A	A	A	395	B	340	300	210	250	255	270	B	280	265	300	270	270	285	R	A	F	A	A
10	A	345	A	A	A	400	520	A	450	A	270	250	225	255	240	215	220	250	240	230	290	495	A	A
11	320	380	F	A	A	A	480	A	A	B	B	280	240	245	215	225	220	210	230	280	340	B	B	B
12	R	350	310	A	A	A	430	390	320	280	255	250	245	220	225	240	235	200	230	220	260	255	280	300
13	420	290	R	B	A	475	420	400	525	320	300	235	230	220	220	245	215	200	240	220	220	270	350	370
14	F	F	290	290	600	500	E740A	A	450	255	250	240	235	230	235	235	215	215	220	210	220	B	330	A
15	R	F	430	F	F	350	A	A	380	280	270	245	260	240	230	240	230	220	250	245	320	A	390	410
16	250	B	A	330	F	600	F	530	490	510	B	B	B	B	300	630	395	B	B	300	A	A	A	A
17	A	A	B	A	A	B	A	B	B	B	B	B	365	330	B	B	355	370	B	A	A	R	R	R
18	A	B	A	A	R	290	F	B	B	B	B	B	B	B	330	280	300	300	250	310	R	R	A	R
19	A	A	B	B	R	B	A	B	B	B	B	B	B	B	B	300	310	265	280	250	B	B	A	B
20	B	B	B	B	A	B	B	B	B	B	B	B	B	300	290	260	265	260	225	295	260	B	A	R
21	R	R	480	B	A	A	B	B	B	B	B	B	B	B	370	275	250	260	270	310	R	A	A	A
22	B	470	R	A	400	B	520	590	B	B	B	B	295	290	B	300	280	270	245	240	B	R	R	F
23	A	A	R	460	B	B	A	620	B	B	B	B	B	250	270	280	260	280	300	280	A	A	430	F
24	R	A	520	B	B	400	B	600	B	B	B	470	B	B	400	270	295	270	250	245	B	B	B	R
25	A	A	B	A	400	B	480	500	570	310	280	300	275	255	330	265	230	210	250	300	B	B	F	A
26	R	A	A	B	460	540	430	340	310	C	230	B	370	225	230	230	220	240	235	220	225	250	300	380
27	A	A	R	410	B	B	440	355	280	270	250	245	240	230	225	210	225	200	240	220	210	245	250	300
28	365	360	335	380	F	400	380	270	260	245	230	240	240	215	240	220	230	230	230	215	210	230	220	260
29	310	265	R	B	390	415	400	335	285	265	270	255	260	255	300	295	240	250	235	225	235	240	300	R
30	A	500	445	475	500	465	385	380	330	S	265	260	245	250	260	260	235	255	220	290	F	425	330	A
31	A	A	R	A	A	520	395	390	300	245	215	245	260	290	280	290	240	310	290	250	245	300	R	A
No.	6	12	9	7	9	14	17	19	17	16	17	18	23	25	28	29	30	29	29	28	16	11	11	7
Median	315	345	380	410	400	440	430	400	370	290	270	255	260	250	250	260	240	250	240	255	260	270	330	300

h'F

Sweep 40 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

Aug. 1959 | h'E | 45° E Mean Time (G.M.T.+3h.)

Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							115	105	115	B	B	B	B	B	B	C					125			110
2	105									B	B	B	B	B	B	B								155
3	115H	115	110							A	B	B	B	B	B	B						115	125	120
4	140	120		120	125					A	B	B	B	B	B	B			140			140		110
5	110				115	110			135	B	B	B	B	B	B	B							125	105
6										A	B	B	B	B	B	B						130	165	135
7	110		120		110					S	A	B	B	105	140	B							115	170
8		110	115	110	105			105		B	B	B	B	B	B	B								125
9	105	115			110			110		180	B	B	B	B	B	B			105	110	110			170
10	105	110		115	120	110				B	B	B	B	B	B	B	115	140	110	150	130			
11	130		120		155					B	B	B	B	145	B	B					130			
12	120	105	105	105	105		105	115		B	B	B	B	B	B	S								155
13	110	120	110		105		125			B	B	B	B	B	B	B	160							110
14				120	120	120				E180B	E170B	B	B	B	B	B								105
15	110	110	120	110						B	170	B	125	B	B	B					120		110	110
16				105			110	105		B	B	B	B	B	B	B								
17		110								B	B	B	B	B	B	B				110		105	120	110
18					120	120	E190B			B	B	B	B	B	B	B					115	120		120
19	120				115					B	B	B	B	B	B	B								
20										B	B	B	B	B	B	B								150
21	115	120	115							B	B	B	B	B	B	B					110H			
22			100		125					B	B	B	B	B	B	B						115	110	110
23			115	150				120		B	B	B	B	B	B	B							115	
24	120							125		B	B	B	B	B	B	B								110
25	110									B	B	B	B	B	B	B				110			165	110
26	110	115						130		C	B	B	B	B	B	B								115
27	110	110	115							B	B	B	B	B	B	B								
28		170	130	115				B	B	E175B	B	B	B	B	B	B								140H
29			130					B	B	B	B	B	B	B	B	B							160	115
30	125	110H	110							S	B	B	B	B	B	B							120H	
31	110	110	115	115	110	115				150	B	B	B	B	B	B								
No.	19	15	15	10	14	5	4	8	2	4	2		1	2	1		2	1	3	4	7	6	11	22
Median	110	110	115	115	115	115	110	110	125	E180	E170		125	125	140		110	140	110	110	120	120	120	115

h'E

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

Aug. 1958 | h'Es | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	140	110	B	B	105	105	G	G	B	105	B	B	B	B	C	C	B	B	B	G	110	105	G
2	130	125	140	155	105	150	110	145	B	B	B	B	B	B	B	B	B	B	B	B	B	160	110	G
3	135	G	135	130	120	110	B	100	110	110	B	B	B	B	B	B	B	B	B	B	150	150	155	120
4	G	120	130	140	G	125	115	105	110	110	B	B	B	B	B	B	B	B	G	B	B	G	125	135
5	G	B	B	110	140	G	130	155	G	B	B	B	B	B	B	B	B	B	B	B	B	105	G	170
6	180	110	105	115	120	105	115	B	100	110	B	B	B	B	B	B	B	B	B	B	B	130	G	170
7	160	125	165	B	125	B	180	135	100	S	120	B	B	G	G	B	B	S	B	B	165	115	160	170
8	110	120	145	110	120	150	100	G	115	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
9	125	120	120	135	G	B	100	110	B	G	B	B	B	B	B	B	B	B	150	G	180	125	140	115
10	150	G	115	170	180	160	110	110	100	110	B	B	B	B	B	B	115	G	G	G	G	115	110	105
11	110	120	120	110	110	110	105	100	105	B	B	B	B	G	B	B	B	B	B	B	G	B	B	B
12	G	G	145	145	145	105	G	G	B	B	B	B	B	B	B	S	B	B	B	B	B	B	B	G
13	120	165	G	B	105	115	G	165	110	120	B	B	B	B	B	B	110	B	B	B	B	B	B	G
14	110	120	110	120	120	135	110	100	105	G	G	B	B	B	B	B	B	B	B	B	B	B	B	140
15	G	G	G	110	125	155	105	100	B	B	G	B	G	B	B	B	B	B	B	165	G	165	140	135
16	110	B	145	G	115	120	G	G	105	105	B	B	B	B	B	B	115	B	B	130	110	110	120	105
17	115	160	B	115	165	B	110	B	B	B	B	B	B	B	B	B	B	B	B	140	110	G	G	G
18	120	B	125	120	G	G	G	B	B	B	B	B	B	B	B	B	B	B	B	115	G	G	110	G
19	150	120	B	B	G	B	140	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	140	B
20	B	B	B	B	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	160	G
21	G	G	140	B	100	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	105	105	130
22	B	110	G	160	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	G
23	100	145	G	150	B	B	100	G	B	B	B	B	B	B	B	B	155	B	140	B	115	115	160	115
24	G	120	160	B	B	115	B	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
25	120	110	B	140	115	B	110	110	120	B	B	B	B	B	B	B	B	B	B	110	B	B	G	140
26	150	115	105	B	105	105	120	140	B	C	B	B	B	B	B	B	B	B	B	B	B	B	B	170
27	150	120	G	110	B	B	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
28	B	G	G	G	B	B	B	G	G	G	B	125	B	130	120	B	100	B	B	B	B	B	B	B
29	B	B	G	B	110	105	120	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
30	160	G	155	135	150	B	B	105	B	S	B	B	B	B	B	B	B	B	B	B	B	B	170	180
31	160	150	G	150	150	130	120	120	125	G	B	B	B	B	B	B	B	B	B	B	B	B	G	115
No.	21	19	18	20	21	18	20	15	12	6	2	1		1	1		5		2	5	6	13	15	16
Median	125	120	135	135	120	115	110	110	110	110	115	125		130	120		115		145	130	135	115	140	135

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

IONOSPHERIC DATA

Aug. 1959

Types of Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	a	f	a			a	a				ℓ											f	a	
2	h	a	r	a	f	a	a	a														h	a	
3	h		h	a	a	a		ℓ	a	a											f	a	h	ℓ
4		a	f	h		r	a	a	a	a													a	h
5				a	h		a	h														r		h
6	h	f	a	a	r	a	a		ℓ	a												c		h
7	h	a	h		h		a	a	ℓ		ℓ										a	a	h	c
8	f	h	h	ℓ	h	a	r		ℓ															
9	h	h	a	a			a	ℓ											h		h	a	a	ℓ
10	h		f	h	h	h	a	a	a	a							c					a	a	a
11	ℓ	a	ℓ	a	ℓ	a	f	a	a															
12			h	h	h	a																		
13	h	h	f		ℓ	r		a	a	a							ℓ							
14	a	a		c	a	a	r	a	a															h
15				ℓ	a	a	f	f												a		r	h	h
16	a		a		a	a			a	a							a			a	a	a	r	a
17	a	h		a	a		f													a	f			
18	f		a	a																a			a	
19	a	a					a																a	
20					f																		f	
21			h		f	a																r	f	a
22		a		a																				
23	f	f		a			f										a		ℓ		a	a	a	f
24		a	a			a																		
25	h	a		f	a		a	ℓ	a											ℓ				h
26	h	a	f		a	a	a	h																a
27	a	h		a			a																	
28												ℓ		ℓ	ℓ		ℓ							
29					a	r	a																	
30	a		h	a	a			ℓ														a	h	h
31	h	h		h	h	h	a	a	a															a
No.																								
Median																								

Types of Es

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 10

IONOSPHERIC DATA

Sep. 1959 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	R	F	F	5.5	B	5.5^{F}	F	B	A	5.8	6.5	B	B	9.3	10.2^{R}	J11.7^{R}	11.0	D10.7^{F}	5.4	R	R	F	F
2	A	A	F	R	3.2^{F}	B	B	A	B	A	B	5.1	B	B	F	F	F	7.8	7.1	5.2	3.7	R	4.7^{R}	A
3	F	F	F	4.8^{F}	A	B	F	4.6	5.3^{R}	5.7	U6.7^{R}	6.9	6.9	7.0^{R}	U8.5^{F}	9.4	10.3	10.7	9.3	5.1	4.7	F	A	A
4	A	F	A	4.7^{F}	4.5	F	A	A	A	F	B	B	B	B	B	6.1	7.0	5.7	R	F	F	A	3.2	3.5
5	A	A	A	A	4.4	A	B	B	B	R	5.7	5.6	B	B	7.6	8.3	10.5	10.2	10.2	8.2	3.0	A	5.3	A
6	3.6	B	B	A	F	F	F	4.6	5.4	6.7^{R}	6.4	B	8.3	9.8	10.4	11.0	11.3	10.9	D10.2^{R}	10.0^{R}	5.3	3.1^{F}	F	R
7	3.1	2.8	F	F	F	4.8	4.8	5.4	6.7	8.2	8.8	9.0	10.0	10.0	10.5	11.1	10.8	10.8	10.0	9.0	4.0	3.4	2.6	4.5^{R}
8	3.4	2.8	R	F	5.2^{F}	5.2	5.6^{F}	5.5	5.5	6.6	7.0	8.6	10.3	10.3	11.4^{R}	J12.0	J12.0^{R}	J11.7^{R}	12.0	11.3	D9.2^{F}	3.4	2.7	2.7
9	R	F	F	B	5.3	4.5	4.9	4.7	6.5^{R}	6.8	7.3	8.6	9.9	9.9	10.4	10.8	U10.8^{R}	10.2^{S}	D9.7^{S}	8.9	6.8	F	2.7	2.3
10	3.2	F	F	A	5.0	5.1	F	5.6^{F}	4.8	5.6	6.7	8.1	9.4^{F}	9.9	10.3	10.4	10.6^{R}	10.6	9.2	8.9	6.3	4.3	2.7	2.3
11	4.6^{F}	R	A	5.6^{R}	5.3	F	F	B	A	B	5.5^{H}	6.2	7.1	8.5	8.7	9.2	10.5	10.9	D11.0^{R}	F	4.0	3.2	A	5.5
12	F	4.8^{F}	A	A	A	4.6^{F}	4.4^{R}	A	U5.0^{R}	5.8^{F}	6.1	7.3^{R}	7.4	8.2	8.5	9.4	9.7	8.4	8.1	5.7	B	B	R	R
13	A	R	A	3.9	B	A	4.4	F	6.1	7.1	8.5	U9.5^{R}	9.6	10.2	10.0	D10.3^{R}	10.8^{R}	10.6^{R}	10.0^{R}	9.0	6.6	4.3	2.9	R
14	R	A	B	5.1^{F}	4.8	4.2	B	A	B	A	B	B	B	4.0	B	J7.1^{R}	D8.5^{R}	D8.5^{R}	7.5	5.7	4.9	4.7	R	R
15	A	A	A	4.0^{R}	4.0	A	4.3	4.5	5.3^{F}	6.1	6.2	B	B	B	10.2	10.0	10.6	10.2	9.7	8.6	A	4.3	R	A
16	R	B	B	3.7	B	B	B	B	A	B	B	B	5.6	5.4	6.0	6.3	6.6	7.0	7.3	5.7	4.0	R	4.1	R
17	A	R	B	3.7^{F}	5.2	4.5	A	5.4	6.0	U6.0^{R}	8.1	U8.2^{R}	10.0^{R}	9.8	10.5^{R}	10.5	D10.3^{R}	10.0^{R}	9.4	7.4	F	3.0^{R}	A	A
18	A	A	U8.2^{R}	5.1	F	A	A	A	5.2	5.6	5.7	5.9	6.7	8.2	B	9.8	9.8	B	8.8	6.8	3.0^{R}	A	A	F
19	A	A	B	B	B	B	B	B	B	B	B	R	B	B	6.2	6.1	6.2^{R}	U6.9^{R}	6.0	4.8	4.1	3.7	3.0^{F}	R
20	3.8	F	5.3^{F}	F	4.4	A	B	R	R	B	B	B	4.4	R	6.3^{R}	B	6.1	B	3.3	3.4	A	A	F	B
21	A	4.3	A	R	A	2.8	B	B	A	B	B	B	B	B	U5.2^{R}	B	5.8^{R}	4.8	A	R	A	U5.3^{R}	A	F
22	A	B	A	3.1	A	B	B	B	B	4.4	B	B	B	B	B	B	B	6.5	4.9	3.5	R	4.0	A	A
23	A	A	B	B	A	4.3	4.9	5.7	6.0	6.9	7.0	B	B	D5.6^{R}	D8.0^{R}	9.2	D9.0^{R}	10.2^{R}	10.0^{R}	R	F	A	F	A
24	3.7	U4.6^{R}	F	U6.3^{R}	5.1	4.6	U4.7^{R}	B	B	B	B	6.2	B	B	R	7.3	7.6	6.5	6.5	4.8	3.4	R	A	F
25	F	F	U4.7^{F}	4.8	4.1	U4.0^{F}	F	B	B	R	B	5.5	5.7	8.1	9.8^{R}	J11.5^{R}	F	6.8	F	F	B	A	A	A
26	A	C	C	C	5.0^{R}	B	A	B	B	5.8	6.0	B	B	B	7.3	8.0	9.0	B	B	7.0	4.3	R	A	B
27	B	4.3^{F}	B	B	4.7	5.4	4.8	B	6.0	B	B	B	5.9	6.9	R	U10.0^{R}	10.5	F	5.4	3.7	F	F	R	A
28	A	A	A	5.0	4.4	B	B	5.9	5.9	6.6^{R}	5.6^{F}	5.7	6.7	U9.2^{R}	F	9.1	9.8	10.1	9.2	8.3	7.0	A	F	A
29	A	B	F	5.3^{F}	5.2	5.0	4.8	6.0	7.0	7.9^{R}	7.6	8.1	8.6	8.6	8.8	8.9	9.3	9.1	9.4	8.7	F	5.3	5.4	5.1
30	R	A	5.5	5.0^{F}	U5.6^{F}	5.0	5.9	6.9	8.6	8.9	10.0	10.3	11.4^{R}	11.6	J12.2^{R}	J12.4^{R}	12.6^{R}	7.6	5.5^{F}	5.0	4.4	3.6^{F}	A	A
31																								
No.	7	6	4	15	19	14	12	12	16	17	19	18	18	18	21	26	24	25	26	25	18	14	11	7
Median	3.6	4.3	5.4	4.8	5.0	4.6	4.8	5.4	6.0	6.6	6.7	7.1	7.8	8.9	9.3	9.6	10.4	10.1	10.2	6.8	4.4	3.8	3.0	3.5
U.Q	3.8	4.6	6.8	5.1	5.2	5.0	5.2	5.8	6.3	7.0	7.6	8.6	9.9	9.9	10.4	D10.5	10.8	10.6	D10.0	8.8	6.3	4.3	4.7	5.1
L.Q	3.2	2.8	5.0	3.9	4.4	4.3	4.6	4.6	5.3	5.8	5.8	5.9	6.7	8.1	7.4	8.3	8.3	7.0	7.1	5.0	4.0	3.4	2.7	2.3
Q.R	0.6	1.8	1.8	1.2	0.8	0.7	0.6	1.2	1.0	1.2	1.8	2.7	3.2	1.8	3.0		2.5	3.6		3.8	2.3	0.9	2.0	2.8

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

IONOSPHERIC DATA

Sep.1959 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B				B	B										
2									B		B	L	B	B										
3												L	L		L	L								
4											B	B	B	B	B	L								
5								B	B			B	B	B										
6									L		L	B	L	L										
7												L	L			L								
8													L			L								
9										L		L	L	L	L									
10													L	L		L	L							
11								B		B	LH	L	L	L		L								
12										L	L		L			L								
13										L	L		L	L	L	L								
14							B		B	A	B	B	B		B									
15								3.7	L	L	L	B	B	B		L								
16								B		B	B	B	L	L	L	L								
17									L		L	L	L				L							
18									A	4.2	L		L	L	B	L		B						
19								B	B	B	B	R	B	B	4.2	4.2	L							
20										B	B	B	4.0^R	4.2^R	4.3	B	B	B						
21								B		B	B	B	B	B	B	B	B	R						
22								B	B		B	B	B	B	B	B	B							
23										L		B	B											
24								B	B	B	B	B	B	B	L	L	L							
25								B	B	A	B	$^U4.3^R$	B	L	L	L								
26								B	B	L	B	B	B	B	L	L		B						
27								B	L	B	B	B	L	L	L			L						
28								A	A	L	L	L	L				L							
29							B	A		L	L		L		L	L	L	L						
30									L	L	L	L	L	L										
31																								
No.								1		1		1	1	1	2	1								
Median								3.7		4.2		$^U4.3$	4.0	4.2	4.2	4.2								

The Radio Research Laboratories, Japan.

foF1

Sweep 10 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

S ?

IONOSPHERIC DATA

Sep. 1959 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	B	A	B	B	B	B	B	B	B	B						3.10
2								B	B	B	B	B	B	B	B	B	B	B				2.90		
3				2.90				A	A	B	B	B	B	B	B	B	B	B			2.90			
4								A	A	A	B	B	B	B	B	A	A	B						
5								B	B	B	B	B	B	B	B	B	B	B						
6								2.80	B	B	B	B	B	B	B	B	B	B						
7		2.50					2.95	2.00	2.20	2.60	2.40	2.70	B	B	B	B	B	B						
8	2.70H	2.10	2.80				A	A	A	A	3.00	2.55	2.80	2.90	B	B	B	B					2.00	3.00
9	2.80							3.00	3.20	A	B	2.90	B	R	B	B	2.30	2.00					1.90	2.20
10		3.30H					A	A	A	B	B	B	3.00	R	B	B	2.50	B						
11					2.70	2.40	2.45	B	B	B	A	B	B	B	B	B	B	B						
12	2.90							A	B	R	R	B	B	B	B	B	B	B					2.40R	3.30
13	3.20	3.10						2.50	2.80	2.50	3.00	B	3.00	B	B	3.00	2.35	2.15						2.60
14	3.50				2.60		B	B	B	B	B	B	B	B	B	B	B	B	2.40		2.50	3.20	3.50	3.20
15				3.00	2.50			A	3.00	2.80H	3.00	B	B	B	B	B	B	B				2.60	3.80	
16				2.30				B	B	B	B	B	B	R	R	2.60	2.50	2.40	2.00			3.20	3.30	4.40
17	4.10	4.00R		2.25	3.90			3.90	3.10	B	B	B	B	B	B	B	2.50R	B	2.00	2.20		R	4.00	
18			3.80		2.70			A	3.80	2.90	B	B	B	B	B	B	B	B	2.30	2.20				2.80
19								B	B	B	B	B	B	B	B	B	A	B						
20	2.80	3.00	3.40	2.50				A	A	B	B	B	B	B	B	B	B	B		2.20	3.00			
21				3.20				B	B	B	B	B	B	B	B	B	B	B		3.70		4.30	3.90	
22								B	B	B	B	B	B	B	B	B	B	B		2.00	2.80			
23								B	B	B	B	B	B	B	B	B	B	B		3.05		2.70		
24								B	B	B	B	B	B	B	B	B	B	R					3.80R	
25								B	B	A	B	B	B	B	B	B	B	B			2.90	2.50		
26								B	B	B	B	B	B	B	B	B	B	B				2.55	3.00	
27		2.80						B	A	B	B	B	B	B	B	B	B	B				3.00		
28					2.35			B	A	B	B	B	B	B	B	B	B	B						
29							B	A	B	B	3.00	3.15	B	B	B	R	2.70	B						
30	2.80				3.60		3.80	3.80	2.60	2.90	3.00	B	A	B	A	B	B	B		3.80	3.60			
31																								
No.	8	7	3	6	7	1	3	6	7	5	6	4	3	1		2	6	3	4	7	6	9	10	8
Median	2.85	3.00	3.40	2.70	2.70	2.40	2.95	2.90	3.00	2.80	3.00	2.80	3.00	2.90		2.80	2.50	2.15	2.15	2.20	2.90	2.90	3.40	3.05

foE

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

IONOSPHERIC DATA

Sep.1959 | foEs | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	⁻6.3	⁻6.5	⁻4.9	⁻4.2	⁻4.5	B	B	⁻5.7	B	5.2	B	B	B	B	B	B	B	B	B	B	⁻3.1	⁻3.5	⁻6.3	⁻5.3
2	⁻6.6	⁻3.9	4.0	⁻3.8	⁻3.2	B	B	6.0	B	⁻4.8	B	B	B	B	B	B	B	B	B	B	B	G	⁻5.4	3.3
3	⁻5.2	B	B	⁻5.1	3.9	B	3.3	⁻6.4	⁻3.8	B	B	B	B	B	B	B	B	B	B	B	4.0	⁻7.0	⁻5.4	4.3
4	⁻7.2	⁻6.4	⁻5.9	⁻5.4	⁻4.0	⁻5.3	⁻5.2	⁻5.2	⁻3.6	4.4	B	B	B	B	B	3.2	3.3	B	2.8	⁻3.0	⁻3.6	4.1	⁻3.2	⁻6.3
5	⁻4.2	⁻4.2	⁻4.0	⁻3.9	⁻5.4	⁻5.0	B	B	B	B	B	B	B	B	B	B	B	B	B	B	2.4	2.9	⁻6.4	⁻5.0
6	⁻5.4	B	B	⁻5.1	4.8	⁻3.4	3.0	⁻3.1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	G	⁻5.2	⁻6.0	⁻5.4	⁻4.0	G	2.3	G	G	G	G	B	B	B	B	B	B	B	B	B	B	⁻2.9	⁻3.7
8	3.0	2.7	G	⁻3.9	4.7	⁻3.5	⁻3.6	⁻3.9	⁻3.9	⁻3.4	G	G	G	G	B	B	B	B	B	B	B	⁻2.1	G	2.6
9	G	⁻6.6	⁻3.9	B	⁻4.0	3.5	B	⁻3.4	⁻4.2	2.6	B	G	B	G	B	B	G	G	B	B	B	B	B	2.4
10	2.8	G	⁻4.0	⁻4.3	⁻5.2	⁻4.3	⁻3.6	⁻3.4	2.5	B	B	B	G	G	B	B	G	B	B	B	B	B	⁻3.0	⁻2.8
11	⁻3.4	⁻8.2	⁻8.2	⁻5.3	G	G	G	B	⁻4.3	B	2.7	B	B	B	B	B	B	B	B	2.4	3.1	⁻3.4	⁻3.2	⁻4.0
12	⁻6.3	⁻6.8	5.3	⁻5.3	⁻4.9	⁻3.9	⁻5.4	3.8	B	G	G	B	B	B	B	B	B	B	B	B	B	B	G	G
13	⁻6.2	3.4	4.6	6.3	B	4.7	3.9	G	G	G	G	B	G	B	B	G	G	G	B	B	B	B	B	G
14	G	6.1	B	3.4	G	3.3	B	⁻4.6	B	⁻5.0	B	B	B	B	B	B	B	B	G	B	G	G	G	G
15	⁻3.9	4.1	3.7	G	G	3.8	3.8	⁻3.5	⁻3.5	G	G	B	B	B	B	B	B	B	B	B	⁻3.1	G	G	⁻6.4
16	⁻5.0	B	B	G	B	B	B	B	⁻5.2	B	B	B	B	G	G	G	G	G	G	B	B	G	G	G
17	⁻5.2	G	B	3.3	G	⁻6.5	5.4	G	G	B	B	B	B	B	B	B	G	B	G	⁻3.1	B	G	⁻4.4	⁻6.5
18	⁻6.4	5.3	4.5	⁻2.8	⁻4.5	⁻4.2	⁻4.8	⁻4.2	⁻4.5	G	B	B	B	B	B	B	B	B	G	G	B	3.8	⁻3.6	⁻5.2
19	5.7	5.7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.2	B	B	B	B	B	2.6	2.5
20	⁻3.2	G	G	G	⁻4.5	⁻6.8	B	⁻3.7	⁻3.5	B	B	B	B	B	B	B	B	B	B	⁻2.8	⁻3.5	⁻3.6	⁻5.5	B
21	⁻7.2	⁻3.7	3.9	G	⁻6.7	2.0	B	B	4.2	B	B	B	B	B	B	B	B	B	⁻3.8	G	⁻6.4	G	4.7	⁻3.1
22	⁻6.1	B	⁻6.6	⁻2.6	⁻5.8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	3.7	⁻6.8	⁻4.0
23	3.2	⁻3.2	B	B	4.3	⁻3.7	⁻3.6	B	B	B	B	B	B	B	B	B	B	B	B	⁻6.4	2.5	2.6	2.8	⁻4.7
24	⁻7.4	3.8	⁻5.1	⁻4.0	2.8	⁻3.8	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	G	⁻7.9	⁻5.4
25	⁻8.6	⁻5.2	⁻7.1	⁻3.8	D10.0D	⁻3.4	2.6	B	B	4.7	B	B	B	B	B	B	B	G	⁻3.9	⁻4.0	B	⁻4.2	⁻5.4	⁻4.8
26	3.6	C	C	C	2.8	B	⁻4.6	B	B	3.8	B	B	B	B	B	B	B	B	B	B	G	G	⁻9.4	B
27	B	⁻6.3	B	B	B	3.7	B	B	3.6	B	B	B	B	B	B	B	B	B	B	B	3.3	G	G	4.3
28	⁻3.0	⁻5.3	⁻7.2	3.7	G	B	B	⁻4.0	5.3	B	B	B	B	B	B	B	B	B	B	B	B	⁻3.6	⁻6.0	⁻5.5
29	⁻8.5	B	⁻3.4	⁻4.0	B	⁻6.4	B	3.8	4.2	B	G	G	B	B	B	G	G	B	B	B	B	B	2.1	2.3
30	3.0	⁻7.0	⁻6.4	⁻6.5	G	4.0	G	G	G	G	G	B	⁻4.2	B	⁻3.3	B	B	B	⁻3.5	G	3.8	⁻5.1	⁻3.2	3.8
31																								
No.	28	24	21	25	25	22	16	19	18	14	8	4	4	4	2	4	8	4	8	11	14	22	27	27
Median	5.2	4.7	4.6	3.9	4.3	3.8	3.6	3.8	3.7	3.0	G	G	G	G	G	G	G	G	G	2.4	3.1	G	G	4.0

foEs

Sweep 1.0 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 4

IONOSPHERIC DATA

Sep. 1959 | **f-min** | 45° E Mean Time (G.M.T.+3h.) | **Syowa Base** | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.60	1.60	1.65	1.70	1.60	B	3.50	2.40	B	2.30	4.80	5.00	B	B	3.70	5.00	5.10	3.10	3.20	3.00	1.30	2.40	1.30	1.40
2	1.40	1.80	1.20	1.45	1.30	B	B	5.30	B	3.20	B	3.50	B	B	4.00	3.25	3.50	2.50	3.00	2.10	1.80	1.40	1.40	1.90
3	1.90	1.90	2.30	2.10	2.75	B	2.40	2.30	2.40	5.10	5.10	4.00	4.65	5.40	4.45	4.10	2.70	2.50	2.00	1.80	2.10	1.60	1.70	1.90
4	2.40	1.65	3.10	1.85	2.10	2.10	2.10	2.20	2.40	2.60	B	B	B	B	B	2.35	2.40	3.30	2.30	1.35	2.10	2.30	1.75	1.85
5	2.10	2.20	3.05	2.70	2.20	3.70	B	B	B	4.70	5.00	5.00	B	B	5.10	3.20	2.50	2.20	2.50	2.00	1.60	1.50	1.70	2.00
6	1.90	B	B	2.80	2.65	1.90	1.90	1.60	3.40	5.10	4.60	B	5.00	5.00	3.00	3.00	2.40	2.20	3.80	3.35	2.40	2.10	1.70	1.80
7	1.70	1.60	2.00	1.45	1.70	1.60	1.70	1.70	2.00	2.30	2.20	2.30	3.00	3.00	2.70	2.60	2.20	2.10	3.00	1.60	1.40	1.60	1.50	1.40
8	1.50	1.50	2.10	1.40	2.00	1.80	1.80	2.20	2.20	2.30	2.20	2.35	2.20	2.30	4.80	4.60	3.60	2.00	4.00	2.20	2.30	1.90	1.70	1.30
9	2.30	2.10	3.30	B	2.30	2.00	2.20	2.40	2.10	2.40	3.15	2.90	3.20	2.40	3.20	3.00	2.10	1.85	1.80	1.50	1.45	1.50	1.85	1.45
10	1.35	1.20	2.10	1.55	1.85	1.50	1.55	1.70	2.10	3.20	3.00	3.40	3.00	2.30	2.85	2.55	2.50	2.00	1.50	1.45	1.80	1.50	1.20	1.25
11	1.50	1.70	2.10	2.50	1.80	1.70	1.80	B	2.90	B	2.30	4.10	3.20	3.00	2.80	2.35	2.70	4.00[S]	1.90	1.70	1.80	1.40	1.20	1.70
12	1.50	1.70	2.15	4.25	3.60	2.10	2.30	2.70	3.90	2.00	2.10	4.90	3.55	4.90	4.10	4.20	3.15	2.05	1.90	1.60	B	B	1.65	1.30
13	1.50	2.15	3.15	1.85	B	3.15	2.20	1.80	2.10	2.20	2.70	7.00	2.35	3.10	4.10	2.10	2.00	2.15	1.80	2.00	2.15	1.60	1.80	1.70
14	2.15	2.45	B	2.10	2.00	1.70	B	3.40	B	3.30	B	B	B	3.00	B	4.00	2.70	3.30	1.80	3.00	2.00	2.30	1.40	1.50
15	2.00	2.60	2.20	1.70	1.70	2.30	2.00	2.30	2.10	2.10	2.70	B	B	B	4.20	3.30	3.10	3.00	2.00	2.00	1.80	1.20	1.30	1.80
16	2.20	B	B	1.80	B	B	B	B	3.10	B	B	B	3.20	2.20	2.20	2.10	2.00	1.90	1.80	1.90	1.90	1.20	1.15	3.10
17	2.00	2.10	B	1.65	2.40	2.45	2.70	2.10	1.90	5.10	5.00	5.10	5.20	3.00	4.20	2.90	2.05	2.20	2.00	1.85	2.00	1.90	2.80	1.70
18	2.90	2.30	2.10	1.60	1.70	2.00	2.00	2.40	2.10	1.70	3.40	5.00	3.00	3.00	B	4.00	2.50	B	2.00	1.70	1.80	1.40	1.60	1.70
19	5.10	5.40	B	B	B	B	B	B	B	B	B	3.50	B	B	3.70	3.00	2.30	3.20	2.50	1.90	2.10	1.85	2.10	1.80
20	1.80	1.55	1.80	1.85	1.85	1.60	B	2.70	2.45	B	B	B	3.30	3.85	3.00	B	3.70	B	2.40	1.85	2.10	1.90	1.70	B
21	1.55	2.20	3.00	2.05	1.80	1.90	B	B	3.00	B	B	B	B	B	4.80	B	4.30	2.90	2.20	2.10	1.90	2.20	2.80	1.75
22	5.15	B	2.30	1.60	2.80	B	B	B	B	3.90	B	B	B	B	B	B	B	2.80	3.00	1.60	1.90	1.80	2.30	3.30
23	2.30	1.80	B	B	3.70	2.15	2.80	5.00	5.10	4.00	5.00	B	B	5.10	5.20	3.20	8.50	5.10	2.80	2.30	1.80	2.30	1.10	2.10
24	1.40	3.10	1.50	2.70	2.15	2.10	3.65	B	B	B	B	5.00	B	B	5.20	3.10	2.90	3.45	3.10	2.30	2.45	1.70	2.10	1.80
25	1.80	1.10	1.95	2.20	2.15	2.30	2.10	B	B	2.70	B	3.80	5.15	3.40	5.50	3.60	3.20	2.20	3.00	1.50	B	2.00	2.00	1.85
26	1.90	C	C	C	2.30	B	3.90	B	B	3.10	5.00	B	B	B	3.50	3.30	4.70	B	B	4.00	1.30	2.00	2.00	B
27	B	1.90	B	B	3.50	3.00	3.70	B	2.65	B	B	B	4.20	3.85	5.10	5.05	3.40	3.20	3.00	2.40	1.80	1.80	2.20	3.70
28	2.30	2.15	2.20	2.70	1.70	B	B	3.40	2.60	5.15	3.95	4.00	4.50	5.25	4.10	5.10	4.00	4.90	2.20	3.80	2.00	2.10	1.40	3.30
29	3.00	B	2.10	2.20	3.20	1.80	3.70	2.80	3.80	4.50	2.20	3.15	3.20	5.80	4.05	2.40	2.10	3.30	3.90	3.50	2.00	1.80	1.80	1.80
30	1.75	1.80	2.10	1.70	2.15	3.00	2.10	1.90	2.20	2.10	2.00	3.50	2.90	3.10	3.00	3.20	3.35	2.60	2.20	3.40	2.40	2.40	2.15	2.40
31																								
No.	29	25	22	25	27	22	21	20	21	23	19	19	18	20	26	27	29	27	29	30	28	29	30	28
Median	2.90	2.90	2.10	2.85	2.15	2.05	2.20	2.35	2.40	3.10	3.15	4.00	3.20	3.10	4.10	3.20	2.70	2.60	2.30	2.00	1.90	1.80	1.70	1.80

f-min Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 5

23

IONOSPHERIC DATA

Sep. 1959 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B				B	B										
2									B		B	L	B	B										
3												L	L		L	L								
4											B	B	B	B	B	L								
5								B	B			E520^B	B	B										
6									L		L	B	L	L										
7												L	L			L								
8													L			L								
9										L		L	L	L	L									
10													L	L		L	L							
11								B		B	LH	L	L	L		L								
12										L	L		L			L								
13										L	L		L	L	L	L								
14							B		B	A	B	B	B		B									
15								550	L	L	L	B	B	B		L								
16								B		B	B	B	L	L	L	L								
17									L		L	L	L				L							
18									570	470	L		L	L	B	L		B						
19								B	B	B	B	R	B	B	395	420	L							
20										B	B	B	685	R	520	B	500	B						
21								B		B	B	B	B	B	E550^B	B	450	450						
22								B	B		B	B	B	B	B	B	B							
23										L		B	B											
24								B	B	B	B	495	B	B	L	L	L							
25								B	B	695	B	600	645	L	L	L								
26								B	B	L	460	B	B	B	L	L		B						
27								B	L	B	B	B	L	L	L			L						
28								510	E570^A	L	L	L	L				L							
29							500	490		L	L		380		L	L	L	L						
30									L	L	L	L	L	L										
31																								
No.							1	3	2	2	1	3	3		2	1	2	1						
Median							500	510	570	580	460	E520	645		460	420	480	450						

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

Sep. 1959 | h'F | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4'S, Long. 39° 35.4'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	350	440	F	460	B	550	F	B	A	420	300	B	B	280	295	280	245	260	405	A	A	F	F
2	A	A	500	620	400	B	B	A	B	A	B	350	B	B	245	255	240	300	270	300	330	R	310	A
3	390	300	295	420	A	B	435	400	480	440	340	310	320	E400B	290	265	260	250	230	300	600	F	A	A
4	A	480	A	650F	560	400F	A	A	A	290	B	B	B	B	B	310	305	315	A	F	F	A	280	305
5	A	A	A	A	490	A	B	B	B	400	500	B	B	B	290	270	270	230	230	230	290	A	430	A
6	430	B	B	A	495	390	420	460F	315	E400B	E400B	B	300	290	250	255	230	250	285	250	285	345	400	400
7	385	540	360	400	330	445	390	295	270	270	250	235	235	230	250	240	220	225	230	215	275	245	330	355
8	380	380	R	400	510	440	400	525	330	270	280	250	255	230	290	255	230	235	270	240	270	315	305	380
9	R	470	F	B	525	455	390	470	350	255	235	245	235	230	235	240	225	220	230	220	210	225	320	330
10	500	F	310	A	570	490	430	400	290	310	230	250	255	225	235	235	230	230	210	230	225	240	310	465
11	280	430	A	405	345	360	F	B	A	B	225H	305	275	270	240	255	265	225	235	235	310	360	A	350
12	F	390	A	A	A	500	310	A	450	290	285	325	270	305	250	280	245	215	240	260	B	B	R	R
13	A	A	A	285	B	A	510	360	300	265	245	E320B	235	235	235	285	225	230	215	220	230	235	265	R
14	R	A	B	480	490	300	B	A	B	A	B	B	B	300	B	340	270	280	265	285	380	535	R	R
15	A	A	A	325	400	A	515	500	330	280	250	B	B	B	240	270	230	220	230	240	A	390	R	A
16	300	B	B	345	B	B	B	B	A	B	B	B	245	265	255	265	250	250	265	260	300	R	310	R
17	A	R	B	375	370	500	A	420	335	380	300	E295B	E285B	270	265	250	235	230	240	270	290	500	A	A
18	A	A	350	425	490	A	A	A	A	280	270	E410B	250	265	B	250	250	B	280	260	295	A	A	325
19	A	A	B	B	B	B	B	B	B	B	B	330	B	B	320	290	275	285	270	285	295	285	350	A
20	400	355	350	495	565	A	B	A	A	B	B	B	275	340	280	B	B	B	410	400	A	A	340F	B
21	A	490	A	R	A	460	B	B	A	B	B	B	B	B	B	B	B	295	A	R	A	320	A	300
22	A	B	A	410	A	B	B	B	B	330	B	B	B	B	B	B	B	310	330	350	R	400	A	A
23	A	A	B	B	A	470	470	470	E410B	300	E340B	B	B	E330B	E300B	250	345	295	275	320	390	A	F	A
24	F	550	305	430	420	330	520	B	B	B	B	B	B	B	305	260	295	380	300	340	310	760	A	305F
25	F	450	500	390	660	595	430	B	B	A	B	320	B	260	E400B	270	290	290	500	F	B	A	A	A
26	A	C	C	C	470	B	A	B	B	380	B	B	B	B	270	260	300	B	B	290	425	600	A	B
27	B	490	B	B	470	415	510	B	280	B	B	B	E300B	E270B	360	360	280	295	365	410	F	520	R	A
28	A	A	A	E500A	365	B	B	A	A	E400B	300	300	300	300	300	290	280	285	225	255	225	A	F	A
29	A	B	355	435	370	400	B	A	370	360	250	250	235	E330B	270	250	240	265	250	250	230	225	280	280
30	A	A	330F	520	405	570	420	370	230	230	235	225	225	200	220	230	265	250	310	390	500	400F	A	A
31																								
No.	8	13	11	18	22	17	15	11	13	17	16	14	15	16	23	27	27	27	27	27	21	18	13	11
Median	490	450	350	415	470	445	430	420	430	290	260	300	255	265	265	260	260	250	265	260	295	350	310	330

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

Sep.1959 | R'E | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	B	A	B	B	B	B	B	B	B	B						135
2								B	B	B	B	B	B	B	B	B	B	B				125		
3				120				A	A	B	B	B	B	B	B	B	B	B			160			
4								A	A	A	B	B	B	B	B	A	A	B						
5								B	B	B	B	B	B	B	B	B	B	B						
6								110	B	B	B	B	B	B	B	B	B	B						
7		115					115	120	B	185	110	125	B	B	B	B	B	B					110	110
8	110H	105	140				A	A	A	A	115	125	120	105	B	B	B	B					130	110
9	160							100	110	A	B	B	B	110	B	B	130	180						
10		120H					A	A	A	B	B	B	B	120	B	B	B	B						
11					115	115	135	B	B	B	A	B	B	B	B	B	B	B						
12	120							A	B	120	110	B	B	B	B	B	B	B					120	115
13	115	180						130	185	170	180	B	120	B	B	115	130	B						150
14	120				145		B	B	B	B	B	B	B	B	B	B	B	B	135		180	120	115	120
15				125	135			A	110	125H	125	B	B	B	B	B	B	B				110	120	
16				125				B	B	B	B	B	B	110	110	120	125	190	170			115	110	115
17	110	120		170	130			120	110	B	B	B	B	B	B	B	130	B	B	140		150	135	
18			110		150			A	145	135	B	B	B	B	B	B	B	B	170	155				120
19								B	B	B	B	B	B	B	B	B	A	B						
20	130	125	125	110				A	A	B	B	B	B	B	B	B	B	B		175	170			
21				125				B	B	B	B	B	B	B	B	B	B	B		180		115	120	
22								B	B	B	B	B	B	B	B	B	B	B		145	145			
23								B	B	B	B	B	B	B	B	B	B	B						
24								B	B	B	B	B	B	B	B	B	B	B		125		115		
25								B	B	A	B	B	B	B	B	B	B	170					115	
26								B	B	B	B	B	B	B	B	B	B	B			110	115		
27		155						B	A	B	B	B	B	B	B	B	B	B				110	145	
28					120			B	A	B	B	B	B	B	B	B	B	B				110		
29							B	A	B	B	110	B	B	B	B	120	115	B						
30	125			135	120		115	115	115	110	105	B	A	B	A	B	B	B		120	165			
31																								
No.	8	7	3	7	7	1	3	6	6	6	7	2	2	3	1	3	5	3	3	7	6	10	10	8
Median	120	120	125	125	130	115	115	120	110	130	110	125	120	110	110	120	130	180	170	145	160	115	120	120

R'E

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

Sep. 1959 | h'Es | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	120	110	120	110	110	B	B	140	B	105	B	B	B	B	B	B	B	B	B	B	105	110	150	130
2	120	135	150	115	125	B	B	120	B	100	B	B	B	B	B	B	B	B	B	B	B	G	150	110
3	140	B	B	150	125	B	120	150	110	B	B	B	B	B	B	B	B	B	B	B	185	105	120	110
4	130	120	105	115	130	115	125	120	120	125	B	B	B	B	B	165	160	B	110	140	140	115	125	110
5	135	115	110	110	130	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	110	115	115
6	115	B	B	100	115	115	115	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	G	120	110	115	105	G	150	G	G	G	G	B	B	B	B	B	B	B	B	B	B	135	115
8	150	145	G	130	110	120	115	110	105	130	G	G	G	G	B	B	B	B	B	B	B	155	G	145
9	G	130	105	B	105	115	B	125	125	150	B	G	B	G	B	B	G	G	B	B	B	B	B	150
10	120	G	115	105	105	115	120	115	140	B	B	B	G	G	B	B	G	B	B	B	B	B	150	110
11	120	105	110	105	G	G	G	B	110	B	110	B	B	B	B	B	B	B	B	150	120	115	110	120
12	150	115	105	100	100	115	125	120	B	G	G	B	B	B	B	B	B	B	B	B	B	B	G	G
13	150	130	125	120	B	110	115	G	G	G	G	B	G	B	B	G	G	G	B	B	B	B	B	G
14	G	115	B	130	G	135	B	115	B	110	B	B	B	B	B	B	B	B	G	B	G	G	G	G
15	115	130	120	G	G	120	115	115	170	G	G	B	B	B	B	B	B	B	B	B	115	G	G	105
16	110	B	B	G	B	B	B	B	120	B	B	B	B	G	G	G	G	G	G	B	B	G	G	G
17	110	G	B	180	G	130	110	G	G	B	B	B	B	B	B	B	G	B	G	170	B	G	150	125
18	115	105	155	125	170	115	105	120	130	G	B	B	B	B	B	B	B	B	G	G	B	110	115	175
19	125	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	145	B	B	B	B	B	140	140
20	140	G	G	G	145	120	B	120	115	B	B	B	B	B	B	B	B	B	B	175	170	160	155	B
21	120	120	125	G	115	120	B	B	110	B	B	B	B	B	B	B	B	B	115	G	115	G	135	120
22	115	B	115	120	130	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	115	110	105
23	115	130	B	B	100	105	105	B	B	B	B	B	B	B	B	B	B	B	B	110	105	110	170	125
24	130	115	130	100	120	140	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	G	125	130
25	105	120	105	125	120	120	115	B	B	110	B	B	B	B	B	B	B	G	160	120	B	155	150	155
26	115	C	C	C	120	B	100	B	B	110	B	B	B	B	B	B	B	B	B	B	G	G	110	B
27	B	125	B	B	B	115	B	B	120	B	B	B	B	B	B	B	B	B	B	B	115	G	G	110
28	105	115	110	135	G	B	B	110	105	B	B	B	B	B	B	B	B	B	B	B	B	180	145	145
29	105	B	135	120	B	120	B	125	180	B	G	G	B	B	B	G	G	B	B	B	B	B	130	125
30	140	115	120	135	G	150	G	G	G	G	G	B	130	B	115	B	B	B	150	G	115	160	110	110
31																								
No.	26	20	19	21	19	21	13	16	14	8	1		1		1	1	2		4	6	11	13	21	23
Median	120	120	120	120	120	115	115	120	120	110	110		130		115	165	150		130	145	115	115	135	120

h'Es

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

IONOSPHERIC DATA

Sep. 1959

Types of Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	a	a	a	f a	a			a		r											a	a	a	a
2	a	a	a	a	f			a		a													a	f
3	a			h	f		a	a	l												h	a	a	r
4	a	a	a	a	a	a	a	a	a	a						a	a		l	a	a	r	f	f
5	a	a	a	a	a	a															r	r	a	a
6	a			a	r	a	a	a																
7			a	a	a	a		h															a	a
8	h	h		a	r	a	a	a	a	a												a		h
9		a	a		a	a		h	h	h														a
10	r		a	a	a	a	a	a	a														a	a
11	a	a	a	a					a		a									a	r	a	a	a
12	a	a	r	f	f	a	a	r																
13	a	l	a	r		r	a																	
14		a		a		a		a		a														
15	a	r	r			r	a	a	h												a			a
16	a								a															
17	l			a		a	r													h			a	a
18	a	r	h	a	a	a	a	a	l													r	a	a
19	f	f															a						a	a
20	h				a	a		a	a											a	a	a	a	
21	a	a	a		a	l			l										l		a		h	a
22	a		a	a	a																	r	a	a
23	a	a			f	f	f													a	a	a	a	a
24	a	a	a	r	a	a																	f	a
25	f	a	a	a	f	f	a			r									a	a		a	h	a
26	a				a		l			a													f	
27		f				a			a												r			f
28	f	a	a	a				l	r													a	f	f
29	f		a	a		a		a	h														f	r
30	h	a	a	l		a							a		a				a		l	a	f	a
31																								
No.																								
Median																								

Types of Es

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 10

IONOSPHERIC DATA

Oct.1959 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R	F	5.0^{R}	F	B	4.7	B	B	B	B	R	B	B	6.2	7.0^{F}	9.6	^{U}10.3^{R}	6.0	4.8	4.6	^{U}3.8^{F}	A	A	A
2	A	A	4.6	6.0^{R}	4.5	B	4.6	6.0	B	B	B	B	B	B	5.7	5.6	5.8	5.8	5.8	5.5	4.8^{F}	F	F	R
3	3.7	F	F	F	3.8^{F}	3.7	4.2^{F}	4.4^{F}	5.2^{F}	B	B	B	B	6.2	6.5	F	8.0	7.4^{R}	5.6	F	3.0	A	A	F
4	C	C	F	A	3.6	A	B	4.0^{F}	B	B	B	4.1	B	B	5.7	5.6	B	B	4.6	3.3	A	A	A	A
5	3.1	A	A	R	5.2	5.2	B	B	B	A	5.2	B	5.3	6.1	^{U}6.4^{R}	7.8	8.2	^{U}6.3^{F}	5.0	3.9	A	A	F	B
6	C	R	3.1	B	A	^{U}4.7^{R}	3.4^{F}	3.8	B	4.0	B	B	B	B	B	R	5.4	4.3	4.2	B	3.0	A	A	R
7	A	A	4.1	4.0	4.6	4.9	5.6^{R}	B	B	B	B	R	5.9	6.0	6.1	B	B	^{U}6.7^{R}	7.7	7.4^{R}	^{U}7.0^{R}	5.5	4.3	3.5
8	A	B	B	5.0	^{U}5.9^{R}	6.6^{R}	B	B	6.0^{R}	R	7.2^{R}	^{T}8.1^{R}	^{T}7.9^{R}	8.0	^{T}7.7^{R}	8.0	7.8	7.3	7.9	7.7^{R}	6.0	5.3	4.8^{F}	3.4
9	3.2	3.2	4.7^{R}	R	5.8	5.9	B	7.2	8.4	^{T}8.4^{R}	8.4^{R}	8.5^{R}	8.8	9.4	9.6	10.1	9.6	^{D}8.4^{R}	^{D}7.1^{R}	C	B	R	^{U}4.4^{R}	A
10	B	B	B	B	4.3	B	B	6.0	F	8.4	9.0	8.8	8.9	9.0	9.0	9.0	8.9	8.7	^{T}8.4^{R}	^{T}7.9^{F}	7.0	3.7	3.2	R
11	B	4.4	^{U}4.6^{R}	F	^{U}6.0^{R}	F	6.4	^{U}7.5^{F}	^{U}8.5^{F}	9.2	9.5	9.3	9.4	9.2	9.0	8.6	8.7	8.7	8.9	8.6	7.0	6.0	5.0	4.6^{F}
12	B	A	A	A	5.2	5.6^{F}	6.3	7.0	7.7^{H}	7.8	8.3	9.0	9.3	9.0	^{T}9.0^{R}	9.0	9.0	8.9	8.9	8.2	^{U}7.4^{F}	5.9	R	A
13	A	B	F	F	^{U}5.6^{F}	F	F	^{T}7.2^{S}	6.7	7.2	8.0	8.1	8.4	8.9	9.6	9.7	9.8	9.1	9.2	^{T}8.0^{R}	7.0	6.5	5.8	4.9
14	4.6	4.3^{F}	^{U}4.5^{F}	F	^{U}5.1^{F}	5.2	F	F	6.7	7.1	7.3	8.7	9.6	9.6	10.3	^{D}10.5^{R}	10.6	^{D}10.2^{R}	^{D}10.3^{R}	^{T}8.6^{R}	^{U}7.3^{F}	R	3.6	A
15	F	A	4.0	A	B	4.5	3.4^{F}	B	B	4.7	5.2	5.5	5.9	6.1	6.4	6.8^{R}	7.0^{R}	^{U}7.1^{R}	6.8	5.6	^{U}6.2^{R}	4.3	3.3^{F}	A
16	B	B	5.0	B	B	B	7.0	F	^{T}7.7^{R}	8.5	8.7	8.7	8.4	8.1	8.4	8.8	8.9	8.6	8.1	8.0	7.8^{R}	7.2^{S}	6.0	4.1
17	2.9	3.6	3.8	4.3	5.1	5.8	B	7.0	7.5	8.1	8.8	9.4^{R}	9.6	9.8	B	10.0	9.8	10.0	^{T}9.4^{R}	8.4	5.0	A	4.4	A
18	4.6	A	3.2	F	B	B	^{U}4.3^{F}	B	B	5.1	5.0	5.0^{R}	B	5.6^{R}	B	6.1	6.0	5.5	5.4	5.1	4.3	3.4^{F}	R	4.4
19	A	B	4.0	4.4^{R}	B	B	5.4	5.8^{F}	B	B	6.0	5.8	6.4	R	B	8.0^{R}	8.4^{R}	8.4	^{U}8.2^{R}	7.9	6.7	5.8	3.1^{F}	B
20	3.2^{F}	4.0	4.3^{F}	B	B	6.3^{S}	7.4	7.4	8.0	8.3	8.4	B	B	B	8.2	B	7.4	7.7	C	7.8	7.3	^{T}6.6^{R}	^{T}6.4^{R}	6.0
21	5.9^{F}	5.2	5.0	F	5.6	6.7	8.0^{R}	9.2^{R}	^{D}10.0^{D}	^{D}10.0^{D}	10.3	10.1	10.4	10.6^{R}	10.3	10.0	9.8	9.7^{S}	9.5	9.1	8.1	7.8	2.6^{R}	7.0
22	F	^{U}4.3^{F}	^{U}5.8^{F}	4.8	^{U}5.3^{F}	5.5	6.3	7.2	6.0	6.1	6.5	B	8.5	F	F	^{D}10.0^{R}	6.0	R	B	3.7	4.1	B	A	B
23	A	B	B	F	4.3	B	B	B	R	4.6	5.0	5.2	5.5^{F}	6.1^{R}	B	B	B	6.9^{R}	B	6.8^{R}	R	6.3	6.0	6.0^{F}
24	C	C	C	C	6.6	7.3^{F}	7.9	8.2	9.0	8.9	9.0	9.0	9.1	10.0	9.8	9.9^{R}	9.8	9.2	^{U}8.4^{R}	7.5	6.5	5.4	3.3	4.4
25	A	4.2	6.0^{F}	F	F	5.4	^{U}5.5^{F}	B	5.7	B	6.2	6.3	6.6	6.9^{R}	R	8.4	^{D}7.4^{R}	^{D}7.2^{R}	6.8^{R}	4.9	4.6	4.7	4.6	4.4
26	^{U}3.5^{F}	A	A	4.9	F	5.1^{F}	^{U}5.2^{F}	5.9	A	B	B	B	5.3	B	B	F	6.7	^{T}6.3^{R}	R	B	R	4.3	A	^{U}3.3^{F}
27	F	A	B	B	R	C	4.5	5.6^{F}	R	B	B	B	6.0^{R}	6.6	B	B	7.7^{R}	6.5	B	6.2	5.4	5.0^{F}	5.0	4.3^{F}
28	3.4	4.0	B	5.0	B	6.2^{R}	7.0	8.7	^{U}9.3^{R}	9.8	10.1	10.5	10.6^{R}	10.4^{R}	10.2	9.9	9.3	8.6	^{T}8.3^{R}	^{T}8.3^{R}	7.8^{R}	6.8	6.8	6.3
29	5.6	4.6	4.8	F	^{T}6.5^{R}	6.7^{R}	7.1	^{U}8.3^{R}	8.8^{R}	9.4	9.9	10.0	10.2	10.4^{R}	10.0	10.0	^{T}9.6^{R}	9.0^{R}	8.8	8.5	8.4	^{T}7.9^{R}	^{U}6.9^{R}	6.2^{R}
30	5.4	4.2	6.0	6.2	6.2^{R}	A	F	^{U}6.1^{F}	6.5^{R}	7.4	8.3^{R}	^{T}6.9^{R}	7.8^{R}	^{T}7.9^{R}	7.6^{R}	7.8^{R}	8.0^{R}	7.4^{R}	6.7	6.2	^{T}9.9^{F}	6.1	4.6	^{T}5.1^{F}
31	5.9^{R}	F	R	3.7	4.7^{F}	F	F	5.6	5.9	6.1	F	6.5	^{U}6.1^{R}	7.0	8.0^{R}	^{T}9.2^{R}	^{D}7.2^{R}	6.2	^{U}5.4^{F}	^{U}4.5^{F}	4.6^{R}	4.5	A	A
No.	13	11	18	10	20	19	19	21	18	20	22	21	24	24	22	24	26	28	25	27	26	21	20	16
Median	3.7	4.2	4.6	4.8	5.2	5.5	5.6	7.0	7.6	8.0	8.3	8.5	8.4	8.0	8.3	9.0	8.6	7.6	7.9	7.5	6.4	5.5	4.6	4.5
UQ	5.5	4.4	5.0	5.0	5.8	6.3	7.0	7.4	8.5	8.7	9.0	9.2	9.4	9.5	9.6	10.0	9.6	^{D}8.8	8.8	8.2	8.3	6.6	5.9	6.0
LQ	3.2	4.0	4.0	4.3	4.6	4.9	4.5	5.7	6.0	6.1	6.2	6.0	6.0	6.2	6.5	7.9	7.4	6.4	5.5	5.1	4.6	4.4	3.4	4.2
QR	2.3	0.4	1.0	0.7	1.2	1.4	2.5	1.7	2.5	2.6	2.8	3.2	3.4	3.3	3.1	2.1	2.2		3.3	3.1	3.7	2.2	1.5	1.8

foF2

Sweep 40 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

IONOSPHERIC DATA

Oct.1959 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B		B	B	B	B		B	B	4.7	L	U43L	U4.0L							
2						B		L	B	B	B	B	B	B	L	L	L							
3								3.8	4.3	B	B	B	B	L	L	L	L	L						
4							B		B	B	B		B	B	B	4.1	B	B						
5							B	B	B		B	B	4.7	4.6L	L	L	L							
6									B		B	B	B	B	B	B	4.0	L						
7							B	B	B	B	B	B	B	4.7	4.5	B	B							
8							B	B	B	B	4.7	4.8	L	L	5.0L	L	L							
9							B	L	L	4.5	L	L		L	L	L								
10						B	B		4.3	4.4	4.7	L	L	L	L	L								
11								4.2	L	L	4.8	L	L	L	L		L							
12							3.7	4.0L	LH	L	L	L	L	L	L	L								
13							L	L	4.5LH	L	4.8L	L	L	L	L	L	L							
14							3.8L	4.0F	4.2	4.6L	LH	L	L	L	L	L	L							
15								B	B	B	4.4	44R	4.8	4.8H	4.7L	L	L							
16					B	B		4.3L	4.4L	U4.6L	5.0L	L	5.1	L	L	L	L							
17							B	4.3	4.6	4.8	5.2	L	L	5.4	B									
18					B	B		B	B	4.3	B	4.4R	B	4.3R	B	4.8	4.4L	4.2L						
19					B	B	3.4	R	B	B	4.5	B	B	B	B	L	L							
20				B	B		L	4.5	4.7	4.9	L	B	B	B	L	B		L	C					
21							L	L	L	L	L	L	L	L	L	L								
22							4.4	A	4.8R	4.8	4.7	B	5.1	L	L	5.3			B					
23						B	B	B		4.3R	4.3	4.5R	4.5R	4.6R	B	B	B		B					
24						L	4.0L	4.3	L	L	5.1L	5.1L	L	B	L	L	L	L						
25					L		4.1	B	A	B	B	4.6R	4.8	4.8R	R	4.8	L	L						
26						L	U4.1F	4.1F	A	B	B	B	4.6	B	B	4.9L	4.6	L						
27						C		U4.0R		B	B	B	B	4.8R	B	B	L		B					
28					B		R	L	L	5.2	L	L	L	L	L		L	L						
29							L	U4.8L	L	4.9LH	5.1L	5.1L	L	L	L	L	L	L						
30								4.5	U4.6R	4.8	4.8	4.8R	4.8H	5.0L	L	L	L							
31						3.8	4.2	4.2	4.3	4.3	4.5	4.6R	4.7	B	5.1	4.4	L	L						
No.						1	8	13	10	13	14	9	9	10	4	7	4	1						
Median						3.8	4.0	4.2	4.4	4.6	4.8	4.6	4.8	4.8	4.8	4.8	4.2	4.2						

foF1

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 2

IONOSPHERIC DATA

Oct.1959 | **foE** | 45° E Mean Time (G.M.T.+3h.) | **Syowa Base** | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.70		2.90		B	B	B	B	B	B	A	B	B	B	B	B	B	A	B	2.45	3.00			
2			3.95		A	B	A	A	B	B	B	B	B	B	B	B	B	A	B				1.70	3.00
3	2.70				A	2.25	A	2.90	A	B	B	B	B	B	B	B	2.60	2.40	A		2.50			
4					A	A	B	A	B	B	B	B	B	B	B	B	B	B	A					
5				3.55	A	A	B	B	B	A	B	B	B	3.10^{R}	B	B	2.60	2.50	B					
6			2.50		A	3.90	2.85	B	B	3.00	B	B	B	B	B	B	B	2.90	2.70		2.80			2.60
7			3.00	2.60	B	B	B	B	B	B	B	B	B	B	R	B	B	B	R					3.20
8	3.65				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
9			2.60			B	B	B	B	B	B	B	B	B	3.30	B	R	B	B					
10					B	B	B	A	2.90	B	B	B	B	B	B	B	2.70	B	B				R	3.00^{R}
11		3.20			A	A	B	3.00^{R}	3.00	3.00	3.10	3.20	3.20	B	3.10	B	B	B	A					4.00
12					A	B	3.00	2.30	2.90	3.00	R	B	B	B	B	B	B	2.70	2.30			3.60	3.80	2.60
13				2.45	2.60	3.00	2.55	S	2.60	2.90^{R}	B	B	3.30	B	B	3.00	A	B	R	R				
14	2.80	3.20	2.90		A	3.30	2.30	2.50	2.90^{R}	3.10^{H}	3.30	3.25	3.40	3.30	B	B	B	B	2.60			3.00		
15					B	4.00	2.90	B	B	B	B	3.40	B	3.20	B	B	B	B	B					
16					B	B	B	2.90^{R}	3.00	3.05	3.20	B	B	R	B	R	2.90^{R}	2.70	2.40	2.10	1.85			
17			2.50		2.80	B	B	2.80	2.80	3.00	3.30	B	B	3.30	B	3.00	3.00	B	B	2.50				
18					B	B	A	B	B	3.50	B	B	B	B	B	B	B	A	B	2.70^{R}			3.20	3.00
19					B	B	B	B	B	B	B	B	B	B	B	B	R	B	B					
20		2.60			B	3.20^{R}	2.70	B	2.80	2.90	B	B	B	B	B	B	B	B	C					
21		R		2.50	2.50	B	R	2.70	3.00	B	B	B	3.50	3.45	3.30	3.20	3.00	2.70	2.45					
22					A	A	A	A	A	3.10	3.20^{R}	B	B	B	B	B	B	B	B					
23					A	B	B	B	B	A	3.00^{R}	B	B	B	B	B	B	B	B					
24					B	2.40	2.55	2.80	3.00	3.00	B	3.20	B	B	B	B	3.00	B	B	2.40	2.20			3.00
25					2.50	A	A	B	A	B	B	B	B	B	B	B	B	B	B	2.80	3.00	2.50	2.90^{H}	3.15^{H}
26	2.35				A	2.80	2.50	3.00	A	B	B	B	B	B	B	B	B	2.70	A	B				2.70
27	2.50				B	C	R	B	B	B	B	B	B	B	B	B	B	B	B					
28	2.00	3.15			B	B	A	3.00	3.10	3.10^{R}	B	B	B	3.00^{R}	3.00	3.10	2.80^{R}	R	B	2.25	2.55			
29		2.80			B	A	A	3.30	2.80^{R}	B	B	B	B	3.30^{R}	3.15^{R}	3.10^{R}	3.00	2.80	2.60					
30	2.60	2.70			A	A	A	A	B	3.40^{R}	3.40^{R}	3.40^{R}	3.50	3.30^{R}	3.00^{R}	3.10^{R}	2.80^{R}	2.80	2.60	2.30		2.50		
31	2.60				2.20^{H}	2.50^{H}	2.40^{H}	3.40	3.70	3.20	B	B	B	B	B	2.80	B	3.20	B		3.60^{R}			
No.	9	6	7	4	5	9	9	12	13	14	7	5	5	8	6	7	10	10	7	8	8	4	4	10
Median	2.60	3.00	2.90	2.55	2.50	3.00	2.55	2.90	2.90	3.00	3.20	3.25	3.40	3.30	3.10	3.10	2.85	2.70	2.60	2.50	2.70	2.75	3.05	3.00

foE Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

IONOSPHERIC DATA

Oct.1959 | foEs | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S | Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	⁻6.0	⁻8.2	⁻3.2	B	4.4	B	B	B	B	3.0	B	B	B	B	B	B	⁻3.2	B	⁻3.6	G	4.0	⁻6.6	⁻6.2
2	6.3	⁻6.5	G	⁻3.9	⁻3.4	B	5.3	⁻3.0	B	B	B	B	B	B	B	B	B	3.0	B	B	B	⁻2.3	⁻2.4	⁻3.8
3	G	⁻8.7	⁻5.6	⁻3.3	⁻2.9	G	2.3	G	3.9	B	B	B	B	B	B	B	G	G	4.0	⁻3.5	⁻2.7	⁻5.0	⁻4.0	⁻3.1
4	C	C	3.6	4.3	⁻3.6	3.6	B	⁻3.1	B	B	B	B	B	B	B	B	B	B	2.9	⁻3.3	⁻3.9	3.5	3.5	3.2
5	2.6	⁻3.9	⁻4.0	G	⁻3.8	⁻5.0	B	B	B	⁻5.0	B	B	B	G	B	B	G	G	B	3.4	⁻9.1	⁻4.0	⁻3.9	B
6	C	4.4	G	B	4.1	G	G	B	B	G	B	B	B	B	B	B	B	G	G	B	G	⁻3.7	⁻4.0	⁻3.0
7	⁻2.6	4.2	G	G	B	B	B	B	B	B	B	B	B	B	G	B	B	B	G	B	B	B	3.1	G
8	5.8	B	B	⁻6.6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	2.0	3.0	4.5	4.2	B	B	B	B	B	B	B	B	B	G	B	G	B	B	C	B	B	B	3.0
10	B	B	B	B	B	B	B	3.9	G	B	B	B	B	B	B	B	G	B	B	B	B	B	G	G
11	B	G	⁻3.7	⁻6.2	⁻5.2	4.3	⁻3.6	⁻3.5	G	G	G	G	G	B	G	B	B	B	3.1	B	B	B	B	G
12	B	⁻4.8	⁻5.0	4.3	4.2	B	G	G	G	G	G	B	B	B	B	B	B	G	G	B	B	G	G	⁻4.3
13	3.4	B	3.0	G	G	G	G	S	G	G	B	B	3.9	B	B	3.7	⁻3.0	B	G	G	B	B	B	⁻3.0
14	G	G	2.7	⁻5.2	4.3	G	2.8	G	G	G	G	G	G	G	B	B	B	B	G	B	B	⁻3.4	⁻5.7	⁻5.6
15	⁻2.9	⁻3.7	⁻3.4	4.7	B	G	G	B	B	B	B	G	B	G	B	B	B	B	B	B	B	B	2.3	⁻6.2
16	B	B	B	B	B	B	B	G	G	G	G	B	B	G	B	G	G	G	G	G	G	B	B	⁻3.0
17	3.0	3.0	G	3.0	G	B	B	G	G	G	G	B	B	G	B	G	G	B	B	G	3.2	⁻4.4	⁻5.3	⁻6.3
18	⁻8.3	⁻4.8	3.2	3.4	B	B	⁻3.7	B	B	G	B	B	B	B	B	B	B	3.3	B	G	3.1	3.0	3.5	⁻5.2
19	⁻4.3	B	3.2	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	B	B	B	B	B	B
20	B	G	3.9	B	B	G	G	B	G	G	B	B	B	B	B	B	B	B	C	B	B	B	B	B
21	2.6	G	⁻2.2	G	G	B	G	G	G	B	B	B	G	G	G	G	G	G	G	⁻4.9	B	B	B	B
22	3.4	4.2	2.9	2.3	4.5	⁻4.0	4.3	5.5	4.3	G	G	B	B	B	B	B	B	4.4	B	⁻6.3	2.9	B	⁻6.5	B
23	⁻5.2	B	B	3.1	⁻3.8	B	B	B	4.5	3.8	G	B	B	B	B	B	B	B	B	B	B	B	B	B
24	C	C	C	C	B	G	G	G	G	G	B	G	B	B	B	B	G	B	B	G	G	3.4	3.2	G
25	⁻4.7	⁻3.7	⁻6.7	3.1	⁻3.8	⁻4.6	⁻3.8	B	4.5	B	B	B	B	B	B	B	B	B	B	3.6	G	3.0	G	G
26	⁻3.0	⁻8.2	⁻5.2	⁻3.5	⁻3.6	G	G	G	⁻3.7	B	B	B	B	B	B	B	B	G	3.0	B	2.9	3.8	3.0	3.9
27	G	⁻5.0	B	B	B	C	G	B	4.4	B	B	B	B	B	B	B	B	B	B	2.7	G	B	3.0	B
28	G	G	B	3.2	B	B	⁻3.7	G	G	G	B	B	B	G	G	G	G	G	B	G	B	B	B	B
29	3.0	G	3.5	3.6	B	4.2	⁻3.0	G	G	B	B	B	B	G	G	G	G	G	G	B	B	B	B	⁻2.7
30	G	G	3.8	2.7	3.0	⁻6.4	3.2	4.7	B	G	G	G	G	G	G	G	G	G	G	G	3.1	G	⁻2.8	2.9
31	⁻2.8	3.2	B	3.0	G	G	G	G	G	G	B	B	B	B	B	G	B	G	B	4.3	G	⁻3.2	⁻6.3	4.5
No.	22	23	23	24	18	17	20	17	19	16	9	5	5	9	7	8	13	15	13	16	15	15	20	22
Median	3.0	3.2	3.7	3.2	3.7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	3.0	2.7	3.4	3.4	3.0

foEs

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 4

IONOSPHERIC DATA

Oct.1959 | f-min | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S | Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.30	1.70	2.15	2.10	B	3.45	B	B	B	B	2.50	B	B	3.85	3.20	3.35	3.60	2.25	3.05	1.80	1.85	1.80	1.70	2.20
2	2.20	2.25	2.50	2.20	2.00	B	2.15	2.00	B	B	B	B	B	B	2.90	2.80	3.20	2.30	3.00	2.40	1.70	1.30	1.20	2.10
3	1.30	2.10	1.75	1.80	1.50	1.50	2.10	2.00	2.10	B	B	B	B	3.50	4.60	3.10	2.00	2.40	2.90	2.00	1.25	3.50	1.90	2.50
4	C	C	2.60	2.85	2.05	2.40	B	2.20	B	B	B	3.35	B	B	5.05	3.30	B	B	2.15	2.45	2.20	1.80	3.00	1.40
5	2.10	2.60	2.35	1.75	1.85	2.00	B	B	B	2.65	4.50	B	4.65	2.65	4.00	3.10	2.15	2.20	2.70	3.00	2.20	1.50	2.20	B
6	C	3.80	1.50	B	2.20	2.10	2.20	2.80	B	2.30	B	B	B	B	B	5.00	3.60	2.30	1.80	B	1.90	2.30	3.20	1.30
7	2.20	2.80	2.10	2.20	3.00	3.20	5.00	B	B	B	B	5.25	5.10	3.70	2.80	B	B	3.40	2.30	3.00	2.70	2.40	2.10	1.50
8	2.80	B	B	2.20	3.50	3.90	B	B	5.10	5.10	4.00	3.90	4.10	3.30	4.70	4.20	3.40	3.10	2.45	3.80	5.20	2.30	2.10	2.00
9	2.00	1.80	1.70	3.10	4.00	5.00	B	3.10	3.20	3.20	3.20	3.70	5.00	3.90	2.30	3.10	2.20	4.00	3.00	C	B	5.10	2.35	2.20
10	B	B	B	B	2.90	B	B	2.40	2.40	3.40	3.10	3.30	3.50	3.50	3.20	3.10	2.20	2.90	2.20	2.20	2.00	2.00	2.15	2.20
11	B	2.30	2.30	2.30	2.20	3.30	3.60	2.15	1.90	2.10	2.20	2.10	2.50	3.70	3.10	3.80	3.00	2.60	2.10	2.00	2.20	1.90	2.10	2.10
12	B	2.20	2.30	2.25	2.20	3.60	2.30	1.80	1.90	1.90	3.20	3.50	3.40	4.00	3.40	3.40	3.05	2.05	2.30	2.10	1.90	2.15	1.70	2.20
13	2.15	B	2.60	1.70	1.80	2.20	2.05	2.50	2.05	2.05	3.70	3.60	2.50	3.60	3.50	2.20	2.15	2.60	2.10	1.80	1.80	1.90	1.90	1.60
14	1.50	1.90	1.80	2.05	2.30	2.60	2.00	1.90	2.35	2.10	2.35	3.25	2.05	2.40	3.30	3.50	3.60	5.10	2.20	2.20	2.10	1.80	1.90	1.90
15	1.80	2.10	2.00	3.70	B	3.60	2.10	B	B	4.20	3.30	2.65	3.45	2.55	3.40	3.85	3.80	3.80	2.70	2.45	2.80	2.10	2.15	3.60
16	B	B	4.00	B	B	B	4.10	2.20	2.45	2.30	2.35	4.10	3.70	2.90	4.00	2.40	2.20	2.10	2.00	2.10	1.85	1.20	1.10	1.80
17	1.40	1.80	1.80	1.90	2.30	4.10	B	2.10	2.10	2.20	2.50	4.10	3.90	2.70	B	2.10	2.10	2.90	4.00	2.00	1.60	2.20	2.10	1.90
18	2.00	2.20	1.90	1.85	B	B	2.40	B	B	3.20	4.35	4.15	B	4.10	B	4.00	3.10	2.60	2.55	2.25	2.10	2.10	2.10	2.40
19	3.00	B	2.20	4.10	B	B	3.20	4.10	B	B	3.70	5.00	5.15	5.35	B	4.20	2.60	4.20	4.00	2.45	4.10	2.15	2.00	B
20	1.90	2.00	2.50	B	B	2.20	2.50	2.70	2.40	2.30	4.00	B	B	B	4.00	B	4.20	4.00	C	2.60	2.50	2.10	2.80	2.20
21	1.80	2.35	1.35	1.50	2.10	2.55	2.20	2.60	2.45	4.15	4.00	4.00	2.40	2.50	2.20	2.20	2.40	2.20	2.45	2.10	2.10	1.50	1.40	1.80
22	2.30	2.20	2.10	1.90	2.30	2.10	2.00	2.35	2.00	2.20	2.70	B	4.00	4.00	4.05	4.20	4.05	4.00	B	2.20	2.40	B	1.60	B
23	1.70	B	B	2.40	2.10	B	B	B	4.10	2.35	2.20	4.20	3.80	4.05	B	B	B	5.10	B	5.20	5.10	2.20	2.30	2.30
24	C	C	C	C	2.40	2.20	2.45	2.50	2.30	2.20	4.00	2.80	5.10	7.00	4.10	3.80	2.40	2.70	4.00	2.00	1.90	1.50	1.30	1.20
25	1.50	1.90	1.80	1.70	1.90	2.80	2.10	B	2.50	B	5.00	4.00	4.00	3.40	4.15	4.10	4.05	3.10	4.00	2.35	1.90	2.10	1.70	2.15
26	1.45	2.55	2.60	2.30	2.20	2.50	2.00	2.20	2.25	B	B	B	3.70	B	B	4.00	3.50	2.40	2.45	B	2.15	2.00	2.15	2.10
27	1.90	4.10	B	B	4.10	C	2.20	3.70	4.10	B	B	B	5.20	3.80	B	B	4.10	3.15	B	2.10	2.10	2.15	2.30	2.25
28	1.50	1.80	B	2.35	B	5.10	2.60	2.15	2.20	2.40	4.00	4.10	4.00	2.40	2.45	2.20	2.25	2.50	4.00	2.10	2.20	2.10	1.90	1.90
29	2.10	1.80	1.95	2.35	4.00	2.45	2.35	2.50	2.35	3.30	4.05	4.00	4.00	2.80	2.50	2.20	2.20	2.05	2.30	4.10	2.60	1.90	1.95	1.50
30	2.05	2.50	2.50	1.85	1.75	2.65	2.20	2.10	3.90	3.10	2.20	2.30	2.55	2.50	2.35	2.60	2.20	2.35	2.20	2.10	1.60	2.20	1.20	1.35
31	2.10	2.20	3.45	2.05	2.05	2.00	2.30	2.55	2.30	2.40	3.90	4.00	4.10	5.10	4.00	2.40	3.80	2.30	4.05	2.90	2.20	2.20	5.30	3.10
No.	24	23	25	25	24	24	23	23	22	22	24	22	24	26	24	27	28	30	27	28	30	30	31	28
Median	2.00	2.20	2.15	2.20	2.20	2.60	2.20	2.35	2.35	2.40	3.50	3.95	3.95	3.55	3.40	3.30	3.00	3.60	2.45	2.20	2.10	2.10	2.10	2.10

f-min

Sweep 10 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 5

IONOSPHERIC DATA

Oct. 1959 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					B		B	B	B	B		B	B	515	L	415	350							
2						B		L	B	B	B	B	B	B	L	L	L							
3								600	645	B	B	B	B	L	L	410	380	L						
4							B		B	B	B		B	B	E 490 B	515	B	B						
5							B	B	B		600	B	590	410	L	L	L							
6									B		B	B	B	B	B	400	495	L						
7							530	B	B	B	B	430	490	490	440	B	B							
8							B	B	E 490 B	390	385	365	L	L	370	L	L							
9							B	365	L	330	L	L		L	L	L								
10						B	B		410	380	360	L	L	L	L	L								
11								430	385	L	330	L	315	L	L		L							
12							415	420	LH	L	L	L	L	L	L	L								
13							L	L	450	420	400	L	L	L	L	L	L							
14							420	405	470 F	405	LH	L	L	L	L	L	L							
15								B	B	720	600	560	520	420	400	L	L							
16					B	B		400	410	395	400	360	370	L	L	L	L							
17							B	425	465	405	420	385	L	405	B									
18					B	B		B	B	620	700	785	B	600	B	500	460	495						
19					B	B	F	580 F	B	B	505	590	405	415	B	L	L							
20				B	B		L	400	400	405	L	B	B	B	L	B		L	C					
21							L	L	365	L	L	L	L	L	L	L								
22							580 F	460	520 F	480	530	B	465	L	420	F			B					
23						B	B	B		740	590	660	600	500	B	B	B		B					
24						360	370	385	340	385	385	390	380	370	L	L	L	L						
25					450		460	B	570	B	490	545	480	480	490	400	L	L						
26						L	F	500 F	A	B	B	B	590	B	B	400	400	L						
27						C		500		B	B	B	490	405	B	B	L		B					
28					B		400	380	L	360	L	L	L	L	L		L	L						
29							L	400	385	375	370	360	L	320	L	L	L	L						
30								505 F	505	410	390	480	415	400	390	L	L							
31						610 F	540	540 F	550	450	440	475	515	405	410	470	L	L						
No.					1	2	8	17	15	17	17	13	14	14	7	8	5	1						
Median					450	485	440	425	450	405	420	475	485	415	410	415	400	495						

h'F2

Sweep 10 Mc to 20 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

Oct.1959 | **h'F** | **45° E Mean Time** (G.M.T.+3h.) | **Syowa Base** | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R	480	360	395	B	470	B	B	B	B	A	B	B	290	285	300	300	325	420	380	405	A	A	A
2	A	A	570	460	285	B	520	320	B	B	B	B	B	B	235	270	280	285	295	270	280	300	400	520
3	300F	F	F	F	470	510	530F	380	390	B	B	B	B	285	E330B	270	270	285	405	340	500	A	A	F
4	C	C	E490A	A	385	A	B	320	B	B	B	305	B	B	B	290	B	B	310	425	A	A	A	A
5	310	A	A	600	385	340F	B	B	B	A	B	B	B	250	E290B	260	295	285	305	420F	A	A	430	B
6	C	R	535	B	A	425	370	300	B	280	B	B	B	B	B	B	385	305	350	B	500	A	A	A
7	A	A	480	560	375	400	B	B	B	B	B	B	B	260	240	B	B	270	255	250	255	260	285	530
8	A	B	B	450	370	320	B	B	B	B	E400B	265	295	230	E310B	285	250	265	260	265	300	280	270	310
9	400	450	420	500	460	400	B	310	285	235	255	260	E310B	260	250	240	240	255	250	C	B	300	295	A
10	B	B	B	B	370	B	B	420	275	270	220	230	220	230	230	225	235	240	230	250	250	310	400	R
11	B	460	350	400	480	F	425	400	250	235	240	240	220	225	235	250	230	240	240	220	220	225	280	310
12	B	A	A	A	425	415	F	275	225H	240	235	240	230	255	220	250	240	230	235	235	255	370	R	A
13	A	B	F	310	335	340F	300	250	250	240	255	250	230	250	240	225	240	235	240	215	225	225	270	305
14	310	420F	460	340	440	435	385	235	270	255	210H	245	240	235	225	260	245	220	235	225	255	460	450F	A
15	290	A	500	A	B	575	460	B	B	B	250	255	270	245H	250	285	265	265	270	255	300	280	315	A
16	B	B	500	B	B	B	400	290	250	240	245	265	240	230	250	245	245	250	225	235	220	220	225	305
17	420	360	400	400	400	335	B	280	230	225	250	255	245	230	B	235	245	260	270	240	275	A	400F	A
18	380	A	455	420F	B	B	520	B	B	330	B	315	B	E380A	B	300	235	290	280	395	E490R	470	A	500
19	A	B	520	500	B	B	305	305	B	B	280	B	B	B	B	295	255	285	260	255	265	285	365	B
20	320	420	500	B	B	390	280	270	230	250	250	B	B	B	280	B	E275B	280	C	255	230	255	270	280
21	300	305	420	350	320	295	270	260	250	260	270	260	230	240	235	230	245	240	240	245	235	255	250	265
22	430	510	430F	425	425F	530	F	A	335	235	255	B	290	280	E260B	E400B	365	A	B	460	395	B	A	B
23	A	B	B	420	320	B	B	B	A	400	235	360	265	300	B	B	B	305	B	320	300	280	300	290
24	C	C	C	C	310	295	280	270	245	235	235	220	E340B	B	260	240	230	255	260	255	240	300	325	500
25	A	490F	370F	400	340	430	340	B	A	B	B	300	280	250	320	300	290	280	280	390	385	370	360	320
26	F	A	A	440	450	350	F	235	A	B	B	B	250	B	B	E275B	285	270	A	B	A	410	A	495
27	320	A	B	B	500	C	310	E400B	A	B	B	B	B	250	B	B	260	260	B	280	295	290	295	300
28	390	405	B	390	B	415	320	245	255	230	250	250	230	250	235	250	240	250	265	250	250	235	250	260
29	300	360	400	355	390	400	370	305	240	230H	E255B	240	255	225	240	230	245	250	255	260	250	245	255	275
30	330	400	300	270	280	A	390F	E380A	295	240	220	250	220	260	255	260	250	250	245	270	280	460	285	380F
31	300	300	405	540	430	390	340F	280	355	270	290	280	300	B	285	E300R	E310B	290	450	600	440	330	A	A
No.	15	13	19	21	23	21	19	20	17	19	18	20	18	22	19	23	26	29	26	28	26	24	22	17
Median	320	420	430	420	385	400	370	285	250	240	250	255	240	250	240	260	250	265	260	260	270	290	295	310

h'F Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

Oct.1959 | R'E | 45° E Mean Time (G.M.T.+3h.)

Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110		115		B	B	B	B	B	B	A	B	B	B	B	B	B	A	B	110	130			
2			115		A	B	A	A	B	B	B	B	B	B	B	B	B	A	B				135	160
3	130				A	105	A	110	A	B	B	B	B	B	B	B	120	B	A		150			
4					A	A	B	A	B	B	B	B	B	B	B	B	B	B	A					
5				125	A	A	B	B	B	A	B	B	B	115	B	B	115	145	B					
6			155		A	115	145	B	B	110	B	B	B	B	B	B	B	160	120		180			130
7			130	135	B	B	B	B	B	B	B	B	B	B	120	B	B	B	180					120
8	120				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
9			130			B	B	B	B	B	B	B	B	B	120	B	120	B	B					
10					B	B	B	A	115		B	B	B	B	B	B	110	B	B				155	135
11		150			A	A	B	115	110	110	115	105	105	B	B	B	B	B	A					115
12					A	B	135	120	105	110	140	B	B	B	B	B	B	115	B			120	120	135
13				130	125	140	145	S	110	115	B	B	115	B	B	105	A	B	180	135				
14	125	125	140		A	125	120	115	115	105H	110	B	105	105	B	B	B	B	170			130		
15					B	125	110	B	B	B	B	105	B	110	B	B	B	B	B					
16					B	B	B	110	120	115	115	B	B	110	B	110	110	110	120	B	B			
17			110		125	B	B	115	110	110	110	B	B	110	B	105	110	B	B	145				
18					B	B	A	B	B	105	B	B	B	B	B	B	B	A	B	115			120	135
19					B	B	B	B	B	B	B	B	B	B	B	B	115	B	B					
20		110			B	110	165	B	105	105	B	B	B	B	B	B	B	B	C					
21		115		115	130	B	125	125	115	B	B	B	105	100	110	110	115	110	B					
22					A	A	A	A	A	105	110	B	B	B	B	B	B	B	B					
23					A	B	B	B	B	A	110	B	B	B	B	B	B	B	B					
24					B	150	E 160B	120	110	110	B	105	B	B	B	B	110	B	B	150	130			110
25					140	A	A	B	A	B	B	B	B	B	B	B	B	B	B	130	110	125	115H	120H
26	135				A	120	110	110	A	B	B	B	B	B	B	B	B	115	A	B				145
27	150				B	C	105	B	B	B	B	B	B	B	B	B	B	B	B		115			
28	125	115			B	B	A	110	105	105	B	B	B	100	105	105	105	125	B	135				
29		135			B	A	A	120	110	B	B	B	B	105	105	105	105	105	145					
30	140	130			A	A	A	A	B	120	105	105	105	105	105	105	105	120	120	E 200B		180		
31	135				B	130H	B	115	110	110	B	B	B	B	B	105	B	110	B		170			
No.	9	7	7	4	4	9	9	12	13	14	8	4	5	9	6	8	12	10	7	7	7	4	5	10
Median	130	125	130	130	130	125	125	115	110	110	110	105	105	105	110	105	110	115	145	135	130	130	120	130

R'E

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

Oct. 1950 | h'Es | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	120	115	110	B	145	B	B	B	B	105	B	B	B	B	B	B	135	B	135	G	105	105	115
2	120	100	G	130	115	B	180	110	B	B	B	B	B	B	B	B	B	170	B	B	B	110	170	120
3	G	115	120	115	120	G	125	G	115	B	B	B	B	B	B	B	G	G	150	150	140	150	110	120
4	C	C	115	110	120	120	B	110	B	B	B	B	B	B	B	B	B	B	150	150	115	120	140	130
5	130	120	130	G	125	130	B	B	B	105	B	B	B	G	B	B	G	G	B	180	110	130	145	B
6	C	150	G	B	115	G	G	B	B	G	B	B	B	B	B	B	B	G	G	B	G	110	160	135
7	115	135	G	G	B	B	B	B	B	B	B	B	B	B	G	B	B	B	G	B	B	B	185	G
8	185	B	B	115	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	115	150	135	125	B	B	B	B	B	B	B	B	B	G	B	G	B	B	C	B	B	B	135
10	B	B	B	B	B	B	B	110	G	B	B	B	B	B	B	B	G	B	B	B	B	B	G	G
11	B	G	145	130	105	120	110	150	G	G	G	G	G	B	G	B	B	B	145	B	B	B	B	G
12	B	105	105	105	110	B	G	G	G	G	G	B	B	B	B	B	B	G	G	B	B	G	G	175
13	130	B	140	G	G	G	G	S	G	G	B	B	125	B	B	110	115	B	G	G	B	B	B	135
14	G	G	160G	115	110	G	150	G	G	G	G	G	G	G	B	B	B	B	G	B	B	130	120	115
15	115	110	110	110	B	G	G	B	B	B	B	G	B	G	B	B	B	B	B	B	B	B	160	105
16	B	B	B	B	B	B	B	G	G	G	G	B	B	G	B	G	G	G	G	G	G	B	B	120
17	180	120	G	110	G	B	B	G	G	G	G	B	B	G	B	G	G	B	B	G	170	120	110	105
18	105	110	120	120	B	B	120	B	B	G	B	B	B	B	B	B	B	185	B	G	110	150	170	150
19	110	B	105	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	B	B	B	B	B	B
20	B	G	110	B	B	G	G	B	G	G	B	B	B	B	B	B	B	B	C	B	B	B	B	B
21	125	G	105	G	G	B	G	G	G	B	B	B	G	G	G	G	G	G	G	100	B	B	B	B
22	120	115	140	105	145	110	110	105	105	G	G	B	B	B	B	B	B	155	B	180	170	B	125	B
23	115	B	B	120	190	B	B	B	120	105	G	B	B	B	B	B	B	B	B	B	B	B	B	B
24	C	C	C	C	B	G	G	G	G	G	B	G	B	B	B	B	G	B	B	G	G	140	135	G
25	105	110	120	120	125	105	110	B	105	B	B	B	B	B	B	B	B	B	B	150	G	130	G	G
26	150	105	110	115	110	G	G	G	105	B	B	B	B	B	B	B	B	G	105	B	100	105	105	145
27	G	105	B	B	B	C	G	B	110	B	B	B	B	B	B	B	B	B	B	150	G	B	150	B
28	G	G	B	120	B	B	125	G	G	G	B	B	B	G	G	G	G	G	B	G	B	B	B	B
29	150	G	145	145	B	110	110	G	G	B	B	B	B	G	G	G	G	G	G	B	B	B	B	135
30	G	G	120	150	120	110	115	105	B	G	G	G	G	G	G	G	G	G	G	G	170	G	130	165
31	135	120	B	120	G	G	G	G	G	G	B	B	B	B	B	G	B	G	B	150	G	140	140	105
No.	16	16	19	20	14	8	10	6	6	2	1		1			1	1	4	4	9	8	13	17	17
Median	120	115	120	120	120	115	120	110	110	105	105		125			110	115	160	150	150	130	130	140	130

h'Es | Sweep 10 Mc to 200 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

37

IONOSPHERIC DATA

Oct.1959 | **Types of Es** | **45° E Mean Time** (G.M.T.+3h.) | **Syowa Base** | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		a	a	a		a					ℓ							a		h		γ	a	a
2	a	a		a	a		γ	a										a				a	h	ℓ
3		a	a	a	a		a		γ										a	a	ℓ	a	a	a
4			a	γ	a	a		a											a	a	a	γ	a	a
5	f	a	a		a	a				a										a	a	a	a	
6		γ			γ																	a	a	a
7	a	a																					a	
8	h			ℓ																				
9		a	h	a	a																			a
10								γ																
11			a	a	a	a	a	a											a					
12		a	a	γ	γ																			h
13	γ		γ										h			h	ℓ							a
14			a	a	γ		h															a	a	a
15	a	a	a	ℓ																			a	f
16																								a
17	a	a		a																	a	a	a	a
18	a	a	a	a			a											a			ℓ	a	h	a
19	a		ℓ																					
20			ℓ																					
21	a		a																	ℓ				
22	a	a	a	ℓ	a	a	γ	γ	γ									a		a	a		a	
23	a			a	a				a	a														
24																						a	a	
25	a	a	a	a	a	a	a		γ											h		h		
26	a	f	a	a	a				a										ℓ		ℓ	a	a	a
27		a							a											a			a	
28				a			a																	
29	a		a	a		γ	a																	a
30			a	a	a	a	a	a													a		a	a
31	a	a		a																a		a	a	γ
No.																								
Median																								

Types of Es

Sweep 10 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 10

IONOSPHERIC DATA

Nov. 1959 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.8	$^{U}4.3^{F}$	4.2	5.0	R	R	B	A	B	B	B	B	B	B	5.9	5.7	R	B	R	4.4	A	R	A	F
2	A	3.7	A	F	A	R	A	B	B	B	C	B	B	B	5.0^{R}	5.8	B	B	B	B	4.2	B	3.3^{R}	B
3	B	B	4.4	B	4.6	F	B	B	B	B	B	B	R	6.0	B	6.0	5.5	B	B	B	4.8	4.4	B	4.4
4	B	B	4.4	F	5.4	6.5	F	7.0	7.2	B	B	B	B	B	B	R	B	5.0^{R}	4.2	B	4.3^{R}	4.1	A	B
5	B	5.8^{F}	6.0^{R}	F	B	B	4.6	5.4^{F}	B	B	B	B	B	B	7.1	B	B	5.6	5.0	5.2	5.6	4.9	4.2	4.0
6	4.0	4.6	F	5.6	B	B	B	B	B	B	B	B	6.1	6.0	B	B	$^{J}8.0^{R}$	B	$^{J}7.3^{R}$	5.4^{F}	4.6	4.5	4.4^{F}	A
7	4.5^{F}	B	6.0	5.6	6.0	F	7.9	F	$^{U}5.8^{R}$	5.9	6.1^{F}	6.2^{F}	6.3	6.6	6.5	6.8	7.0	7.0^{R}	6.8	6.2	5.6^{F}	4.6^{R}	4.5	4.6
8	B	4.6	5.6	F	7.5^{F}	7.1^{F}	6.3	F	5.6	6.0	6.2	B	R	6.6	B	6.6	6.6	6.9	5.7	B	5.3	B	F	$^{U}4.3^{F}$
9	A	F	5.3	6.0	$^{J}6.7^{R}$	$^{J}6.7^{R}$	7.4	7.8	8.1^{R}	8.3^{F}	8.3	8.3	8.3^{R}	8.3	B	$^{J}7.7^{R}$	7.5	7.0	7.0	$^{J}6.9^{R}$	6.8	4.2	4.4	A
10	A	4.7	5.2	5.2^{F}	A	4.1	R	R	R	R	5.0	5.5	6.0	6.6	6.6	6.6	7.0	7.0	6.3	6.1	5.4	4.6	4.9	4.5
11	$^{U}4.9^{R}$	A	A	$^{U}4.5^{R}$	4.4^{F}	F	4.5^{R}	$^{U}5.2^{F}$	5.9	5.9	6.3	6.8^{R}	6.5^{R}	6.8^{R}	6.8^{R}	B	6.4	5.8	5.6	5.6	5.7	5.7	5.3	4.3
12	4.5	4.6	4.2	F	F	A	R	R	R	5.5	5.6	5.8	6.0^{R}	6.0	6.3	6.5	6.1	6.1	6.0	5.9	6.0	5.8	R	5.0
13	5.0	4.2	A	A	F	4.8	4.2	4.7	R	5.4	5.7	6.3^{R}	6.6	7.0	7.4	B	7.4^{R}	6.6^{R}	6.0	6.4^{R}	5.8	5.3	C	$^{U}5.3^{F}$
14	A	4.4	$^{U}4.2^{F}$	F	3.7^{F}	A	R	F	A	R	B	4.9^{R}	5.0	5.6^{R}	5.5	5.4	5.1	4.2	R	4.5^{F}	4.8	4.5	4.4	4.6
15	A	A	4.3^{F}	A	4.9	5.0	5.4	5.9	6.7	7.0	6.8^{S}	6.4	6.2	6.0	6.0	6.4	7.0	7.2	7.6	7.6	7.8	7.1^{F}	7.0	6.9
16	5.2	5.1	5.3	5.9	6.5	7.4	8.3^{V}	8.8	8.9	9.0	8.7	8.3	8.1	8.0	7.7	7.6	7.2	7.1	7.2	6.8	4.6	R	F	4.7^{R}
17	4.3^{R}	4.9	F	F	7.1	F	5.6	B	B	B	5.5	5.7	5.8	5.9	$^{J}6.5^{R}$	7.1	$^{D}5.8^{R}$	$^{J}6.2^{R}$	5.9	6.7	6.5	6.4	5.7	6.2
18	F	F	5.1	5.5	5.6^{F}	5.7	A	A	A	5.4	5.4^{F}	5.6	6.3	$^{U}6.6^{R}$	6.9	C	C	C	C	C	C	C	A	4.5^{R}
19	4.4	5.0^{F}	F	$^{U}5.3^{F}$	F	F	F	6.0^{R}	6.3	$^{J}6.5^{R}$	7.0	B	B	B	B	$^{D}7.4^{R}$	R	7.0^{R}	6.4^{R}	5.1	5.7	6.3^{R}	5.6	6.0
20	5.7	5.8	5.5	B	F	B	6.2	7.0	7.8^{R}	8.1	8.8	9.2	9.0	9.1	9.3	9.4	8.5	8.0^{R}	7.9^{R}	7.7	7.3	7.5	6.8^{R}	7.0
21	6.2	R	6.4^{R}	5.8	$^{J}6.4^{R}$	$^{J}6.7^{R}$	A	B	B	6.1	6.2	6.5	6.8	R	C	C	C	B	A	5.4	5.3	F	5.3	5.0
22	F	$^{J}4.8^{R}$	F	5.3^{F}	F	5.0	5.3	B	B	R	5.1^{R}	5.3	5.2	5.3	5.4	5.2	5.8	5.8	5.7	5.7	5.4	4.5	A	4.3
23	5.0^{F}	4.9	5.8^{F}	5.6	F	A	B	A	R	4.8	R	R	B	R	5.2	5.6	4.4	R	R	5.4	4.9	4.4	4.8	3.7
24	A	4.4	5.0	B	5.5	5.8	5.5^{R}	5.3	5.6	6.3	6.5	6.5	6.5	6.3	6.2	6.4	6.2	6.3	5.9	5.2	5.8	5.3^{F}	5.0	4.9
25	4.7	4.9	6.0	5.5^{F}	F	6.3	$^{U}6.4^{R}$	6.9	6.9	7.4	7.4	7.6	8.0	8.1	7.7^{R}	7.9	7.9	$^{J}7.0^{R}$	F	6.0^{F}	5.2^{F}	F	4.5	4.5^{F}
26	5.1^{F}	5.3	F	5.9	5.7	5.5^{F}	4.7	5.2	5.4^{F}	6.2	6.8^{F}	6.0	6.1	6.4	7.0	B	7.5	5.7	5.6	5.5	5.6	5.5	5.4	5.3
27	6.0^{S}	F	F	F	6.0	F	S	R	R	5.2^{F}	5.2	5.3^{F}	5.5	6.0	6.4	6.1	6.3	6.3	6.2	6.2	5.8	4.1	$^{U}5.1^{R}$	F
28	4.1	4.4	4.3^{F}	F	A	$^{U}4.3^{F}$	A	A	B	R	A	R	R	B	R	R	R	5.0	5.0^{F}	5.0	5.1^{R}	4.8	4.1^{R}	5.0^{F}
29	A	4.9	4.8	4.9	5.4^{F}	F	R	A	4.7	5.2	$^{U}5.2^{F}$	5.3	5.7	5.7	6.1	6.9	8.2	6.6	5.5	5.1	5.6^{F}	5.4	5.2	F
30	5.0^{F}	B	5.4^{F}	F	F	5.4	B	R	5.5^{F}	5.9	5.7	6.0	6.2^{F}	6.3	6.1	6.7	R	R	R	4.4	$^{U}5.7^{F}$	$^{U}5.3^{F}$	A	A
31																								
No.	17	20	21	15	16	15	14	12	14	19	21	20	21	22	22	21	20	22	21	25	28	23	20	22
Median	4.9	4.8	5.2	5.5	5.6	5.7	5.6	6.0	6.1	6.0	6.2	6.1	6.2	6.4	6.4	6.6	7.0	6.4	6.0	5.6	5.6	4.9	5.0	4.6
U.Q	5.2	5.0	5.7	5.8	6.4	6.7	6.4	7.0	7.2	7.0	6.9	6.6	6.7	6.8	7.0	$^{D}7.2$	7.5	7.0	6.9	6.3	5.8	5.7	5.4	5.3
L.Q	4.4	4.4	4.4	5.2	5.2	5.0	4.7	5.2	5.6	5.4	5.4	5.6	5.9	6.0	6.0	5.9	6.2	5.8	5.6	5.2	5.0	4.5	4.4	4.4
Q.R	0.8	0.6	1.3	0.6	1.2	1.7	1.7	1.8	1.6	1.6	1.5	1.0	0.8	0.8	1.0		1.3	1.2	1.3	1.1	0.8	1.2	1.0	0.9

foF2 | Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

IONOSPHERIC DATA

Nov. 1959 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						4.0	B	A	B	B	B	B	B	B	B	4.2	4.2	B	3.8					
2							A	B	B	B	C	B	B	B	4.3	4.4	B	B	B	B		B		
3				B			B	B	B	B	B	B	4.4	4.4	B	4.6	4.4	B	B	B			B	
4					3.3	3.9^{L}	B	B	4.2	B	B	B	B	B	B	B	B	B	B	B				
5					B	B	3.6	4.0	B	B	B	B	B	B	4.6	B	B	4.1						
6					B	B	B	B	B	B	B	B	B	4.9	B	B	4.7	B	L	L				
7			B	B	B	3.8	4.0	R	B	4.5	4.6	4.7	5.0	R	4.9^{L}	L	L	L						
8						L	4.1	B	4.5^{R}	4.9	B	B	B	5.0	B	4.8	$^{U}4.8^{L}$	$^{U}4.4^{L}$	4.1	B		B		
9						4.1	4.2	4.5	$^{U}4.5^{R}$	4.7	5.0	5.0	L	L	B	L	L							
10							3.8	4.2^{F}	4.5	4.4	4.4	4.6	4.6	4.9	L	5.0	L	L						
11						F	A	R	4.2	4.3	4.5^{R}	4.8	$^{U}4.9^{R}$	$^{U}4.8^{R}$	R	B	L	L	L					
12							A	A	A	4.4	4.5	4.6	4.7	5.0	4.9	L	L	L	L	L				
13						3.9	3.9	4.1	4.6	4.4	R	5.1	5.1	5.1^{L}	$^{U}5.2^{L}$	B	L	L	4.0	L				
14									A	4.5	B	4.4	4.5^{R}	4.6	4.7	4.4	4.5	4.2	4.0					
15							4.3	4.4	4.5	4.5^{R}	4.7^{R}	4.8	4.8^{R}	5.0	5.0	L	L	L	L					
16					L	L	4.3^{L}	4.6	4.6	4.8	4.9	5.0^{H}	5.0	5.2^{L}	5.2^{L}	L	L	L	L					
17				L	$^{U}3.9^{L}$	F	4.2^{F}	B	B	B	4.6^{R}	4.8	R	R	R	5.0	R	L	L						
18					4.0	A	A	A	A	4.9	4.9	5.0	L	5.4	4.9	C	C	C	C	C	C	C		
19					L	4.1^{F}	4.0	4.3	4.4^{R}	4.5	R	B	B	B	B	B	B	L	L	L				
20				B	L	B	A	4.8	$^{U}5.0^{R}$	$^{U}5.4^{LH}$	5.5^{LH}	5.5^{H}	L	5.6^{H}	L	L	L	L						
21					3.9	$^{U}4.3^{R}$	A	B	B	R	5.0	5.0	5.0	B	C	C	C	B	A					
22					3.8^{F}	3.7	4.4^{R}	B	B	4.4	4.5	4.6	4.6	4.8	4.8	4.6	4.5	L	L	L	L			
23							B	A	R	4.4	4.4	$^{U}4.4^{R}$	B	4.6	R	4.5	4.3	A						
24				B	L	B	A	4.6	A	4.8	4.9	B	5.0^{H}	5.1	5.1	4.9	4.9^{LH}	4.4	LH	L				
25						4.2	A	4.6^{R}	4.8	4.9	4.9	5.0	5.0	5.0	5.0	5.1	4.8	4.3	L					
26					F	4.0	4.0	4.0	4.3	5.0	5.0	R	4.9	R	4.9	B	L							
27				F	A	R	S	3.8^{F}	4.6	4.7^{H}	4.6	4.7^{H}	5.0	5.0	4.9	5.1	5.1	L	4.9^{L}					
28						3.5	A	A	B	4.6	A	4.6^{R}	4.3	B	4.2	4.4	4.4^{R}	4.4	L	L				
29				3.1	F	3.7	B	A	4.4	4.4^{H}	4.6	4.8	4.9	4.9	B	B	4.8	4.9	L					
30				3.9	3.7	A	B	A	4.5	4.6	4.7	4.7	B	B	R	4.8	4.6^{F}	4.4	4.1^{F}	L				
31																								
No.				2	6	12	12	12	15	22	19	20	17	18	15	14	13	8	6					
Median				3.5	3.8	4.0	4.0	4.4	4.5	4.6	4.7	4.8	4.9	5.0	4.9	4.7	4.6	4.4	4.0					

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

S 2

IONOSPHERIC DATA

Nov. 1959 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S, Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				A	A	A	B	A	B	B	B	B	B	B	B	B	3.00^{R}	B	B	3.20	A	A	A	
2	3.20		A	2.70	A	A	3.85^{R}	B	B	B	C	B	B	B	B	2.70	B	B	B	B	A	B	A	
3			A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	3.00
4			A	A	2.60	2.60	B	B	R	B	B	B	B	B	B	B	B	B	B	B	A	3.40	A	
5		3.00	B	B	B	B	2.90	3.00	B	B	B	B	B	B	B	B	B	B	B	R	B	A	2.80	
6			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	2.60	B	2.80	B	
7			B	B	B	B	2.90	A	B	B	B	B	B	B	B	B	R	B	2.60	2.35	B	B	2.40	
8			3.30	3.25	3.20	3.40	R	B	B	R	B	B	B	B	B	3.00^{R}	R	2.90^{R}	R	B	2.50	B	2.60	
9		2.40	2.50	2.40	2.20	3.10^{H}	2.90	3.00	B	3.20^{R}	R	R	R	B	B	A	A	3.00	2.90	2.40	2.20	A	A	
10			3.10	2.35	A	A	3.00	3.00	3.50	3.30	3.10	B	B	B	B	R	R	B	B	B	A	A	3.00	2.90^{R}
11			A	A	2.90	2.70	A	3.10	3.00^{R}	3.30	3.45	3.30^{R}	3.50	3.20^{R}	B	B	B	B	R	2.60	A	B	B	
12	3.30		B	B	B	B	B	A	A	3.40	3.30	R	R	R	3.40	3.20	3.00	2.90	2.70	B	2.20	B	4.10	4.30
13	3.40	2.30	A	A	3.00	3.20^{H}	3.30^{H}	3.35^{H}	3.20	$^{S}3.50^{R}$	B	B	3.00^{R}	3.25^{R}	3.20^{R}	B	B	B	B	2.50	2.50	A	C	3.95
14			A	3.25	A	A	2.90^{R}	3.20	A	A	B	3.60	B	B	3.40	3.25	3.10^{R}	B	2.60^{R}	A	A	3.10	A	3.90
15			2.30	B	A	A	B	3.45^{R}	3.30	B	B	R	3.60	3.20^{R}	3.40	3.40	3.20	3.00	3.00	2.80	2.30	2.00	2.00	2.00
16	2.70	3.20	A	3.00	2.70	2.55	2.75	3.00	3.20	3.40	3.40^{R}	3.55	A	3.55	3.60	3.35^{R}	3.30	3.10	2.90	2.40	A	A	A	
17			A	2.40	2.60	A	3.00	B	B	B	B	B	B	B	B	3.00^{R}	B	2.90^{R}	B	R	A	B	B	
18			2.65	3.00	3.60	A	A	B	A	A	A	B	A	A	R	C	C	C	C	C	C	C	B	
19	2.90	2.25	2.40	2.10	R	2.65	R	3.10	3.20	3.45	3.20	B	B	B	B	B	B	B	3.00	R	3.40	R	2.45	R
20	2.70	2.85	A	B	B	B	A	3.40^{R}	3.20^{R}	3.00^{R}	3.30	R	3.50^{R}	3.50^{R}	3.30^{R}	R	3.00^{R}	R	3.00^{R}	2.80	2.55	R	R	
21			B	B	2.80	B	B	B	B	B	3.30	3.40	3.60^{R}	B	C	C	C	B	B	A	A	A	A	
22			2.80	A	2.90	2.50	3.50	B	B	3.45	R	3.35^{R}	3.20^{R}	3.30^{R}	3.30^{R}	3.40	3.25	3.10	2.80	2.45	2.00	A	A	
23			2.60^{H}	2.40	A	B	B	A	3.00^{R}	3.50	3.70	B	B	B	B	B	2.95^{R}	A	A	3.80	3.30	A	A	
24		3.10^{R}	3.10	B	2.70	B	A	A	A	3.60	B	B	2.90^{R}	3.40^{R}	3.50	$^{U}3.40^{R}$	R	3.00	3.00	2.50	2.80	3.60	2.50	R
25	3.10	2.90	3.00	A	A	A	A	4.05	3.40^{R}	3.40^{R}	3.00^{R}	3.80	3.60	B	R	3.40	3.30	3.10^{R}	3.10^{R}	3.00	A	A	2.80	3.30
26		2.60	A	2.50	2.80	3.00	3.10	3.20	A	A	A	B	3.30	B	B	B	B	B	B	A	2.30	2.25	2.40	3.45
27	2.80		A	A	A	3.75	S	3.00	3.55	3.70	$^{U}3.60^{R}$	3.60	3.60	A	R	R	3.25^{R}	3.70	3.00	2.70	R	3.00^{H}	3.60^{H}	3.00^{H}
28		2.60	3.00	3.00	A	2.50	B	A	B	A	B	B	3.40^{R}	B	R	R	R	3.00	3.00	2.45	2.40	3.25	2.80	
29		3.45	A	A	2.60	3.00	B	A	A	3.30	3.80	3.60^{R}	3.60^{R}	3.45^{R}	B	B	3.20	3.00^{R}	3.00^{R}	3.60^{R}	3.80	A	3.10	3.20
30			A	3.10	2.70	A	B	A	A	R	3.60^{R}	B	B	B	B	3.30^{R}	3.35	R	R	2.40	2.35	R	A	
31																								
No.	8	11	11	13	14	12	11	13	10	14	12	8	12	8	8	11	12	12	14	17	14	8	13	10
Median	3.00	2.85	2.80	2.70	2.75	2.85	3.00	3.10	3.20	3.40	3.35	3.60	3.50	3.35	3.40	3.30	3.20	3.00	3.00	2.60	2.45	3.05	2.80	3.25

foE

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

41

IONOSPHERIC DATA

Nov. 1959 | foEs | 45° E Mean Time (G.M.T.+3h.)

Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.3	3.3	$^{f}5.2^{Y}$	$^{f}6.4$	3.2	$^{f}6.6$	B	$^{f}4.8$	B	B	B	B	B	B	B	B	G	B	B	G	4.1	3.0	$^{f}3.8$	$^{f}5.4$
2	4.3	$^{f}6.1$	4.4	G	$^{f}5.2$	3.5	5.8	B	B	B	C	B	B	B	B	G	B	B	B	B	$^{f}5.3$	B	$^{f}5.2$	B
3	B	B	3.3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	2.8	B	B	G
4	B	B	3.0	3.5	G	G	B	B	G	B	B	B	B	B	B	B	B	B	B	B	3.2	G	$^{f}3.9$	B
5	B	G	B	B	B	B	G	G	B	B	B	B	B	B	B	B	B	B	B	G	B	2.3	G	B
6	B	3.0	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	G	$^{f}3.8$	3.4
7	3.4	B	B	B	B	B	G	$^{f}3.8$	B	B	B	B	B	B	B	B	G	B	G	B	B	B	G	B
8	B	B	G	G	G	G	G	B	B	4.4	B	B	B	B	B	G	G	G	G	B	G	B	$^{f}3.7$	3.5
9	5.6	$^{f}3.2$	G	G	3.4	G	G	G	B	G	G	G	G	B	B	$^{f}4.0$	3.8	G	G	G	G	3.6	$^{f}4.6$	$^{f}6.4$
10	$^{f}4.7$	4.1	G	G	4.5	$^{f}3.8$	G	G	G	G	G	B	B	B	B	G	G	B	B	B	3.3	2.7	G	G
11	$^{f}6.4$	$^{f}5.7^{Y}$	$^{f}3.9$	$^{f}3.7$	G	3.6	3.4	G	G	G	G	G	G	G	B	B	B	B	G	2.7	2.5	B	B	B
12	G	$^{f}3.4$	B	B	B	4.5	4.2	$^{f}4.0$	4.4	G	G	G	G	G	G	G	G	G	G	B	G	B	G	G
13	G	G	$^{f}5.4$	4.3	G	G	3.6	G	G	G	B	B	G	G	G	B	B	B	B	G	2.8	$^{f}3.2$	C	G
14	$^{f}5.6$	$^{f}8.8$	$^{f}4.2$	G	$^{f}3.3$	5.6	4.5	G	$^{f}5.2$	$^{f}5.1$	B	G	B	B	G	G	G	B	G	$^{f}3.9$	$^{f}3.7$	$^{f}3.8$	$^{f}5.3$	$^{f}5.0$
15	$^{f}5.2$	$^{f}5.4$	G	$^{f}4.6$	4.5	4.2	B	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	2.6
16	$^{f}3.3$	$^{f}3.8$	4.6	G	G	G	G	G	G	G	G	G	$^{f}3.8$	G	G	G	G	G	G	G	3.3	3.6	3.3	$^{f}5.1$
17	3.7	3.3	3.0	G	$^{f}5.6$	3.2	G	B	B	B	B	B	B	B	B	G	B	G	B	G	2.7	B	B	B
18	B	B	G	G	G	4.4	$^{f}5.4$	4.6	4.6	4.3	4.4	B	3.6	3.3	G	C	C	C	C	C	C	C	5.3	4.3
19	G	3.2	G	G	G	G	G	G	G	G	G	B	B	B	B	B	B	B	G	G	G	G	G	2.4
20	G	G	3.8	B	B	B	$^{f}5.2^{Y}$	G	G	G	G	G	4.0	G	G	G	G	G	G	G	G	G	G	B
21	2.9	B	B	B	G	B	5.7	B	B	B	G	G	G	B	C	C	C	B	4.5	4.7	$^{f}5.2$	$^{f}4.4$	$^{f}3.5$	$^{f}5.8$
22	$^{f}3.6$	$^{f}6.7$	3.8	$^{f}6.6$	G	3.0	G	B	B	G	G	G	G	G	G	G	G	G	3.4	3.0	G	$^{f}4.9$	4.6	$^{f}4.7$
23	$^{f}3.8$	$^{f}5.2$	$^{f}7.0$	2.9	4.2	$^{f}5.2$	B	$^{f}6.4$	G	G	G	B	B	B	B	B	G	3.0	2.6	G	4.3	$^{f}3.7$	3.9	$^{f}6.9$
24	4.3	G	G	B	G	B	$^{f}4.8$	$^{f}6.2$	$^{f}5.2$	G	B	B	G	4.3	4.8	4.2	G	G	G	G	G	G	$^{f}3.4$	G
25	G	G	G	4.5	$^{f}3.7$	4.4	4.4	G	G	G	G	G	G	B	G	G	G	G	$^{f}3.7$	$^{f}4.0$	4.3	$^{f}4.0$	G	G
26	$^{f}6.1$	$^{f}4.9$	$^{f}5.4$	$^{f}6.7$	G	G	G	G	4.5	$^{f}4.7$	$^{f}3.7$	B	G	B	B	B	B	B	B	4.4	$^{f}4.3$	G	3.9	G
27	G	2.6	$^{f}6.3$	3.5	4.4	G	S	G	4.4	G	G	G	4.3	4.5	G	G	G	3.7	G	G	G	G	G	G
28	4.0	3.5	G	3.4	4.6	2.9	5.7	4.3	B	3.6	5.1	B	G	B	G	G	G	3.5	4.2	G	3.5	$^{f}3.7$	$^{f}3.3$	2.5
29	$^{f}6.1$	G	3.0	3.1	3.0	3.9	5.6	4.4	$^{f}4.0$	G	G	G	G	G	B	B	G	G	G	G	G	4.0	G	G
30	4.4	B	$^{f}4.6$	G	$^{f}5.4$	$^{f}5.4$	B	4.6	4.1	G	G	B	B	B	B	G	G	G	G	G	$^{f}3.2$	G	$^{f}3.9$	4.3
31																								
No.	24	23	25	22	24	23	22	22	18	20	17	12	16	11	12	16	18	15	19	23	26	22	26	23
Median	3.8	3.3	3.3	3.0	3.1	3.5	3.5	G	G	G	G	G	G	G	G	G	G	G	G	G	2.8	G	3.4	G

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 4

IONOSPHERIC DATA

Nov. 1959 | f-min | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.50	2.70	2.10	2.50	2.10	2.00	B	2.30	B	B	B	B	B	B	4.80	3.65	2.35	B	3.40	2.35	2.20	2.20	2.10	1.80
2	2.20	1.80	1.80	1.80	1.90	2.10	2.40	B	B	B	C	B	B	B	4.10	2.40	B	B	B	B	2.20	B	2.20	B
3	B	B	2.20	B	4.00	4.00	B	B	B	B	B	B	4.10	4.00	B	4.10	3.20	B	B	B	2.25	3.70	B	2.30
4	B	B	2.30	2.40	2.10	2.20	5.30	4.05	2.40	B	B	B	B	B	B	5.50	B	4.15	3.80	B	2.45	2.60	2.30	B
5	B	2.10	5.35	3.10	B	B	2.50	2.20	B	B	B	B	B	B	4.10	B	B	4.00	4.00	2.35	2.40	2.10	2.10	2.40
6	2.80	2.10	5.10	2.10	B	B	B	B	B	B	B	B	5.00	4.00	B	B	4.20	B	3.10	2.10	4.05	2.30	2.05	2.36
7	2.05	B	4.20	4.00	4.20	3.15	2.25	2.60	5.10	4.05	4.10	3.70	4.00	4.15	4.05	3.60	2.35	4.10	2.20	2.00	2.20	4.10	1.35	4.05
8	B	3.60	2.50	2.30	2.10	2.10	2.60	5.05	4.05	2.60	5.40	B	5.10	5.00	B	2.60	2.50	2.20	2.10	B	1.90	B	2.10	2.20
9	4.10	1.70	1.40	1.80	1.40	2.00	2.00	2.10	4.00	2.30	2.10	2.20	2.30	4.00	B	2.10	2.30	2.10	2.20	2.00	1.90	2.90	2.10	2.80
10	2.90	1.90	2.10	1.90	2.10	2.00	2.00	2.00	2.00	2.10	2.10	4.00	4.00	4.10	4.00	2.30	2.30	4.00	4.00	3.10	2.30	2.10	1.80	1.90
11	2.05	3.70	2.60	2.10	2.30	2.05	2.15	2.30	2.10	2.05	2.05	2.20	2.60	2.40	4.10	B	4.00	3.90	2.55	2.10	2.30	2.30	1.95	2.50
12	2.35	2.30	2.85	2.50	2.50	4.10	3.70	3.00	2.40	2.00	2.20	3.00	2.50	2.30	2.00	2.20	2.10	2.00	2.10	2.60	2.20	2.00	2.50	2.00
13	2.30	2.00	2.30	2.10	2.00	2.00	2.15	2.20	2.10	2.10	4.00	4.10	2.50	2.25	2.40	B	4.00	3.60	3.20	2.10	2.10	2.00	C	1.70
14	2.20	1.90	2.40	1.20	1.20	4.15	2.30	1.80	2.60	2.30	B	2.30	4.00	3.60	2.40	1.90	2.20	3.65	1.60	1.10	1.30	1.30	2.10	1.90
15	2.70	2.45	1.60	3.20	2.10	2.70	4.30	2.50	2.40	3.80	3.90	2.85	2.30	2.30	2.10	2.10	2.20	2.00	1.80	2.10	2.00	1.70	1.70	1.70
16	1.40	2.10	2.50	1.70	1.70	1.80	1.60	1.50	1.70	1.90	2.20	2.45	2.20	2.00	2.15	2.50	2.35	1.65	1.70	1.60	1.40	2.55	2.05	1.90
17	2.35	2.10	2.55	1.60	1.70	1.30	2.30	B	B	B	4.05	4.00	4.00	4.00	4.30	1.30	4.00	2.40	3.00	2.60	2.35	2.55	2.60	2.60
18	2.35	2.60	2.30	2.40	2.50	2.70	2.30	4.00	3.30	2.60	2.50	4.10	2.85	3.10	2.60	C	C	C	C	C	C	C	2.85	2.40
19	2.30	1.70	1.60	1.60	2.45	1.70	2.50	2.30	2.30	2.40	2.60	B	B	B	B	4.80	5.40	4.20	2.15	2.65	2.05	2.60	2.20	1.20
20	E 2.20 C	2.10	2.60	B	2.80	B	2.60	2.55	2.50	2.10	2.25	2.40	2.40	2.90	2.60	2.50	2.50	2.50	2.20	2.20	2.55	2.50	1.50	2.20
21	1.20	4.20	3.80	3.10	2.25	4.00	4.00	B	B	4.10	2.40	2.50	2.30	5.50	C	C	C	B	4.00	2.30	1.30	1.60	1.20	1.20
22	1.70	1.90	1.60	2.70	1.85	1.50	2.50	B	B	2.20	2.80	2.20	2.50	2.55	2.45	2.10	2.10	1.65	2.30	1.20	1.30	1.70	2.00	1.60
23	1.60	1.30	1.50	1.20	2.30	4.00	B	2.40	2.40	2.00	2.25	4.00	B	4.00	4.20	3.60	2.10	1.60	1.50	1.50	2.40	1.65	2.35	3.05
24	2.45	2.20	2.45	B	2.35	4.00	2.45	2.30	2.70	2.25	4.00	5.30	2.40	2.55	2.50	2.25	2.10	2.30	2.25	1.50	2.30	2.10	1.35	3.00
25	2.10	2.10	1.30	2.30	2.35	2.60	3.10	2.55	2.45	2.40	2.20	2.20	2.25	4.05	2.60	2.20	2.35	2.15	2.15	1.60	2.20	1.60	1.80	1.70
26	1.50	1.60	1.50	1.80	2.00	1.70	1.90	1.80	2.20	2.20	2.10	4.05	2.40	4.10	4.20	B	4.10	4.00	4.00	2.40	1.70	1.60	1.60	2.00
27	1.70	1.60	1.90	2.40	3.65	2.15	S	1.60	2.40	2.40	2.20	2.10	2.35	3.90	3.30	2.50	2.20	1.75	2.20	1.60	1.60	1.70	1.70	1.30
28	1.90	1.70	2.00	1.70	1.60	1.70	4.00	2.30	B	2.30	4.00	4.10	2.40	B	2.30	2.40	1.25	1.70	1.60	1.60	1.20	1.60	1.60	1.65
29	2.15	1.60	2.10	1.40	1.60	1.80	5.30	2.90	2.40	2.20	2.35	2.20	2.40	2.25	5.00	5.00	1.90	2.40	1.90	1.90	2.10	2.10	1.90	1.50
30	2.10	B	2.30	1.60	1.30	2.10	B	2.25	2.10	2.30	2.10	4.00	4.90	5.00	4.20	2.20	2.35	2.20	1.90	1.80	1.25	2.40	2.60	1.60
31																								
No.	25	26	30	27	28	27	24	24	21	23	23	22	24	24	23	23	25	24	27	25	29	27	28	28
Median	220	210	230	210	210	210	250	230	240	230	235	290	245	395	330	240	235	235	220	200	220	210	205	195

f-min

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S. 5

IONOSPHERIC DATA

Nov. 1959 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						R	B	A	B	B	B	B	B	B	605	670	R	B	R					
2							A	B	B	B	C	B	B	B	610	530	B	B	B	B		B		
3				B			B	B	B	B	B	B	R	535	B	415	495	B	B	B			B	
4					380	430	420	480	425	B	B	B	B	B	B	500	B	500	E600B	B				
5					B	B	520F	470	B	B	B	B	B	B	500F	B	B	445						
6					B	B	B	B	B	B	B	B	420	420	B	B	325	B	L	L				
7			435	420	430	395	400	460	500	450	445	420	465	400	400	L	L	L						
8						400	420	630F	600F	480F	450	B	450	450	B	470	410	400	405	B		B		
9						430	400	370	420	400	385	385	L	L	B	L	L							
10							R	700	R	R	660	585	520	435	L	415	L	L						
11						F	670	600	490	530	510	465	500	460	460	B	L	L	L					
12							R	R	R	565	600	530	500	500	475	L	L	L	L	L				
13						560	700	700	R	610	E600R	500	425	L	400	B	L	L	400	L				
14									A	R	B	705	800	685F	610	650	680	830	R					
15							670	535	480	460	475	505	500	530	500	L	L	L	L					
16					365	390	395	400	400	395	400	400	400	400	395	L	L	L	L					
17				L	390	500	F	B	B	B	590	590	500F	580	520	490	510	L	L					
18					500F	560	A	A	A	620F	700F	625	L	500	400	C	C	C	C	C	C	C		
19					F	L	580	510	505	495	465	B	B	B	B	400	385	L	L	L				
20				B	L	B	510	415	410	420	395	390	L	380	L	L	L	L						
21					400	405	A	B	B	475	510	490	460	500	C	C	C	B	A					
22					490F	550	640F	B	B	R	700	650	640	600	585	705	495	L	L	L	L			
23							B	A	R	740	R	R	B	R	695	600	R	R						
24				B	L	420	510	600	605	490	485	490	470	495	480	400	490	400F	L	L				
25						400	465	485	500	450	450	460	440	435	470	455	460	515	420F					
26					F	580F	685F	610	570	570	495	530F	510	575	510	B	390F							
27				600	515	615	S	R	R	700F	720	650	600	505	460	520	445	L	L					
28						690	A	A	B	R	A	R	R	B	R	R	770	F	L	L				
29				460	420	F	R	A	750	600	635	635	600	600	570	495	425	405	L					
30				F	F	600F	B	R	610F	525	610	590	590F	515	610	600	R	R	R	L				
31																								
No.			1	3	9	16	15	15	14	19	20	20	19	21	20	16	13	7	3					
Median			435	460	420	465	510	510	500	495	500	520	500	500	500	500	460	440	405					

h'F2 | Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

Nov.1959 | **h'F** | **45° E Mean Time** (G.M.T.+3h.) | **Syowa Base** | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	505	390	560	580^{F}	500	360	B	A	B	B	B	B	B	B	B	270	290	B	$E_{430}{}^{B}$	405	A	A	A	F
2	A	$E_{510}{}^{A}$	A	F	A	A	A	B	B	B	C	B	B	B	$E_{320}{}^{B}$	290	B	B	B	B	455^{F}	B	400	B
3	B	B	400^{F}	B	500	425	B	B	B	B	B	B	305	300	B	300	270	B	B	B	355	300^{F}	B	430
4	B	B	570	500^{F}	$E_{370}{}^{R}$	300	B	B	$E_{315}{}^{R}$	B	B	B	B	B	B	B	B	B	B	B	450	485	A	B
5	B	F	490	500	B	B	285	285	B	B	B	B	B	B	285	B	B	$E_{380}{}^{B}$	295	290	270	280	320	300
6	350	335	450^{F}	300	B	B	B	B	B	B	B	B	B	280	B	B	$E_{280}{}^{B}$	B	275	290	385	400	460	A
7	310	B	B	B	B	350	285	R	B	250	260	220	$E_{250}{}^{B}$	280	$E_{260}{}^{B}$	260	240	295	250	270	280	$E_{350}{}^{B}$	320	$E_{450}{}^{B}$
8	B	$E_{480}{}^{B}$	400	385	390	$E_{370}{}^{R}$	280	B	$E_{300}{}^{B}$	300	B	B	B	B	B	250	$E_{300}{}^{R}$	255	270	B	290	B	F	405
9	A	400^{F}	325	300	305	300	265	230	$E_{300}{}^{B}$	230	225	220	240	240	B	240	270	235	245	240	280	400	460	A
10	A	480^{F}	380	305	A	700^{F}	495^{F}	280	270	215	230	270	280	270	255	260	235	280	300	265	300	320	315	330
11	405	A	A	530	400	400^{F}	A	305	285	250	280	275	260	255	250	B	290	285	260	260	275	285	285	305
12	400	435	310	600	290	A	A	A	A	250	220	300	240	235	255	270	265	230	250	250	270	270	400^{F}	425
13	390	305	A	A	F	320	300	260	200	210	315	260	230	240	250	B	265	235	285	280	300	390	C	435
14	A	480	590	500	320	A	A	330	A	290	B	280	$E_{300}{}^{B}$	280	240	250	250	$E_{300}{}^{B}$	290	480	415	380	400	360
15	A	A	350	A	535	520	B	345	250	280	250	240	215	220	225	245	240	230	235	260	250	265	235	270
16	300	350	400	385	325	285	265	240	220	240	250	220^{H}	235	245	230	245	235	250	265	265	385	600^{F}	F	480
17	460	450^{F}	450^{F}	365	220	310	280	B	B	B	$E_{270}{}^{B}$	245	220	255	$E_{300}{}^{B}$	255	$E_{300}{}^{B}$	285	255	255	250	285	280	300
18	305	300	345	400^{F}	$E_{565}{}^{R}$	A	A	A	A	270	235	260	250	255	245	C	C	C	C	C	C	C	A	485
19	435	345	295	310	350	295	285	285	270	220	250	B	B	B	B	$E_{370}{}^{B}$	B	285	285	315	295	280	280	290
20	330	310	370	B	300	B	A	300	250	230^{H}	230^{H}	225^{H}	270	230^{H}	230	220	250	235	265	260	265	270	270	265
21	300	315	320	330	315	$E_{360}{}^{B}$	A	B	B	285	235	230	220	B	C	C	C	B	A	510	405	335	335	325
22	420	470	365	520	350^{F}	300	300	B	B	260	240	220	240	260	230	250	255	250	250	280	275	$E_{500}{}^{A}$	A	475
23	400	300	350	290	370	A	B	A	R	225	210	210	B	280	$E_{300}{}^{B}$	255	$E_{300}{}^{R}$	A	A	360	350	435	360	350
24	A	430	385	B	295	B	A	310	A	230	215	B	200^{H}	260	320	265	220^{H}	210	235^{H}	250	295	315	305	395
25	370	395	305	470	$E_{450}{}^{A}$	$E_{390}{}^{A}$	A	345	260	220	220	230	230	230	250	245	255	250	325	300	405	400^{F}	390	400^{F}
26	415	355	F	380	300	290^{F}	230	225	$E_{280}{}^{A}$	$E_{305}{}^{A}$	210	255	230	$E_{270}{}^{B}$	280	B	285	$F_{280}{}^{B}$	$E_{310}{}^{B}$	285	280	300	335	355
27	315	270	400	F	A	R	S	275	295	235^{H}	230	200^{H}	260	280	250	260	255	255	260	270	280	320	330	315
28	580	380^{F}	395	F	A	300	A	A	B	205	A	285	210	B	235	270	$E_{370}{}^{R}$	285	310^{F}	290	295	350	395	300
29	A	415	460	440	330^{F}	295	B	A	320	270^{H}	265	230	270	270	B	B	265	225	295	310	300	300	285	400^{F}
30	360	B	470	445	300	A	B	A	330	230	280	240	B	B	280	270	210	330	$E_{400}{}^{R}$	240	300^{F}	280	A	A
31																								
No.	19	21	25	21	19	16	11	14	11	22	20	21	19	20	18	20	19	19	21	25	28	24	21	23
Median	390	380	395	400	335	305	285	285	270	240	235	240	240	260	250	260	255	250	265	280	295	320	330	355

h'F Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

Nov. 1950 | h'E | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				A	A	A	B	A	B	B	B	B	B	B	B	B	110	B	B	140	A	A	A	
2	150		A	115	A	A	110	B	B	B	C	B	B	B	B	105	B	B	B	B	A	B	A	
3			A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	130
4			A	A	110	115	B	B	110	B	B	B	B	B	B	B	B	B	B	B	A	120	A	
5		120	B	B	B	B	115	110	B	B	B	B	B	B	B	B	B	B	B	170	B	A	180	
6			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	180	B	115	B	
7			B	B	B	B	110	A	B	B	B	B	B	B	B	B	110	B	110	125	B	B	105	
8			110	115	110	110	120	B	B	105	B	B	B	B	B	105	105	105	110	B	150	B	155	
9		160	110	120	110	110H	110	110	B	105	105	105	105	B	B	A	A	110	135	130	E180B	A	A	
10			115	115	A	A	110	105	105	105	105	B	B	B	B	105	105	B	B	B	A	A	120	130
11			A	A	125	110	A	110	105	105	105	105	105	105	B	B	B	B	140	120	A	B	B	
12	125		B	B	B	B	B	A	A	105	105	105	105	105	105	105	105	105	105	B	B	B	130	110
13	105	120	A	A	120	115H	110H	110H	110	105	B	B	105	105	105	B	B	B	B	110	145	A	C	115
14			A	110	A	A	110	105	A	A	B	105	B	B	105	105	110	B	110	A	A	110	A	110
15			110	B	A	A	B	110	110	B	B	110	110	110	105	105	110	110	105	130	140	E170B	E180B	130
16	110	120	A	110	115	110	110	110	110	110	110	110	A	105	105	105	110	105	110	110	A	A	A	
17			A	120	110	A	105R	B	B	B	B	B	B	B	B	105	B	110	B	180	A	B	B	
18			145	145	120	A	A	B	A	A	A	B	A	A	105	C	C	C	C	C	C	C	B	
19	110	160	130	125	150	120	120	120	120	115	115	B	B	B	B	B	B	B	115	170	120	160	165	120
20	130	135	A	B	B	B	A	120	120	115	110	110	110	115	115	115	120	120	115	120	B	130	150	
21			B	B	125	B	B	B	B	B	115	110	110	B	C	C	C	B	B	A	A	A	A	
22			115	A	115	110	120	B	B	110	115	110	115	105	105	105	110	110	110	110	110	A	A	
23			105H	120	A	B	B	A	105	105	105	B	B	B	B	B	105	A	A	110	120	A	A	
24		125	115	B	110	B	A	A	A	105	B	B	105	105	105	105	105	105	105	105	170	105	110	135
25	125	145	105	A	A	A	A	110	105	105	105	105	105	B	105	105	105	110	105	105	A	A	105	105
26		110	A	105	105	105	105	105	A	A	A	B	105	B	B	B	B	B	B	A	105	110	115	125
27	150		A	A	A	105	S	105	105	105	105	105	105	A	105	105	105	105	110	110	105	115H	115H	110H
28		115	105	125	A	105	B	A	B	A	B	B	105	B	105	105	105	105	105	110	110	115	150	
29		100	A	A	105	110	B	A	A	105	110	105	105	105	B	B	105	105	105	105	110	A	115	110
30			A	105	105	A	B	A	A	105	105	B	B	B	B	105	110	110	110	110	110	120	A	
31																								
No.	8	11	11	13	15	12	13	13	11	16	14	12	14	9	12	15	17	14	17	20	12	10	13	12
Median	125	120	110	115	110	110	110	110	110	105	105	105	105	105	105	105	105	110	110	115	115	115	120	120

h'E

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

Nov. 1959 | h'Es | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	115	110	120	105	120	140	B	100	B	B	B	B	B	B	B	B	G	B	B	G	115	105	150	140
2	150	115	110	G	110	115	185	B	B	B	C	B	B	B	B	G	B	B	B	B	110	B	100	B
3	B	B	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	B	B	G
4	B	B	110	105	G	G	B	B	G	B	B	B	B	B	B	B	B	B	B	B	115	G	105	B
5	B	G	B	B	B	B	G	G	B	B	B	B	B	B	B	B	B	B	B	G	B	130	G	B
6	B	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	G	110	120
7	120	B	B	B	B	B	G	105	B	B	B	B	B	B	B	B	G	B	G	G	B	B	G	B
8	B	B	G	G	G	G	G	B	B	130	B	B	B	B	B	G	G	G	G	B	G	B	160	105
9	105	180	G	G	125	G	G	G	B	G	G	G	G	B	B	110	110	G	G	G	G	140	115	105
10	105	110	G	G	105	105	G	G	G	G	G	B	B	B	B	G	G	B	B	B	145	160	G	G
11	120	150	105	105	G	160	110	G	G	G	G	G	G	G	B	B	B	B	G	160	130	B	B	B
12	G	125	B	B	B	115	105	105	105	G	G	G	G	G	G	G	G	G	G	B	G	B	G	G
13	G	G	110	105	G	G	150	G	G	G	B	B	G	G	G	B	B	B	B	G	145	125	C	G
14	105	110	110	G	105	115	130	G	105	110	B	G	B	B	G	G	G	B	G	110	110	120	150	150
15	110	105	G	105	110	110	B	G	G	B	B	G	G	G	G	G	G	G	G	G	G	G	G	180
16	155	155	105	G	G	G	G	G	G	G	G	G	105	G	G	G	G	G	G	G	115	115	115	110
17	110	120	110	G	135	120	G	B	B	B	B	B	B	B	B	G	B	G	B	G	130	B	B	B
18	B	B	G	G	G	105	105	105	110	105	105	B	110	115	G	C	C	C	C	C	C	C	120	110
19	G	160	G	G	G	G	G	G	G	G	G	B	B	B	B	B	B	B	G	G	G	G	G	150
20	G	G	120	B	B	B	115	G	G	G	G	G	130	G	G	G	G	G	G	G	G	G	G	B
21	120	B	B	B	G	B	145	B	B	B	G	G	G	B	C	C	C	B	160	115	120	110	105	125
22	130	130	150	125	G	155	G	B	B	G	G	G	G	G	G	G	G	G	160	160	G	105	110	105
23	105	110	125	105	105	105	B	105	G	G	G	B	B	B	B	B	G	105	105	G	165	105	155	105
24	105	G	G	B	G	B	100	105	105	G	B	B	G	115	110	110	G	G	G	G	G	G	150	G
25	G	G	G	115	105	110	110	G	G	G	G	G	G	B	G	G	G	G	170	125	110	110	G	G
26	110	125	120	115	G	G	G	G	105	105	105	B	G	B	B	B	B	B	B	115	115	G	130	G
27	G	125	115	115	110	G	S	G	160	G	G	G	145	125	G	G	G	155	G	G	G	G	G	G
28	110	125	G	105	105	150	110	105	B	105	105	B	G	B	G	G	G	170	135	G	140	155	170	120
29	110	G	110	105	150	120	110	110	105	G	G	G	G	G	B	B	G	G	G	G	G	110	G	G
30	105	B	105	G	175	105	B	105	105	G	G	B	B	B	B	G	G	G	G	G	155	G	100	110
31																								
No.	18	17	16	12	13	15	12	9	8	5	3		4	3	1	2	1	3	5	6	16	13	16	14
Median	110	125	110	105	110	115	110	105	105	105	105		120	115	110	110	110	155	160	120	120	115	120	115

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

47

IONOSPHERIC DATA

Nov. 1959

Types of Es

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

45° E Mean Time (G.M.T.+3h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	a	a	a	l	a	a		a													a	a	a	a
2	a	a	r		a	r	h														a		a	
3			a																		a			
4			a	a																	l		a	
5																						a		
6		a																					a	a
7	a							a																
8										h													h	a
9	a	h			h											l	l					a	a	l
10	a	a			r	a															a	a		
11	a	a	a	a		h	r													h	h			
12		a				a	l	l	r															
13			a	r			h														a	a		
14	a	a	a		a	a	h		a	a										a	a	h	a	h
15	a	l		l	a	a																		h
16	h	a	l										l								r	a	a	a
17	r	a	a		a	a															l			
18						r	a	a	a	a	a		a	l									a	a
19		a																						h
20			r				a						h											
21	a						r												a	r	a	a	a	a
22	a	a	h	a		h													h	h		a	a	a
23	a	a	a	l	r	a		l										l	l		h	a	a	a
24	r						l	a	a					h	h	h							a	
25				a	a	a	a												h	h	a	a		
26	a	a	a	a l					r	a	a									a	h		a	
27		a	a	a	r				h				h	h				h						
28	a	a		l	r	h	a	a		l	a							h	a		h	h	h	a
29	a		a	a	h	h	a	a	a													a		
30	r		a		a	a		r	r												h		a	r
31																								
No.																								
Median																								

Types of Es

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 10

IONOSPHERIC DATA

Dec.1959 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S, Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U4.9R	4.5	B	A	4.6	5.1F	5.4F	5.5	R	A	B	B	B	B	6.6	7.0	R	R	5.2	5.7	5.2R	6.2F	5.6	4.7R
2	B	5.6F	B	U5.8R	5.6	5.9	5.9	R	B	B	B	R	5.8R	6.0	6.6	6.9	B	B	R	4.9	5.0	5.0	4.2	4.2
3	4.5	5.1	5.4F	4.4	4.5	J5.0R	R	B	B	B	B	B	R	B	B	6.6	B	B	4.8	5.6F	5.1	U5.3F	R	A
4	4.3	U3.1F	4.3F	B	5.8	F	F	R	R	R	5.6	B	B	6.0	6.2	J6.3	6.0F	6.2	6.0	6.0	5.5	5.5	5.3	5.0R
5	4.9	5.9	F	5.4R	5.8	6.9	7.0	J8.0	8.8F	8.4	8.2	7.7	J7.5R	7.0	7.6	7.4	R	6.0	G	G	G	G	4.2	C
6	C	C	4.6	4.6F	4.5	5.1	F	5.4	4.7	5.1	5.6	5.3	5.8	5.8	6.0	6.0	6.2	5.9	5.6	5.4	5.3	4.6	4.9	4.4
7	R	5.7	5.9	5.9F	5.5	5.8	5.7	7.9	6.0	7.1	6.2	6.2	5.9	6.3	6.2	6.1	6.2	6.0	5.9	5.6	6.1	6.2	5.6	5.7
8	5.7	5.2	5.3	5.6	5.3	5.8F	5.3	R	5.9F	6.5F	6.8F	B	7.1	7.5	7.7	7.9	7.9	7.6	7.4	6.9	6.0	5.5	5.2	5.4
9	4.8	5.1	F	F	5.2	5.7	6.0	5.9	6.1	6.0	R	6.0	6.4	7.0	6.3	6.3	6.6	6.6	6.6	6.3	6.2	5.8	6.0	5.5
10	4.9	F	4.3	R	4.2	4.4	4.8	F	R	5.6F	6.0S	6.4	6.4	6.9	6.7	6.7	6.8	6.5	6.3	6.0	5.8	6.0S	5.9	5.0
11	5.0	4.4	4.9	5.5	5.9V	6.3	7.0	5.6	R	5.6	5.0	5.9	F	6.1	6.2	6.3	6.2	6.5	6.1	5.8	6.1	6.4R	5.8	5.4
12	4.7R	A	4.6R	A	5.7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	6.0	5.9	4.8	4.8	4.7
13	A	B	J5.2R	R	5.9	B	B	B	B	B	B	B	B	B	B	R	R	R	B	5.8	5.5	4.6	4.8R	5.2
14	J5.4R	B	B	A	4.6	B	B	R	B	B	B	B	B	B	B	B	B	B	B	A	4.5	B	B	R
15	4.1	A	4.3	4.6	B	4.8	B	B	B	B	B	B	B	B	B	B	B	R	R	5.8	5.7R	B	4.6R	4.2
16	4.5R	4.7	A	B	B	5.8	B	B	B	B	B	B	B	R	B	B	6.3	R	B	B	4.5R	5.3	B	4.3
17	4.2	A	A	4.6R	A	5.2R	R	R	R	6.2R	U6.5R	B	6.3	B	B	6.8	R	B	B	6.1	6.0	5.6	5.0	4.5
18	5.2R	5.3	A	5.4R	B	5.6	5.8	6.4R	U7.1R	7.9	D6.8R	B	D6.6R	D6.6R	B	B	R	B	6.5	5.4	J6.0R	5.3	5.4	5.5
19	4.3	4.4	A	5.6	B	5.6	B	B	B	B	B	B	B	6.0	6.3	B	B	R	B	5.6	5.8	5.5	6.0	5.2
20	B	4.8	'5.5	5.1R	5.4	5.4R	5.3	5.5	5.6	6.2	R	6.2R	6.6R	B	R	J6.4R	R	J6.4R	R	6.2	5.4	4.5	R	5.4
21	5.4	5.3	5.5	6.4R	B	5.8R	5.6	6.4R	6.6R	B	B	B	B	B	B	B	B	B	B	B	B	R	5.6	6.0
22	B	B	B	5.8R	B	B	B	D6.9R	J8.4R	R	7.5R	7.2	6.7	6.5	6.6	6.6	6.6	6.7	6.6	6.3	5.9	4.9	4.6F	5.2
23	5.5	U5.3F	5.3	5.6	F	5.2F	F	5.6	6.4	5.7	R	5.2	5.6	6.0	C	7.0	7.1	6.9	6.3	R	F	A	A	5.6
24	4.2	5.4F	4.6	A	4.2	5.2R	F	F	F	6.0	F	6.1	5.9	6.1	6.4	6.3	6.0	5.5	F	5.2F	6.0F	6.5	6.8	6.3
25	5.8	6.0F	5.9	F	5.5FR	5.3	5.5	5.7	5.7	6.0	6.2	6.2	6.8	6.9	6.9	7.0F	6.6	6.4	5.7	5.9	5.1	4.8R	4.4	5.0
26	5.0R	R	5.0	6.1R	5.4	5.6	5.5F	R	B	B	5.4	U5.9F	F	5.9F	6.0	6.6	7.6	7.3	4.2	4.7	5.5	5.1	B	B
27	3.9	5.0	4.3	4.3	B	4.3	A	B	B	B	B	5.6	6.1	6.4F	6.2	R	4.4	5.0	5.2H	4.2	4.9	4.3	A	B
28	B	4.3	B	B	B	B	B	5.8	A	B	B	5.3	5.4	5.5	7.2	7.2	5.7	5.5	R	4.5	5.2	R	R	4.6
29	4.4	B	B	R	4.3	B	R	R	B	B	5.2	5.5R	5.7	6.4	6.6	6.4	B	5.2	5.8	4.8	5.2	5.0	5.4	5.6
30	5.8	5.3	A	B	5.9	6.4R	C	C	C	C	6.2	6.0	7.7	7.7F	7.2	7.0	6.9	5.6	5.6	4.9	5.5F	5.3	S	4.8
31	5.0	5.5	4.9	5.9	6.0	6.1F	6.9	6.1	7.3F	8.0	9.5	10.0	9.5	9.0	8.0	7.4	7.1	7.0	6.6	6.1	6.0	5.9	5.4	5.5
No.	24	21	18	18	21	24	14	14	12	14	15	17	19	21	20	22	17	19	19	27	29	26	22	26
Median	4.9	5.2	5.0	5.6	5.4	5.6	5.6	5.8	6.2	6.1	6.2	6.0	6.4	6.4	6.6	6.6	6.6	6.4	5.9	5.7	5.5	5.3	5.4	5.2
U.Q	5.1	5.4	5.4	5.8	5.8	5.8	6.0	6.4	7.2	7.1	D6.8	6.3	D6.8	D7.0	7.0	7.0	7.0	6.7	6.5	6.0	6.0	5.8	5.6	5.5
L.Q	4.4	4.6	4.6	4.6	4.6	5.2	5.4	5.6	5.8	5.7	5.6	5.6	5.8	6.0	6.2	6.3	6.1	5.6	5.2	4.9	5.2	4.8	4.8	4.7
Q.R	0.7	0.8	0.8	1.2	1.2	0.6	0.6	0.8	1.4	1.4		0.7			0.8	0.7	0.9	1.1	1.3	1.1	0.8	1.0	0.8	0.8

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

IONOSPHERIC DATA

Dec. 1959 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			B		4.0	4.0	4.2	R	4.3^{R}	A	B	B	B	B	4.8	4.7	4.5	4.3^{H}	4.8					
2	B		B		A	4.2	4.2	R	B	B	B	4.8^{R}	B	4.9^{R}	4.8	4.6	B	B	R					
3						R	R	B	B	B	B	B	4.4	B	B	4.6	B	B	4.2					
4			3.1	B	R	4.8	R	R	4.8	R	R	B	B	B	5.1	5.0	R	L	L	L	L			
5					4.0	4.2	4.5	4.7	4.8^{R}	4.9	R	B	B	B	5.0	5.0	R	4.2	4.6	3.8	3.5	3.1		C
6	C	C		L	3.9	3.9	4.1	4.1	4.2	4.6	4.6	4.7	4.9	5.0	4.8	5.0	4.9	4.8	L	L	L			
7				A		A	4.2	4.2	A	4.8	4.7	4.9	5.0^{H}	5.0	R	5.0	5.0	5.0	L	L	L			
8					3.9	4.0	4.1	R	4.8^{R}	5.0	4.9	B	5.0	5.1	5.6	L	L	L	L	L	L	L		
9					4.0	4.2	4.2	4.5	4.8	5.0	4.9	5.0	5.1	5.0	5.1	5.0	4.8	L	L	L		L		
10			3.3	A	3.8	4.0	R	4.5	4.6	4.7	5.0^{S}	5.0	5.2	5.2	L	4.9^{L}	5.0^{L}	L	L	L	L			
11			L	L	4.0^{L}	3.9	4.1	4.2	4.5^{R}	4.9	4.9^{H}	4.8	V 5.0^{R}	5.0	5.0	5.1	5.1	L	L	L	L	L		
12					4.2^{L}	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
13		B			R	B	B	B	B	B	B	B	B	B	B	4.5^{R}	4.5	4.4	B	L	L			
14		B	B		L	B	B	4.2	B	B	B	B	B	B	B	B	B	B	B			B	B	
15			R	L	B	3.9	B	B	B	B	B	B	B	B	B	B	B	R	4.5			B		
16				B	B	B	B	B	B	B	B	B	B	R	B	B	R	4.4^{R}	B	B			B	
17				A	A	R	4.3^{R}	4.4^{R}	A	B	R	B	B	B	B	B	R	B	B	L	L	L	L	
18				A	B	R	R	4.4	R	R	B	B	R	B	B	B	R	B	B	L				
19			A	B	B	B	B	B	B	B	B	B	B	B	R	B	B	R	B					
20	B				L	R	R	4.6^{R}	R	4.7^{R}	R	R	5.0	B	R	4.8^{R}	R	4.6^{R}	B	L	L			
21				4.0	B	A	4.5^{R}	R	B	B	B	B	B	B	B	B	B	B	B	B	B			
22	B	B	B		B	B	B	B	B	R	4.9^{R}	5.1	5.2^{L}	5.2	5.1	5.0^{L}	5.0	L	L		L H	L		
23					3.8^{F}	4.0	4.0	4.3	5.0	4.8	4.9	4.8	5.0^{H}	5.1	C	5.1	5.0	5.0	4.4	4.1				
24		A			3.6	4.0	4.2	4.2	4.5	4.6^{R}	4.6	4.6	4.8	4.8	5.1	4.9	4.8	4.6^{H}	4.5	L				
25				L	L	R	R	4.8	4.8	4.7	4.7	4.7	4.8	A	A	4.9	4.9	4.8^{L}	L H	L	L			
26				A	R	R	4.4	4.4^{R}	B	B	4.8^{R}	4.8^{H}	5.0^{H}	5.0	4.9	4.9	4.9	4.5	B	R			B	B
27			L	A	B	3.9	A	B	B	B	B	4.8	5.0	4.8	4.5	B	4.2	4.5						B
28	B		B	B	B	B	B	R	A	B	B	4.7	5.0	B	B	4.9	4.8^{R}	4.6	R	4.0	L			
29		B	B	3.4	L	B	B	R	B	B	4.7	B	B	5.0^{R}	R	4.7	B	4.7^{R}	L	4.3	L	L		
30				B	R	R	C	C	C	C	5.0	5.0^{R}	5.2^{R}	5.1	5.1	5.0	4.9	4.7	L					
31					L	4.6	5.0	5.0	5.2^{L}	5.4^{L}	5.2	5.2	5.1	B	5.1	5.1	5.0	L	L	L	L	L		
No.			2	2	10	14	14	15	12	12	14	15	17	14	14	21	16	15	6	4	1	1		
Median			3.2	3.7	4.0	4.0	4.2	4.4	4.8	4.8	4.9	4.8	5.0	5.0	5.0	4.9	4.9	4.6	4.5	4.0	3.5	3.1		

foF1

Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

S 2

IONOSPHERIC DATA

Dec.1959 | **foE** | **45° E Mean Time** (G.M.T.+3h.) | **Syowa Base** | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.80	2.60	B	A	3.00^{H}	2.75	3.40	A	R	B	B	B	B	B	R	R	R	R	3.50	R	3.30	3.40^{R}	3.5^{R}	3.60
2	B	R	B	B	A	3.10^{R}	3.10	B	B	B	B	B	B	B	B	R	B	B	B	R	B	3.00	A	A
3	3.40	B	A	3.50	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	R	A	A	B	A
4	3.00	A	2.60	B	3.20^{R}	R	R	R	3.00^{R}	3.40	B	B	B	B	B	R	B	3.00^{R}	3.10	2.60^{R}	2.90	2.60	3.40	3.10
5	3.10^{R}	2.75	A	2.90	3.00^{R}	2.95	3.20^{R}	2.90^{R}	2.90^{R}	2.80^{R}	R	B	B	B	3.00^{R}	3.10^{R}	R	3.20	3.00^{H}	R	B	B	A	C
6	C	C	3.00	2.30	2.50	2.80	2.80	3.00	3.20	A	2.50^{R}	B	3.40	3.10^{R}	3.20^{R}	3.40	3.20	3.00	3.00	2.80	2.80^{H}	3.10^{H}	2.90	3.10
7	B	B	2.80^{R}	A	A	A	3.20^{R}	2.80^{R}	A	3.60	3.90	3.60	3.70	3.60	3.00^{R}	3.30	3.20	3.00	3.00	2.60	2.60	A	2.00	2.00
8	A	A	3.80	3.60	A	2.80	A	R	4.30	4.00	B	B	3.40^{R}	A	A	A	A	A	A	2.90	2.70^{H}	A	2.40	3.60
9	A	A	A	2.50	2.30	2.60	2.90	3.20	2.80^{R}	3.80	3.50^{R}	B	B	3.20^{R}	3.30^{R}	3.35	3.10	3.10	3.40	2.70	2.40	2.60^{H}	2.20	2.00^{R}
10	2.20^{H}	A	A	A	2.90	2.90	3.00	3.20	3.40	3.30	3.20^{S}	3.60	3.60	3.60	3.60	3.40	3.00^{R}	3.20	3.00	2.65	2.60	2.40^{H}	2.40^{H}	3.00
11	3.40	2.70^{H}	2.00	2.50	2.50	2.80	2.85	3.00^{R}	R	A	3.80^{R}	U 3.70^{R}	R	3.40^{R}	U 3.60^{R}	3.50	3.10	2.90	2.60	2.80	2.60	2.40	2.40	R
12	3.00	A	A	A	2.90	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	2.80	B	B
13	A	B	3.40	3.00	3.00^{R}	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.80	3.90	4.10
14	3.00	B	B	A	3.00	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.50	B	B	3.50
15	2.90^{R}	A	3.35	3.00	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.90	B	A	A
16	B	3.20	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.50^{R}	3.60^{H}	B	3.50
17	3.20	A	A	A	A	3.50	R	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	2.30	3.40
18	3.80^{H}	A	A	A	B	3.60	3.60^{R}	3.00	2.75^{R}	R	B	B	B	B	B	B	B	B	B	B	A	A	2.40	A
19	3.00	2.80	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.90	4.20	4.20	4.10	3.60
20	B	3.00	2.50	2.30	2.30^{R}	3.80^{R}	4.00	B	3.80	R	R	B	R	B	R	B	R	3.00^{R}	B	R	2.80^{R}	3.50	3.40	3.50
21	3.20	A	A	2.60	B	A	3.50	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	3.60	3.60	3.80	3.50	3.10^{R}	A	3.00^{R}	3.10	2.75	2.60	3.00	2.40	2.20
23	A	A	A	3.90	2.70	2.80	3.10	3.20	3.55	A	3.80^{R}	2.80^{R}	3.30^{R}	3.20^{R}	C	3.30	3.30	3.20	3.00	2.30^{R}	3.60	A	A	A
24	3.65	A	2.30	B	3.30	3.00	2.90	3.20	3.40	A	R	3.50^{R}	3.50^{R}	B	B	B	B	3.20	3.40	3.00	2.90	2.90	2.45	2.30
25	3.30	3.20	2.60	A	2.80	3.00^{R}	3.00^{R}	A	3.00^{R}	R	A	A	3.60	3.50	3.15	3.30	B	3.20	3.00	2.75	2.80	3.20	3.20	3.40
26	3.30	3.60	3.60	A	4.00	4.20	3.00	3.15	B	B	A	3.60	3.40	3.70	3.60	3.20^{R}	B	3.30	B	2.70^{R}	4.00	3.50	B	B
27	2.80	A	3.00	A	B	3.00	A	B	B	B	B	B	B	3.20^{R}	3.40^{R}	B	3.10^{R}	3.20^{R}	3.00	2.80^{R}	3.50	3.40	A	B
28	B	A	B	B	B	B	B	3.00^{R}	A	B	B	B	B	B	B	3.00^{R}	B	3.00^{R}	3.30^{R}	2.90	2.30	2.40	3.60	3.60
29	2.90^{H}	B	B	2.90	3.00	B	B	R	B	B	3.30^{R}	B	B	B	B	R	B	B	A	3.20^{H}	2.70^{H}	2.60	2.25^{H}	2.10
30	3.00	R	B	B	R	3.10	C	C	C	C	B	B	B	B	3.25^{R}	3.20^{R}	3.00^{R}	3.00^{S}	3.20	3.60	3.80	3.40	S	2.90
31	3.00	2.95	A	B	3.30	3.45	A	3.30	3.35	A	R	B	B	B	B	B	A	3.20	3.00	2.70	2.45	2.60	2.60	3.20
No.	20	9	12	12	17	18	15	12	12	6	7	7	9	10	11	12	8	17	16	18	23	21	19	20
Median	3.05	2.95	2.90	2.90	3.00	3.00	3.10	3.10	3.30	3.50	3.50	3.60	3.50	3.45	3.30	3.30	3.10	3.10	3.00	2.80	2.80	3.00	2.45	3.30

foE Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

IONOSPHERIC DATA

Dec. 1959 | foEs | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	B	J3.6	J4.1	3.1	G	D10.0D	G	4.4	B	B	B	B	G	G	G	G	G	G	G	G	G	G
2	B	G	B	B	J3.7	G	G	4.5	B	B	B	B	B	B	B	G	B	B	B	4.1	B	G	J5.2	J8.3
3	G	B	J3.9	J6.1	3.5	J5.3	B	B	B	B	B	B	B	B	B	B	B	B	B	4.6	J3.8	J3.7	4.4	J5.0
4	G	2.8	G	B	G	G	G	G	G	G	B	B	B	B	B	G	B	G	3.3	2.9	G	G	G	G
5	J5.4	G	J5.7	G	G	G	G	G	G	G	G	B	B	B	G	G	G	G	G	G	B	B	J6.5	C
6	C	C	G	3.0	G	G	G	G	G	J3.8	G	B	G	G	G	G	G	G	G	3.0	G	G	G	3.2
7	B	B	G	4.2	2.5	J3.9	G	G	4.2	G	G	3.9	4.0	G	G	G	3.7	G	G	3.1	2.8	2.4	2.4	2.7
8	2.9	3.1	G	G	3.8	J4.0	J3.9	G	G	G	B	B	G	4.1	4.5	J4.4	J6.6	J4.4	J4.6	G	G	3.2	G	G
9	J5.2	J5.0	J3.0	G	2.7	G	3.4	G	G	G	G	B	B	G	G	3.6	4.4	3.4	J5.2	J6.3	J5.1	G	2.4	G
10	G	J5.0	J3.5	J6.4	3.3	3.3	G	3.7	3.8	G	G	3.8	J5.1	4.6	4.4	3.6	G	3.6	3.7	3.2	G	G	G	G
11	G	G	2.6	2.8	2.9	3.0	3.2	G	G	4.4	G	G	G	G	3.9	4.1	3.9	3.8	3.3	G	G	G	G	G
12	G	J3.7	4.4	4.5	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	3.2	G	B	B
13	J5.4	B	G	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	G
14	G	B	B	4.0	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	4.2	G	B	B	G
15	G	J6.2	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	3.7	3.7
16	B	G	4.3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	B	G
17	G	J5.2	J6.3	3.7	3.8	G	G	B	4.3	B	B	B	B	B	B	B	B	B	B	6.0	B	B	G	G
18	G	3.8	J5.2	J6.3	B	G	G	G	G	G	B	B	B	B	B	B	B	B	B	B	4.5	J5.1	2.8	3.0
19	G	G	J6.3	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	G	G	G
20	B	G	G	G	J3.8	G	G	B	G	G	G	B	G	B	G	B	G	G	B	G	G	G	G	G
21	G	J5.3	J5.6	G	B	4.4	G	4.2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	4.3	B	B	B	B	B	B	B	4.1	4.0	G	G	G	3.5	G	G	3.2	G	G	G	G
23	3.6	D10.0D	J5.3	G	2.4	G	G	4.0	4.2	4.3	G	G	G	G	C	3.8	G	G	G	G	J6.6	J3.7	J5.1	J6.6
24	G	J6.8	G	4.3	G	G	3.5	3.7	3.8	J3.6	G	G	G	B	B	B	B	G	3.9	G	J5.2	J5.2	4.2	3.5
25	G	G	G	3.3	G	G	G	J4.6	G	G	3.6	3.9	3.9	J6.2	J7.8	4.1	B	3.6	G	G	G	G	G	G
26	G	G	G	4.4	G	G	G	G	B	B	3.5	G	G	G	G	G	B	G	B	G	G	G	B	B
27	G	J5.0	G	J5.2	B	G	J5.4	B	B	B	B	B	B	G	G	B	G	G	G	G	G	G	J6.6	B
28	B	3.7	B	B	B	B	B	G	4.3	B	B	B	B	B	B	G	B	G	G	G	G	G	G	G
29	G	B	B	G	G	B	B	G	B	B	G	B	B	B	B	G	B	B	3.8	G	G	G	G	2.3
30	3.5	3.1	6.9	B	G	G	C	C	C	C	B	B	B	B	G	G	G	G	G	G	G	G	S	4.3
31	J4.3	J4.8	3.3	B	G	3.8	J4.0	3.6	3.5	J4.4	4.8	B	B	B	B	B	J3.6	G	G	3.2	3.3	3.3	G	G
No.	24	24	25	24	23	22	20	19	17	15	13	8	11	11	14	17	14	19	18	25	26	26	25	26
Median	G	34	30	34	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

foEs

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 4

IONOSPHERIC DATA

Dec.1959 | f-min | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.30	1.35	B	2.50	1.80	1.80	2.20	3.30	2.50	3.75	B	B	B	B	2.45	2.65	2.50	2.15	2.20	2.60	2.40	2.60	2.40	2.45
2	B	2.45	B	5.30	2.50	2.35	2.25	3.40	B	B	B	4.10	5.60	4.10	3.90	2.60	B	B	4.15	2.35	2.45	2.30	2.15	2.30
3	1.70	4.10	2.10	1.70	2.40	2.10	4.10	B	B	B	B	B	3.90	B	B	4.15	B	B	4.05	2.45	3.15	2.35	4.10	2.50
4	2.40	2.30	2.10	B	2.30	2.45	2.35	2.60	2.20	2.60	4.15	B	B	5.35	5.10	2.50	4.10	2.60	2.40	2.30	2.30	2.10	2.30	2.20
5	2.10	2.20	2.50	2.15	2.20	2.75	3.00	2.30	2.50	2.10	2.60	5.00	5.10	5.40	2.40	2.00	2.40	2.10	2.10	2.40	2.40	2.10	2.10	C
6	C	C	1.60	1.80	1.80	1.90	1.60	1.80	2.20	2.60	2.20	3.90	2.50	2.20	2.30	2.10	1.80	1.70	1.80	1.25	1.30	1.20	1.20	2.00
7	4.00	5.00	1.60	2.80	2.00	2.50	1.90	2.20	1.50	1.80	2.10	2.30	2.00	2.20	2.30	1.70	1.90	2.00	1.30	1.20	1.15	2.00	1.20	1.20
8	1.20	1.60	2.10	1.60	1.50	1.40	1.30	2.35	2.20	1.90	3.70	B	1.60	1.95	2.20	2.60	2.20	1.85	2.60	2.15	2.15	2.35	1.90	2.20
9	2.00	1.60	2.00	1.30	1.25	1.60	1.70	1.70	1.50	2.00	2.40	4.00	5.10	2.40	2.10	2.10	2.20	2.20	1.40	1.60	2.10	1.35	1.70	1.40
10	1.30	1.40	1.50	2.10	1.20	1.30	1.65	2.20	2.15	2.20	1.70[S]	2.25	2.20	1.80	2.50	2.20	2.30	2.10	1.70	1.50	1.20	1.60	1.20	1.50
11	1.60	1.20	1.50	1.80	1.80	1.65	1.30	1.45	2.60	2.20	2.15	1.90	2.30	2.50	2.20	2.20	2.15	1.70	1.60	2.25	1.25	2.20	1.70	1.70
12	2.10	2.50	2.60	2.50	2.20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	4.10	2.50	2.40	4.00	4.00
13	2.60	B	2.90	2.10	2.50	B	B	B	B	B	B	B	B	B	B	4.00	4.10	4.10	B	3.85	2.80	2.60	2.40	2.40
14	2.20	B	B	2.10	2.45	B	B	3.80	B	B	B	B	B	B	B	B	B	B	B	4.00	1.85	B	B	2.35
15	2.10	2.20	1.50	1.60	B	2.90	B	B	B	B	B	B	B	B	B	B	B	3.50	3.30	5.50	2.85	B	3.00	2.80
16	4.00	2.15	3.20	B	B	4.10	B	B	B	B	B	B	B	4.20	B	B	4.10	4.10	B	B	1.60	2.80	B	3.00
17	1.80	2.20	2.00	2.55	1.60	1.90	2.60	3.35	2.85	5.35	4.10	B	5.10	B	B	5.40	4.00	B	B	3.90	3.10	2.80	1.60	1.60
18	1.65	2.20	2.70	2.20	B	2.20	2.20	2.25	2.10	2.15	5.00	B	4.30	5.20	B	B	4.00	B	4.00	4.00	2.60	2.50	1.80	1.90
19	2.10	1.80	2.30	4.10	B	4.00	B	B	B	B	B	B	B	5.20	5.50	B	B	4.10	B	1.70	3.20	2.30	2.20	1.70
20	B	1.90	1.70	1.80	1.70	2.15	2.45	3.70	3.45	2.80	2.75	4.20	2.20	B	2.20	4.00	2.25	2.20	5.10	2.20	2.10	2.50	2.20	2.10
21	2.10	1.70	2.10	2.20	B	2.10	2.20	2.90	5.25	B	B	B	B	B	B	B	B	B	B	B	B	4.20	5.20	5.20
22	B	B	B	4.15	B	B	B	5.40	5.20	4.10	4.10	3.60	2.25	2.10	2.20	2.10	1.70	1.65	1.60	1.60	1.90	2.40	1.70	1.90
23	1.80	2.10	2.10	1.85	2.10	1.50	1.50	2.60	1.60	2.10	2.40	2.30	2.10	2.10	C	2.00	1.90	1.60	1.40	1.80	1.60	2.50	3.00	1.60
24	1.60	2.60	1.60	3.70	1.90	1.30	1.55	2.20	2.10	2.00	2.40	1.70	2.10	4.00	4.00	4.00	3.40	2.10	1.70	1.60	1.30	1.80	1.70	1.90
25	1.60	1.60	1.50	1.50	1.60	1.60	1.80	1.80	2.30	2.90	2.60	2.60	2.15	2.10	1.70	2.20	4.55	2.00	1.80	1.65	2.40	2.10	1.60	1.60
26	1.65	2.30	2.60	2.20	1.60	3.35	1.60	1.65	B	B	2.60	2.10	2.25	1.90	2.10	2.40	3.90	2.20	4.10	1.60	1.70	1.70	B	B
27	2.10	1.80	1.50	1.60	B	1.90	2.70	B	B	B	B	4.00	4.60	1.90	1.70	5.30	1.90	1.80	1.60	1.40	1.90	2.20	2.70	B
28	B	1.70	B	B	B	B	B	1.70	2.25	B	B	4.00	4.00	5.10	5.20	1.80	4.00	2.25	2.10	1.70	1.50	2.40	2.10	1.60
29	1.70	B	B	1.90	2.40	B	5.45	2.40	B	B	2.20	5.20	5.30	4.10	4.10	2.70	B	3.60	3.20	2.20	2.10	2.00	1.60	1.70
30	2.10	2.20	5.50	B	2.35	2.60	C	C	C	C	3.80	4.00	5.20	3.90	2.80	2.70	2.10	2.10[S]	1.60	1.60	2.10	2.20	S	1.30
31	1.70	1.90	2.65	3.60	2.40	1.8(	2.40	1.50	1.80	1.55	2.20	5.00	5.10	5.20	4.00	4.30	2.10	1.90	1.80	1.55	2.15	2.20	2.00	1.65
No.	26	26	25	27	23	25	22	23	19	17	19	18	22	22	21	24	23	24	24	29	30	29	27	28
Median	1.90	2.10	2.10	2.10	2.00	2.10	2.20	2.30	2.20	2.20	2.60	3.95	3.20	3.20	2.40	2.55	2.30	2.10	1.95	2.15	2.10	2.30	2.10	1.90

f-min | Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 5

IONOSPHERIC DATA

Dec.1959 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			B		610F	610	650	600	R	A	B	B	B	B	660	585	R	R	600					
2	B		B		480	460	540	E650R	B	B	B	R	E840B	595	620	600	B	B	R					
3						R	R	B	B	B	B	B	R	B	B	595	B	B	520					
4			620	B	500F	F	F	R	R	610	660	B	B	535	515	475	505F	L	L	L	L			
5					470F	430	475	430	400	420	455	480F	520F	510	500	535	R	615F	G	G	G	G		C
6	C	C		L	650F	580F	590F	655	825F	775	595	700	600	620	555	550	480	500	L	L	L			
7				395		510	600F	550	595	470	505	520	610	500	511	500	440	480	L	L	L			
8					500	500	550	R	690F	520	490	B	490	470	470	440	380	L	L	L	L	L		
9					480	490F	530	580F	605	605	R	535	510	435	525	500	475	L	L	L		L		
10			525	580F	880	685	650	690	R	630	570	495	565	485	L	400	410	L	L	L	L			
11			L	L	455	490	470	510	R	660	530	500	600	510	495	470	485	L	L	L	L	L		
12					470	B	B	B	B	B	B	B	B	B	B	B	B	B	B					
13		B			370	B	B	B	B	B	B	B	B	B	B	R	R	R	B	L	L			
14		B	B		L	B	B	R	B	B	B	B	B	B	B	B	B	B	B			B	B	
15			510	L	B	535	B	B	B	B	B	B	B	B	B	B	B	430	R			B		
16				B	B	435	B	B	B	B	B	B	B	470	B	B	410	505	B	B			B	
17				570	A	540	R	480	580	550	445	B	490	B	B	425	405	B	B	L	L	L	L	
18				530	B	520	500	485	435	435	410	B	450	420	B	B	445	B	370	L				
19			A	400	B	425	B	B	B	B	B	B	B	530	B	B	B	R	B					
20	B				L	435	E635R	600	605	485	490	500	480	B	485	465	450	400	390	L	L			
21				380	B	480	550	500	485	B	B	B	B	B	B	B	B	B	B	B	B			
22	B	B	B		B	B	B	430	400	R	445	415	465	485	455	410	425	L	L		L	L		
23					405	600F	630	660	600	710	R	600F	610	500F	C	435	410	430	420	R				
24		670			640	430	F	595	600	520	670F	520	565	580	525	480	495	520	F	L				
25				L	L	435	515	500	595	570	515	520	490	500	480	415	430	425	LH	L	L			
26				400	565	545	540	735	B	B	715	510	490	585	575	545	435	485	660	610			B	B
27			L	530	B	630	A	B	B	B	B	E700B	560	565	635	600	900	700						B
28			B	B	B	B	B	570	A	B	B	660F	590	770	540	510	590	560	R	435	L			
29		B	B	R	L	B	530	R	B	B	700F	670	700	530	560	585	B	700	L	690F	L	L		
30				B	485	495	C	C	C	C	510	480F	485	430	455	530	520	530	L					
31					L	510	445	460	420	420	400	395	400	410	425	430	430	L	L	L	L	L		
No.		1	3	8	15	23	16	18	14	15	17	16	20	22	19	23	20	14	6	3				
Median		670	525	465	485	500	540	560	595	550	510	515	515	505	515	500	440	500	470	610				

h'F2

Sweep 10 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

Dec. 1959 | h'F | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	580	370	B	A	345	305	320^{F}	300	270	A	B	B	B	B	260	265	^{E}340^{R}	260^{H}	285	285	320	310	330	400
2	B	350	B	450	A	300	260	R	B	B	B	250	B	250	250	280	B	B	300	295	280	295	300	335
3	495	560	385	590^{F}	660	280	315	B	B	B	B	B	280	B	B	300	B	B	^{E}380^{B}	330	405	370	A	A
4	410	380	485	B	R	390	280	295	290	230	^{E}300^{B}	B	B	B	B	265	255	260	230	280^{F}	300	305	330	305
5	405	400^{F}	355^{F}	390^{F}	300	280	^{E}380^{B}	300	260	265	235	B	B	B	260	250	R	265	270	260	265	300^{F}	310	C
6	C	C	370	290^{F}	300	325	360	270	270	300	235	^{E}270^{B}	230	220	235	240	230	240	270	275	270	390^{F}	390	435
7	450	460	390	A	380	A	290	300	A	270	270	235	210^{H}	230	260	220	270	240	270	280	265	260	285	285
8	315	305	385	400	A	300	300	270	295	250	225	B	225	235	260	250	^{E}350^{A}	^{E}280^{A}	250	260	270	320	295	285
9	290	410	315	290	290	275	270	280	235	210	220	260	B	225	235	225	380	250	270	300	295	300	285	280
10	300	300^{F}	A	A	370	340	330	290	285	230	250	235	310	245	230	220	235	245	270	265	265	280	280	380
11	400	385	350	335	310	290	290	290	230	250	240^{H}	225	225	245	230	265	260	250	255	255	260	280	290	300
12	350	A	475	A	^{E}410^{R}	B	B	B	B	B	b	B	B	B	B	B	B	B	B	300	290	^{E}380^{R}	400	370
13	A	B	460	385	R	B	B	B	B	B	B	B	B	B	B	280	270	300	B	300	280	490	385	400
14	300	B	B	A	330	B	B	285	B	B	B	B	B	B	B	B	B	B	B	A	310	B	B	R
15	380	A	R	400	B	270	B	B	B	B	B	B	B	B	B	B	B	235	275	390	330	B	380	400
16	435	325	A	B	B	B	B	B	B	B	B	B	B	270	B	B	285	^{E}310^{B}	B	B	320	300	B	460
17	405	A	A	A	A	R	285	240	A	B	260	B	B	B	B	B	280	B	B	^{E}300^{A}	270	275	270	400
18	350	390	A	A	B	R	R	295	285	^{E}385^{R}	B	B	270	B	B	B	^{E}270^{B}	B	^{E}300^{B}	^{E}330^{B}	295	^{E}330^{A}	295	290
19	420	435	A	B	B	B	B	B	B	B	B	B	B	B	515	B	B	^{E}310^{B}	B	300	350	350	390	340
20	B	360	280	305	290	R	335	255	260	265	250	260	245	B	265	240	270	250	B	270	265	405	490	350
21	300	390	410	285	B	A	350	385	B	B	B	B	B	B	B	B	B	B	B	B	B	285	300	315
22	B	B	B	440	B	B	B	B	B	270	230	270	245	245	220	250	230	215	225	235	260^{H}	370	280	290
23	300	350^{F}	600	600	300	235^{F}	290	300	205	240	250	230	200^{H}	225	C	220	245	230	225	700	285	A	A	460
24	^{E}450^{R}	A	340	A	^{E}530^{B}	290	265	265	250	295	250	220	235	250	245	260	220	230^{H}	305	285	285	330	300	295
25	315	390	300	300	300	R	R	295	230	220	215	215	250	A	A	255	305	255	215^{H}	260	250	380	395	400
26	390	460	600	A	R	R	230	230	B	B	250	220^{H}	210^{H}	230	235	235	245	280	B	B	360	^{E}405^{R}	B	B
27	385	385	^{E}405^{B}	A	B	315	A	B	B	B	B	285	^{E}300^{B}	205	^{E}280^{R}	B	^{E}300^{R}	240	235^{H}	^{E}300^{R}	300	380	A	B
28	B	410	B	B	B	B	B	R	A	B	B	270^{F}	255	B	B	250	280	270	R	320	270	R	R	570
29	390	B	B	390	360	B	B	280	B	B	230	B	B	250	255	255	B	230	260	265	270	245	275	290
30	300	350	A	B	R	300	C	C	C	C	300	265	B	275	230	225	225	270	275	305	295	300	S	275
31	305	380	330	310	360	300	300	280	230	270	285	380	B	B	240	260	230	235	235	260	285	285	310	320
No.	24	22	17	16	14	16	17	20	14	14	17	15	14	15	17	22	18	21	19	24	30	24	23	26
Median	380	385	385	390	320	300	290	290	260	260	250	250	240	245	245	250	260	250	270	280	280	300	300	340

h'F

Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

Dec.1959 | R'E | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	115	B	A	105 H	105	105	A	105	B	B	B	B	B	105	105	105	105	115	120	130	125	115	120
2	B	130	B	B	A	115	115	B	B	B	B	B	B	B	B	110	B	B	B	115	B	150	A	A
3	120	B	A	150	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	105	A	A	B	A
4	165	A	130	B	110	110	105	105	105	100	B	B	B	B	B	105	B	105	105	110	140	130	130	125
5	115	140	A	130	120	150	135	105	105	100	110	B	B	B	105	105	105	105	115 H	120	B	B	A	C
6	C	C	105	110	105	105	105	100	100	A	105	B	105	105	105	105	105	105	105	105	105 H	105 H	105	110
7	B	B	105	A	A	A	105	105	A	100	105	105	105	105	105	105	105	105	105	105	110	A	105	105
8	A	A	115	105	A	105	A	105	105	100	B	B	100	A	A	A	A	A	A	115	125 H	A	150	125
9	A	A	A	105	105	105	105	105	105	105	105	B	B	105	105	105	105	110	105	105	115	115 H	A	140
10	115 H	A	A	A	105	105	105	105	110	105	110	105	105	100	105	105	110	110	105	110	110	115 H	115 H	125
11	115	115 H	120	115	115	110	105	100	105	A	105	105	105	110	110	105	105	105	110	120	105	155	165	155
12	145	A	A	A	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	180	B	B
13	A	B	130	130	135	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	150	135	135
14	155	B	B	A	155	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	B	B	155
15	165	A	115	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	140	B	A	A
16	B	140	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	135 H	B	165
17	120	A	A	A	A	110	120	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	130	130
18	120 H	A	A	A	B	115	115	110	110	110	B	B	B	B	B	B	B	B	B	B	A	A	130	A
19	150	145	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	165	115	110	105
20	B	145	145	145	115	110	115	B	155	115	110	B	110	B	110	B	110	115	B	115	130	150	150	150
21	150	A	A	130	B	A	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	B	B	B	B	B	B	B	B	B	105	105	105	105	A	105	105	110	115	145	155	160
23	A	A	A	110	130	105	105	115	105	A	100	105	100	100	C	105	105	105	105	105	105	A	A	A
24	110	A	130	B	105	105	105	110	105	A	105	100	105	B	B	B	B	105	100	105	110	140	130	130
25	130	130	135	A	110	115	105	A	110	110	A	A	105	100	100	105	B	100	105	110	E 185 B	130	125	120
26	130	135	150	A	120	130	115	115	B	B	A	100	100	100	105	105	B	100	B	105	110	105	B	B
27	170	A	105	A	B	110	A	B	B	B	B	B	B	100	100	B	100	100	100	100	100	115	A	B
28	B	A	B	B	B	B	B	105	A	B	B	B	B	B	B	100	B	105	105	110	105	105	105	105
29	105 H	B	B	110	135	B	B	110	B	B	100	B	B	B	B	105	B	B	A	115 H	125 H	125	115 H	120
30	125	120	B	B	110	135	C	C	C	C	B	B	B	B	105	105	105	110	105	105	125	130	S	105
31	115	115	A	B	120	110	A	105	100	A	105	B	B	B	B	B	A	100	105	105	120	160	155	125
No.	20	11	12	12	18	19	17	15	14	9	11	6	11	10	13	16	11	18	16	23	22	21	18	21
Median	120	130	125	110	115	110	105	105	105	105	105	105	105	100	105	105	105	105	105	110	115	130	130	125

R'E

Sweep 1.0 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

Dec.1959 | h'Es | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	B	110	180	150	G	125	G	115	B	B	B	B	G	G	G	G	G	G	G	G	G	G
2	B	G	B	B	115	G	G	105	B	B	B	B	B	B	B	G	B	B	B	180	B	G	160	105
3	G	B	120	100	125	110	B	B	B	B	B	B	B	B	B	B	B	B	B	170	155	120	150	120
4	G	185	G	B	G	G	G	G	G	G	B	B	B	B	B	G	B	G	155	165	G	G	G	G
5	120	G	130	G	G	G	G	G	G	G	G	B	B	B	G	G	G	G	G	G	B	B	130	C
6	C	C	G	145	G	G	G	G	G	105	G	B	G	G	G	G	G	G	G	180	G	G	G	180
7	B	B	G	105	115	101	G	G	105	G	G	135	130	G	G	G	110	G	G	160	155	120	155	150
8	125	135	G	G	105	180	105	G	G	G	B	B	G	105	105	105	105	105	110	G	G	155	G	G
9	105	105	135	G	145	G	155	G	G	G	G	B	B	G	G	115	110	165	130	125	130	G	140	G
10	G	105	105	105	180	170	G	170	180	G	G	150	120	120	115	120	G	155	140	155	G	G	G	G
11	G	G	125	130	185	170	135	G	G	105	G	G	G	G	115	110	110	110	110	G	G	G	G	G
12	G	150	120	115	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	125	G	B	B
13	115	B	G	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	G
14	G	B	B	120	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	160	G	B	B	G
15	G	120	G	G	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	150	150
16	B	G	115	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	B	G
17	G	110	110	130	100	G	G	B	120	B	B	B	B	B	B	B	B	B	B	135	B	B	G	G
18	G	145	150	125	B	G	G	G	G	G	B	B	B	B	B	B	B	B	B	B	135	140	170	135
19	G	G	130	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G	G	G	G	G
20	B	G	G	G	180	G	G	B	G	G	G	B	G	B	G	B	G	G	B	G	G	G	G	G
21	G	130	140	G	B	100	G	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
22	B	B	B	150	B	B	B	B	B	B	B	125	120	G	G	G	100	G	G	130	G	G	G	G
23	150	130	115	G	100	G	G	165	160	105	G	G	G	G	C	170	G	G	G	G	130	110	150	180
24	G	130	G	150	G	G	150	170	160	105	G	G	G	B	B	B	B	G	170	G	130	130	130	130
25	G	G	G	105	G	G	G	105	G	G	110	115	120	115	110	120	B	165	G	G	G	G	G	G
26	G	G	G	120	G	G	G	G	B	B	110	G	G	G	G	G	B	G	B	G	G	G	B	B
27	G	110	G	100	B	G	105	B	B	B	B	B	B	G	G	B	G	G	G	G	G	G	105	B
28	B	100	B	B	B	B	B	G	105	B	B	B	B	B	B	G	B	G	G	G	G	G	G	G
29	G	B	B	G	G	B	B	G	B	B	G	B	B	B	B	G	B	B	135	G	G	G	G	175
30	150	185	155	B	G	G	C	C	C	C	B	B	B	B	G	G	G	G	G	G	G	G	S	140
31	140	120	140	B	G	150	110	130	145	100	115	B	B	B	B	B	105	G	G	150	135	140	G	G
No.	7	15	14	15	11	8	6	8	7	6	3	4	4	3	4	6	6	5	7	11	8	7	10	10
Median	125	130	130	115	125	150	120	130	145	105	110	130	120	115	110	120	110	155	135	160	130	130	150	145

h'Es

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 9

IONOSPHERIC DATA

Dec.1950

Types of Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				a	h	h		a		a										h			a	a
2					a			a												h	a	a	a	a
3			a	a	a	a													h	h				
4		a																					a	
5	a		a																	h				h
6				h						a														
7				Y	a	l			Y			h	h				h			h	h	h	h	h
8	Y	a			Y	h	a							l	l	l	l	l	l			a		
9	l	a	a		h		h									h	h	h	h	h	h		a	
10		a	a	a	h	h		h	h			h	h	h	h	h		h	h	h				
11			h	h	h	h	h			Y					h	h	h	h	C					
12		a	a	Y																	a			
13	a																							
14				Y																a				
15		a																					a	a
16			a																					
17		a	a	a	l				Y											a				
18		a	a	a																	a	h	h	a
19			a																					
20					h																			
21		a	a			Y		Y																
22				Y								h	h				l			h				
23	Y	a	a		l			h	h	l						h					a	a	a	a
24		a		a			h	h	h	a									h		h	h	C	C
25				l				a			a	a	h	h	h	h		h						
26				Y							l													
27		a		l			a																a	
28		l							Y															
29																			h					h
30	h	h	a																					h
31	h	h	a			h	a	h	h	l	h						l			h	h	l		
No.																								
Median																								

Types of Es

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 19

38

IONOSPHERIC DATA

Jan. 1960 | foF2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.0	5.7	R	6.6	6.2	7.0 F	6.2 F	6.6	6.8	7.1	7.4	7.4	7.4	7.2	7.3	7.4	7.2	7.4	7.0	6.5	6.1	6.1	6.2	6.0
2	5.8	U 5.7 F	5.9	D 7.2 R	F	6.9	8.7	9.0	8.9	8.7	8.7	9.0	8.9	8.7	8.5	8.4	8.0	7.8	7.5	6.8	6.3	5.5 F	5.1	5.1
3	5.4	U 5.9 F	6.1	5.9	6.8	6.5	6.5	6.3	6.0	6.5	6.7	6.8	6.9	6.8	6.9	6.8	6.8	6.7	6.4	6.1	5.3 F	5.1	5.6	5.2
4	5.9	6.6	6.5	5.3 F	5.8	F	6.0	A	6.2	6.3	6.6	6.7	6.4	6.6	C	6.5	6.8	C	6.2	6.0 FR	5.8 R	5.8	5.7	5.6
5	C	5.2 F	F	C	F	F	F	5.6	F	5.5	6.4	5.9	6.4	6.6	6.5	6.8	5.9	5.4	4.6	5.3	5.7	5.9	5.5	5.6
6	5.1	F	F	A	C	4.2 R	3.9	C	R	5.3	5.2	5.7	6.0	5.9	6.1	5.8	5.9	5.9	C	5.9	5.9	5.4	5.3	5.8
7	5.5	5.4	5.4	5.7	5.6 F	5.0	F	5.0 F	F	6.0	C	6.4	6.1	7.0	6.8	6.9	7.0	J 7.0 S	D 5.8 S	6.2	6.3	5.4	F	5.0
8	5.8	5.6	5.7	5.2	5.1	5.0	5.4	F	6.0	6.3	7.0	6.4	6.2	6.1	5.8	6.4	6.5	6.2	6.5	6.1	5.9	6.0 H	6.1	5.8
9	5.8	5.3	5.2	5.8	5.7	F	5.8	6.0	7.5	7.5	7.5	7.6 R	7.5	7.1	7.7	7.4	7.1	7.2	7.2	7.2	6.7	6.3	6.4	6.4
10	5.0 F	4.8 F	5.8 F	5.9	F	6.2	F	7.1	F	8.8	9.2	8.0	8.2	8.2 R	8.7	6.9	5.6	R	4.8	F	A	R	A	4.9
11	A	R	J 5.1 F	4.3	4.7	4.6 F	5.3	F	5.5	5.6	6.1	6.3	B	J 7.3 R	F	D 6.7 S	5.6	R	R	5.1	5.0 F	4.7	5.3	4.5
12	4.7	C	C	C	C	C	C	C	C	C	6.9 R	7.0	R	6.9 R	6.4	6.5	6.5	6.4 R	5.8	B	5.3	C	C	C
13	C	C	C	C	C	C	C	C	C	C	6.5	6.7	7.0	U 7.3 R	7.6	J 6.8 R	J 8.0 R	7.1	6.6	5.7	5.3	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	5.8	6.3 R	R	R	R	6.0	5.5	5.2	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	R	5.2	5.5	5.5	C	C	C	C	C	C	C	C	C
16	4.4	4.8 R	4.8	5.5	5.9	5.8	5.1	6.0	6.3	6.8	6.7	6.8	7.3	7.3	6.9	7.0	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	6.5	6.4	6.7	B	5.7 F	C	6.0 R	J 6.1 R
18	D 5.3 R	J 5.5 R	J 5.4 R	J 5.9 R	R	F	R	J 7.4 F	J 7.9 F	J 7.9 F	J 7.2 R	J 7.1 F	7.1	C	C	J 8.2	J 6.5 F	5.4 F	5.5	5.1	4.7	J 4.8 R	U 4.5 F	F
19	F	F	F	F	F	B	5.0 F	5.5	5.8 F	C	C	C	C	C	7.0 F	7.0 F	7.1	6.7	6.9	7.1	6.9	6.8 F	6.3	7.2
20	J 6.2 R	5.0 F	J 6.0 R	5.2 F	6.0	5.8	F	F	5.7 F	F	F	F	F	J 8.2 F	J 7.9 R	8.1 F	7.4	7.3	8.1 F	8.3 F	7.4	6.0	5.2	5.1
21	4.6	J 6.1 R	J 6.0 R	F	J 6.3 R	F	F	F	A	5.5 F	F	A	C	5.5 F	R	6.1 F	R	4.9 F	5.0	4.4	F	F	F	B
22	B	F	F	B	F	F	F	5.6	5.3	5.4	5.3	5.6	6.1	F	C	B	C	C	C	C	C	C	F	F
23	F	4.4 F	4.2 F	F	F	F	5.7	5.5 R	4.9 R	5.8	R	5.8	R	6.0	C	C	6.6 F	5.9	5.2 F	4.7 F	F	4.3 F	F	F
24	F	R	F	5.2	F	A	C	C	B	5.5	6.1 F	6.0 F	F	F	F	J 7.2 C	7.5	6.8	5.5	U 5.6 F	5.3	4.5 F	F	4.8
25	F	F	J 5.3 F	J 5.8 F	6.1	5.5	5.3 F	6.0 F	6.4	6.6	6.7	7.1	7.0	6.9	7.0	6.8 F	6.6 F	6.3 F	D 5.9 R	6.2	5.9	4.2	5.2	J 6.1 F
26	6.1 F	J 6.0 R	4.9	F	6.3 F	J 6.5 R	F	6.9	F	F	F	F	C	F	C	7.1	7.1	6.9	6.6	6.3	5.8	6.2 F	J 6.2 R	F
27	5.4	B	5.0	6.1 F	6.0	J 6.0 F	6.3	6.4 R	6.5	F	J 8.0 F	J 8.0 F	J 7.6 F	7.1 F	7.2	7.5	7.3	6.8	6.9	6.7	6.6	6.6	U 6.7 F	6.6 F
28	6.5 F	J 6.7 F	6.1	F	6.4 F	6.2 F	F	7.4 F	8.1 F	8.5 F	8.2 F	8.0 R	8.0	7.7	7.4	7.1	7.0	6.9	6.7 R	6.2	6.4	6.6	6.3 F	F
29	F	F	R	5.8	7.0 F	F	B	F	6.2	J 7.1 F	F	J 8.1 F	8.0 F	8.1 F	8.2	J 8.3 R	F	8.0	D 7.5 R	7.0 F	J 7.0 R	6.8	6.8	J 6.7 R
30	J 6.2 F	F	F	U 5.7 F	6.1	7.1	F	F	9.3 F	9.3 F	8.8	8.3	8.2	7.9	7.7	7.6	7.3	6.9	6.8 F	6.6	6.6	6.3	6.2 R	6.3
31	6.5	J 6.9 F	J 7.2 F	F	J 8.0 R	F	F	F	10.4	10.8	10.3	B	9.6	9.4	9.2	9.1	8.5	8.5	8.0	7.4	7.2	7.2	7.2	7.0
No.	18	17	18	17	17	15	13	16	19	22	21	23	22	25	21	25	25	25	24	25	24	22	20	20
Median	5.6	5.6	5.6	5.8	6.1	6.0	5.7	6.2	6.3	6.6	6.9	6.8	7.0	7.1	7.2	7.1	7.0	6.7	6.6	6.2	5.9	6.0	6.0	5.8
U.Q	6.1	6.0	6.0	5.9	6.4	6.5	6.2	7.0	7.9	7.9	8.1	8.0	8.0	7.8	7.8	7.8	7.3	7.2	7.0	6.8	6.6	6.3	6.3	6.4
L.Q	5.0	5.1	5.1	5.2	5.8	5.0	5.2	5.6	5.8	5.6	6.4	6.3	6.2	6.4	6.6	6.8	6.5	6.1	5.5	5.4	5.5	5.1	5.3	5.1
Q.R	1.1	0.9	0.9	0.7	0.6	1.5	1.0	1.4	2.1	2.3	1.7	1.7	1.8	1.4	1.2	1.0	0.8	1.1	1.5	1.4	1.1	1.2	1.0	1.3

foF2

Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 1

69

IONOSPHERIC DATA

Jan. 1960 | foF1 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			R				4.4 H	4.6	4.7 H	4.9	5.1 H	5.1 R	5.2 H	U 5.2 R	5.1	5.2	5.2 L	L	L	L				
2				R	3.9	4.4	4.7 H	4.9	5.0	5.0	5.2	5.2	5.3	5.3	5.4	5.3	C	L	L	L	L			
3				3.3	4.2	B	5.0	R	5.0	5.0	5.0	5.0	5.1	5.2	5.1	5.0	4.9	5.0	4.9	4.3	L			
4						A	A	A	5.0	5.1 H	5.1 H	U 5.1 R	5.1	5.0	C	5.0	4.6	C	4.6	L	L			
5	C		L	C	F	A	A	4.5	4.6 R	A	5.2	5.0	5.0	5.1	5.1 H	4.9	4.8	4.7	4.3	4.4 H	L	L		
6				A	C	3.7	3.5	C	4.2	4.6	4.8	4.9	5.0	5.0	5.1	5.0	5.0	L	C	L	L			
7				R	4.0	4.1	4.3	4.4	4.6	A	C	U 4.9 R	5.1	5.1	5.2	5.1	5.2	LH	L	L	L			
8						4.1	A	4.5	4.8	4.8	4.8	5.0	4.9	5.0	5.2 R	5.1	5.0	5.2	L		L			
9				A	4.0	3.9	A	4.4	4.6	4.8	4.9 H	5.0	A	5.3 H	5.2 L	L	5.3 H	L	L	L	L			
10					A	4.1	4.5	4.7	R	4.7	5.1	4.9	4.7	5.2	4.9	4.7	4.8	4.4	R					
11						3.8	4.0	4.1	4.5 H	4.6	B	R	B	R	5.0 R	R	R	R	R	L				
12		C	C	C	C	C	C	C	C	C	R	B	B	5.2	5.1 R	R	5.0	4.8 L	4.3	B	B	C	C	C
13	C	C	C	C	C	C	C	C	C	C	R	4.8	U 5.0 R	R	4.9 R	R	B	B	B	L	B	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	B	R	B	B	4.6 R	4.5	4.4 R	L	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	4.5	4.8	4.8	4.9	C	C	C	C	C	C	C	C	C
16						4.2	4.3	4.6	4.8	4.9	5.1	5.1 H	5.2 H	5.2	5.4	5.1	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	5.0 H	4.7 H	L	B	L	C		
18						F	4.2	4.2	4.3	4.4	4.7	4.7	4.6	C	C	4.8	4.6	4.4	L		L			
19						B	4.2 R	A	4.8	C	C	C	C	C	5.0	5.0 H	LH	LH	LH	L	L	L		
20							3.4		4.1	4.2	4.0	4.2	4.5	4.8 H	R	L	L	4.8	4.7	L	L	L	4.0	
21									A	4.3	4.1	A	C	4.3	B	4.5	4.6	4.4	4.3	4.0				B
22	B			B	R	3.6	3.7	R	4.2	4.4	4.5	4.8	4.7	4.8	C	B	C	C	C	C	C	C		
23						B	B	B	B	A	R	C	B	4.8	C	C	4.8	4.6	4.3 L	4.3	L			
24				B	A	A	C	C	B	B	4.6 R	4.7	4.9	5.0	5.1	5.0	5.0	L	L	L				
25						A	R	4.5	R	4.9	R	4.9	5.0	5.0	5.0	5.0	L	L	L	L	L			
26					R	4.0	4.2	4.6 R	4.6	5.0	5.0 H	R	C	5.2	C	5.2	5.1	L	L	L	L	L		
27		B				L	B	A	B	4.8	4.9	5.0	5.2	5.2 H	5.3	5.0	L	L	L	L				
28					B	A	A	4.7	4.9	5.0 LH	5.2	U 5.1 R	5.2	5.2 H	5.3	5.3 L	L	L	L	L	L			
29					A	4.1	B	4.4	4.7	4.9	5.1	5.1	5.2	LH	5.6	L	L	L						
30						L	L	4.7	4.8	5.1	5.2	A	5.3	5.5 H	5.4	LH	L	L	L					
31						L	L	4.8 L	4.8	L	5.5 L	B	L	5.5	5.6 L	5.5 L	L	L	L					
No.				1	4	11	13	16	20	20	21	21	21	24	22	19	16	11	8	4			1	
Median				3.3	4.0	4.1	4.2	4.6	4.7	4.8	5.0	5.0	5.0	5.2	5.1	5.0	5.0	4.7	4.4	4.3			4.0	

foF1

Sweep 1.0 Mc to 200 Mc in 20 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

S 2

IONOSPHERIC DATA

Jan.1960 | foE | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′S | Long. 39° 35.4′E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.35H	3.40	B	B	4.20	4.30	A	3.40	3.35	B	B	3.80	3.65	3.45R	2.80	A	A	3.20	3.20	3.00R	R	R	2.30	2.10H
2	2.65	3.00H	2.90	B	2.90	2.90	3.10	3.20	B	B	B	B	B	3.60	3.40	3.20	C	3.30	3.40	3.00	2.80H	2.60	3.20	3.20
3	3.30	3.45	3.55H	2.80H	A	B	A	A	A	3.80	3.35	3.40	3.80	3.70	3.70	3.35	3.50	3.25	3.10	3.00	3.10	A	A	A
4	A	2.60	3.00	A	A	A	A	A	A	3.70R	3.40	3.30	3.20R	3.50	C	R	3.20R	C	3.00	A	2.50	2.60H	2.40R	R
5	C	2.80H	B	A	A	A	A	3.20	3.30R	A	U4.00R	3.80	C	3.90	3.80	3.60	3.00	3.40	3.50	3.00	2.65	2.80	3.10	3.30
6	A	A	A	A	C	2.80	2.90	C	3.30	3.50	3.80	3.80	3.70	3.60	3.65	3.50	3.40	3.20	C	2.90	2.50	2.80	2.50H	A
7	A	3.25	R	3.30	3.20	3.40	3.65	3.70R	3.80	A	C	A	R	3.60	3.45	3.25	3.20	3.15	2.75	2.80	2.60	2.60	3.10	3.20
8	3.30	3.10	3.10	3.25	F	A	A	3.50	3.80	3.50	3.60	3.60	3.50	3.60	3.40	3.40	3.20	2.90	2.35	A	2.70H	2.50	2.40H	2.65
9	3.30	3.75	4.40	A	A	A	A	3.20	3.20R	3.50	3.50	3.45	3.60	3.50	3.50	3.20	3.00	3.00	U3.00R	2.65	2.60	2.45	2.25	2.20
10	3.00	3.10	2.90	3.20	A	3.20	3.80	3.30	A	3.40	A	A	3.50	3.30	B	3.80	3.70H	2.80	2.80	3.10	B	3.50	A	2.30
11	A	A	3.30	3.40R	3.20	2.80	3.35	3.15	3.75	B	B	B	B	B	B	B	B	3.20R	2.65	3.20	A	3.70	3.35H	3.50
12	3.50	C	C	C	C	C	C	C	C	C	B	B	B	B	R	B	B	R	R	B	B	C	C	C
13	C	C	C	C	C	C	C	C	C	C	R	R	R	3.50	B	B	B	B	B	B	B	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	R	3.00	2.60	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	R	B	3.70	R	C	C	C	C	C	C	C	C	C
16	A	A	A	A	3.50	3.50	A	3.60	3.50	3.30	3.20R	3.50	3.20R	3.40R	3.30	3.40R	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	3.50H	3.00	B	2.50	C	A	A
18	A	A	A	A	A	A	2.85	3.00	3.00	3.25	3.20	3.40	3.20	C	C	3.10	R	A	A	2.60	2.30	2.80H	A	A
19	A	A	A	A	A	B	A	A	3.90	C	C	C	C	C	3.50	3.50	3.50	3.30R	U3.40R	3.25R	3.00	2.90	A	2.65H
20	2.50	A	A	A	A	A	A	A	A	A	A	A	A	3.30R	3.40	3.30	3.40	3.40	R	3.40	B	3.00	3.00	A
21	2.70	A	A	A	A	A	A	A	A	A	A	A	C	B	B	R	3.20R	3.20	2.80	A	A	A	A	B
22	B	A	A	B	3.30	2.80	A	2.90R	3.90	A	3.60	3.50	B	B	C	B	C	C	C	C	C	C	3.00	A
23	3.10	A	A	A	A	B	B	A	B	A	B	C	B	B	C	C	B	3.45	B	2.70	3.10H	2.60	2.65	B
24	A	B	A	B	A	B	C	C	B	B	B	B	B	B	B	C	B	B	B	2.80R	B	2.60H	2.50	2.80
25	2.40	2.60	2.30	2.70R	A	A	A	A	A	B	B	B	B	B	B	3.00R	3.40	3.20	R	B	2.60	2.80	2.20	2.00
26	B	2.60	B	A	A	3.20	A	A	B	B	B	B	C	B	C	B	3.40	B	B	2.80	2.50	R	2.00	B
27	1.70	B	B	B	B	A	B	B	B	B	R	R	R	3.60	B	B	B	B	R	2.85	A	B	A	A
28	A	A	B	B	B	A	B	A	3.20R	3.40	3.60	R	3.30	3.15	R	3.60	3.35	3.10R	R	2.85H	2.60H	2.00	A	B
29	A	A	B	A	A	3.00R	B	A	A	A	B	3.50	3.70	3.30R	3.35	R	3.35	B	3.00	2.70	2.10	A	A	A
30	A	A	A	A	A	A	A	A	R	3.00R	3.50	3.55	3.50	3.20	A	3.45R	3.40	3.25	3.00	2.70	2.40	A	A	A
31	R	A	A	R	2.90	2.60	2.70	A	B	3.40	3.50	B	A	A	A	A	A	3.25	3.00	2.70	2.30	A	A	1.80
No.	12	11	8	6	7	11	7	11	12	11	12	12	12	18	12	15	16	19	17	21	18	16	15	12
Median	2.85	3.10	3.05	3.20	3.20	3.00	3.10	3.20	3.40	3.40	3.50	3.50	3.50	3.50	3.40	3.40	3.40	3.20	3.00	2.85	2.60	2.70	2.50	2.65

foE

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

S 3

19

IONOSPHERIC DATA

Jan.1960 | foEs | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S | Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.8	G	B	B	G	G	3.6	G	G	B	B	G	4.1	J 5.1	J 5.1	3.5	3.4	G	G	G	G	G	2.4	3.0
2	G	G	G	B	G	G	G	G	B	B	B	B	B	3.8	3.8	3.7	C	G	G	G	G	G	G	G
3	3.6	3.8	G	G	J 8.6	B	J 5.3	4.3	J 4.0	G	G	G	G	G	G	G	G	G	G	3.0	3.5	J 5.4	J 5.2	3.6
4	3.4	J 3.5	3.0	4.4	4.6	4.9	4.3	J 4.9	J 4.7	G	G	G	G	G	C	4.2	G	C	3.7	3.4	2.9	G	2.8	J 3.9
5	C	G	B	D 3.5 C	J 5.3	5.5	J 5.2	J 4.6	G	5.9	4.5	G	C	G	G	G	G	3.9	G	3.6	3.4	3.3	G	G
6	J 6.5	4.4	J 8.2	J 5.0	C	G	3.3	C	G	G	G	G	G	4.7	4.5	J 4.7	3.6	J 6.2	C	3.1	2.7	G	G	2.3
7	J 3.0	J 3.7	J 6.6	G	4.2	J 6.6	J 8.0	J 5.1	J 3.9	J 6.3	C	J 3.6	G	J 5.6	J 5.4	D 10.0 D	J 6.0	3.5	J 5.2	J 6.1	4.5	G	G	G
8	G	G	G	G	J 6.7	4.4	4.6	3.8	G	G	4.3	J 6.2	4.2	3.9	4.2	3.7	3.5	3.3	J 5.2	J 5.6	3.3	G	2.6	G
9	G	J 4.7	4.7	J 4.0	4.0	3.9	4.6	4.0	G	G	G	3.7	J 5.3	4.2	G	3.4	3.3	3.3	G	3.2	G	G	G	G
10	G	G	4.3	G	J 7.2	G	G	3.6	4.4	3.2 G	J 3.7	J 3.6	G	G	B	G	G	G	G	J 8.2	6.4	J 6.2	4.3	G
11	J 5.4	3.8	G	G	G	G	G	G	G	B	B	B	B	B	B	B	B	G	J 3.7	G	J 3.7	G	G	J 4.1
12	G	C	C	C	C	C	C	C	C	C	B	B	B	B	G	B	B	G	G	B	B	C	C	C
13	C	C	C	C	C	C	C	C	C	C	G	G	G	G	B	B	B	B	B	B	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	G	3.7	3.6	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	4.8	4.4	4.2	G	C	C	C	C	C	C	C	C	C
16	J 6.6	4.6	4.1	3.5	G	G	4.1	G	G	G	G	G	G	3.7	G	G	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	G	G	B	2.9	C	J 4.8	J 4.2
18	J 4.4	J 3.3	3.8	3.3	3.3	J 3.2	J 3.7	3.5	G	G	4.0	4.1	3.5	C	C	G	G	3.6	J 4.9	J 5.7	3.2	G	J 3.6	J 3.5
19	J 5.3	J 8.3	3.3	J 5.2	J 9.6	B	4.5	J 5.0	J 4.3	C	C	C	C	C	4.0	4.5	J 5.8	G	4.0	G	G	G	2.9	G
20	G	2.4	2.8	J 3.2	3.4	3.5	4.2	J 5.4	J 5.1	J 4.3	4.2	3.6	3.5	G	G	3.6	G	G	G	G	B	3.4	G	3.6
21	3.1	4.0	3.8	J 5.7	3.4	3.6	3.7	3.7	J 7.7	J 5.2	J 4.0	5.1	C	B	B	G	G	G	3.5	3.8	J 9.0	J 4.3	J 6.2	B
22	B	3.4	J 7.4	B	G	G	J 3.2	G	G	4.3	G	G	B	B	C	B	C	C	C	C	C	C	3.4	J 3.2
23	3.6	J 9.1	3.4	J 4.2	J 8.0	B	B	4.4	8.7	J 4.3	B	C	B	B	C	C	B	6.8	B	2.9	G	G	G	4.3
24	J 6.8	4.3	3.6	B	J 4.0	5.3	C	C	B	B	B	B	B	B	B	C	B	B	B	G	B	G	G	G
25	J 6.1	3.9	2.8	3.2	J 4.1	4.1	4.5	3.5	J 4.4	B	B	B	B	B	B	G	G	G	G	B	2.9	G	G	G
26	B	3.2	B	3.0	4.0	G	4.3	4.3	B	B	B	B	C	B	C	B	G	B	B	G	2.7	G	G	B
27	2.2	B	B	J 9.3	B	J 9.2	B	J 8.8	B	B	G	G	G	G	B	B	B	B	G	G	2.8	3.8	2.8	J 4.3
28	J 6.3	J 4.0	3.9	J 4.6	5.3	3.7	J 4.1	3.4	G	G	3.7	G	3.7	3.5	G	G	G	G	G	G	G	2.9	2.5	B
29	1.9	2.6	B	4.2	J 5.0	G	B	5.3	4.9	4.0	4.0	G	G	G	3.5	G	G	B	G	3.7	3.0	J 3.2	2.1	2.6 H
30	2.9	2.8	J 8.0	4.1	3.6	2.6	J 3.3	J 3.1	3.6	G	4.5	J 9.5	J 6.3	J 6.6	J 5.8	G	J 4.1	G	3.4	2.8	2.8	2.2	1.9	2.5
31	G	2.4	2.3	G	G	G	G	J 3.7	B	G	4.0	B	J 5.0	4.5	4.8	4.6	J 4.1	3.8	3.1	G	3.2	3.0	2.7	G
No.	24	25	21	21	24	23	22	24	21	18	18	20	18	18	17	20	19	22	23	24	23	24	26	23
Median	3.0	3.5	3.6	3.5	4.0	3.2	4.1	3.8	3.6	G	3.7	G	G	3.8	3.5	G	G	G	G	3.0	2.9	G	G	G

foEs

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

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62

IONOSPHERIC DATA

Jan. 1960 | f-min | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4′ S, Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.55	1.75	3.45	5.20	2.30	2.30	2.20	1.60	1.60	4.30	4.10	1.65	2.10	2.20	2.20	2.20	2.05	2.55	1.80	2.45	2.45	2.30	2.30	1.60
2	1.60	1.65	2.45	3.00	2.35	1.55	1.50	1.50	3.50	5.00	5.20	4.10	4.70	2.30	2.30	2.40	C	2.80	2.50	2.10	2.40	1.30	1.80	1.70
3	2.35	2.20	1.55	1.30	2.10	4.90	2.20	2.30	2.40	2.10	2.00	2.20	2.50	2.20	2.30	2.10	1.80	1.50	1.70	1.90	2.50	1.70	2.50	1.70
4	1.40	1.50	1.45	2.40	1.65	2.50	2.20	2.55	2.50	2.00	1.60	1.50	1.50	2.20	C	2.60	2.20	C	1.40	3.00	1.20	1.20	1.50	1.65
5	C	1.55	2.40	1.60	1.55	2.15	2.20	1.40	2.10	2.60	2.30	1.70	C	2.70	2.20	2.10	2.30	2.10	2.20	1.60	1.30	1.30	1.20	1.30
6	1.35	1.20	2.10	1.30	C	1.20	1.40	C	1.50	2.10	2.10	2.10	2.15	1.80	1.90	1.60	1.70	1.70	C	1.30	1.50	1.20	1.80	1.60
7	1.50	2.20	2.30	2.30	1.30	1.35	1.80	1.40	1.50	1.50	C	2.40	2.40	2.30	1.80	2.20	2.30	1.60	2.30	2.00	1.50	1.30	1.50	1.50
8	1.60	1.60	1.60	1.70	1.90	1.70	1.70	1.50	1.80	1.90	1.90	1.90	1.60	1.80	1.90	1.60	1.85	1.60	1.35	1.45	1.40	1.45	1.20	1.50
9	1.45	1.55	2.45	1.40	2.10	1.70	2.20	1.50	1.50	1.80	1.60	1.60	2.20	2.30	1.65	1.90	1.65	1.30	1.50	1.35	1.45	1.40	1.30	1.20
10	1.40	1.45	1.60	1.50	1.70	1.30	2.30	1.60	1.60	1.60	2.20	2.20	2.00	2.20	3.80	3.00	2.10	1.50	1.30	1.50	5.15	2.80	2.60	1.70
11	2.40	2.20	1.30	1.60	1.40	1.50	1.65	1.55	2.40	4.20	5.10	4.20	B	4.15	3.70	4.00	4.10	2.30	1.60	2.10	2.05	2.20	1.20	2.20
12	1.50	C	C	C	C	C	C	C	C	C	4.35	5.40	5.45	4.40	3.20	4.15	3.50	2.65	2.55	B	4.20	C	C	C
13	C	C	C	C	C	C	C	C	C	C	2.60	2.30	2.50	2.45	4.40	4.30	5.65	5.30	4.80	4.05	4.10	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	5.20	4.20	5.80	5.80	4.10	2.80	2.30	1.80	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	2.70	3.70	2.50	2.40	C	C	C	C	C	C	C	C	C
16	2.80	2.50	2.60	2.70	2.10	2.10	3.10	2.20	2.20	2.45	2.10	2.20	2.20	2.15	2.10	2.35	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	3.55	2.20	2.00	B	1.60	C	1.70	1.70
18	1.35	1.50	1.60	1.50	1.45	1.45	1.60	1.60	1.35	1.30	2.30	1.50	1.90	C	C	2.35	2.00	3.30	1.60	1.40	1.40	1.40	1.45	1.40
19	1.20	1.30	1.30	1.70	1.60	B	2.10	2.40	1.55	C	C	C	C	C	1.50	1.90	2.20	2.30	2.00	2.20	2.70	1.40	2.50	1.70
20	1.50	1.45	1.50	1.40	1.40	2.70	2.60	1.70	1.60	1.70	1.45	1.50	1.50	1.50	1.40	1.50	1.55	1.65	3.30	2.15	4.10	1.80	1.30	1.90
21	1.40	1.30	1.30	1.20	1.35	1.20	1.40	1.35	2.70	1.50	1.50	2.20	C	3.40	5.10	2.45	2.30	2.60	1.20	1.35	2.80	2.10	1.20	B
22	B	1.55	1.35	B	1.80	1.70	1.50	1.50	2.60	2.00	2.10	2.20	3.70	3.30	C	B	C	C	C	C	C	C	1.45	1.30
23	1.35	1.80	1.85	1.85	3.45	4.70	4.60	4.20	4.65	2.70	4.25	E 4.60 C	4.90	4.10	C	C	3.35	2.30	3.20	2.10	1.70	1.60	1.65	3.35
24	1.90	3.65	1.80	4.60	1.80	4.60	C	C	B	4.70	4.45	4.20	3.80	4.00	4.15	E 3.60 C	4.35	3.40	4.70	2.35	3.00	1.80	1.60	1.80
25	1.40	1.50	1.50	1.90	2.80	3.20	2.00	1.85	2.50	3.90	4.60	4.30	4.00	3.90	4.20	2.25	2.10	1.95	2.10	2.90	1.40	1.70	1.80	1.60
26	2.10	1.30	4.00	2.00	2.10	2.20	2.70	3.20	3.60	4.20	3.90	3.90	C	3.90	C	3.80	1.90	3.20	3.20	1.50	2.00	1.90	1.70	2.10
27	1.30	B	3.20	3.30	5.00	2.10	5.50	3.30	5.00	3.60	3.20	2.10	2.10	2.40	3.80	4.00	3.70	3.40	1.80	1.65	2.50	3.20	2.40	2.10
28	1.40	1.20	3.60	3.30	4.30	2.70	3.60	1.80	1.60	1.60	1.80	2.20	2.00	2.10	2.30	2.00	1.85	1.85	1.80	1.90	1.35	1.40	1.40	3.15
29	1.35	2.10	4.30	2.10	2.10	2.00	B	2.30	2.25	2.20	3.80	1.65	1.45	1.80	1.90	2.00	2.65	4.20	1.80	1.30	1.30	1.20	1.25	1.20
30	1.30	1.30	1.40	1.60	2.40	2.40	1.45	1.35	1.45	1.90	1.80	1.65	2.00	1.60	1.80	1.65	1.50	1.20	1.35	1.25	1.20	E	1.20	1.20
31	1.45	1.40	1.20	1.80	2.50	1.90	1.30	2.00	3.20	2.80	2.30	B	3.40	3.30	3.10	1.30	1.70	1.35	1.30	1.30	1.25	1.20	1.20	1.10
No.	25	25	26	25	25	25	24	24	25	25	26	26	25	28	25	26	27	27	27	26	27	24	26	25
Median	1.45	1.55	1.70	1.80	2.10	2.10	2.15	1.65	2.20	2.10	2.30	2.20	2.20	2.35	2.30	2.20	2.20	2.30	1.80	1.85	1.70	1.40	1.50	1.65

f-min

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 5

IONOSPHERIC DATA

Jan. 1960 | h'F2 | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S | Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			550				490	495	485	495	480	480	465	480	470	450	450	390	L	L				
2				420	460	400	400	400	400	410	435	410	400	420	420	400	400	L	L	L	L			
3				460	425	475	525	535	510	495	500	500	495	500	470	480	420	445	470	470	L			
4						525	570	A	540	520	510	490	525	555	C	505	480	C	515	L	280			
5	C		L	C	400F	410	400F	570F	605	E750A	510	600	555	565	560	570	630	670	890	480	L	L		
6					C	690	380	C	R	670	670	620	560	600	L	C	500	500	L	L	L			
7				400	425	550	625	755	640	615	C	490	570	480	485	465	400	LH	L	L	L			
8						600	570	590	545	485	470	500	500	520	685	500	470	500	L		L			
9				450	470	455	600	520	480	440	430	450	E480A	480	410	L	430	330	L	L	L			
10					430	380	430	500	485	430	410	520	490	490	490	600	615	R	300					
11						590	650	615	700	565	535	530	B	470	460	500	530	R	610	L				
12		C	C	C	C	C	C	C	C	C	475	470	465	440	480	480	440	420	490	B	L	C	C	C
13	C	C	C	C	C	C	C	C	C	C	495	485	490	480	480	435	395	400	395	455	435	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	660	600	640	640	R	480	365	L	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	R	680	620	620	C	C	C	C	C	C	C	C	C
16						490	610	530	470	420	430	430	410	400	450	435	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	450	430	L	B	L	C		
18						F	420	495	450	450	490	525	600	C	C	455	510	500	L			L		
19						B	640	615	575	C	C	C	C	C	445	460	425	450	400	L	L	L		
20							330		450	510	600	505	500	410	460	390	L	510	485	L	L	L	490	
21									A	595	F	A	C	600	610	600	R	720	590	615				B
22	B			B	500F	450	510	580	615	575	620	530	530	505	C	B	C	C	C	C	C	C		
23						500	545	565	780	575	R	570	600	550	C	C	500	565	500	L	L			
24				515	500	A	C	C	B	585	530	545	515	510	500	475	420	410	L	L				
25						570	535	610F	500	505	500	485	485	505	470	480	L	465	L	L	L			
26					465	490	470	500	470	505	505	490	C	505	C	465	460	L	L	L	L	L		
27		B			480	L	600	700	580	490	475	450	480	495	495	435	L	L	L	L				
28					400	540	480	420	435	420	435	465	465	470	480	480	L	L	L	L	L			
29					485	400	B	F	620	520	480	475	465	L	465	410	L	L						
30						L	L	410	415	410	435	450	450	440	465	410	L	L	L					
31						L	L	400	400	395	395	B	400	400	400	395	L	L	L					
No.			1	5	12	17	21	20	23	24	24	25	26	27	25	26	19	16	12	4	2		1	
Median			550	450	460	490	525	530	500	500	485	490	490	495	480	470	450	460	490	475	360		490	

h'F2 | Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 6

IONOSPHERIC DATA

Jan. 1960 | h'F | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	410	380	420	500	500	300H	250	240H	E290B	230H	205	260H	250	E350A	220	230	210	255	245	260	280	285	300
2	290	305	365	250	315	280	240H	225	230	B	B	220	E300B	240	215	210	C	245	245	245	270	300	355	315
3	295	300	450	E350A	E405A	B	A	R	300	230	235	260	230	235	220	220	230	240	235	265	310	280	280	280
4	300	285	285	320	410	A	A	A	335	220H	230H	210	250	245	C	225	260	C	280	305	260	275	310	335
5	C	390	300	C	310F	A	A	240	260	A	220	205	255	235	230H	250	E275R	275	E270R	240H	300	345	385	330
6	500	340	560	A	C	245	255	C	275	245	220	225	240	240	240	240	225	235	C	245	255	295	270	280
7	305	325	400	R	400	400	305	365	290	A	C	290	250	250	E420A	E300A	260	215H	280	265	235	275	400	370
8	340	310	320	380	495	B	A	300	280	225	E290A	265	235	225	245	220	225	230	280	295	255	260H	295	320
9	300	385	480	A	A	A	A	290	220	225	225H	235	A	210H	220	250	200H	215	250	240	260	265	285	285
10	300	360R	290F	305	A	320	350	250	310	220	250	250	235	265	255	270	260	E300B	R	F	A	500	A	310
11	A	A	395	500	390	300	320	220	300H	E300B	B	270	B	240	235	250	270	R	R	295	420	400	320	440
12	470	C	C	C	C	C	C	C	C	C	285	B	B	E270B	220	265	235	280	280	B	E350B	C	C	C
13	C	C	C	C	C	C	C	C	C	C	270	240	250	250	295	230	B	B	B	E440B	B	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	B	280	B	B	280	260	225	285	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	265	280	255	250	C	C	C	C	C	C	C	C	C
16	400	460	420	400	380	370	E400A	295	265	230	225	210H	255H	225	250	220	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	260H	230H	230	B	280	C	330	325
18	325	360	285	295	280	F	300	215	230	245	220	220	225	C	C	260	235	220	250	280	280	360	410	370
19	F	F	F	F	400	B	E380A	A	325	C	C	C	C	C	225	220H	210H	200H	215H	200	220	220	220	265
20	280	265	270	260	290	300	300	F	290	320	300	250	245	200H	220	220	210	210	230	220	280	225	295	350
21	355	280	290	465	240	F	340	285	A	E420A	300	A	C	210	B	235	200	210	225	260	F	400	F	B
22	B	350	500	B	R	300	295	R	335	255	230	210	225	215	C	B	C	C	C	C	C	C	320	305
23	370	335	480	450	400	B	B	B	B	A	280	C	B	250	C	C	220	260	280	285	345	300H	360	290
24	F	470	400	B	A	A	C	C	B	B	320	260	255	230	240	230	E290B	240	E400B	240	290	295	325	300
25	300	355	305	375	445	A	E450A	290	295	250	380	260	225	230	270	225	220	250	255	270	265	355	300	285
26	285	295	E470B	370	R	330	325	320	230	275	225H	300	C	240	C	230	230	230	240	270	270	290	280	290
27	275	B	420	390	B	300	B	A	B	255	265	235	240	200H	245	240	240	235	255	255	265	285	285	285
28	305	300	270	430	B	A	A	270	240	210H	240	220	220	220H	225	230	225	230	250	250	270	280	280	310
29	300	310	380	490	A	355	B	300	300	260	250	220	220	220H	230	235	230	280	250	240	265	275	280	285
30	320	290	F	380	450	325	280	250	260	250	270	A	260	250H	235	215H	235	235	240	255	270	260	270	280
31	285	295	300	330	400	280	265	255	245	240	235	B	215	210	215	205	255	230	235	235	250	250	260	270
No.	22	23	23	19	16	14	13	17	22	17	23	23	21	27	21	25	24	24	22	24	23	24	24	25
Median	300	325	380	380	400	310	300	270	280	245	240	235	240	235	235	230	230	230	250	255	270	280	295	300

h'F

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 7

IONOSPHERIC DATA

Jan. 1960 | R'E | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	140 H	120	B	B	105	100	A	100	100	B	B	105	100	100	100	A	A	105	105	120	130	120	B	115 H
2	120	120 H	145	B	110	110	105	105	B	B	B	B	B	100	105	100	C	100	100	110	150 H	110	130	120
3	130	A	120 H	125 H	A	B	A	A	A	105	105	105	105	105	105	105	100	100	105	110	140	A	A	A
4	A	A	A	A	A	A	A	A	A	105	100	100	100	105	C	105	105	C	105	A	110	110 H	120	120
5	C	120 H	B	A	A	A	A	105	105	A	105	100	C	105	105	105	100	110	110	105	105	110	110	110
6	A	A	A	A	C	105	105	C	100	100	100	100	100	100	100	100	105	100	C	105	105	100	115 H	A
7	A	135	165	135	110	130	150	135	130	A	C	A	100	100	105	105	105	105	115	110	105	105	115	120
8	130	115	125	110	110	A	A	100	100	100	100	100	100	100	100	105	100	100	100	A	130 H	100	135 H	150
9	110	100	100	A	A	A	A	100	100	100	100	100	100	100	100	100	100	100	105	105	110	115	125	125
10	125	125	110	100	A	105	110	100	A	A	A	A	100	100	B	120	110 H	105	105	105	B	130	A	150
11	A	A	100	105	105	105	105	105	105	B	B	B	B	B	B	B	B	110	100	115	A	110	105 H	115
12	110	C	C	C	C	C	C	C	C	C	B	B	B	B	110	B	B	110	115	B	B	C	C	C
13	C	C	C	C	C	C	C	C	C	C	100	100	100	100	B	B	B	B	B	B	B	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	115	105	100	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	110	B	105	105	C	C	C	C	C	C	C	C	C
16	A	A	A	A	115	110	A	105	105	105	100	105	105	105	105	100	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	100	100	B	100	C	A	A
18	A	A	A	A	A	A	100	100	100	100	100	100	100	C	C	100	100	A	A	100	100	100 H	A	A
19	A	A	A	A	A	A	A	A	100	C	C	C	C	C	100	100	100	100	100	100	105	100	A	105 H
20	120	A	A	A	A	A	A	A	A	A	A	A	A	100	100	100	100	100	125	100	B	100	100	A
21	105	A	A	A	A	A	A	A	A	A	A	A	C	B	B	100	100	115	100	A	A	A	A	B
22	B	A	A	B	100	100	A	100	100	A	100	100	B	B	C	B	C	C	C	C	C	C	120	A
23	120	A	A	A	A	B	B	A	B	A	B	C	B	B	C	C	B	110	B	125	115 H	135	120	B
24	A	B	A	B	A	B	C	C	B	B	B	B	B	B	B	C	B	B	B	130	B	150 H	150	125
25	110	110	110	115	A	A	A	A	A	B	B	B	B	B	B	100	100	105	110	B	110	120	180	155
26	B	105	B	A	A	125	A	A	B	B	B	B	C	B	C	B	105	B	B	105	130	130	160	B
27	115	B	B	B	B	A	B	B	B	B	110	105	100	110	B	B	B	B	100	100	A	B	A	A
28	A	A	B	B	B	A	B	A	100	100	100	100	100	100	105	100	105	100	100	110 H	100 H	125	A	B
29	A	A	B	A	A	115	B	A	A	A	B	100	100	100	100	105	110	B	110	120	110	A	A	A
30	A	A	A	A	A	A	A	A	125	105	105	100	105	100	A	105	125	100	120	100	125	A	A	A
31	105	A	A	165	155	120	120	A	B	110	105	B	A	A	A	A	A	130	120	100	100	A	A	105
No.	13	9	8	7	8	11	7	11	13	10	14	16	15	18	15	18	17	21	22	21	19	18	14	13
Median	120	120	115	115	110	110	105	100	100	100	100	100	100	100	105	100	100	105	105	105	110	110	120	120

R'E

Sweep 1.0 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

S 8

IONOSPHERIC DATA

Jan. 1960 | h'Es | 45° E Mean Time (G.M.T.+3h.) | Syowa Base | Lat. 69° 00.4' S, Long. 39° 35.4' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	190	G	B	B	G	G	110	G	G	B	B	G	115	110	105	105	105	G	G	G	G	G	190	150
2	G	G	G	B	G	G	G	G	B	B	B	B	B	110	110	110	C	G	G	G	G	G	G	G
3	160	140	G	G	110	B	100	100	100	G	G	G	G	G	G	G	G	G	G	125	155	115	125	120
4	120	120	115	115	110	105	100	100	105	G	G	G	G	G	C	115	G	C	180	165	155	G	135	140
5	C	G	B	105	110	105	105	150	G	100	130	G	C	G	G	G	G	180	G	165	150	170	G	G
6	110	100	105	100	C	G	180	C	G	G	G	G	G	130	135	130	170	130	C	180	170	G	G	120
7	125	125	170	G	130	100	100	100	100	100	C	100	G	120	120	115	115	120	140	130	130	G	G	G
8	G	G	G	G	160	105	100	100	G	G	165	130	120	120	115	120	120	115	105	100	100	G	100	G
9	G	105	120	115	110	100	100	135	G	G	G	120	115	115	G	115	115	115	G	135	G	G	G	G
10	G	G	135	G	105	G	G	180	150	100	105	100	G	G	B	G	G	G	G	170	150	180	110	G
11	105	100	G	G	G	G	G	G	G	B	B	B	B	B	B	B	B	G	120	G	115	G	G	115
12	G	C	C	C	C	C	C	C	C	C	B	B	B	B	G	B	B	G	G	B	B	C	C	C
13	C	C	C	C	C	C	C	C	C	C	G	G	G	G	B	B	B	B	B	B	B	C	C	C
14	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	B	B	G	150	130	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	B	125	130	120	G	C	C	C	C	C	C	C	C	C
16	110	110	105	150	G	G	140	G	G	G	G	G	G	125	G	G	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	G	G	B	115	C	125	120
18	120	115	120	120	105	105	150	150	G	G	120	115	120	C	C	G	G	165	150	125	165	G	120	120
19	130	120	150	125	100	B	100	105	100	C	C	C	C	C	135	130	120	G	120	G	G	G	185	G
20	G	130	125	120	120	135	120	115	100	100	100	100	100	G	G	120	G	G	G	G	B	170	G	115
21	170	115	110	110	120	120	125	105	120	100	100	100	C	B	B	G	G	G	160	100	165	120	120	B
22	B	110	100	B	G	G	100	G	G	100	G	G	B	B	C	B	C	C	C	C	C	C	170	115
23	160	105	120	105	120	B	B	140	125	100	B	C	B	B	C	C	B	145	B	185	G	G	G	150
24	110	155	115	B	100	160	C	C	B	B	B	B	B	B	B	C	B	B	B	G	B	G	G	G
25	105	120	135	115	105	130	105	100	110	B	B	B	B	B	B	G	G	G	G	B	180	G	G	G
26	B	180	B	125	125	G	125	110	B	B	B	B	C	B	C	B	G	B	B	G	170	G	G	B
27	190	B	B	180	B	105	B	115	B	B	G	G	G	G	B	B	B	B	G	G	145	120	115	110
28	105	100	140	165	110	100	115	100	G	G	125	G	110	105	G	G	G	G	G	G	G	120	165	B
29	120	160	B	120	120	G	B	110	105	105	150	G	G	G	120	G	G	B	G	135	135	120	110	100 H
30	150	150	135	120	160	100	100	100	100	G	120	110	110	105	100	G	100	G	180	165	130	120	100	100
31	G	100	100	G	G	G	G	115	B	G	135	B	110	110	110	100	100	100	100	G	120	105	105	G
No.	17	20	17	16	18	13	18	19	11	8	10	9	9	11	9	10	8	8	10	14	17	10	15	13
Median	120	120	120	120	110	105	105	110	105	100	120	110	115	115	115	115	115	125	145	135	150	120	120	120

h'Es

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Jan. 1960

Types of Es

45° E Mean Time (G.M.T.+3h.)

Syowa Base

Lat. 69° 00.4′ S
Long. 39° 35.4′ E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	h						a						h	h	h	l	l						h	h
2														h	h	h								
3	h	l			a		a	a	a											h	h	u	a	a
4	f	l	l	a	r	a	a	a	a							h			h	h	h		h	h
5				a	a	r	a	h		a	h							h		h	h	h		
6	a	a	a	r			h							h	h	h	h	h		h	h			h
7	a	l	h		h	a	l	l	l	l		l		h	h	h	h	h	h	h	h			
8					h	r	r	l			h	h	h	h	h	h	h	h	h	l	l		l	
9		l	h	l	r	r	r	h				h	h	h		h	h	h		h				
10			a		a			h	l	l	l	l								a	a	h	r	
11	a	a																	h		a			a
12																								
13																								
14																			h	h				
15												h	h	h										
16	a	a	r	r			a							h										
17																					h		a	a
18	a	a	a	a	a	a	h	h			h	h	h					h	a	h	h		a	a
19	a	a	a	a	l	B	r	r	l						h	h	h		h				h	
20		a	a	a	a	a	a	a	a	a	r	a	a			h								r
21	h	a	a	a	a	a	a	a	a	a	a	r							h	a	a	a	a	
22		a	a				a			a													h	a
23	h	a	a	a	a			a	a	a								h		h				a
24	a	a	a		a	a																		
25	f	a	h	c	a	a	a	a	a												h			
26		h		a	a		a	a													h			
27	h			a		a		a													h	a	a	f
28	f	f	a	a	a	a	a	a			h		h	h								l	a	
29	a	a		a	a			a	a	a	h				h					h	h	a	a	a
30	af	a	a	r	al	l	l	l	l		h	h	h	h	l		l		h l	h	h l	a	l	f
31		l	l					a			h		h	h	h	a	l	l	l		h	a	a	
No.																								
Median																								

Sweep 10 Mc to 200 Mc in 20 ~~min~~ sec in automatic operation.

Types of Es

The Radio Research Laboratories, Japan.

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