F — 135

IONOSPHERIC DATA IN JAPAN

FOR MARCH 1960

Vol. 12 No. 3

(Including Provisional Data at Showa Base)

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Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

KOKUBUNJI, TOKYO, JAPAN

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THE RADIO RESEARCH LABORATORIES

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CONTENTS

SITES OF THE RADIO WAVE OBSERVATORIES

Ionospheric observation is carried out at the following four observatories in Japan.

	Latitude	Longitude	Site
Wakkanai	45°23.6′N.	141°41.1′E.	Wakkanai-shi, Hokkaido
Akita	39°43.5′N.	140°03.2′E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4′N.	139°29.3′E.	Koganei-machi, Kitatama-gun, Tokyo-to
Yamagawa	31°12.5′N.	130°37.7′E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission and radio propagation conditions are observed at Hiraiso Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0′N.	140°37.5′E.	Hiraiso-machi, Nakaminato-shi, Ibaragi-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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.

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

$(M\,3000)F1$ — 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 A 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.

B. SOLAR RADIO EMISSION

Solar radio emission is received on 200 Mc at Hiraiso Radio Wave Observatory using a 6×4 dipole broadside array and an ordinary superheterodyne receiver. The type of observation is of intensity recording of both steady flux and outstanding occurrences.

a. Daily Data

Steady flux The mean value of recorded base level. Outstanding occurrences are to be omitted except the phenomena with duration of hours or more.

Variability Variability is expressed in four grades as follows:

0=no burst
1=a few bursts
2=many bursts
3=exceptionally many bursts

Number of bursts is determined relatively in comparison with the base level. If the number of bursts be fixed, the variability is greater, when bursts are widely distributed, than in the case of being concentrated in a short period.

b. Outstanding occurrences

Starting time When the start is not obvious, 20% rise time of smoothed flux is adopted and *x* is suffixed. (e.g. 0234*x*)

Maximum time When the instantaneous maximum can not be taken, the smoothed maximum is used and *x* is suffixed. (e.g. 0539*x*)

Time of end When the phenomena have ended obscurely the time of 20% of maximum smoothed flux is written.

Type Outstanding emissions are classified as follows: On another point of view, the classification in the URSI Interchange code is to be added.

S : simple rise and fall of intensity
C : complex variation of intensity
A : appears to be part of general activity
D : distinct from (i.e. apparently superposed upon) the general

activity

M : multiple peaks separated by relatively long period of quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

Combined letters express one phenomenon (e.g. SD, ECD); letters joined by + express some phenomena occurring in parallel; the preceding term is more important (e.g. SD+F, SA+C).

Maximum intensity

Instantaneous: The highest value above the base level.

Smoothed: By multiplying the duration, the approximate total power of the phenomenon con be estimated.

C. RADIO PROPAGATION CONDITIONS

a. Radio Propagation Quality Figures

Radio propagation quality figures are usually expressed on the scale that ranges from one to five as follows:

1=good
2=normal
3=rather poor (unstable)
4=poor (disturbed)
5=very poor (very disturbed)

The tabulated circuits contain WWV (frequencies 10, 15, 20 Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15 Mc broadcast from Hawaii), which are received at Hiraiso Radio Wave Observatory near Tokyo.

Warnings of radio propagation broadcast from JJY station are expressed in three grades:

N=normal
U=unstable
W=disturbed

The letter W expresses disturbed condition expected to be during the following 12 hours after issue. The letter U and N means also unstable or normal conditions, respectively.

Whole day radio quality indices are the weighted averages of the 6-hourly indices of WWV and S.F., with half weight given to quality grade 2 (normal). This procedure is taken to avoid the concentration of the whole day indices to grade 2.

Start- and end-time of principal geomagnetic storms closely correlated to radio propagation conditions are tabulated from observations at Kakioka.

b. Sudden Ionospheric Disturbances (S. I. D.)

The data of short wave fade-out (SWF) are preparated from the field intensity records on following circuits received at Hiraiso. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensity

W S .....WWV 20 Mc, 15 Mc and 10 Mc (Washington)
S F .....WNA-27 : 7.6550 Mc, WND-20 : 10.4925 Mc, WNC-93 : 13.7525 Mc, WMJ-30A2 : 20.8173 Mc (San Francisco)
H A .....WWVH 15 Mc and 10 Mc (Hawaii)
T O .....JJY 15 Mc and 10 Mc (Tokyo)
M N .....DZM-28 : 14.5850 Mc (Manila)
L N .....GIJ-34 : 14.6702 Mc (London)

Start-time and Duration, Types and Importances are described from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10 Mc, 15 Mc and 20 Mc for WWV, WWVH and JJY are marked ; 10 Mc ('), 15 Mc (none) and 20 Mc (").

Start-times and Durations

Types

S : sudden drop-out and gradual recoverly
Slow : slow drop-out taking 5 to 15 minutes and gradual recoverly
G : gradual disturbances ; fade irregular in both drop-out and recoverly

Importances

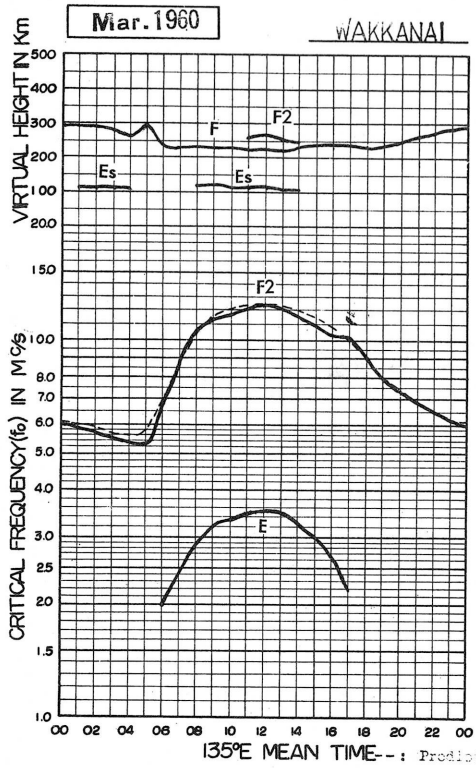
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out ;

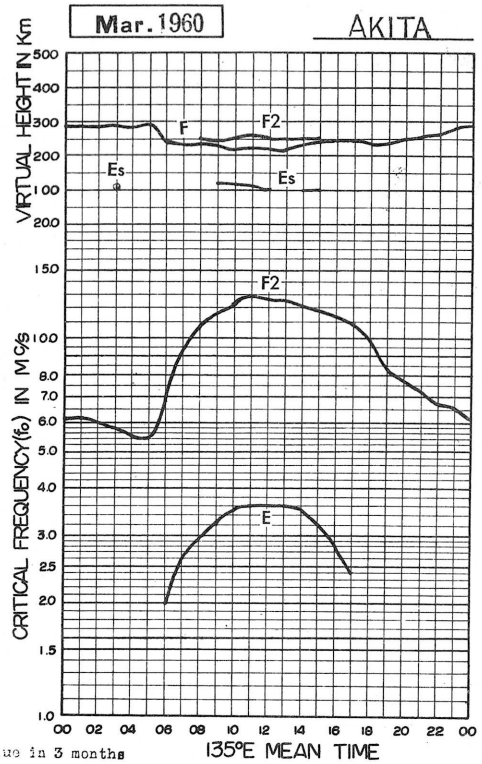
1−	1	1+
2−	2	2+
3−	3	3+

The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance.*

Besides, the time associated phenomena of SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record) are given in this table from interchange messages or measurements at Hiraiso.

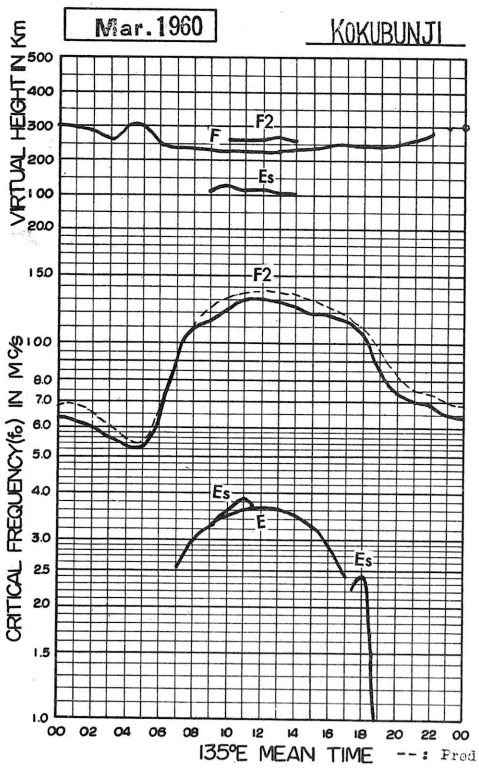
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

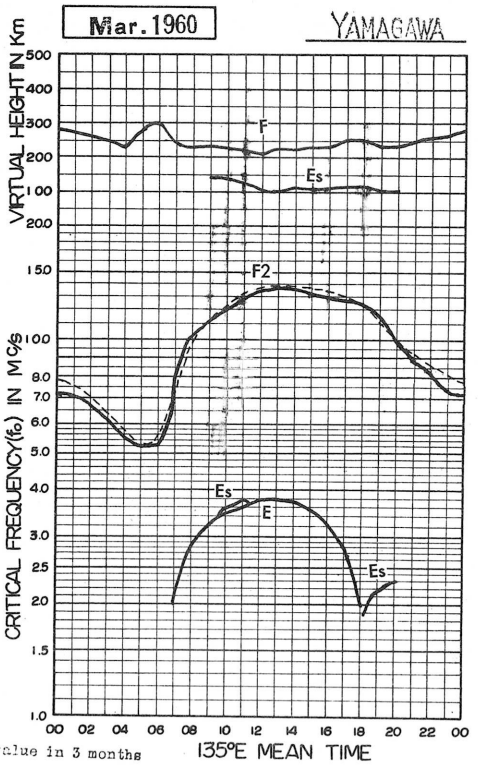




--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





--: Predicted value in 3 months advance by R.R.L.

IONOSPHERIC DATA

Mar. 1960 | foF2 | 135° E Mean Time (G.M.T.+ 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' 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	6.0	5.7	5.3	5.8	5.8	5.1	5.3	8.8	J10.8 R	12.6	13.3	U13.0 R	12.8	11.9	12.1 H	11.8	11.0	10.5	8.3	7.5	7.0	6.4	6.4	6.2
2	6.5	5.3	5.2	5.0	4.9	4.7	5.1	7.3	10.1	10.3	12.4	J13.3 R	J13.8 R	J13.3 R	12.8	12.3	12.0	10.8	8.8	7.2	6.5	6.2	6.2	5.7
3	5.5	6.0	5.6	5.0	4.5	4.4	5.3	U8.3 S	10.8	12.3	12.1	11.3	J12.8 R	12.5	12.2	11.3 H	11.5	10.6	9.0	7.3	6.1	6.0	5.8	5.5
4	5.3	5.2	5.2	5.5	4.4	4.4	5.3	8.3	11.8	11.7	12.4	12.3	12.5	12.3	11.1	10.8	10.3	9.8	8.3	6.7	6.5	6.3	5.8	5.5
5	5.3	5.0	4.8	4.8	5.0	4.5	5.6	8.1	10.5	I11.0 C	11.5	13.0	12.3	12.0	11.7	10.7	10.3	9.3	9.2	7.3	6.6	6.3	5.5	5.5
6	5.7	5.6	5.4	5.3	5.0	5.0	6.0	9.0	U10.8 R	10.8	11.8	11.7	12.2	12.0	11.2	11.7	11.2	11.0	9.2	U8.3 S	7.3	6.9	7.0	6.6
7	6.5	6.3	5.8	5.9	5.9	5.8	6.4	9.3	10.0	12.2	12.8	12.8	J13.0 R	12.7 H	12.0	11.2	10.8	10.6	9.3	U7.9 S	U7.5 S	6.5	6.5	6.2
8	6.0	5.9	5.8	5.7	5.8	5.3	6.6	8.5	U10.3 R	11.5	12.3	12.8	12.5	11.9	11.5	11.4	10.8	10.0	9.5	9.0	I8.7 S	7.0	6.0	6.0
9	6.3	6.5	U6.0 S	6.1	6.3	6.3	7.2	9.5	11.2	12.1	U13.3 R	13.3	I12.9 R	12.0	11.3	10.9	11.2	10.3	9.3	U8.1 S	U7.3 S	6.3	6.1	6.1
10	6.1	5.8	5.7	5.8	5.8	5.3	6.8	9.6	11.3	11.1	12.6	U13.5 R	13.7	12.8	12.4	11.8	10.8	10.5	9.1	I8.3 S	7.0	6.8	U7.3 S	6.3
11	6.0	5.4	5.3	5.3	5.3	5.2	5.8	U7.3 S	8.3 H	9.4	11.5	12.5	12.2	12.1	12.0	11.5	10.3	10.2	8.8	7.2	6.9	6.8	5.5	5.6
12	5.7	5.9	5.3	4.6	4.7	4.6	5.7	8.0	8.2	8.6	11.1	11.1	11.7	11.7	10.8	9.8	9.5	8.7	7.5	6.6	6.3	5.8	5.6	5.3
13	I5.3 S	5.0	5.2	4.9	5.0	4.9	5.8	7.3	C	C	C	C	C	C	C	C	C	C	C	I7.9 S	U7.8 S	6.3	5.8	5.4
14	5.5	5.5	5.3	5.3	5.0	5.0	7.0	8.0	8.4	10.1	11.7	11.3	11.3	11.2	10.8	10.8	10.3	10.0	8.6	6.9	6.8	6.0	5.8	5.9
15	5.7	5.3	5.3	5.3	5.3	5.3	6.6	8.0	U8.6 R	U10.0 R	10.8	11.4	11.7	11.5	10.3	10.0	U9.8 S	9.5	8.6	U7.4 S	7.4	6.8	6.5	6.3
16	6.0	5.8	5.5	5.3	5.1	5.1	5.8	7.2	8.3	9.8	10.9	11.9	11.3	11.1	11.8	11.8	9.8	10.3	U8.8 S	7.0	6.9	6.8	6.9	U6.1 S
17	U6.2 S	6.0	U5.7 S	I5.4 F	5.1	4.3	4.5	6.5	7.0 Z	7.9	9.7	10.1	11.4	U10.8 R	9.7	9.8	10.2	9.2	U8.0 S	7.3	6.6	5.8	5.8	5.6
18	5.4	5.3	5.2	5.1	5.0	5.2	6.8	U10.0 R	9.8	U10.8 R	12.0	10.8	11.8	10.8	10.3	9.8	9.3	9.4	U8.5 S	6.4	6.5	6.5	5.5	5.3
19	U5.3 S	5.3	5.3	5.0	4.9	5.0	6.8	9.1	U10.3 R	10.6	11.4	11.1	11.0	10.7	10.6	9.8	9.5	9.8	8.8	7.3	6.8	6.7	6.3	6.0
20	6.0	5.8	5.5	5.6	5.3	5.3	7.1	8.0	11.0	11.6	11.8	11.3	10.9	11.3	11.3	9.6	9.3	9.6	8.7	7.5	6.9	6.9	6.7	6.5
21	6.2	6.0	5.9	6.0	5.8	5.3	U8.1 S	U9.3 S	9.6	11.2	11.9	11.5	11.9	11.7	11.5	10.3	10.3	9.8	8.9	U8.0 S	U7.7 S	7.0	7.0	U6.1 S
22	6.0	6.3	6.5	5.8	4.9	5.2	8.0	10.3	10.4	11.3	11.7	12.5	11.7	11.4	11.2	10.4	10.5	10.3	9.8	7.9	U7.7 S	U7.1 S	6.8	6.3
23	6.1	6.0	6.2	6.1	5.5	5.9	J8.8 S	9.4	J11.0 R	11.1	11.4	11.7	11.8	11.7	11.8	11.5	11.2	10.4	9.8	9.0	I8.1 S	7.0	6.9	6.5
24	6.1	6.0	5.8	5.5	5.5	5.6	J8.3 S	9.8	10.5	12.1	12.3	12.2	12.2	12.0	11.7	11.8	11.7	10.8	9.8	8.5	J8.3 S	U7.5 S	U7.4 S	6.5
25	6.3	5.9	5.7	5.5	5.3	5.6	9.3	9.5	11.0	12.2	11.4	12.0	11.8	12.5	12.3	11.2	10.6	10.5	U10.3 S	U8.0 S	I7.8 S	7.2	6.8	6.7
26	6.5	6.6	6.5	6.1	6.0	6.0	9.1	I9.6 R	10.8	12.4	12.8	12.5	12.9	12.5	11.8	11.2	10.3	10.0	9.4	U8.3 S	I7.8 S	U7.3 S	7.3	6.3
27	6.3	6.0	6.1	5.8	6.0	6.5	8.3	10.1	10.2	11.7	11.4	12.1	12.5	11.9	11.8	11.3	10.8	10.8	10.1	U8.5 S	I8.2 S	7.6	7.1	U7.3 S
28	U7.4 S	U7.4 S	7.0	6.9	6.7	7.0	9.5	10.5	11.0	11.8	12.1	11.8	12.1	12.0	11.6	10.8	9.8	10.1	10.1	8.5	S	S	S	S
29	U8.0 S	6.4	5.8	5.7	5.8	6.2	9.1	9.8	10.5	11.6	12.5	12.4	12.2	I12.6 R	12.3	11.3	10.7	9.8	8.8	I7.7 S	U7.3 S	I7.4 S	7.3	6.8
30	6.3	6.3	6.0	5.8	5.8	6.1	8.1	9.3	10.7	11.5	11.5	11.3	11.8	12.5	12.1	10.9	10.0	10.7	9.7	8.8	U8.0 S	U7.6 S	7.3	6.3
31	6.8	6.8	6.3	6.0	6.0	6.1	7.4	8.0	9.4	10.4	11.8	11.2	10.3	10.7	10.6	10.3	9.3	9.4	9.2	9.0	I7.5 S	U7.0 S	U7.3 S	U7.1 S
No.	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30	30	30	31	30	30	30	30
Median	6.0	5.9	5.7	5.5	5.3	5.3	6.8	9.0	10.4	11.2	11.8	12.0	12.2	12.0	11.6	11.0	10.3	10.2	9.0	7.9	7.3	6.8	6.5	6.2
U.Q	6.3	6.3	6.0	5.8	5.8	5.9	8.1	9.6	10.8	11.8	12.4	12.5	12.5	12.5	12.0	11.5	10.8	10.5	9.5	8.3	7.8	7.0	7.0	6.5
L.Q	5.7	5.4	5.3	5.3	5.0	5.0	5.8	8.0	9.6	10.4	11.4	11.3	11.7	11.4	11.1	10.3	9.8	9.8	8.7	7.3	6.8	6.3	5.8	5.6
Q.R	0.6	0.9	0.7	0.5	0.8	0.9	2.3	1.6	1.2	1.4	1.0	1.2	0.8	1.1	0.9	1.2	1.0	0.7	0.8	1.0	1.0	0.7	1.2	0.9

foF2

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 1

IONOSPHERIC DATA

Mar. 1960 | foF1 | 135° E Mean Time (G.M.T. + 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' 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													L	L	L									
3										L	L	L	L	L	L									
4											L	L	L											
5															L	L								
6									L			L												
7												L												
8													L											
9											L	L		L	L									
10											L	L		L										
11											L		L											
12										L	L		L	L										
13									C	C	C	C	C	C	C	C								
14											L	L	L	L										
15											L	L	4.5	L	L									
16										L		L	L	L										
17								L	L	L	L	L		L										
18											L	L		L										
19										L														
20											L		L	L	L									
21										L	L		L	L										
22											L	L	L	L										
23										L	L	L	L	L										
24									L		L	L	L	L										
25											L		L	L										
26									L	L		L	L	L										
27									L				L		L									
28											L	L	L	L	L									
29												L	L	L										
30												L	L	L										
31											L	L	L											
No.													1											
Median													4.5											

foF1

Sweep 1.0 Mc to 20.7 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 2

IONOSPHERIC DATA

Mar. 1960 | foE | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' 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								2.00	2.70	3.05	3.25 H	3.35	3.45	3.35	3.30	3.00	2.50	S						
2								2.15	2.65	I 2.80 A	I 3.10 A	3.45	3.50	3.40	3.20	2.95	2.45	S						
3								2.20	2.65	I 2.80 A	I 3.20 A	3.40	3.30	3.40	3.20	2.90	A	A						
4								2.00	2.45	2.75	2.70	3.40	3.40	3.30	3.20	2.95	2.55	S						
5								A	A	I 3.05 C	I 3.20 A	3.35	3.30	3.35	3.10	2.90	2.55	S						
6								2.10 H	2.70	3.00	3.35	3.40	3.45	3.40	3.25	3.00	2.55	S						
7								2.35 H	2.75	3.10	3.25	3.35	3.20	3.35	3.20	3.05	2.60	S						
8								2.30	2.75	3.10 H	3.40 H	3.50	3.45	3.40	3.20	3.00	S	S						
9								I 2.40 S	2.70	3.05	3.20	3.25	3.50	3.40	3.35	3.05	2.60	S						
10								2.35	2.75	3.10	3.30	3.35	3.45	3.25	3.25	3.00	2.55	S						
11								2.45	2.90	3.05	3.10	3.45	3.50	3.45	3.30	3.00	2.55	1.90						
12								2.35	2.80	3.00	3.25	3.30	3.45	3.50	3.30	3.00	2.50	2.00						
13								2.25	C	C	C	C	C	C	C	C	C	C						
14							1.90	2.45	2.90	3.25	3.35	3.40	3.55	3.45	3.30	3.05	2.50	S						
15							1.80	2.45	2.95 H	3.10	3.35	3.45	3.40	3.50	3.45	3.10	2.65	S						
16							1.80	2.45	2.85	3.15	3.25	3.00	I 3.40 A	3.40	I 3.25 A	3.00	2.55	S						
17							S	2.35	2.75	3.25	3.45	3.30	I 3.50 A	3.45	3.30	3.00	2.70	2.10						
18							1.90	2.50	2.90	3.25	3.45	I 3.30 A	3.45	3.35	3.30	2.95	I 2.70 A	A						
19							2.00	2.50	I 2.85 A	3.10	3.15	I 3.25 A	I 3.45 A	3.40	3.40	3.00	2.60	2.05						
20							2.00	2.60	3.10	3.35	3.50	3.55	3.50	3.50	3.35	3.00	2.70	2.10						
21							2.25	2.60	3.00	3.25	3.40	3.50	3.45	3.45	3.40	3.05	2.65	A						
22							2.00	2.60	3.05	3.40	3.50	I 3.50 A	I 3.60 A	3.50	3.40	3.10	2.70	2.00						
23							2.05	2.70	3.05	3.35	3.50	3.55	3.60	3.45	3.45	3.20	2.70	2.25						
24							1.95	2.65	3.05	3.40	3.55	3.60	3.55	3.50	3.45	3.20	2.85	2.25						
25							2.05	2.65	3.10	3.35	3.40	3.50	3.50	3.50	3.50	3.20	2.70	2.20						
26							2.00	2.60	3.00	3.20	3.45	3.55	3.55	3.50	3.40	3.20	2.90	2.20						
27							2.00	2.70	3.20	3.45	3.50	3.50	3.65	3.55	3.50	3.25	2.90	2.35						
28							2.15	2.70	3.25	3.45	3.55	3.55	I 3.55 A	3.60	3.40	3.20	2.90	2.35						
29							2.40	2.85	3.05	3.40	3.50	3.55	3.75	3.60	3.45	3.20	B	B						
30							2.25	2.90	3.30	3.40	3.55	3.60	I 3.50 B	3.50	3.55	3.35	2.95	2.45						
31							2.10	2.70	3.10	3.40	3.50	3.60	3.50	3.55	3.45	3.25	2.85	2.20						
No.							17	30	29	30	30	30	30	30	30	30	27	14						
Median							2.00	2.45	2.90	3.20	3.35	3.40	3.50	3.45	3.30	3.00	2.65	2.20						

foE

Sweep 1.0 Mc to 20.7 Mc in 1 min sec in automatic operation.

The Radio Research Laboratories, Japan.

W 3

IONOSPHERIC DATA

Mar. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Wakkanai | Lat. 45° 23.6' N, Long. 141° 41.1' 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	E	E	J1.8	E	E	E	E	G	G	G	G	2.9 G	3.1 G	3.5	J4.3	G	G	S	E	E	E	E	E	E
2	E	J2.8	E	2.0	E	E	E	G	G	J3.8	3.5	3.3 G	G	G	G	G	G	S	E	E	E	E	E	E
3	E	2.3	E	E	E	E	E	G	G	3.5	J3.8	3.5	G	3.1 G	3.1 G	3.1	3.1	J3.3	J3.0	E	E	J4.0	J2.7	2.5
4	E	2.0	2.3	E	E	E	E	2.4	3.0	3.7	J4.2	G	G	G	G	G	G	S	E	E	E	E	E	E
5	E	J2.8	E	E	E	E	E	2.6	3.2	C	3.5	G	2.8 G	2.6 G	2.5 G	G	G	S	E	E	E	E	E	E
6	E	1.8	1.9	1.8	2.4	E	E	G	G	G	3.5	G	3.0 G	G	G	G	G	S	E	E	E	E	E	E
7	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	J2.8	S	J2.8	J2.5	E	E	E	E
8	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	S	S	E	E	E	E	E	E
9	E	E	E	J2.3	E	E	E	S	3.0	G	3.5	G	G	G	G	G	G	S	E	E	E	E	E	2.0
10	2.1	2.1	E	E	E	E	E	G	G	G	G	G	2.2 G	G	G	G	G	S	E	E	E	E	E	E
11	E	E	E	E	3.1	E	E	G	G	4.5	J3.8	G	G	G	G	G	G	G	S	E	E	E	E	E
12	E	E	J1.8	E	E	E	E	G	3.4	3.4	G	G	G	G	G	G	2.8	G	E	E	E	E	J2.8	E
13	J5.0	J5.0	J2.8	J2.8	E	E	E	G	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E
14	E	E	E	E	E	E	G	G	3.5	4.5	G	G	G	G	G	G	G	S	E	E	E	E	E	J2.8
15	E	J1.7	J2.5	J1.8	J1.8	E	G	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
16	E	E	E	E	1.8	E	G	G	G	3.7	3.7	J4.2	3.6	3.3 G	J4.3	G	G	S	E	E	E	E	E	E
17	E	2.4	E	2.4	E	E	S	G	G	3.5	G	G	4.0	3.5	G	G	G	G	E	E	E	E	E	E
18	E	E	E	E	E	E	G	G	3.4	G	G	4.2	G	G	G	G	J2.5	J3.3	E	E	E	E	E	E
19	E	E	E	E	E	E	G	G	4.0	4.0	4.5	3.5	3.5	G	J3.5	G	G	G	E	E	E	E	E	E
20	E	J2.8	J2.8	E	E	E	G	G	G	G	G	G	G	G	2.6 G	G	G	G	E	E	E	E	E	E
21	E	E	E	E	E	E	G	G	G	G	G	G	G	2.6 G	3.3 G	3.0 G	G	J2.8	J2.8	E	E	E	E	E
22	E	E	E	E	J1.8	E	G	G	G	G	G	4.2	4.0	3.3 G	3.7	G	G	G	E	E	E	E	E	E
23	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	J7.1	G	G	E	E	E	E	E	E
25	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
26	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
27	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
28	E	E	E	E	E	E	G	G	G	G	G	G	4.3	G	G	G	G	G	E	E	E	E	E	E
29	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	B	B	2.1	J4.2	J2.8	E	E	E
30	E	E	E	E	E	E	G	G	G	G	G	G	B	G	G	G	G	G	E	E	E	E	E	E
31	E	E	E	E	E	E	G	G	G	G	G	G	G	3.1 G	2.6 G	G	G	G	E	E	E	E	E	E
No.	31	31	31	31	31	31	30	31	30,	29	30	30	29	30	30	30	28	17	29	31	31	31	31	31
Median	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
U.Q	E	1.8	E	E	E	E	G	G	G	3.5	3.5	G	2.9	2.6	2.6	G	G	G	E	E	E	E	E	E
L.Q	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
Q.R																								

foEs

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 4

IONOSPHERIC DATA

Mar. 1960 | f_bE_s | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' 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			E									2.7G	2.5G	2.6	2.4			S						
2		E		E						3.1	3.0	2.9G						S						
3		E								3.2	3.4	2.7		2.4G	2.3G	2.4	2.6	2.6	E			2.8	2.5	E
4		E	E					G	G	G	G							S						
5		E						2.4	3.0		3.5		2.6G	2.5G	2.4G			S						
6		E	E	E	E						2.9		2.4G					S						
7																	G	S	E	E				
8																	S	S						
9				E				S	G		G							S						E
10	E	E											2.1G					S						
11					E					G	G								S					
12			E						G	G							G						2.4	
13	2.6	E	E	E					C	C	C	C	C	C	C	C	C	C	C					
14									G	G								S						E
15		E	E	E	E													S						
16					E					G	G	G	3.6	2.7G	3.5			S						
17		E		E			S			G			3.5	2.9										
18									G			3.5					2.7	2.3						
19									3.0	G	4.5	3.5	3.5		2.5									
20		E	E												2.4G									
21														2.5G	2.5G	2.3G		2.4	2.6					
22					E							3.6	3.6	3.1G	3.0									
23																								
24																G								
25																								
26																								
27																								
28													3.8											
29																	B	B	2.0	4.2	2.5			
30													B											
31														3.0G	2.5G									
No.	2	10	7	6	5			2	7	9	9	7	9	8	9	3	4	3	4	2	1	1	2	3
Median	E	E	E	E	E			G	G	G	2.9	2.7	3.5	G	G	G	G	2.4	E	E	2.5	2.8	2.4	E

f_bE_s

Sweep 1.0 Mc to 20.7 Mc in 1 min ~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 5

IONOSPHERIC DATA

Mar. 1960 | f-min | 135° E Mean Time (G.M.T.+ 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' 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	E 1.60s	E 1.40s	E 1.40s	E 1.20s	E	E 1.60s	E 1.60s	1.60	1.70	1.80	1.70	1.90	1.75	1.70	1.80	1.90	1.70	E 2.00s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
2	E 1.60s	E 1.30s	E 1.20s	E	E 1.20s	E 1.60s	E 1.60s	1.60	1.70	1.70	1.80	1.90	2.00	1.80	1.90	1.70	1.70	E 2.00s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.80s	E 1.60s
3	E 1.60s	E 1.35s	E	E	E	E 1.60s	E 1.60s	1.60	1.65	1.70	1.70	1.80	1.85	1.70	1.70	1.60	1.70	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
4	E 1.60s	E	E	E	E	E 1.60s	E 1.60s	1.60	1.70	1.70	1.80	2.10	E 2.40s	E 2.40s	1.80	1.80	1.90	E 2.00s	E 1.60s	E 1.60s	E 1.60s	E 1.85s	E 1.60s	E 1.70s
5	E 1.60s	E 1.20s	E 1.20s	E 1.40s	E 1.10s	E 1.60s	E 1.60s	1.70	1.80	I 1.75C	E 2.40s	2.00	2.10	1.90	1.85	2.00	1.80	E 2.00s	E 1.60s	E 1.60s	E 1.80s	E 1.80s	E 1.60s	E 1.60s
6	E 1.60s	E 1.40s	E	E	E	E 1.60s	E 1.60s	1.60	1.70	1.85	2.00	E 2.50s	1.90	1.90	E 2.60s	2.00	2.00	E 2.00s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.80s
7	E 1.60s	E 1.40s	E 1.40s	E 1.40s	E	E 1.60s	E 1.60s	1.60	1.70	1.70	1.80	1.85	E 2.45s	1.90	E 2.40s	1.90	1.70	E 2.10s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
8	E 1.60s	E 1.40s	E 1.40s	E 1.30s	E 1.40s	E 1.60s	E 1.60s	1.70	2.10	1.70	E 2.40s	E 2.50s	E 2.50s	E 2.45s	E 2.40s	E 2.40s	E 2.70s	E 2.40s	E 1.70s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
9	E 1.60s	E 1.40s	E 1.40s	E	E 1.50s	E 1.60s	E 1.70s	E 2.50s	1.70	E 2.40s	E 2.40s	E 2.40s	E 2.45s	E 2.40s	E 2.40s	1.90	1.90	E 2.10s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
10	E 1.60s	E 1.40s	E 1.40s	E 1.40s	E	E 1.60s	E 1.60s	1.70	1.75	1.75	E 2.60s	E 2.40s	1.70	E 2.40s	E 2.40s	2.00	1.80	E 2.00s	E 1.70s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.80s
11	E 1.60s	E 1.60s	E 1.60s	E 1.20s	E	E 1.60s	E 1.60s	1.60	1.80	1.80	2.00	1.80	E 2.40s	1.90	1.90	2.00	1.70	1.60	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
12	E 1.60s	E 1.40s	E 1.40s	E	E 1.40s	E 1.60s	E 1.60s	1.60	1.60	1.90	2.00	2.00	E 2.40s	1.90	1.90	1.70	1.80	1.65	E 1.60s	E 1.60s	E 1.60s	E 1.80s	E 1.60s	E 1.60s
13	E 1.60s	E 1.40s	E	E	E 1.40s	E 1.60s	E 1.80s	1.60	C	C	C	C	C	C	C	C	C	C	C	E 1.70s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
14	E 1.60s	E 1.20s	E	E	E	E 1.60s	1.60	1.60	1.60	1.60	1.80	2.60	1.85	E 2.40s	2.00	2.00	1.70	E 2.40s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
15	E 1.60s	E 1.40s	E	E	E	E 1.60s	1.60	1.60	1.70	1.80	1.90	E 2.40s	E 2.40s	2.00	E 2.40s	1.70	1.70	E 2.10s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
16	E 1.60s	E 1.60s	E	E	E	E 1.60s	1.60	1.60	1.60	1.70	1.70	1.70	1.80	E 2.40s	2.10	2.00	1.70	E 2.10s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.70s	E 1.60s
17	E 1.70s	E 1.15s	E 1.40s	E	E	E 1.60s	E 1.90s	1.60	1.70	1.70	1.70	E 2.40s	1.85	1.90	1.70	1.70	1.70	E 1.75s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
18	E 1.60s	E 1.60s	E	E	E	E 1.60s	1.60	1.60	1.70	1.70	1.90	1.70	E 2.40s	1.70	E 2.40s	1.80	1.60	1.60	E 1.60s	E 1.65s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
19	E 1.70s	E 1.60s	E 1.40s	E	E	E 1.60s	1.60	1.60	1.60	1.70	1.85	1.90	1.90	1.80	1.90	1.70	1.70	1.70	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
20	E 1.60s	E	E	E	E	E 1.60s	1.60	1.70	1.60	1.85	1.75	E 2.40s	1.90	1.85	1.60	1.70	1.65	1.65	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
21	E 1.60s	E 1.60s	E 1.20s	E	E 1.40s	E 1.60s	1.60	1.70	1.80	1.80	1.80	1.80	E 2.40s	1.90	1.70	1.60	1.80	1.60	E 1.60s	E 1.60s	E 1.70s	E 1.70s	E 1.60s	E 2.40s
22	E 1.60s	E 1.40s	E 1.10s	E 1.30s	E	E 1.60s	1.70	1.70	1.70	1.80	2.00	1.95	2.20	1.90	1.90	1.85	1.80	1.70	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
23	E 1.60s	E 1.20s	E 1.40s	E	E	E 1.60s	1.60	1.70	1.60	1.75	1.95	1.90	E 2.40s	2.00	2.00	1.90	1.70	1.70	E 1.70s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
24	E 1.60s	E 1.60s	E 1.40s	E	E	E 1.60s	1.70	1.80	1.70	1.90	2.00	E 2.50s	E 2.40s	1.90	1.90	1.90	1.85	1.70	E 1.70s	E 1.65s	E 1.60s	E 1.80s	E 1.60s	E 1.60s
25	E 1.60s	E 1.60s	E	E	E	E 1.50s	1.70	1.65	1.70	1.80	1.80	E 2.50s	1.90	2.10	2.00	1.90	1.75	1.70	E 1.70s	E 1.80s	E 1.60s	E 1.65s	E 1.70s	E 1.70s
26	E 1.80s	E 1.60s	E	E	E	E 1.60s	1.70	1.70	1.70	1.80	2.00	E 2.50s	E 2.50s	2.20	E 2.50s	2.00	1.70	1.70	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
27	E 1.60s	E 1.40s	E	E	E	E 1.60s	1.60	1.60	1.60	1.80	2.00	E 2.60s	E 2.50s	2.00	2.00	1.90	1.70	1.70	E 1.70s	E 1.60s	E 1.60s	E 1.60s	E 1.70s	E 1.70s
28	E 1.60s	E 1.40s	E 1.10s	E	E	E 1.60s	1.70	1.70	1.80	1.90	1.80	E 2.50s	2.20	1.90	1.90	1.70	2.00	1.70	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.60s
29	E 1.60s	E 1.40s	E 1.40s	E	E	E 1.60s	1.80	1.85	1.90	2.00	1.90	E 2.40s	E 2.50s	2.50	2.50	2.50	3.10	2.80	E 1.60s	E 1.60s	E 1.60s	E 1.60s	E 1.80s	E 1.60s
30	E 1.60s	E 1.60s	E 1.20s	E 1.40s	E 1.40s	E 1.60s	1.70	2.00	1.90	E 2.50s	E 2.45s	E 2.50s	3.80	2.50	E 2.50s	E 2.40s	E 2.40s	1.70	E 1.60s	E 1.60s	E 1.70s	E 1.60s	E 1.60s	E 1.60s
31	E 1.60s	E 1.40s	E	E 1.30s	E	E 1.60s	1.60	1.85	E 2.40s	E 2.40s	E 2.45s	E 3.00s	E 2.50s	E 2.40s	2.00	1.80	1.90	1.70	E 1.70s	E 1.60s	E 1.60s	E 1.80s	E 1.90s	E 1.80s
No.	31	31	31	22	23	31	28	30	29	27	24	30	30	23	21	28	28	17	30	31	31	31	31	31
Median	E 1.60	E 1.40	E 1.20	E	E	E 1.60	1.60	1.60	1.70	1.80	1.80	E 2.25	E 2.30	1.90	1.90	1.90	1.70	1.70	E 1.60	E 1.60	E 1.60	E 1.60	E 1.60	E 1.60

f-min

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 6

IONOSPHERIC DATA

Mar. 1960 | (M3000)F2 | 135° E Mean Time (G.M.T.+ 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' 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	2.70	2.65	2.65	2.70	2.70	2.75	2.90	3.20	J2.95R	3.10	3.10	U3.10R	3.10	2.95	2.90	3.05	3.00	3.10	2.95	2.95	2.80	2.65	2.70	2.60
2	2.75	2.85	2.60	2.45	2.50	2.50	2.95	3.10	3.15	3.20	3.00	J2.95R	J2.95R	J2.95R	2.95	2.90	3.05	3.05	2.85	2.85	2.75	2.75	2.80	2.65
3	2.60	2.70	3.05	2.70	2.75	2.50	3.10	U3.20S	3.05	3.20	3.15	2.90	J3.05R	3.10	3.10	3.00	2.95	3.00	3.00	2.95	2.75	2.75	2.70	2.70
4	2.45	2.55	2.50	2.80	2.80	2.50	2.70	3.00	3.30	3.15	3.10	3.15	3.10	3.15	2.95	3.10	3.00	3.05	3.00	2.90	2.75	2.80	2.75	2.65
5	2.65	2.40	2.40	2.45	2.65	2.70	2.90	3.10	2.95	I3.10C	2.85	3.00	3.00	3.00	3.05	3.05	3.15	2.95	2.95	2.95	2.85	2.90	2.70	2.80
6	2.50	2.75	2.75	2.75	2.70	2.70	3.00	3.20	U3.15R	2.95	3.05	2.95	2.95	3.00	2.90	2.90	2.90	3.10	2.90	U2.90S	2.90	2.80	2.85	2.70
7	2.75	2.70	2.75	2.70	2.90	3.00	3.00	3.10	3.00	3.05	3.10	3.05	3.00	3.00H	3.00	2.95	2.95	3.00	3.05	U2.95S	U2.95S	2.85	2.90	2.80
8	2.85	2.85	2.85	2.70	2.90	3.00	3.05	3.25	U3.20R	3.05	3.10	3.05	3.10	2.95	2.95	3.00	3.00	2.90	2.85	2.95	I2.90S	2.85	2.65	2.60
9	2.55	2.60	U2.70S	2.70	2.60	2.60	2.70	2.85	2.95	3.10	U2.95R	3.00	I3.05R	2.95	2.95	2.95	3.05	3.00	2.90	U2.90S	U3.10S	2.75	2.50	2.80
10	2.80	2.60	2.65	2.70	2.70	2.75	2.95	2.95	3.00	2.90	3.10	U3.05R	3.00	3.05	3.05	3.05	2.95	3.05	3.00	I3.00S	2.85	2.80	U2.85S	2.90
11	2.85	2.70	2.60	2.50	2.50	2.55	3.05	U3.10S	2.95H	2.95	2.95	3.10	3.05	3.00	3.00	3.05	2.85	2.90	3.05	2.85	2.80	2.95	2.60	2.55
12	2.60	2.75	2.85	2.45	2.30	2.45	2.80	3.15	3.15	2.95	3.15	3.10	3.00	3.05	3.05	3.10	3.05	3.15	3.05	2.85	2.85	2.95	2.90	2.95
13	I2.80S	2.70	2.70	2.55	2.70	2.75	3.10	3.15	C	C	C	C	C	C	C	C	C	C	C	I2.85S	U2.95S	3.00	2.85	2.85
14	2.80	2.85	2.85	2.75	2.80	2.75	3.20	3.40	3.20	3.00	3.25	3.05	3.00	2.90	3.00	2.85	2.95	3.00	3.05	2.90	2.95	2.70	2.70	2.85
15	2.80	2.85	2.60	2.65	2.75	2.90	3.25	3.30	U3.15R	U2.90R	3.05	3.00	2.95	2.95	3.10	3.00	U2.95S	3.05	3.10	U2.90S	2.90	2.65	2.75	2.65
16	2.65	2.60	2.60	2.60	2.50	2.50	3.10	3.20	3.05	3.05	2.95	2.95	2.85	2.85	2.90	3.00	2.75	2.95	U3.00S	2.70	2.70	2.70	2.75	U2.85S
17	U2.65S	2.65	U2.45S	I2.45T	2.45	2.30	2.80	2.75	2.70Z	3.05	3.05	3.05	3.00	U3.15R	3.00	2.85	3.05	3.05	U3.05S	2.80	2.85	2.85	2.75	2.75
18	2.70	2.65	2.55	2.65	2.55	2.60	2.95	U3.20R	2.85	U2.90R	3.15	3.05	2.90	3.05	3.10	3.05	3.00	3.10	U3.05S	2.80	2.85	2.75	2.90	2.75
19	U2.65S	2.75	2.70	2.75	2.75	2.75	3.10	3.15	U3.10R	3.10	3.05	2.95	3.00	3.00	3.00	2.90	2.90	2.95	3.05	3.00	2.85	2.70	2.75	2.65
20	2.85	2.60	2.70	2.80	2.75	2.85	3.05	3.00	3.15	3.10	3.15	3.00	3.00	2.95	3.00	2.95	3.00	2.90	3.00	2.80	2.75	2.75	2.85	2.75
21	2.75	2.70	2.70	2.85	2.80	2.85	U3.10S	U3.10S	3.00	3.10	3.00	2.95	3.00	2.95	2.95	2.85	3.00	2.95	2.95	U2.80S	U2.90S	2.90	2.85	U2.65S
22	2.50	2.55	2.80	2.95	2.55	2.75	3.05	3.25	3.10	3.10	3.05	3.10	2.95	2.85	2.95	2.90	2.90	2.90	3.05	2.90	U2.85S	U2.90S	2.90	2.70
23	2.60	2.70	2.75	2.90	2.75	2.80	J3.05S	3.10	J3.10R	3.10	2.85	2.90	2.90	2.90	2.90	2.85	2.95	2.95	2.95	2.90	I2.90S	2.85	2.85	2.75
24	2.70	2.70	2.80	2.80	2.80	2.80	J3.20S	3.05	3.05	3.05	3.10	2.85	2.90	2.85	2.80	2.90	2.90	2.95	3.05	2.90	J2.85S	U2.90S	U2.85S	2.75
25	2.70	2.65	2.55	2.60	2.55	2.60	2.90	3.00	2.95	2.95	2.80	2.90	2.85	2.95	2.85	2.90	2.90	3.15	U2.90S	U2.85S	I2.80S	2.95	2.75	2.65
26	2.60	2.70	2.75	2.75	2.70	2.70	3.05	I3.00R	2.85	3.05	3.00	2.95	2.95	3.05	2.90	2.75	3.00	2.90	2.95	U2.90S	U2.85S	U2.75S	2.75	2.70
27	2.60	2.55	2.70	2.65	2.80	2.75	3.15	3.15	2.95	2.90	2.90	2.90	2.90	2.80	2.85	2.85	2.85	3.00	2.95	U2.80S	I2.85S	2.80	2.70	U2.60S
28	U2.65S	U2.75S	2.65	2.75	2.70	2.70	3.00	3.10	3.00	3.05	2.90	2.90	2.90	2.85	2.75	2.80	2.80	2.70	2.80	2.90	S	S	S	S
29	U2.85S	2.80	2.60	2.45	2.55	2.55	3.15	2.85	2.90	2.95	2.90	2.80	2.75	I2.85R	2.85	2.85	2.95	2.85	2.95	I2.60S	U2.75S	I2.70S	2.85	2.70
30	2.65	2.60	2.60	2.60	2.60	2.65	3.00	3.00	2.85	2.95	2.85	2.85	2.75	2.85	2.90	2.85	2.75	2.85	2.85	2.80	U2.80S	U2.80S	2.75	2.65
31	2.60	2.65	2.55	2.50	2.50	2.60	3.10	2.85	2.85	2.95	2.90	2.90	2.75	2.75	2.85	2.85	2.85	2.85	2.75	2.75	I2.65S	U2.45S	U2.45S	U2.45S
No.	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30	30	30	31	30	30	30	30
Median	2.65	2.70	2.70	2.70	2.70	2.70	3.05	3.10	3.00	3.05	3.05	3.00	3.00	2.95	2.95	2.90	2.95	3.00	3.00	2.90	2.85	2.80	2.75	2.70

(M3000)F2 Sweep 1.0 Mc to 20.7 Mc in 1 min sec in automatic operation.

The Radio Research Laboratories, Japan.

W 7

IONOSPHERIC DATA

Mar. 1960 | (M3000)F1 | 135° E Mean Time (G.M.T.+ 9h.) | Wakkanai | Lat. 45° 23.6' N, Long. 141° 41.1' 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													L	L	L									
3										L	L	L	L	L	L									
4											L	L	L											
5															L	L								
6									L			L												
7												L												
8													L											
9											L	L		L	L									
10											L	L		L										
11											L		L											
12										L	L		L	L										
13									C	C	C	C	C	C	C	C								
14											L	L	L	L										
15											L	L	3.75	L	L									
16										L		L	L	L										
17								L	L	L	L	L		L										
18											L	L		L										
19										L														
20											L		L	L	L									
21										L	L		L	L										
22											L	L	L	L										
23										L	L	L	L	L										
24									L		L	L	L	L										
25											L		L	L										
26									L	L		L	L	L										
27									L				L		L									
28											L	L	L	L	L									
29												L	L	L										
30												L	L	L										
31											L	L	L											
No.													1											
Median													3.75											

(M3000)F1

Sweep 1.0 Mc to 20.7 Mc in 1 min/~~sec~~ in automatic operation.

The Radio Research Laboratories, Japan.

W 8

IONOSPHERIC DATA

Mar.1960 | h'F2 | 135° E Mean Time (G.M.T.+ 9h.) | Wakkanai | Lat. 45° 23.6' N, Long. 141° 41.1' 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													L	L	L									
3										L	L	L	L	L	L									
4											L	L	L											
5															L	L								
6									L			L												
7												L												
8													L											
9											L	245		L	L									
10											L	275		L										
11											L		245											
12										295	270		I260L	255										
13									C	C	C	C	C	C	C	C								
14											260	260	250	250										
15											260	270	260	250	I250L									
16										240		270	I250L	L										
17								315	L	L	I260L	240		245										
18											L	L		L										
19										L														
20											250		255	I260L	260									
21										265	260		275	260L										
22											L	275	I255L	L										
23										L	L	L	L	L										
24									L		L	L	L	L										
25											L		L	L										
26									L	L		L	L	L										
27									L				L		L									
28											L	L	I255L	L	L									
29												L	L	L										
30												L	L	L										
31											I285L	265	L											
No.								1		3	7	8	9	6	2									
Median								315		265	260	270	255	250	U>255									

h'F2

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 9

IONOSPHERIC DATA

Mar. 1960 | h'F | 135° E Mean Time (G.M.T. + 9h.) | Wakkanai | Lat. 45° 23.6' N | Long. 141° 41.1' 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	290	280	310	280	255	235	225	225	235	235	230	225	225	220	225H	235	240	225	215	250	260	295	280	300
2	260	250	280	315	300	330	220	235	230	225	225	225	230	240	225	230	240	225	220	240	260	265	275	310
3	315	290	240	270	250	335	240	230	230	230	235	220	215	220	235	230H	240	235	220	230	240	I 290A	305	290
4	340	320	310	275	220	310	230	225	245	240	240	220	230	220	235	240	240	235	215	225	260	260	285	325
5	320	340	325	335	280	260	250	225	235	I 220C	230	230	240	230	230	235	240	240	240	225	240	250	290	300
6	320	300	275	270	260	305	250	230	230	230	235	220	225	225	235	220	235	230	220	245	250	260	260	290
7	285	265	260	290	260	240	240	225	210	220	235	220	240	220H	240	230	240	235	225	245	240	250	270	270
8	285	280	270	275	250	250	235	225	235	220	220	230	220	220	230	240	245	240	230	250	240	245	285	310
9	320	310	300	280	300	290	260	240	230	220H	230	230	230	230	235	245	245	245	230	240	240	260	300	300
10	295	310	290	290	280	260	260	230	240	230	240	210	240	210	230	240	240	240	230	250	245	260	270	250
11	270	285	345	325	320	300	245	240	240	235	225	225	220	225	245	240	240	230	215	245	275	270	305	320
12	320	270	260	300	360	350	275	250	235	210	210	240	220	220	235	230	240	230	230	245	250	260	285	290
13	305	310	310	315	295	260	240	225	C	C	C	C	C	C	C	C	C	C	C	250	240	240	260	270
14	290	280	265	265	250	270	240	220	230	230	240	230	215	220	225	240	245	240	225	235	245	285	290	285
15	275	275	305	315	285	270	230	225	230	205H	240	220	220	230	225	225	245	245	230	240	250	265	270	290
16	300	305	340	320	340	355	240	235	245	235	230	230	235	230	250	250	250	240	225	250	290	270	285	260
17	290	300	310	350	335	375	290	270	240	240	225	230	230	230	230	225	240	240	230	240	260	250	295	270
18	310	280	310	280	300	305	260	240	235	225	225	225	215	230	220	240	245	240	220	240	260	250	275	285
19	310	300	290	260	250	295	250	245	230	240	250	220	240	220	245	235	240	240	225	235	250	285	275	300
20	270	310	310	265	250	250	235	225	240	230	240	230	225	220	225	230	240	240	235	235	260	270	270	270
21	290	290	275	250	250	285	245	225	240	220	225	235	210	210	220	240	250	240	240	235	250	260	265	290
22	335	290	260	225	250	295	250	240	240	235	230	220	225	230	235	240	240	245	235	235	250	260	250	285
23	310	290	280	250	250	280	240	230	240	225	220	220	225	215	230	240	240	240	245	235	235	245	270	270
24	280	270	270	255	250	275	240	240	235	220	220	225	225	215	240	235	245	240	230	245	260	260	250	250
25	270	285	320	325	325	345	240	225	230	230	230	230	215	215	245	240	260	245	240	235	255	250	290	290
26	305	290	250	250	260	295	240	225	225	220	230	220	220	220	240	245	240	250	240	240	260	260	260	270
27	300	310	275	285	265	255	230	240	230	220	215H	215H	230	235	220	240	250	245	240	240	260	260	290	300
28	295	270	275	265	260	290	240	230	240	240	225	220	215	215	205	235	240	250	250	245	270	275	310	290
29	230	245	290	340	340	310	235	245	245	240	240	230	245	210	240	240	250	245	250	315A	275	280	260	265
30	245	290	290	300	310	300	240	245	245	240	230	230	220	210	250	240	250	260	245	250	250	255	260	270
31	310	275	315	320	330	320	250	250	240	230	240	230	240	240	240	240	240	260	260	260	260	355	350	325
No.	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31
Median	295	290	290	280	265	295	240	230	235	230	230	225	225	220	235	240	240	240	230	240	250	260	275	290

h'F

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

Mar. 1960 | *h'Es* | 135° E Mean Time (G.M.T. + 9h.) | **Wakkanai** | Lat. 45° 23.6' N, Long. 141° 41.1' 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	E	E	105	E	E	E	E	G	G	G	G	105	105	105	105	G	G	S	E	E	E	E	E	E
2	E	105	E	105	E	E	E	G	G	110	110	110	G	G	G	G	G	S	E	E	E	E	E	E
3	E	105	E	E	E	E	E	G	G	110	110	110	G	105	105	105	105	105	105	E	E	110	110	110
4	E	105	105	E	E	E	E	125	120	115	110	G	G	G	G	G	G	S	E	E	E	E	E	E
5	E	110	E	E	E	E	E	115	110	C	110	G	105	105	110	G	G	S	E	E	E	E	E	E
6	E	105	100	100	100	E	E	G	G	G	110	G	105	G	G	G	G	S	E	E	E	E	E	E
7	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	100	S	100	100	E	E	E	E
8	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	S	S	E	E	E	E	E	E
9	E	E	E	110	E	E	E	S	150	G	145	G	G	G	G	G	G	S	E	E	E	E	E	110
10	110	105	E	E	E	E	E	G	G	G	G	G	105	G	G	G	G	S	E	E	E	E	E	E
11	E	E	E	E	110	E	E	G	G	115	115	G	G	G	G	G	G	G	E	E	E	E	E	E
12	E	E	105	E	E	E	E	G	125	125	G	G	G	G	G	G	120	G	E	E	E	E	110	E
13	110	105	105	105	E	E	E	G	C	C	C	C	C	C	C	C	C	C	C	E	E	E	E	E
14	E	E	E	E	E	E	G	G	135	130	G	G	G	G	G	G	G	S	E	E	E	E	E	110
15	E	105	105	100	100	E	G	G	G	G	G	G	G	G	G	G	G	S	E	E	E	E	E	E
16	E	E	E	E	105	E	G	G	G	120	120	110	110	110	110	G	G	S	E	E	E	E	E	E
17	E	115	E	105	E	E	S	G	G	140	G	G	110	105	G	G	G	G	E	E	E	E	E	E
18	E	E	E	E	E	E	G	G	120	G	G	110	G	G	G	G	105	110	E	E	E	E	E	E
19	E	E	E	E	E	E	G	G	115	120	115	110	110	G	105	G	G	G	E	E	E	E	E	E
20	E	110	105	E	E	E	G	G	G	G	G	G	G	G	105	G	G	G	E	E	E	E	E	E
21	E	E	E	E	E	E	G	G	G	G	G	G	G	110	105	105	G	100	100	E	E	E	E	E
22	E	E	E	E	110	E	G	G	G	G	G	115	115	115	115	G	G	G	E	E	E	E	E	E
23	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	100	G	G	E	E	E	E	E	E
25	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
26	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
27	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
28	E	E	E	E	E	E	G	G	G	G	G	G	110	G	G	G	G	G	E	E	E	E	E	E
29	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	B	B	120	115	115	E	E	E
30	E	E	E	E	E	E	G	G	G	G	G	G	B	G	G	G	G	G	E	E	E	E	E	E
31	E	E	E	E	E	E	G	G	G	G	G	G	G	105	105	G	G	G	E	E	E	E	E	E
No.	2	10	7	6	5			2	7	9	9	7	9	8	9	3	4	3	4	2	1	1	2	3
Median	110	105	105	105	105			120	120	120	110	110	110	105	105	105	105	105	100	110	115	110	110	110

h'Es

Sweep 1.0 Mc to 20.7 Mc in 1 ~~sec~~ min in automatic operation.

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

Mar. 1960

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Wakkanai

Lat. 45° 23.6' N
Long. 141° 41.1' 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									l	l	l	l									
2		f		f						l	l	l										f	f2	f
3		f								l	l	l		l	l	l	l	l	f			f	f2	f
4		f	f					C	C	C	C													
5		f						l	l		l		l	l	l									
6		f	f	f	f						l		l				l		f	f				
7																								
8																								f
9				f					h		h													
10	f	f											l											
11					f					C	C												f	
12			f						C	C							C							
13	f	f	f	f																				f
14									h	h														
15		f	f	f	f																			
16					f					C	C	C	l	l	l									
17		f		f						h			l	l										
18									C			l					l	l						
19									l	C	C	l	l		l									
20		f2	f												l									
21														l	l	l		l	f					
22					f							l	l	l	l									
23																l								
24																								
25																								
26																								
27																								
28													l						f	f2	f			
29																								
30														l	l									
31																								
No.																								
Median																								

Types of Es

Sweep 1.0 Mc to 20.7 Mc in 1 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

W 12

IONOSPHERIC DATA

Mar. 1960 | foF2 | 135° E Mean Time (G.M.T. + 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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	6.4	6.3	5.5	6.0	6.0	5.0[H]	5.8	8.8	11.3	13.0	14.0	13.6	12.7	12.4	11.9	11.7	11.6	11.1	9.1	7.6	7.2	6.9	7.2	6.5
2	6.7	6.2	5.4	5.0	5.1	5.0	6.2	7.7	11.4	12.1	13.0	13.7	14.8	14.5	13.7	13.0	12.2	11.6	9.9[S]	8.1[S]	7.2[S]	7.1[S]	6.7	6.1
3	6.1	6.4	6.3	5.1	4.7	4.6	5.8	8.6	11.9	12.0	12.9	13.7	13.0	13.1	12.2	12.0	11.2	11.5	9.6	7.6	6.6	6.5	6.5	6.1
4	5.8	5.9	5.7	5.8	5.1	5.0	5.8	8.1	11.9	12.3	12.3	13.6	12.7	13.1	11.8	11.1	10.8	10.4	9.1	7.2	6.9	6.6	6.1[F]	6.0
5	5.9	5.7[S]	5.5	5.3	5.6	5.4	5.8	9.0	10.4	12.6	13.6	13.2	13.6	13.1	12.5	11.9	11.6	10.7	9.7	8.0	7.7	6.4	5.8	5.8
6	5.5	5.9	5.3	5.2	5.0	4.9	6.0	8.6	10.6	12.2	12.4	12.9	13.0	12.8	12.2	11.7[H]	11.9	11.9	10.7	8.0	8.2	7.4	7.6[S]	7.1
7	6.7	6.5	6.4	6.1	6.1	5.9	6.2	9.1	11.5	11.1	12.1	12.9	12.5	13.1	12.6[H]	12.1	11.2	11.1	10.2[S]	8.6	7.7[S]	6.7	6.5	6.5
8	6.1	6.2	6.4	5.8[S]	5.8[F]	5.3[F]	6.7[F]	9.1	10.7	11.1	11.8	12.9	12.6	11.8	11.9	11.3	11.7	11.1	9.9[S]	8.9	8.5	7.4[S]	6.4	6.7
9	6.7[F]	6.9[F]	6.9[F]	6.6[F]	6.5[F]	6.5	7.5	10.4	11.7	11.7	13.5	14.5	14.0	13.0	12.0	12.0	11.9	11.2	[U]10.0[R]	8.2	7.8	6.5	6.5	6.7
10	6.6	6.1	6.2	6.0	6.0	5.8	6.7	10.1	11.5	11.5	12.6[H]	13.7	14.4	13.9	12.8	12.2	11.5	11.2	9.7[S]	8.2	7.8[S]	7.3[S]	7.2[S]	6.7
11	6.1	6.0	5.7	5.5	5.6	5.5	6.8	8.9	9.6	12.3	13.0	14.0	13.4	13.2	13.5	12.5	11.3	10.8	10.0	7.6	7.5	7.7	6.0	6.3
12	6.2	6.6	5.7	5.0	4.9	5.2	6.4	10.0	10.9	10.6	12.7[H]	[U]13.3[R]	13.8	13.8	13.1	12.1	10.8	10.4	8.6	7.0	6.8	6.5	6.4	5.6
13	5.5	5.3	5.2	5.1	5.0	5.4	6.0	8.2	10.0	10.4	11.9	13.0	12.4	11.5	11.0	11.1	10.4[S]	10.1	9.2[S]	8.5[S]	8.3[S]	6.7	5.7	5.6
14	5.8	5.7	5.7	5.6[S]	5.2[S]	4.8[S]	6.4[S]	8.3	8.9[S]	9.9	11.3	12.5[H]	12.1	11.5	11.0	11.0	10.5	10.7	[U]10.0[R]	7.2	6.6	5.7	5.8	6.0
15	5.9	5.6	5.3	5.1	5.0	5.1	7.0	7.7	8.8	9.5	11.0	11.5	11.9	12.2	10.7	10.0[H]	9.7	10.4	9.5	7.4	7.1	6.7	6.6	6.1
16	6.0	5.9	5.7	5.7	5.4	[L]5.2[S]	6.8	8.4	8.9	11.5	11.0	12.1	12.5	11.3[H]	11.9	11.6	10.2	11.3	9.5	7.0	6.9	7.4	6.4	6.5
17	6.2	6.4	6.4[F]	5.4[F]	5.6[F]	5.5	5.7	6.9[H]	9.2[H]	10.1	11.8	[U]13.3[R]	13.2	11.9	10.6	10.6	11.0	10.1	8.8	7.0	6.6	6.9	5.9	6.0
18	5.9	5.9	5.6	5.9	5.4	5.6	7.0	[U]10.6[S]	12.0	12.0	13.2	13.1	12.3[H]	13.0	11.2	10.5	10.3	10.2	8.8	7.2	6.6	6.6	5.6	5.6
19	5.5	5.5	5.3	5.2	5.0	5.0	6.6	9.6	11.1	12.1	11.4	11.7	11.9	11.6	11.0	10.9	10.6	10.5	9.5	7.6	6.7	[L]6.6[C]	6.6	6.1
20	6.2	5.9	5.8	5.6	5.3[H]	5.5	7.0	9.3	10.9	12.0	12.2	12.3	11.8	11.4	11.2	10.5	9.6	9.5	9.5	7.6	7.0	7.0	7.0	6.6
21	6.5	6.0	6.0	5.9	5.1	5.1	7.1	9.4	9.8	10.9[H]	12.0	13.0	12.3	12.3	12.2	11.3	10.6	10.9	10.0	8.4	8.0	7.5	7.1	6.6
22	6.1	6.4	6.5	6.3	5.0	5.0	7.5	11.0	11.0	11.2	12.0	12.5	12.5	11.9	11.8	11.4	10.6	11.0	11.0	9.0	7.6	7.5	7.1	6.7
23	6.5	6.4	6.4	6.5	5.5	5.7	8.1	10.6	10.4	10.5	11.4	12.1	12.4	12.5	12.3[H]	11.8[H]	12.0	11.4	10.5	9.4	8.4	7.6	7.0	6.9
24	6.4	6.2	6.2	5.9	5.4	5.4	7.9	10.1	11.5	11.7	12.3	12.5	12.6	12.8	12.5	12.2	12.3	12.0	10.8	9.5[S]	8.2	[L]8.2[C]	7.7	7.0
25	6.5	6.0	5.7	5.5	5.5	[L]5.8[C]	9.0	9.7	10.8	[L]11.6[C]	12.0[H]	12.4	12.2	12.3	12.6[H]	12.0	[L]11.5[C]	11.2	10.9	8.5	7.6	7.3	7.3	7.3
26	7.0	7.0	7.4	6.7	6.0	5.9	8.1	9.6	10.6	11.8	12.7	12.9	13.0	13.0	12.1	11.7	11.0	10.5	10.2	9.5	7.8	7.2	7.4	7.2
27	6.7	6.5	6.6	6.1	6.1	6.5	8.0	9.5	10.4	10.6	11.1	12.1	12.2	12.4	11.9[H]	12.0[H]	12.0	11.2	10.6	9.0	8.2	7.9	7.4	7.5
28	7.4	7.7	7.0	7.0	6.7	6.8	9.5	10.2	10.9	12.0	11.7	12.2[H]	12.8	12.1	12.0[H]	11.4	10.7	10.7	11.0	9.3	8.7	8.0	7.9	8.0
29	8.3	6.5	6.0	5.8	5.9	6.2	9.2	10.3	11.4	12.9	12.8	13.3	12.9	13.6[H]	13.8	12.2[H]	11.6	[L]10.8[C]	9.9[S]	8.2[S]	8.3[S]	7.7[S]	7.9[S]	7.2[S]
30	6.9	6.8	6.5	6.4	6.3	6.6	8.1	9.8[S]	11.0	12.5	12.7	12.8	12.6	13.2	13.4[H]	12.6	11.6	11.8	11.5	9.6	8.3	7.8	7.9	7.5
31	7.1	7.4	6.5	6.2	6.0	6.3	8.3	9.1	11.1	11.7	11.0	12.3	11.3	11.7[H]	12.0	11.4	10.3	9.8	9.7	9.1	8.3	7.6	8.0	7.8
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	6.2	6.2	6.0	5.8	5.5	5.4	6.8	9.3	10.9	11.7	12.2	12.9	12.6	12.5	12.0	11.7	11.2	10.9	9.9	8.2	7.7	7.2	6.7	6.6
U.Q	6.7	6.5	6.4	6.1	6.0	5.9	8.0	10.1	11.4	12.1	12.7	13.3	13.0	13.1	12.6	12.1	11.6	11.2	10.5	9.0	8.2	7.6	7.4	7.1
L.Q	5.9	5.9	5.6	5.3	5.1	5.0	6.0	8.6	10.4	10.9	11.7	12.3	12.3	11.9	11.8	11.1	10.6	10.4	9.5	7.6	6.9	6.6	6.4	6.1
Q.R	0.8	0.6	0.8	0.8	0.9	0.9	2.0	1.5	1.0	1.2	1.0	1.0	0.7	1.2	0.8	1.0	1.0	0.8	1.0	1.4	1.3	1.0	1.0	1.0

foF2

Sweep 1.60 Mc to 20.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 1

IONOSPHERIC DATA

Mar. 1960 | foF1 | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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											L		L	L	L	L								
2										L	L	L	L	L	L	L								
3												L	L	L	L	L								
4										L	L	L	L	L										
5											L	L	L	L										
6										L	L	L	L	L	L									
7												L		L		L								
8										L		L	L	L	L									
9										L	L	L	L	L										
10										L		L	L	L		L								
11										L	L	L	L	L	L	L								
12											4.5		L	L	L									
13									L	L	L	L	L	L	L	L								
14										L	L		L	L	L									
15										L	L	L	L		L	L								
16									L	L	L	I 4.6 L	L	L	L									
17										L	L	L	L	L	L	L								
18										L	L	L H	L	L		L								
19										L	L	L	L	L	L	L								
20									B	L	L	L	L	L	L									
21										L	L	L	L	L	L	L								
22										L	L	L	L	L	L	L								
23										L	L	L	L	L	L	L								
24										L	L	L	L	L	L									
25										C	L	L	L	L	L									
26									L	L	L H	L	L	L	L	L								
27									L	L	L	L	L	L	L									
28									L	L	L	L	L	L										
29										L	L	L	L	L	L									
30									L	L	L	L	R	L										
31										L	L	L	L	L	L	L								
No.											1	1												
Median											4.5	4.6												

foF1

Sweep 1.60 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

A 2

IONOSPHERIC DATA

Mar. 1960 | f_oE | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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								2.20	2.75	I 3.10 R	3.25	I 3.45 A	3.55	3.50	3.35	3.10	2.65	B						
2								2.15	2.85	I 3.15 A	I 3.50 A	3.65	3.75	3.55	3.50	3.20	2.75	B						
3								2.30	2.80	3.05	I 3.30 R	3.45	3.50	3.50	3.45	3.05	2.70	B						
4								R	2.85	3.15	3.25	A	A	A	3.45	3.10	2.75	B						
5								B	A	R	B	B	A	R	I 3.30 A	3.10	2.60	B						
6								B	2.70	3.20	I 3.30 A	I 3.50 A	A	A	A	A	A	B						
7								B	2.70	B	B	B	I 3.50 B	3.50	3.35	3.10	2.80	A						
8								B	I 2.80 R	3.15	I 3.40 R	B	R	B	3.35	3.20	2.80	B						
9								B	2.80	I 3.10 R	3.25	R	B	B	3.40	3.00	2.70	B						
10								B	2.80	I 3.15 R	I 3.40 R	3.50	3.55	3.50	3.35	3.10	2.75	B						
11							B	2.25	2.90	3.05	I 3.30 R	3.55	I 3.60 A	I 3.55 R	3.50	3.25	I 2.80 R	B						
12								B	2.95	I 3.10 B	I 3.30 B	I 3.45 R	I 3.55 R	3.55	3.45	3.15	B	B						
13								2.40	2.95	3.35	3.55	3.70	3.75	3.60	3.50	3.25	B	B						
14								B	2.80	3.10	3.45	I 3.55 B	I 3.60 B	3.60	3.50	3.20	B	B						
15								B	I 2.80 R	3.20	3.55	3.60	3.70	3.65	3.50	3.20	I 2.80 B	B						
16								B	2.80	3.20	3.50	A	B	R	R	3.15	B	B						
17								B	2.80	I 3.30 R	3.55	A	B	3.55	I 3.30 R	I 3.10 A	2.70	B						
18								S	2.95	3.20	3.35	I 3.45 A	3.55	I 3.55 R	3.50	3.30	2.90	2.00						
19							E	2.50	3.00	3.20	3.40	I 3.50 A	I 3.60 A	3.55	3.50	3.20	2.80	2.05						
20							B	2.55	I 3.00 B	3.20	3.45	3.55	I 3.60 B	3.60	I 3.45 R	3.15	2.85	2.15						
21							B	2.60	3.00	3.35	3.55	A	A	A	I 3.50 R	3.35	2.95	R						
22							B	2.60	3.05	3.30	3.50	3.60	I 3.60 B	3.65	3.55	3.40	I 2.80 A	2.10						
23							R	2.60	3.10	3.40	I 3.60 A	3.65	3.70	3.65	3.60	3.25	2.95	2.25						
24							1.90	2.70	I 3.00 A	I 3.35 A	I 3.55 C	3.65	3.75	I 3.70 R	3.60	3.45	I 2.90 A	2.45						
25							C	2.70	3.05	I 3.35 C	3.50	3.50	I 3.65 A	3.65	A	A	C	2.20						
26							1.95	2.70	3.00	I 3.30 A	3.55	3.80	I 3.75 R	3.65	3.55	3.25	2.95	2.40						
27							2.05	2.70	3.10	A	R	R	3.95	3.85	3.60	3.50	3.00	2.50	B					
28							2.00	2.80	3.10	3.50	I 3.65 R	3.75	3.90	3.60	I 3.50 R	3.40	3.05	2.45						
29							2.30	2.90	3.15	3.50	3.60	I 3.80 R	3.90	3.90	I 3.70 R	I 3.50 C	I 3.05 C	I 2.65 C						
30							2.05	2.85	3.50	3.55	3.70	I 3.75 A	R	B	B	3.45	3.10	2.50						
31							2.00	2.65	3.15	3.55	3.55	3.80	3.80 R	3.75	3.60	3.45	3.05	2.40	B					
No.							8	18	30	28	28	22	22	23	27	29	25	13						
Median							2.00	2.60	2.95	3.20	3.50	3.60	3.60	3.60	3.50	3.20	2.80	2.40						

f_oE

Sweep 1.60 Mc to 2.00 Mc in 20 min sec in automatic operation.

IONOSPHERIC DATA

Mar. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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	E	E	E	E	E	E	E	G	G	G	3.1[g]	3.1[g]	G	G	G	G	G	B	E	E	E	E	E	E
2	E	J2.5	J2.5	J2.3	J2.1	E	E	G	G	J3.7	J4.4	J3.5	J5.7[Y]	G	3.0[g]	J3.0	J3.2	B	E	J1.8	E	E	E	E
3	J3.7	J3.7	E	J4.6[Y]	J2.3	E	E	G	G	G	G	G	G	G	G	2.5[g]	G	B	E	E	E	E	E	J3.4
4	J2.3	J1.8	E	J1.8	E	E	E	G	G	G	J4.1	J5.0	J3.7	J3.3	G	G	G	B	E	E	E	E	E	E
5	J2.5	E	J2.3	J2.3	E	E	E	B	J5.0	G	B	B	J4.1	G	J3.8	J3.9	G	B	J2.4	J3.7	J2.5	E	E	E
6	E	E	J2.5	J2.3	J2.3	E	E	B	G	G	J3.7	J3.6	J3.8	4.0	J4.3	J3.7	J4.5	3.3	J2.4	E	E	E	E	E
7	E	E	E	E	E	E	E	B	G	B	B	B	B	G	G	G	3.5	J2.5	E	E	E	E	E	E
8	E	E	E	E	E	E	E	B	G	G	G	B	G	B	G	G	G	B	E	E	E	E	E	E
9	E	E	J2.4	J2.5	E	E	E	B	G	G	G	G	4.0	4.0	4.5	G	G	B	E	E	E	E	E	E
10	E	E	E	E	E	E	E	B	G	G	G	G	G	G	G	G	G	B	E	E	E	E	E	E
11	E	E	E	J2.4	E	E	B	G	G	3.4	G	G	J3.3[g]	G	G	G	G	B	E	E	E	E	E	E
12	E	E	E	E	E	E	E	B	G	B	3.8	G	G	G	G	G	B	B	E	E	E	E	E	E
13	J3.8	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	B	B	E	E	E	E	E	E
14	E	E	E	E	E	E	E	B	G	G	G	B	B	G	G	G	B	B	E	E	E	E	E	E
15	E	E	E	E	E	E	E	B	G	G	G	G	G	G	G	G	B	B	E	E	E	E	E	E
16	E	E	E	E	E	E	E	B	G	G	3.7	4.2	4.1	G	G	G	B	B	E	E	E	E	E	E
17	E	E	E	E	E	E	E	B	G	3.6	4.1	4.3	B	G	G	3.6	G	B	J2.4	E	E	E	E	E
18	E	E	E	E	E	E	E	S	G	4.0	3.8	3.9	G	G	G	G	G	2.5	E	E	E	J1.8	J1.9	E
19	E	E	E	2.1	E	E	2.0	2.6	2.3[g]	G	3.7	3.8	J3.8	G	G	G	G	G	E	E	E	C	E	E
20	E	E	E	E	E	E	B	G	B	G	G	G	B	G	G	G	G	G	E	E	J1.8	E	E	E
21	E	E	E	E	E	E	B	G	G	G	G	3.6	3.6	3.7[g]	G	G	G	G	E	E	E	E	E	E
22	E	E	E	E	E	E	2.3	G	G	G	G	G	B	G	G	G	J3.0[Y]	G	E	2.3	J2.9	J2.5	E	E
23	E	E	E	E	E	E	G	G	G	3.6	3.8	G	G	G	G	G	G	G	E	E	E	E	E	E
24	E	E	E	E	E	E	G	G	3.3	3.7	C	G	G	G	G	G	3.0	G	E	J2.6	J1.8	C	E	C
25	E	E	E	E	E	C	C	G	G	C	4.1	3.7	4.1[Y]	G	J3.8	J3.5	C	G	E	E	E	J1.7	E	E
26	E	E	E	E	E	E	G	G	G	4.0	G	G	G	G	4.2[Y]	G	G	G	E	E	E	E	E	E
27	E	E	E	E	E	E	G	G	G	3.9	G	B	G	G	G	G	G	G	B	J2.3	2.3	E	E	E
28	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	3.8	G	G	E	E	E	E	E	E
29	E	E	E	E	C	E	G	G	G	3.8	3.9	G	G	G	G	C	C	C	E	E	E	J2.1	J1.7	E
30	E	E	J2.0	E	E	E	G	G	3.7	G	G	4.1	G	B	B	G	G	G	B	E	E	E	E	E
31	E	E	E	E	E	E	G	G	G	G	4.0	4.2	4.1	4.0	2.5[g]	2.7[g]	G	G	B	E	E	E	E	E
No.	31	31	31	31	30	30	27	19	30	28	28	26	26	29	30	30	24	15	28	31	31	29	31	30
Median	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
U.Q	E	E	E	1.8	E	E	G	G	G	4.0	3.8	3.8	3.8	G	G	2.5	G	G	E	E	E	E	E	E
L.Q	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
Q.R																								

foEs

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 4

IONOSPHERIC DATA

Mar. 1960 | f_bE_s | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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[q] E 3.1[B]							B						
2		E	2.0	E	E					3.5	G	3.5	3.5		2.8[q]	2.4	2.2	B		E				
3	E	E		E	E											2.1[q]		B						E
4	E	E		E							4.1	4.5	E 3.7[B]	G				B						
5	E		E	E				B	3.5		B	B	U 4.1[B]		3.5	2.9		B	2.0	2.3	E			
6			1.9	E	1.8			B			G	E 3.6[B]	3.8	G	3.8	3.4	3.3	2.4	E					
7								B		B	B	B	B				2.4	2.5						
8								B				B		B				B						
9			E	E				B					3.9	3.9	4.3			B						
10								B										B						
11				E			B			U 3.4[B]			E 3.3[B]					B						
12								B		B	3.8						B	B						
13	E																B	B						
14								B				B	B				B	B						
15								B									B	B						
16								B			3.6	4.0	4.0				B	B						
17								B		3.5	3.9	4.0	B			3.3		B	1.8					
18								S		3.5	3.7	3.9						2.3				E	E	
19				E			1.8	2.1	2.0[q]		3.7	3.8	U 3.8[B]									C		
20							B		B				B								E			
21							B					U 3.6[B]	U 3.6[B]	U 3.2[B]										
22							2.0						B				U 3.0[B]			E	2.5	2.0		
23										3.5	3.8													
24									3.2	3.5	C						3.0			1.9	E	C		C
25						C	C			C	3.8	U 3.7[B]	4.0		3.6	3.5	C					E		
26										3.6					G									
27										3.7		B							B	E	E			
28																3.5								
29					C					G	G					C	C	C				E	E	
30			E						G			4.0		B	B				B					
31											4.0	4.2	4.1	4.0	2.5[q]	2.5[q]			B					
No.	4	3	5	8	3		2	1	4	9	13	12	11	5	7	8	5	3	3	5	5	4	2	1
Median	E	E	E	E	E		1.9	2.1	2.6	3.5	3.7	3.9	3.9	3.2	3.5	3.1	3.0	2.4	1.8	E	E	E	E	E

f_bE_s | Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 5

IONOSPHERIC DATA

Mar.1960 | f-min | 135° E Mean Time (G.M.T.+ 9h.)

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' 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	E	E	E	E	E	E	E	1.80	1.90	2.05	2.25	2.00	2.00	2.15	2.80	2.10	2.05	2.00	E	E	E	E	E	E
2	E	E	E	E	E	E	E	1.70	2.05	2.10	2.15	2.25	2.45	2.10	2.00	1.90	1.95	2.10	E	E	E	E	E	E
3	E	E	E	E	E	E	E	1.90	2.00	2.00	2.70	2.00	2.45	2.05	2.05	1.90	1.95	2.00	E	E	E	E	E	E
4	E	E	E	E	E	E	E	1.80	1.90	2.20	2.00	2.75	2.60	2.45	2.10	1.90	2.00	2.10	E	E	E	E	E	E
5	E	E	E	E	E	E	E	2.60	2.00	2.00	3.55	3.10	2.05	2.05	2.00	2.00	2.00	2.05	E	E	E	E	E	E
6	E	E	E	E	E	E	E	2.30	2.05	2.50	2.30	2.50	2.00	2.00	1.95	2.10	2.10	2.10	2.00	E	E	E	E	E
7	E	E	E	E	E	E	E	2.40	2.00	3.50	3.80	4.00	4.00	2.80	2.00	2.50	1.80	1.80	E	E	E	E	E	E
8	E	E	E	E	E	E	E	2.70	2.50	2.75	2.70	3.90	2.80	3.80	2.00	2.60	2.00	2.20	E	E	E	E	E	E
9	E	E	E	E	E	E	E	2.40	2.25	2.25	2.40	2.90	3.50	3.50	2.45	2.40	2.40	2.10	E	E	E	E	E	E
10	E	E	E	E	E	E	E	2.40	2.00	2.50	2.55	2.10	2.25	2.80	2.10	2.00	1.90	2.25	E	E	E	E	E	E
11	E	E	E	E	E	E	1.75	1.95	1.90	2.05	2.05	2.50	2.05	2.00	2.50	2.75	2.05	2.05	E	E	E	E	E	E
12	E	E	E	E	E	E	E	2.55	2.75	3.30	3.50	3.05	3.05	3.20	2.55	2.80	3.30	2.80	E	E	E	E	E	E
13	E	E	E	E	E	E	E	2.00	2.00	2.50	2.75	2.85	2.00	2.50	1.90	1.70	2.30	1.90	E	E	E	E	E	E
14	E	E	E	E	E	E	E	2.30	2.00	2.30	2.50	4.00	3.70	2.50	2.50	2.50	2.90	2.20	E	E	E	E	E	E
15	E	E	E	E	E	E	E	2.55	2.00	2.60	2.75	3.00	2.55	2.90	2.50	2.40	2.90	2.05	E	E	E	E	E	E
16	E	E	E	E	E	E	E	2.50	1.90	2.40	2.45	2.70	3.50	2.55	2.50	2.75	2.70	2.30	E	E	E	E	E	E
17	E	E	E	E	E	E	E	2.05	2.45	2.50	2.50	2.50	3.80	2.00	2.05	2.00	2.05	2.40	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E 2.50 S	2.20	2.05	2.05	3.05	2.95	2.65	2.20	1.75	1.70	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	1.70	1.75	1.90	2.00	2.00	2.20	2.00	2.00	1.90	1.75	1.80	E	E	E	C	E	E
20	E	E	E	E	E	E	1.95	1.90	5.00	2.05	2.00	2.05	4.00	2.20	2.95	2.95	1.90	1.70	E	E	E	E	E	E
21	E	E	E	E	E	E	1.90	1.70	1.90	1.90	2.45	2.05	1.80	2.45	1.95	1.85	1.75	1.90	E	E	E	E	E	E
22	E	E	E	E	E	E	1.75	1.95	1.70	1.90	2.05	2.40	3.95	2.95	2.95	2.00	1.90	1.70	E	E	E	E	E	E
23	E	E	E	E	E	E	E	1.70	1.70	1.95	2.00	2.95	2.00	2.05	2.00	1.95	1.70	1.65	E	E	E	E	E	E
24	E	E	E	E	E	E	E	1.65	2.00	1.70	E 4.50 C	2.80	2.00	2.05	2.50	1.75	1.65	1.65	E	E	E	C	E	C
25	E	E	E	E	E	C	E 5.00 C	1.65	1.70	I 2.00 C	1.80	2.05	2.05	2.10	2.05	2.00	I 1.85 C	1.70	E	E	E	E	E	E
26	E	E	E	E	E	E	1.70	1.70	1.75	2.05	2.00	2.05	2.05	2.00	2.05	1.80	1.70	1.70	E	E	E	E	E	E
27	E	E	E	E	E	E	1.70	E	1.70	1.75	2.05	3.50	2.40	2.05	2.00	2.00	1.75	1.70	1.75	E	E	E	E	E
28	E	E	E	E	E	E	1.70	1.70	2.00	2.05	2.00	2.15	2.60	2.00	2.00	2.00	1.75	1.75	E	E	E	E	E	E
29	E	E	E	E	E 4.60 C	E	1.70	1.90	1.75	1.95	2.00	3.00	3.45	3.00	3.40	E 3.80 C	E 4.00 C	I 2.50 C	1.90	E	E	E	E	E
30	E	E	E	E	E	E	1.75	1.90	1.95	2.00	2.05	2.75	3.00	4.20	3.95	2.55	1.85	1.70	1.75	E	E	E	E	E
31	E	E	E	E	E	E	1.70	1.65	1.80	2.05	2.50	2.60	2.55	2.45	2.00	1.70	1.85	1.65	1.75	E	E	E	E	E
No.	31	31	31	31	30	30	30	30	31	31	30	31	31	31	31	30	30	31	31	31	31	29	31	30
Median	E	E	E	E	E	E	E	1.90	2.00	2.05	2.30	2.70	2.55	2.45	2.05	2.00	1.90	2.00	E	E	E	E	E	E

f-min

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

IONOSPHERIC DATA

Mar. 1960 | (M3000)F2 | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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	2.80	2.90	2.60	2.70	3.10	2.50S	2.90	3.10	3.20	3.20	3.10	3.10	3.00	3.00	2.95	3.00	3.10	3.10	3.10	2.95	2.85	2.80	2.85	2.70
2	2.85	2.90	2.75	2.60	2.60	2.50	3.20	3.15	3.25	3.15	3.05	3.00	2.95	2.95	3.00	3.00	3.00	3.10	3.05S	2.90S	3.00S	3.00S	2.80	2.60
3	2.70	2.70	3.05	2.85	2.75	2.60	2.95	3.25	3.40	3.15	3.05	3.05	3.00	3.00	3.00	3.00	3.00	3.10	3.20	3.05	2.85	2.80	2.90	2.80
4	2.65	2.60	2.55	2.70	2.65	2.55	3.10	3.20	3.35	3.20	3.20	3.10	3.05	3.05	3.05	3.05	3.05	3.10	3.20	2.90	3.05	2.90	2.80F	2.65
5	2.60	2.50S	2.55	2.50	2.70	2.75	2.90	3.25	3.25	3.10	3.15	3.00	3.00	3.05	3.00	3.05	3.10	3.10	3.10	3.05	3.10	3.10	2.80	2.70
6	2.80	2.75	2.70	2.75	2.75	2.70	3.20	3.30	3.20	3.20	3.15	3.00	3.05	3.00	2.95	2.90H	3.00	3.05	3.10	2.95	3.00	3.00	2.90S	2.95
7	2.85	2.65	2.85	2.80	2.95	3.05	3.00	3.20	3.30	3.50	3.05	3.10	2.95	3.00	2.95H	3.05	3.00	3.10	3.10S	3.10	3.15S	3.00	2.80	2.90
8	2.80	2.80	2.90	2.75S	2.90F	2.85F	3.00F	3.30	3.20	3.15	3.05	3.15	3.10	3.00	2.95	2.95	3.00	3.00	3.10S	2.90	3.05	3.00S	2.70	2.55
9	2.60F	2.70F	2.70F	2.85F	2.70F	2.65	2.80	3.10	3.15	3.00	3.00	3.05	3.00	3.00	2.90	3.00	3.05	3.10	U3.10R	3.00	3.10	2.85	2.70	2.80
10	2.80	2.70	2.75	2.70	2.70	2.70	2.85	3.15	3.10	3.05	3.00H	3.10	3.00	3.05	2.95	3.00	3.05	3.10	3.05S	3.05	3.00S	2.90S	2.80S	3.05
11	2.85	2.65	2.55	2.60	2.55	2.60	3.10	3.20	3.05	3.20	3.00	3.05	3.00	3.05	3.05	3.10	3.10	3.20	3.10	3.00	2.95	3.10	2.60	2.55
12	2.65	2.80	2.85	2.60	2.30	2.45	2.90	3.25	3.15	3.30	3.05H	U3.05R	3.05	3.00	3.05	3.15	2.90	3.20	3.15	3.00	3.00	2.95	3.05	2.80
13	2.70	2.75	2.75	2.60	2.60	2.80	3.15	3.30	3.25	3.10	3.00	3.15	3.15	3.05	3.00	3.10	3.10S	3.10	3.10S	3.10S	3.15S	3.15	2.80	2.70
14	2.70	2.75	2.65	2.90S	2.90S	2.90S	3.10S	3.50	3.30S	3.15	3.05	3.15H	3.05	3.00	3.00	3.05	3.00	3.10	U3.15R	3.05	2.85	2.75	2.75	2.85
15	2.90	2.90	2.75	2.75	2.75	2.80	3.35	3.35	3.30	3.20	3.10	3.10	2.95	3.20	3.00	3.00H	3.05	3.15	3.15	3.00	2.95	2.80	2.85	2.80
16	2.70	2.70	2.55	2.60	2.50	I2.50S	3.10	3.35	3.15	3.20	3.00	3.00	3.05	2.80H	2.85	2.75	2.95	3.10	3.15	2.70	2.65	2.80	2.95	2.75
17	2.70	2.80	2.60F	2.45F	2.60F	2.45	2.65	2.70H	3.05H	3.10	3.10	U3.15R	3.15	3.05	2.95	3.00	3.10	3.20	3.25	3.10	2.90	3.00	2.85	2.85
18	2.60	2.70	2.60	2.70	2.60	2.60	3.00	U3.20S	3.25	3.10	3.15	3.10	3.00H	3.05	3.10	3.00	3.15	3.15	3.15	3.05	2.90	3.10	2.75	2.85
19	2.65	2.65	2.75	2.80	2.70	2.70	3.15	3.20	3.30	3.30	3.25	3.00	3.00	3.00	3.00	3.05	3.05	3.10	3.15	3.15	2.80	I2.85C	2.80	2.80
20	2.90	2.65	2.70	2.75	2.65H	2.70	3.05	3.25	3.10	3.15	3.10	3.20	3.05	3.00	3.05	3.05	3.10	3.10	3.20	3.00	2.90	2.80	2.90	2.85
21	2.80	2.80	2.85	2.95	2.80	2.75	3.20	3.30	3.25	3.00H	3.10	3.05	3.05	3.00	3.05	3.05	3.00	3.10	3.10	3.00	2.95	3.00	2.90	2.85
22	2.55	2.70	2.80	3.20	2.75	2.75	3.20	3.35	3.30	3.15	3.00	3.10	3.05	2.90	2.95	3.00	2.95	3.00	3.10	3.20	2.80	2.95	2.90	2.80
23	2.65	2.75	2.80	2.90	2.75	2.80	3.25	3.30	3.30	3.15	3.00	3.00	3.00	2.95	2.90H	2.90H	2.95	3.05	3.05	3.05	3.00	2.95	2.90	2.85
24	2.80	2.80	2.90	2.90	2.80	2.80	3.20	3.30	3.25	3.05	2.90	2.95	2.90	2.80	2.80	2.80	2.90	3.00	3.00	3.10S	2.80	I2.90C	2.95	2.85
25	2.85	2.70	2.55	2.55	2.55	I2.50C	3.00	3.20	3.00	I3.00C	2.90H	2.90	2.85	2.80	2.85H	2.90	I2.90C	3.00	3.10	3.05	2.75	2.80	2.70	2.75
26	2.70	2.75	3.00	2.95	2.75	2.70	3.10	3.20	3.00	2.90	3.00	3.05	2.95	2.90	2.90	2.90	2.90	2.95	3.00	3.10	2.65	2.70	2.80	2.80
27	2.75	2.65	2.80	2.80	2.85	3.00	3.35	3.25	3.10	2.95	3.30	2.95	2.85	2.90	2.80H	2.85H	2.95	3.00	3.05	3.00	2.85	2.90	2.65	2.70
28	2.70	2.90	2.80	2.85	2.75	2.80	3.30	3.25	3.00	3.00	2.95	2.85H	3.00	2.85	2.85H	2.85	2.85	2.90	3.00	3.00	2.90	2.75	2.60	2.80
29	3.05	2.80	2.65	2.45	2.35	2.60	3.10	3.10	2.95	3.05	2.90	2.85	2.70	2.70H	2.80	2.80H	2.85	I2.90C	3.00S	2.80S	2.85S	2.75S	2.80S	2.90S
30	2.75	2.70	2.65	2.60	2.60	2.70	3.15	3.10S	3.00	3.10	2.95	2.75	2.80	2.80	2.85H	2.85	2.80	2.90	3.00	3.05	2.95	2.75	2.80	2.80
31	2.60	2.85	2.50	2.55	2.45	2.45	3.05	3.10	3.05	3.10	2.75	2.90	2.85	2.75H	2.85	2.90	2.90	2.95	2.90	2.95	2.80	2.35	2.40	2.40
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	2.70	2.75	2.75	2.75	2.70	2.70	3.10	3.25	3.20	3.15	3.05	3.05	3.00	3.00	2.95	3.00	3.00	3.10	3.10	3.00	2.90	2.90	2.80	2.80

(M3000)F2 Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 1960 | (M3000)F1 | 135° E Mean Time (G.M.T.+ 9h.) | **Akita** | Lat. 39° 43.5' N | Long. 140° 08.2' 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											L		L	L	L	L								
2										L	L	L	L	L	L	L								
3												L	L	L	L	L								
4										L	L	L	L	L										
5											L	L	L	L										
6										L	L	L	L	L	L									
7												L		L		L								
8										L		L	L	L	L									
9										L	L	L	L	L										
10										L		L	L	L		L								
11										L	L	L	L	L	L	L								
12											4.10		L	L	L									
13									L	L	L	L	L	L	L	L								
14										L	L		L	L	L									
15										L	L	L	L		L	L								
16									L	L	L	I 4.00	L	L	L									
17										L	L	L	L	L	L	L								
18										L	L	L H	L	L		L								
19										L	L	L	L	L	L	L								
20									B	L	L	L	L	L	L									
21										L	L	L	L	L	L	L								
22										L	L	L	L	L	L	L								
23										L	L	L	L	L	L	L								
24										L	L	L	L	L	L									
25										C	L	L	L	L	L									
26									L	L	L H	L	L	L	L	L								
27									L	L	L	L	L	L	L									
28									L	L	L	L	L	L										
29										L	L	L	L	L	L									
30									L	L	L	L	R	L										
31										L	L	L	L	L	L	L								
No.											1	1												
Median											4.10	"4.00												

(M3000)F1 Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

IONOSPHERIC DATA

Mar. 1960 | h'F2 | 135° E Mean Time (G.M.T. + 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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											250		I 245 L	255	245	L								
2										L	L	L	L	255 L	L	L								
3												250	I 245 L	250	250 L	245								
4										L	I 250 L	I 255 L	240	I 250 L										
5											250	245	245	250 L										
6										I 245 L	245 L	I 250 L	250	250 L	L									
7												L		L		250								
8										L		255 L	250 L	245 L	L									
9										245	250	255	250	245										
10										L		L	260 L	260 L		L								
11										245	245 L	245 L	245	245 L	250 L	245								
12											245 H	250	250	250 L	250									
13									250 L	I 250 L	I 260 L	250	245	I 240 L	L	L								
14										245	250		250	250 L	250 L									
15										250	270	255	I 270 L		245	L H								
16									250	255	I 265 L	260	255	I 250 H	I 265 L									
17										250	250	260	250	245	245	250								
18										245	250	I 250 L	245	250		245								
19										250	245	250 L	250 L	250	250	245								
20									250	250	250 L	255	255	250	250									
21										245 H	260 L	260 L	255	I 250 L	270	250								
22										250	250	260	260	250	255	250								
23										245	250	255 L	250	250 L	I 250 H	245 H								
24										245	250 L	250 L	250	260	L									
25										C	245 H	260 L	260	270	250 H									
26									245	245	I 255 L	275	I 260 L	255 L	250	250 L								
27									245	245 L	250	250	255	250	L H									
28									245	250	250	250 H	270 L	245										
29										260 L	L	L	L	L H	L									
30									L	250 L	250	255	260	270 L										
31										245	250	255	255	I 260 H	I 260 L	250								
No.									6	21	25	25	28	28	16	11								
Median									250	245	250	255	250	250	250	250								

h'F2

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 1960 | h'F | 135° E Mean Time (G.M.T.+ 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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	270	260	300	290	245	250	265	225	235	240	210	245	240	205	205	230	245	240	210	250	255	260	290	280
2	270	245	255	310	340	330	240	230	240	225	225	225	220	225	225	225	240	240	225	245	245	255	250	300
3	290	300	230	255	260	340	245	230	240	235	245	240	225	205	210	230	245	245	210	240	245	280	275	300
4	300	305	295	280	245	320	245	230	245	245	225	245	210	210	230	240	230	225	225	230	245	250	290	305
5	310	340	305	330	295	260	230	225	240	245	245	235	I 220A	230	245	245	245	235	245	245	245	245	280	300
6	270	290	255	280	265	300	250	220	230	225	220	220	200	210	230	230H	240	240	225	225	250	255	265	270
7	265	275	260	280	255	245	230	230	225	220	240	225	245	240	220H	235	235	245	220	225	240	230	275	275
8	270	295	280	260	245	255	240	220	225	220	225	220	210	220	240	225	240	240	230	240	245	240	260	300
9	305	305	295	280	300	295	270	230	220	240	210	245	240	220	245	245	245	245	240	220	245	250	290	295
10	290	275	290	290	290	290	250	245	230	220	240H	230	240	240	230	225	240	240	230	235	250	265	270	230
11	260	280	320	320	335	295	245	225	220	240	210	210	220	210	235	240	245	240	235	240	260	260	280	320
12	300	300	240	300	390	355	260	250	245	230	205	225	215	210	220	245	245	245	225	240	250	250	250	255
13	295	270	290	295	300	280	240	245	240	240	220	200	210	210	210	235	240	245	230	230	240	220	260	290
14	300	280	270	260	250	270	230	220	230	240	205	245H	230	230	200	245	245	250	230	230	250	250	285	290
15	275	260	295	295	285	290	245	220	240	240	245	230	215	255	240	220	245	250	225	240	250	280	260	280
16	290	305	330	340	345	340	240	240	240	240	240	245	210	215	245	250	245	255	230	245	300	290	240	280
17	295	290	295	355	350	360	260	250H	245	230	240	240	230	210	215	235	245	240	240	245	255	260	260	280
18	300	295	305	300	300	310	260	245	245	220	210	200H	225	205	240	220	245	245	210	240	245	245	260	275
19	295	295	290	290	285	290	245	245	245	245	210	205	240	235	210	225	245	245	240	220	250	I 280C	270	290
20	260	295	295	290	250H	290	245	245	I 245B	245	220	240	225	210	225	240	245	245	235	220	245	270	265	270
21	290	295	290	255	245	295	250	240	240	215	205	220	225	215	210	220	245	250	240	245	255	245	255	270
22	315	295	260	240	270	300	250	245	240	235	215	210	210	210	230	235	245	245	245	220	250	250	250	255
23	305	295	290	250	240	285	245	240	240	220	205	215	235	235	205	245	245	245	240	230	240	245	250	255
24	255	290	275	250	250	280	245	245	240	225	230B	225	220	210	240	245	245	250	240	240	245	I 255C	245	I 250C
25	255	280	310	335	315	I 340C	250	225	230	I 220C	220	205	230	215	235	245	I 245C	250	245	215	245	265	280	295
26	295	295	250	245	255	280	245	235	220	225	205H	210	215	235	230	240	245	245	245	245	245	245	270	270
27	280	300	290	270	270	255	220	240	205	205	210	225B	220	240	225	245H	250	245	245	245	255	250	280	295
28	295	270	260	260	270	265	240	225	230	240	220	210	200	205	240H	245	245	250	250	245	255	275	300	290
29	240	215	270	330	I 350C	310	245	245	245	230	220	230	230	220	250	240H	240	I 245C	245	245	260	260	260	250
30	280	290	300	290	295	295	230	225	230	245	230	200	200	230	245H	245	245	255	245	235	245	260	260	265
31	305	270	325	305	340	345	245	245	245	245	225	240	205	235	240	245	245	255	250	245	255	345	355	340
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	290	290	290	290	285	295	245	235	240	235	220	225	220	215	230	240	245	245	235	240	250	255	265	280

h'F | Sweep 160 Mc to 200 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

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IONOSPHERIC DATA

Mar. 1960 | Es | 135° E Mean Time (G.M.T. + 9h.) | Akita | Lat. 39° 43.5' N | Long. 140° 08.2' 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	E	E	E	E	E	E	E	G	G	G	110	105	G	G	G	G	G	B	E	E	E	E	E	E
2	E	105	105	105	105	E	E	G	G	110	110	110	105	G	100	100	105	B	E	100	E	E	E	E
3	105	105	E	100	100	E	E	G	G	G	G	G	G	G	G	105	G	B	E	E	E	E	E	105
4	105	105	E	105	E	E	E	G	G	G	115	105	105	105	G	G	G	B	E	E	E	E	E	E
5	105	E	105	105	E	E	E	B	105	G	B	B	100	G	100	100	G	B	100	100	100	E	E	E
6	E	E	100	100	100	E	E	B	G	G	110	105	105	100	100	100	100	100	100	E	E	E	E	E
7	E	E	E	E	E	E	E	B	G	B	B	B	B	G	G	G	100	100	E	E	E	E	E	E
8	E	E	E	E	E	E	E	B	G	G	G	B	G	B	G	G	G	B	E	E	E	E	E	E
9	E	E	105	105	E	E	E	B	G	G	G	G	120	110	110	G	G	B	E	E	E	E	E	E
10	E	E	E	E	E	E	E	B	G	G	G	G	G	G	G	G	G	B	E	E	E	E	E	E
11	E	E	E	105	E	E	B	G	G	125	G	G	100	G	G	G	G	B	E	E	E	E	E	E
12	E	E	E	E	E	E	E	B	G	B	130	G	G	G	G	G	B	B	E	E	E	E	E	E
13	105	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	B	B	E	E	E	E	E	E
14	E	E	E	E	E	E	E	B	G	G	G	B	B	G	G	G	B	B	E	E	E	E	E	E
15	E	E	E	E	E	E	E	B	G	G	G	G	G	G	G	G	B	B	E	E	E	E	E	E
16	E	E	E	E	E	E	E	B	G	G	145	110	110	G	G	G	B	B	E	E	E	E	E	E
17	E	E	E	E	E	E	E	B	G	120	140	110	B	G	G	100	G	B	100	E	E	E	E	E
18	E	E	E	E	E	E	E	S	G	120	125	115	G	G	G	G	G	145	E	E	E	110	105	E
19	E	E	E	100	E	E	155	110	105	G	120	105	105	G	G	G	G	G	E	E	E	C	E	E
20	E	E	E	E	E	E	B	G	B	G	G	G	B	G	G	G	G	G	E	E	105	E	E	E
21	E	E	E	E	E	E	B	G	G	G	G	105	105	105	G	G	G	G	E	E	E	E	E	E
22	E	E	E	E	E	E	145	G	G	G	G	G	B	G	G	G	110	G	E	105	105	105	E	E
23	E	E	E	E	E	E	G	G	G	125	105	G	G	G	G	G	G	G	E	E	E	E	E	E
24	E	E	E	E	E	E	G	G	105	115	C	G	G	G	G	G	110	G	E	105	105	C	E	C
25	E	E	E	E	E	C	C	G	G	C	110	110	105	G	105	110	C	G	E	E	E	105	E	E
26	E	E	E	E	E	E	G	G	G	105	G	G	G	G	100	G	G	G	E	E	E	E	E	E
27	E	E	E	E	E	E	G	G	G	110	G	B	G	G	G	G	G	G	B	110	105	E	E	E
28	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	125	G	G	E	E	E	E	E	E
29	E	E	E	E	C	E	G	G	G	130	125	G	G	G	G	C	C	C	E	E	E	105	105	E
30	E	E	105	E	E	E	G	G	140	G	G	105	G	B	B	G	G	G	B	E	E	E	E	E
31	E	E	E	E	E	E	G	G	G	G	145	120	120	145	100	100	G	G	B	E	E	E	E	E
No.	4	3	5	8	3		2	1	4	9	13	12	11	5	7	8	5	3	3	5	5	4	2	1
Median	105	105	105	105	100		150	110	105	120	120	110	105	105	100	100	105	100	100	105	105	105	105	105

Es

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 11

IONOSPHERIC DATA

Mar. 1960

Types of Es

135° E Mean Time (G.M.T.+ 9h.)

Akita

Lat. 39° 43.5' N
Long. 140° 08.2' 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											l	l												
2		f	f	f	f					l	l	l	l		l	l	l			f				
3	fz	fz		fz	fz											l								fz
4	f	f		f							c	lz	l	l										
5	f		fz	f					lz				lz		l	l			f	fz	f			
6			f	f	f						l	l	l	l	l	l	l	l	f					
7																	l	l						
8																								
9			f	f									c	c	cz									
10																								
11				fz						c			l											
12											c													
13	f																							
14																								
15																								
16											h	c	c											
17										c	h	c				l			fz					
18										c	c	l						h				f	f	
19				fz			h	l·h	l		c	l	l											
20																					f			
21												l	l	l										
22							h										l			f	fz	f		
23										c	l													
24									l	c							l			fz	f			
25											c	c	l		l	l						f		
26										l					l									
27										c										fz	f			
28																c								
29										h	h											fz	f	
30			f						h			l												
31											h	c	c	h	l	l								

No.																								
Median																								

Types of Es

Sweep 1.60 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1960 | foF2 | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35°42.4' N, Long. 139°29.3' 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	u 6.3 s	J 6.6 s	u 5.3 s	5.6	u 4.8 s	4.4	5.6	u 8.6 s	11.5	12.7	13.6	13.5	12.4	12.5	11.8	J 11.5 s	11.8	11.5	9.2	7.2 s	u 7.6 s	I 6.9 s	u 7.2 s	I 6.3 s
2	I 6.8 s	u 6.8 s	u 5.9 s	5.0	5.0	5.2	6.5 s	8.1	11.8	12.7	13.2	13.9	u 14.2 R	J 14.7 D	14.3 s	u 13.5 s	12.5	11.7	10.8	J 8.6 s	J 8.0 s	I 7.1 s	I 6.6 s	5.8 s
3	u 6.0 s	I 6.4 s	7.0	4.8	4.2	4.4	5.6	9.2	11.7	11.9	12.6	13.8 s	13.3	12.8	12.0	12.2	11.7	11.5	I 10.2 s	8.3	7.1 s	u 6.8 s	6.9	6.5 s
4	I 6.4 s	I 6.1 s	5.9	5.5	5.3	5.1	6.2	J 8.6 s	10.9	11.2	12.8	13.1	13.3	12.7	12.0	11.4	11.5 s	10.4	9.1	7.3	u 7.1 s	u 6.3 s	6.2 s	6.1
5	I 6.1 s	5.8	5.8	5.5	5.7 s	5.3	5.9	u 8.7 s	10.7	12.2	u 13.8 s	14.0 s	13.7	13.5 s	12.8 s	12.4	12.2	12.2	I 10.0 s	8.7 s	I 7.7 s	I 6.8 s	u 6.0 s	5.9 s
6	J 5.9 s	5.7	u 5.5 s	5.2	I 4.8 s	4.4	6.0 s	u 9.3 s	J 11.0 s	12.1	12.7	13.0	13.3	13.3	13.0	11.9	12.1 s	u 12.5 s	J 10.8 s	I 9.4 s	I 8.7 s	I 8.2 s	I 8.0 s	I 7.8 s
7	I 7.1 s	J 6.4 s	u 6.6 s	6.2 s	5.7 s	5.3 s	6.0 s	8.9 s	11.4	J 11.6 s	11.7	12.2	13.1	13.3	13.3	13.0	12.0 s	11.5 s	u 11.1 s	I 9.1 s	J 8.2 s	I 6.7 s	u 6.2 s	u 6.2 s
8	u 5.9 s	5.9	I 6.0 s	5.9	5.0	4.5	5.7 s	8.7 s	9.8 s	10.6	11.6	12.7	12.6 s	12.1	11.8	11.6 s	11.7 s	11.6	I 10.5 s	I 7.8 s	I 8.0 s	I 7.3 s	I 6.4 s	I 6.0 s
9	I 6.2 s	u 6.5 s	6.3 s	6.5	u 5.6 s	5.8 s	u 7.0 s	I 10.2 s	u 11.6 s	11.1	12.7	J 14.2 s	J 14.3 s	13.6	13.0	12.4	12.2	11.9	J 10.8 s	J 8.6 s	u 7.4 s	I 6.8 s	6.3 s	u 6.5 s
10	I 6.5 s	u 6.3 s	u 6.0 s	5.9	5.6	u 5.6 s	u 6.3 s	I 9.5 s	11.3	11.4	12.0	J 13.8 s	I 14.0 s	I 13.8 s	13.3 s	12.6	12.0 s	11.5 s	u 10.5 s	I 9.0 s	I 7.6 s	I 7.2 s	I 6.9 s	u 7.0 s
11	6.4 s	5.9 s	5.6	5.7	I 5.6 s	5.5	6.5 s	8.7 s	10.4 s	I 12.6 C	13.4	14.0	J 14.0 s	13.7 s	13.5	12.8	11.8 s	11.1 s	I 10.0 s	I 8.4 s	u 6.9 s	I 7.0 s	u 6.3 s	u 6.2 s
12	6.3 s	J 6.3 s	u 6.3 s	5.1	u 4.9 s	5.2	u 6.8 s	I 10.3 s	11.4 s	11.9	12.5	D 15.2 s	J 14.4 s	J 14.3 s	D 14.9 s	I 14.0 s	12.8	11.5	J 10.6 s	J 8.2 s	I 7.1 s	I 7.2 s	7.1 s	5.8 s
13	I 5.6 s	6.0	5.1 s	5.1 s	J 4.8 s	5.3	6.0	u 8.6 s	J 10.8 s	11.0	12.0	13.5	12.1	12.2	11.6	11.6	11.1	10.4 s	u 9.8 s	I 8.7 s	u 8.0 s	I 6.6 s	4.8	5.5
14	u 5.7 s	5.5	u 5.5 s	5.9	4.5	u 4.0 s	5.5	I 8.0 s	8.9	10.1	11.1	12.8	12.9	12.2	11.3	11.7	11.0	11.0	10.4	I 7.8 s	6.0	u 5.8 s	I 5.7 s	5.9 s
15	I 6.2 s	5.8	5.4	5.2	4.8	4.9	6.4	u 8.1 s	9.4	9.6	10.3	11.8	11.8	12.6	11.2	10.3	I 10.5 s	J 10.6 s	9.9	7.3 s	6.9	6.6	6.6	6.2
16	6.1	6.0	5.6	5.6	5.1	5.1	6.8	8.9	9.1	11.3	11.5	12.6	12.6	11.8	11.3	11.4	10.7	11.3	I 9.8 s	6.8	u 6.7 s	I 7.2 s	I 6.4 s	5.4 H
17	5.8	6.1 s	6.2	5.8	5.8 F	5.4 F	6.1	7.3 s	11.5	12.0	13.4	14.5	14.4 s	12.7	12.4	11.9	11.4	11.2	9.4	7.1 s	6.3	6.6	5.8	5.9
18	5.5	5.8	5.5	5.3	5.0	5.1	6.7	9.6 s	12.4	13.0	13.0	13.3	13.3	13.4	13.0	11.6	11.3	10.2	u 9.7 s	u 7.9 s	6.7	I 6.3 C	u 5.3 C	I 5.4 C
19	u 5.3 C	u 5.4 C	5.3	5.2	4.7	u 4.8 C	u 6.3 C D	9.3 C	11.7	11.7	11.8	11.6	12.7	12.8	11.9	11.5	11.3	11.1	10.1 R	7.9	6.6	6.8	6.6 s	6.2 s
20	6.5	5.9	5.7	5.4	5.1	5.3	6.6	9.1	11.4	11.4	12.2	12.5	12.3	11.5	10.8	10.9	10.6	9.9 s	u 9.6 s	8.6 s	u 7.1 s	6.7	7.1 s	6.7
21	6.6	6.1	6.1	5.9	4.8	4.9	6.5	9.1	10.0	10.8 R	11.0	12.5	12.6	12.7	12.1	11.8	11.5	J 10.6 s	u 10.3 s	8.6 s	u 7.3 s	I 7.4 s	6.8 s	6.6
22	6.0	6.2	6.3	5.6	4.6	4.6	6.9	J 10.3 s	11.4	11.1	12.1	13.1	12.6	12.6	12.3	11.7	11.3	11.4	11.8	I 9.4 s	7.3 s	u 7.3 s	u 7.2 s	7.1
23	6.5	6.6	6.6	6.5	5.4	5.4	J 7.6 s	J 10.7 s	10.6	10.6	11.2	12.6	13.3	13.4	12.8	12.5	12.4	12.4	11.7	9.5	J 8.4 s	8.3	u 7.2 s	7.0
24	6.5	6.3 s	6.3	6.3	5.4	5.0	u 7.1 s	10.3 s	11.5	11.1	12.0	13.2	13.6	13.6	12.8	12.6	12.8	12.4	11.7	J 10.3 s	J 8.1 s	I 8.0 s	I 8.0 s	u 7.2 s
25	6.6 s	6.0	5.6	5.5	5.5	5.4	u 7.6 s	I 9.5 s	J 10.8 s	11.2	12.3	12.8	13.1	13.2	12.6	12.5	12.2	12.2	u 10.8 s	u 8.9 s	u 6.7 s	I 7.3 s	u 7.1 s	I 7.4 s
26	u 7.1 s	u 7.5 s	I 7.6 s	7.3	5.5	5.5	7.2	u 9.4 s	u 9.8 s	11.7	12.3	13.2	12.9	13.0	12.5	11.8	11.3	10.8 s	J 10.7 s	I 9.3 s	u 6.9 s	u 6.9 s	I 7.1 s	I 7.2 s
27	u 7.1 s	6.8	J 6.8 s	6.6	5.9	6.3	u 7.8 s	8.5	9.8	10.9	12.3	12.5	12.2	12.3	12.3	12.3	12.4	11.2	u 10.7 s	u 9.0 s	I 7.8 s	u 7.4 s	u 7.0 s	u 7.6 s
28	J 7.4 s	u 8.0 s	7.3 s	6.7	6.7	6.6	u 8.6 s	u 9.6 s	10.4	11.4	12.0	12.4	13.1	12.6	12.0	11.5	11.5	11.1	10.9	I 10.0 s	J 8.3 s	J 8.2 s	7.9 s	J 8.3 s
29	u 7.7 s	6.6	5.9	5.6	5.6	6.0	8.5	u 10.2 s	11.5	13.2	12.9	13.2	13.3	14.1	J 14.2 s	13.2	12.5	11.8	I 10.8 s	8.9 s	u 8.4 s	6.6 s	7.3 s	I 7.1 s
30	u 7.0 s	6.6	6.5	6.5	6.5	6.6	8.3	u 9.9 s	10.9	12.1	13.3	13.5	13.2	13.6	13.9	13.5	12.8	12.6	u 12.7 s	I 10.1 s	u 8.2 s	J 7.8 s	I 8.0 s	8.3
31	7.1	u 7.6 s	6.7	6.5	6.1	6.3	u 8.5 s	9.7	11.7	12.3	10.8	12.1	12.4	12.3	12.8	12.0	10.9	u 9.8 s	u 9.8 s	u 9.7 s	u 7.8 s	I 7.6 s	I 8.2 s	I 8.5 s
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	u 6.4	6.2	6.0	5.6	5.3	5.3	6.5	9.2	11.0	11.4	12.3	13.1	13.1	12.8	12.5	11.9	11.7	11.4	u 10.5	8.6	u 7.4	u 7.0	u 6.9	6.5
u.q.	6.8	6.6	6.5	6.3	5.6	5.5	7.2	9.7	11.5	12.1	12.9	13.8	13.6	13.6	13.0	12.6	12.2	11.8	10.8	9.3	8.0	7.4	7.2	7.2
L.q.	6.0	5.9	5.6	5.3	4.8	4.9	6.0	8.6	10.4	11.1	11.6	12.5	12.6	12.5	11.9	11.6	11.3	10.8	9.8	7.9	6.9	6.7	6.3	5.9
q.R.	0.8	0.7	0.9	1.0	0.8	0.6	1.2	1.1	1.1	1.0	1.3	1.3	1.0	1.1	1.1	1.0	0.9	1.0	1.0	1.4	1.1	0.7	0.9	1.3

foF2

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

The Radio Research Laboratories, Japan.

K 1

IONOSPHERIC DATA

Mar. 1960 | foF1 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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											L			L										
2																								
3																								
4																								
5														L										
6																								
7													L											
8												L	L	L										
9											L	L												
10												L												
11										C														
12											L													
13												L												
14												L	L											
15											L	L		L										
16											L	L												
17												L												
18																								
19							C	C	C			L	L	L		L								
20													L											
21												L												
22												L		L										
23											L	L	L											
24												L	L	S		L								
25											L	L		L										
26												L			L									
27											L	L	L			L								
28												L	L	L	L									
29													L	L	L									
30											L	L		L	L									
31											S	L	S	L	L									
No.																								
Median																								

foF1

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

The Radio Research Laboratories, Japan.

K 2

IONOSPHERIC DATA

Mar. 1960 | foE | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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							S	I z.55 S	z.85	3.15	3.25	3.50	I 3.60 S	3.60	3.50	I 3.10 S	I z.70 S	S						
2							S	S	U 3.00 S	I 3.05 A	I 3.30 A	I 3.50 A	3.60	I 3.60 A	3.50 S	I 3.10 A	I z.65 A	S						
3							S	S	U 3.00 S	3.10	3.40	I 3.50 S	3.65	3.60	3.25	3.15 S	I z.65 S	S						
4							B	S	z.85	3.20	3.40	A	A	S	3.40	3.30	I z.85 S	S						
5							S	S	S	S	R	I 3.40 A	S	S	A	A	AS	S						
6							S	S	U z.70 S	I 3.30 S	3.60 S	I 3.65 S	I 3.70 S	I 3.65 S	3.50 S	A	S	S						
7							S	S	U z.90 S	S	S	S	S	3.60 R	I 3.45 S	3.25 R	S	S						
8							S	S	S	S	U 3.35 S	S	S	U 3.60 S	3.45 S	I 3.30 S	I z.90 S	S						
9							S	S	S	I 3.15 S	I 3.45 B	I 3.55 A	I 3.55 S	A	A	A	S	S						
10							S	S	U z.80 S	U 3.30 S	I 3.50 S	U 3.60 S	I 3.60 S	I 3.60 S	I 3.50 S	S	S	S						
11							S	S	z.70 S	I 3.20 C	U 3.25 A	I 3.50 S	U 3.60 S	3.65 S	3.60 S	3.25 S	I z.90 S	S						
12							S	S	I z.90 S	3.15	I 3.25 A	I 3.45 A	3.70	U 3.60 S	3.45	I 3.25 S	I z.75 S	S						
13							S	S	z.60	A	S	I 3.70 S	S	S	3.50	3.30	S	S						
14							S	S	I z.80 S	I 3.20 S	U 3.40 S	C	S	3.70	3.50	S	S	S						
15							S	S	I z.90 S	I 3.25 A	3.60	I 3.60 S	I 3.70 S	U 3.75 S	U 3.40 S	3.35	I z.85 S	S						
16							S	S	z.60	I 3.30 S	I 3.45 S	U 3.60 R	I 3.65 A	3.55	I 3.40 A	U 3.10 S	z.80	S						
17							S	S	I z.90 A	I 3.20 A	3.60	3.60	I 3.60 R	I 3.50 S	I 3.40 S	3.10	I z.75 A	S						
18							S	I z.45 S	U 3.05 S	I 3.30 A	3.40	A	A	I 3.60 A	3.50	I 3.10 A	I z.75 S	A						
19							C	C	C	R	I 3.40 C	I 3.60 S	3.70	3.70	I 3.50 A	3.30	z.80	S						
20							B	I z.40 S	z.90	3.40	U 3.50 R	I 3.50 A	I 3.60 R	3.70	3.55	3.40	z.90	U z.30 S	S					
21							1.60	I z.45 S	3.00	3.30	3.60	3.70	I 3.65 R	3.55	3.50	3.35	I z.90 S	S	S					
22							S	I z.65 S	I 3.10 S	U 3.45 A	A	A	I 3.75 A	3.75	3.60	3.40 S	U 3.10 S	S	S					
23							S	I z.55 S	3.05	3.50	3.60	3.70	I 3.70 A	I 3.60 R	I 3.55 S	3.40	3.00	U z.20 S	S					
24							S	I z.40 S	3.00	3.25	3.60	I 3.80 S	3.90	3.75 S	3.60	3.50	I 3.20 S	S	S					
25							S	I z.55 A	U 3.15 S	3.45	I 3.60 A	I 3.75 A	I 3.85 S	3.90	3.65	3.40	I 3.10 S	S	S					
26							B	z.50	3.10 S	I 3.40 S	S	A	3.75	3.65	3.45	3.35	U 3.10 S	S	S					
27							S	S	3.15 S	3.50	I 3.65 A	I 3.80 B	I 3.80 S	3.95	3.65	3.50	I 3.15 A	z.20 S	S					
28							S	I z.85 S	3.35	3.50 S	I 3.70 S	I 3.85 A	I 3.90 S	3.70	U 3.55 S	I 3.40 S	3.05 S	z.60	S					
29							S	U z.85 S	3.30	3.20	3.60	I 3.75 A	I 3.70 S	I 3.70 S	I 3.30 S	3.25	I z.80 B	I z.40 S	I z.10 S					
30							S	I z.75 S	3.25	3.60	3.85 S	3.90	B	A	I 3.70 B	3.55	I 3.20 S	I z.40 S	S					
31							I z.25 S	z.80 S	3.25	3.60	I 3.70 R	I 3.70 S	I 3.70 S	I 3.70 S	3.60	3.40	I 3.05 S	I z.40 S	S					
No.							z	13	z7	z6	z6	z4	z3	z6	z9	z6	z4	7	1					
Median							U 1.90	U z.55	3.00	3.30	U 3.50	U 3.60	U 3.70	3.65	3.50	3.30	U z.90	U z.40	U z.10					

foE

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

The Radio Research Laboratories, Japan.

K 3

IONOSPHERIC DATA

Mar. 1960 | foEs | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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	S	E	S	E	S	S	S	S	G	G	3.6	G	2.7[G]	G	2.7[G]	G	S	S	S	S	S	S	S	S
2	S	E	E	J1.8	E	E	S	S	G	3.8[S]	3.8[S]	J3.7	3.8	3.9	G	J3.1	3.9[S]	S	S	S	S	2.1[M]	E	S
3	S	S	2.0[M]	2.3[M]	2.3	J2.4	2.4	S	G	2.8[G]	G	G	G	G	G	G	S	S	S	E	S	S	E	S
4	S	2.9	2.3[M]	2.0[M]	2.2[S]	S	B	S	G	G	3.6	3.9	7.0[S]	3.1[G]	2.5[G]	G	S	S	E	S	S	J2.6	S	S
5	S	J3.2	S	E	S	S	S	2.9	S	G	J3.0	J5.2	S	S	J4.7	5.2	4.6[M]	S	E	E	E	S	S	E
6	S	E	S	S	2.1	E	S	S	3.1	S	G	S	S	G	G	3.6[M]	S	S	J3.3	J3.0	3.1[M]	S	S	S
7	S	S	E	S	S	S	S	S	G	G	S	S	S	G	G	G	S	S	S	S	S	S	S	S
8	S	S	S	E	S	S	S	S	G	3.5	3.5	S	S	G	G	S	S	S	S	S	S	E	S	S
9	E	S	E	E	E	E	S	S	S	G	B	3.9	S	J4.0	4.2	3.5	3.0	S	J2.8	J2.8	S	S	S	S
10	S	S	S	S	E	S	S	S	2.9	G	S	G	S	G	S	S	S	S	S	S	S	S	S	S
11	S	S	E	C	S	J2.4[S]	S	S	G	C	3.8	G	G	G	G	G	S	S	S	S	S	S	S	S
12	S	E	S	E	S	S	S	S	G	J4.2	3.6	J4.8	G	3.9[S]	G	S	S	S	S	S	S	S	S	S
13	S	S	S	E	S	S	S	S	G	3.3	G	S	S	S	G	G	S	S	S	S	S	E	E	S
14	S	S	S	E	E	S	S	S	G	S	G	C	G	G	G	G	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	J4.8[S]	G	S	S	G	G	G	S	S	S	E	S	E	S	S
16	E	E	E	E	E	E	S	S	G	2.9[G]	S	G	3.7	G	3.7	G	G	S	J2.4	E	E	E	S	E
17	S	S	E	E	E	S	S	S	3.0	3.7[S]	4.1	4.0	3.5[G]	D3.0[S]	D3.0[S]	G	3.1	S	S	S	2.3	S	E	E
18	E	E	E	E	E	S	S	G	G	3.6	3.8[S]	4.1	4.1	3.8[S]	4.2[M]	J4.2	S	2.5[S]	J2.4	S	C	C	C	C
19	C	C	C	E	C	C	C	C	C	2.9[G]	C	G	G	2.7[G]	3.9	G	G	S	S	S	E	E	S	E
20	E	E	E	E	E	E	B	2.9	G	G	G	4.0	3.6	G	G	G	G	G	S	S	S	E	E	E
21	E	E	E	E	E	E	G	S	G	3.1[G]	G	3.9	G	G	G	G	G	S	S	S	E	E	E	E
22	2.2	E	E	E	E	E	S	S	S	3.8[M]	4.0	3.9	4.0	G	G	G	G	S	S	E	E	E	E	2.4
23	E	E	E	E	E	E	S	S	3.5	G	G	G	J3.8	G	G	G	G	G	S	E	E	S	E	E
24	E	E	E	E	E	E	S	G	G	3.7	3.9	S	G	G	G	G	S	S	S	S	E	E	E	E
25	E	E	E	E	E	E	S	2.9	G	G	3.9	D3.6[S]	G	G	G	G	S	S	S	E	S	S	E	S
26	S	E	E	E	E	E	B	G	G	3.8[S]	G	4.0	G	G	G	G	G	S	S	S	E	S	S	S
27	S	E	E	E	E	E	S	S	G	G	3.9	S	G	G	G	G	3.4	G	S	S	E	E	E	E
28	E	E	E	E	E	S	S	G	G	S	3.6	3.9[S]	G	G	G	S	S	G	S	S	E	E	E	E
29	E	E	E	E	E	E	S	G	G	G	4.0	4.0[S]	S	4.1	G	3.9	B	S	S	E	S	E	3.0[S]	S
30	S	S	E	E	E	E	G	S	3.8	G	G	G	B	J5.3	B	3.9[S]	G	S	S	J2.7	E	E	E	E
31	S	E	E	E	E	E	S	G	G	G	G	G	G	G	2.8[G]	G	S	G	S	E	E	S	E	E
No.	11	19	21	26	22	17	3	9	26	27	26	21	21	28	28	27	13	6	6	12	14	15	15	13
Median	E	E	E	E	E	E	G	G	G	G	3.6	3.9	G	G	G	G	G	G	2.4	E	E	E	E	E
U.Q.	E	E	E	E	E	E	G	2.9	G	3.7	3.8	4.0	3.8	3.2	2.8	3.1	3.2	G	2.8	E	E	E	E	E
L.Q.	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E
Q.R.																								

foEs

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

The Radio Research Laboratories, Japan.

K 4

IONOSPHERIC DATA

Mar. 1960

f_bE_s

135° E Mean Time (G.M.T.+ 9h.)

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' 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	S		S		S	S	S	S			3.4		E 2.7 S		2.7 q		S	S	S	S	S	S	S	S
2	S			E			S	S		3.3	3.5	3.7	3.0 q	3.7		3.1	3.2	S	S	S	S	E 2.1 S		S
3	S	S	E	1.7	2.1	2.2	1.9	S		2.3 q							S	S	S		S	S		S
4	S	1.8	2.0	E	E	S	B	S			3.6	3.6	4.5	E 3.1 S	2.5 q		S	S		S	S	2.6	S	S
5	S	2.6	S		S	S	S	2.9	S		E 3.0 B	4.1	S	S	4.2	4.5	4.5	S				S	S	
6	S		S	S	1.5		S	S	3.1	S		S	S			3.3	S	S	3.0	3.0	3.1 S	S	S	S
7	S	S		S	S	S	S	S			S	S	S				S	S	S	S	S	S	S	S
8	S	S	S		S	S	S	S		E 3.5 S	E 3.5 S	S	S			S	S	S	S	S	S		S	S
9		S					S	S	S		B	3.7	S	3.7	4.0	3.4	u 2.6 S	S	2.6	2.7	S	S	S	S
10	S	S	S	S		S	S	S	2.9		S		S		S	S	S	S	S	S	S	S	S	S
11	S	S		C	S	2.4 S	S	S		C	3.8						S	S	S	S	S	S	S	S
12	S		S		S	S	S	S		3.7	3.6	4.2		G		S	S	S	S	S	S	S	S	S
13	S	S	S		S	S	S	S		3.2		S	S	S			S	S	S	S	S			S
14	S	S	S			S	S	S		S		C					S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	3.6		S	S				S	S	S		S		S	S
16							S	S		E 2.9 S	S		3.7		3.6			S	2.2				S	
17	S	S				S	S	S	3.0	u 3.7 S	4.0	3.8	E 3.5 S	D 3.0 S	D 3.0 S		2.8	S	S	S	2.0	S		
18						S	S			3.3	3.8	4.0	3.9	3.7	3.2	3.5	S	1.8	2.0	S	C	C	C	C
19	C	C	C		C	C	C	C	C	E 2.9 B	C			2.7	3.7			S	S	S			S	
20							B	2.9				3.9	3.6						S	S	S			
21								S		3.0 q		3.3 q						S	S	S				
22	E						S	S	S	u 2.6 A	3.7	3.8	3.8					S	S					1.8
23							S	S	3.3				3.8						S			S		
24							S			3.6	3.7	S					S	S	S	S				
25							S	2.7			3.9	D 3.6 S					S	S	S		S	S		S
26	S						B			3.5		3.9						S	S	S		S	S	S
27	S						S	S			3.9	S					3.2		S	S				
28						S	S			S	3.6	3.9				S	S		S	S				
29							S				3.7	E 4.0 S	S	4.0		3.6	B	S	S		S		2.8	S
30	S	S						S	3.6				B	5.3	B	G		S	S	1.7				
31	S						S								2.8		S		S			S		
No.	1	2	2	3	3	2	1	3	5	13	15	12	9	8	8	7	5	1	4	3	2	2	1	1
Median	E	2.2	E	E	1.5	2.3	1.9	2.9	3.1	3.3	3.7	3.8	3.7	3.7	3.4	3.4	3.2	1.8	2.4	2.7	2.6	E 2.4	2.8	1.8

f_bE_s

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

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

Mar. 1960 | f-min | 135° E Mean Time (G.M.T.+ 9h.)

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' 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	E1.90S	1.30	E1.90S	1.30	E1.90S	E1.90S	E1.90S	E2.50S	1.90	1.30	2.10	2.25	2.10	2.50	1.80	1.80	E3.20S	E2.30S	E2.05S	E1.70S	E1.90S	E2.00S	E1.70S	E1.80S
2	E2.00S	1.30	1.70	1.20	1.00	1.20	E1.50S	E2.40S	2.10	E2.50S	2.10	2.40	2.50	2.15	2.10	1.70	E2.40S	E2.20S	E2.20S	E1.90S	E2.05S	E1.60S	1.30	E2.00S
3	E2.10S	E1.70S	1.15	1.10	1.20	1.40	E1.80S	E2.50S	2.20	2.00	E2.80S	E2.90S	2.20	2.40	2.20	1.90	E2.80S	E1.90S	E2.10S	1.40	E1.70S	E2.20S	1.40	E1.70S
4	E2.00S	1.15	E1.70S	1.30	E1.50S	E2.10S	1.30	E2.50S	1.95	2.05	2.20	E3.10S	2.40	2.50	2.10	2.40	E2.50S	2.45S	1.30	E2.00S	E1.90S	1.30	E1.80S	E1.95S
5	E1.80S	E1.90S	E1.90S	1.10	E2.00S	E2.10S	E1.80S	E2.40S	E3.10S	2.30	2.20	2.15	E4.10S	E4.00S	2.15	2.00	E2.40S	E3.50S	2.20	2.60	2.00	E2.80S	E2.40S	1.40
6	E3.00S	1.10	E2.00S	E2.00S	1.00	1.05	E2.80S	E2.90S	E2.00S	E3.30S	E3.20S	E3.50S	E4.10S	E3.10S	3.05	2.20	E3.00S	E3.00S	1.90	1.90	E2.10S	S	E2.60S	E2.20S
7	E2.20S	E2.30S	1.70	E1.90S	E2.60S	E2.20S	E2.60S	E2.60S	E2.20S	2.00	E3.70S	E4.20S	E3.90S	3.10	2.70	2.25	E3.30S	E3.00S	E2.50S	E2.50S	E2.50S	E3.00S	E2.50S	E2.00S
8	E2.50S	E2.40S	E2.40S	1.90	E2.40S	E2.10S	E2.80S	E3.00S	E2.00S	E3.30S	2.20	E3.90S	E3.80S	E2.60S	E3.15S	E3.30S	E3.40S	E3.00S	E2.80S	E2.90S	E2.30S	1.80	E1.80S	E2.50S
9	1.50S	E2.50S	1.40S	1.30	1.90	1.50S	E2.30S	E2.50S	E3.30S	2.00	3.50	2.50	E3.50S	E3.00S	2.35	2.00	E2.10S	E2.50S	E1.90S	E2.00S	E2.10S	E2.10S	E1.80S	E1.60S
10	E1.90S	E1.90S	E2.20S	E1.90S	1.25	E2.00S	E1.90S	E2.80S	2.10	E2.20S	E2.70S	E2.50S	E3.00S	E3.10S	E3.70S	E3.50S	E3.10S	E3.20S	E2.50S	E2.50S	E2.40S	E2.40S	E1.60S	E1.50S
11	E2.30S	E2.60S	1.50S	E1.80C	E3.20S	E1.60S	E2.10S	E2.50S	1.30	I2.20C	2.20	3.00	E2.60S	E2.60S	E2.70S	E2.40S	E3.20S	E3.00S	E2.50S	E2.30S	E2.50S	E1.80S	E2.60S	E2.60S
12	E2.40S	1.90S	E1.80S	1.90	E2.10S	E1.80S	E2.00S	E2.90S	E2.10S	2.35	3.00	3.00	3.10	2.90	2.40	E3.20S	E2.80S	E3.10S	E2.20S	E2.20S	E2.40S	E3.00S	E2.30S	E1.80S
13	E2.10S	E2.10S	E1.80S	1.50	E2.00S	E1.80S	E1.70S	E2.40S	1.90	1.80	E2.60S	E3.60S	E4.20S	E3.90S	E3.05S	2.20	E3.05S	E3.00S	E2.50S	E2.10S	E1.70S	1.50	1.50	E1.65S
14	E2.10S	E2.20S	E2.20S	1.40	1.40	E2.00S	E2.50S	E2.80S	E2.10S	E3.00S	2.50	E4.10C	3.00	3.05	2.90	2.20	E2.70S	E2.40S	E2.10S	E2.60S	E2.30S	E2.20S	E2.10S	E2.30S
15	E2.30S	E2.00S	E1.80S	E1.95S	E1.60S	E2.10S	E1.90S	E2.50S	E3.05S	E3.00S	E3.00S	E3.90S	E3.90S	E3.20S	1.90	2.05	E2.50S	E2.20S	E1.90S	1.40	E1.80S	1.40	E2.00S	E1.70S
16	1.40	1.20	1.05	1.40	1.40	1.70	E1.90S	E2.50S	1.90	2.00	E3.50S	E3.00S	2.20	2.40	2.20	2.10	1.80	E2.10S	1.50	1.40	1.40	1.30	E1.50S	1.40
17	E1.45S	E1.70S	1.05	1.10	1.40	E1.80S	E2.00S	E1.80S	2.00	2.05	2.10	2.50	2.20	2.20	2.20	2.30	1.80	E2.40S	E1.60S	E1.80S	E1.70S	E1.80S	1.50	1.40
18	1.20	1.20	1.00	1.30	1.20	E1.50S	E1.80S	1.70	1.90	2.00	2.10	2.10	2.20	2.50	2.10	2.20	E2.50S	1.60	1.40	E1.50S	E2.50C	E2.90C	E2.90C	E2.50C
19	E2.40C	E2.40C	E1.90C	1.30	E2.00C	E2.50C	E2.10C	E2.30C	E3.00C	2.10	E3.65C	E3.10C	2.15	2.10	2.30	2.10	1.80	E2.35S	E1.50S	E1.60S	1.40	1.70	E1.80S	1.50
20	1.40	1.30	1.40	1.30	1.10	1.40	1.70	E1.90S	2.00	2.10	2.10	2.10	2.20	2.30	2.00	2.20	2.00	1.90	E1.80S	E1.70S	E1.50S	1.30	1.20	1.30
21	1.60	1.10	1.10	1.00	1.10	1.40	1.30	E2.40S	1.80	2.00	2.20	2.10	E2.50S	2.30	2.10	2.30	2.20	E2.40S	E1.60S	E1.70S	1.10	1.25	1.30	1.20
22	1.30	1.40	1.10	1.10	1.10	1.30	E1.90S	E2.50S	1.90	1.95	2.20	2.20	2.10	2.10	2.30	2.10	2.20	E2.40S	E1.60S	1.20	1.40	1.30	1.30	1.40
23	1.30	1.05	1.20	1.10	1.10	1.40	E2.10S	E2.45S	2.00	2.10	2.20	2.20	2.10	2.15	2.00	2.10	2.00	E1.70S	E1.60S	1.40	1.20	E1.60S	1.10	1.30
24	1.25	1.40	1.00	1.00	1.10	1.10	E1.50S	1.90	1.90	2.00	2.30	2.10	2.30	2.50	2.60	2.20	E2.95S	E2.50S	E1.70S	E1.60S	1.50	1.30	1.20	1.10
25	1.20	1.60	1.05	1.30	1.10	1.10	E1.50S	1.90	1.90	2.05	2.10	2.25	2.60	2.50	2.10	2.20	E2.50S	E2.30S	E1.80S	1.50	E1.50S	E1.90S	1.20	E1.50S
26	E1.50S	1.20	1.10	1.05	1.30	1.50	2.10	1.80	1.90	2.00	2.00	2.20	2.20	2.25	2.20	2.00	1.90	E2.70S	E1.70S	E1.50S	1.40	E1.80S	E1.40S	E1.40S
27	E1.50S	1.40	1.15	1.10	1.10	1.10	E1.80S	E2.40S	1.90	2.00	2.40	E3.90S	2.90	2.45	2.05	2.40	2.00	E1.80S	E1.80S	E1.60S	1.50	1.30	1.50	1.50
28	1.50	1.40	1.10	1.10	1.50	E1.70S	E2.00S	1.90	1.90	2.00	2.10	2.50	2.20	2.20	2.20	1.95	E2.20S	2.00	E1.80S	E1.80S	1.40	1.50	1.30	1.70
29	1.20	1.60	1.20	1.10	1.50	1.50	E2.10S	E2.00S	2.15	2.25	2.40	2.50	E4.20S	2.60	2.90	2.40	4.10	E2.90S	E2.00S	1.10	E1.60S	1.40	1.15	E1.80S
30	E1.80S	E1.80S	1.20	1.10	1.40	1.50	E2.00S	E2.60S	2.20	2.30	2.30	2.50	5.00	2.20	3.80	2.90	2.40	1.90	E1.80S	1.10	1.50	1.50	1.20	1.05
31	E1.50S	1.30	1.40	1.10	1.20	1.70	E2.30S	1.90	2.15	2.10	2.40	2.60	2.60	2.15	2.00	2.20	E2.40S	E1.85S	E2.00S	1.20	1.20	E1.90S	1.40	1.30
No.	31	18	20	26	21	16	31	31	22	25	23	19	20	23	27	27	31	31	31	31	31	31	31	31
Median	E1.80	1.30	1.15	1.15	1.20	1.40	E1.90	E2.45	1.90	2.00	2.20	2.25	2.20	2.40	2.20	2.20	E2.50	E2.40	E1.90	E1.70	E1.70	E1.80	E1.50	E1.60

f-min

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

The Radio Research Laboratories, Japan.

K 6

IONOSPHERIC DATA

Mar. 1960 | (M3000)F2 | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' 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	u z.75 s	J z.95 s	u z.55 s	z.70	u 3.10 s	z.55	z.90	u 3.25 s	3.15	3.15	3.00	3.05	z.90	z.90	z.90	J z.95 s	z.95	3.05	3.05	z.75 s	u z.75 s	I z.80 s	u z.75 s	I z.75 s
2	I z.75 s	u z.80 s	u z.85 s	z.60	z.60	z.50	z.90 s	3.25	3.20	3.25	z.95	z.95	u 3.00 R	J 3.05 s	I 3.00 s	u 3.05 s	z.95	3.00	z.95	J z.90 s	J z.95 s	I z.95 s	I z.80 s	z.55 s
3	u z.65 s	I z.75 s	3.15	3.05	z.55	z.40	z.90	3.35	3.20	3.15	3.00	3.05 s	3.00	z.90	z.90	z.85	3.00	3.10	I 3.00 s	z.90	z.85 s	u z.70 s	z.75	z.60
4	I z.70 s	I z.70 s	z.70	z.70	z.80	z.55	z.95	J 3.00 s	3.20	3.15	3.05	3.00	3.00	3.00	3.00	3.00	3.15 s	3.00	3.10	3.00	u z.95 s	u z.85 s	z.75 s	z.60
5	I z.60 s	z.55	z.60	z.55	z.60 s	z.70	3.00	u 3.10 s	3.05	3.10	u 3.00 s	3.00 s	3.00	3.05 s	z.95 s	z.95	3.05	3.20	I 3.10 s	3.00 s	S	S	u z.80 s	z.65 s
6	J z.75 s	z.70	u z.95 s	z.90	I z.85 s	z.70	3.00 s	u 3.30 s	J 3.20 s	3.15	3.05	3.05	3.00	3.00	z.95	z.90	3.00 s	u 3.10 s	J 3.15 s	I 3.05 s	I z.90 s	I z.90 s	I z.90 s	I z.95 s
7	I z.80 s	J z.80 s	u z.90 s	z.95 s	z.95 s	z.75 s	3.00 s	3.05 s	3.15	J 3.20 s	z.90	3.05	3.05	z.95	3.00	3.05	3.00 s	3.00 s	u 3.10 s	I 3.10 s	J z.95 s	I z.90 s	u z.75 s	u z.90 s
8	u z.90 s	z.75	I z.90 s	3.15	z.90	z.75	3.00 s	3.35 s	3.25 s	3.25	3.15	3.05	3.05 s	3.05	z.95	z.95 s	3.00 s	3.15	S	S	S	S	I z.80 s	I z.70 s
9	I z.60 s	z.65 s	z.85 s	z.90	u z.65 s	z.70 s	u z.85 s	I 3.10 s	u 3.30 s	z.90	z.90	J 3.00 s	J 3.00 s	3.00	z.90	z.90	3.05	3.10	J 3.15 s	J 3.10 s	u z.90 s	I z.80 s	z.65 s	u z.70 s
10	I z.85 s	u z.70 s	u z.70 s	z.70	z.65	u z.65 s	u z.85 s	I 3.15 s	3.20	3.05	z.90	J 3.05 s	S	S	3.00 s	3.00	3.10 s	3.15 s	u 3.10 s	S	S	I z.85 s	I z.80 s	u z.95 s
11	z.95 s	z.75 s	z.55	z.55	I z.60 s	z.65	z.90 s	3.10 s	3.15 s	I 3.05 C	3.10	3.00	J 3.05 s	3.00 s	3.05	3.00	3.05 s	3.00 s	S	S	u 3.00 s	I 3.00 s	u z.65 s	u z.60 s
12	z.75 s	J z.70 s	u z.95 s	z.65	u z.40 s	z.50	u z.85 s	I 3.05 s	3.25 s	3.10	z.95	I 3.00 s	J 3.00 s	J 3.00 s	I 3.00 s	I 3.10 s	3.10	3.15	J 3.10 s	J 3.05 s	I 3.00 s	I 3.10 s	z.95 s	z.80 s
13	I z.70 s	z.80	z.65 s	z.75 s	J z.60 s	z.75	3.00	u 3.25 s	J 3.25 s	3.15	3.10	3.10	3.00	3.00	3.00	3.00	3.00	3.15 s	u 3.05 s	I 3.05 s	u 3.10 s	I 3.10 s	z.90	z.60
14	u z.65 s	z.80	u z.95 s	3.05	3.10	u z.75 s	3.10	I 3.20 s	3.20	3.15	3.05	3.00	3.00	z.95	z.85	3.00	3.00	z.90	3.15	I 3.00 s	z.75	u z.75 s	I z.70 s	z.75 s
15	I z.85 s	z.80	z.80	z.75	z.65	z.65	3.00	u 3.20 s	3.30	3.20	3.10	3.05	z.95	z.95	3.05	z.90	I 3.00 s	J 3.10 s	3.15	3.00 s	z.75	z.80	z.90	z.75
16	z.60	z.60	z.50	z.65	z.55	z.35	3.00	3.25	3.20	3.00	3.15	z.95	z.95	z.90	z.65	z.75	z.90	3.00	I 3.10 s	z.80	u z.50 s	I z.80 s	I z.95 s	z.55 H
17	z.60	z.70 s	z.75	z.45	z.40 F	z.45 F	z.80	z.75 s	3.10	3.15	3.15	3.10	3.05 s	z.90	z.90	3.05	3.05	3.10	3.10	3.10 s	z.70	z.85	z.95	z.70
18	z.70	z.60	z.55	z.65	z.50	z.55	z.80	3.15 s	3.05	3.20	3.10	3.10	3.00	z.90	3.05	z.95	3.00	3.10	u 3.05 s	u 3.05 s	z.90	I 3.00 C	u z.85 C	I z.80 C
19	u z.70 C	u z.75 C	z.70	z.70	z.60	u z.70 C	u 3.10 C	I 3.20 C	3.25	3.15	3.15	z.85	3.00	3.05	z.95	3.05	3.00	3.05	3.10 R	3.05	z.80	z.75	z.90 s	z.70 s
20	z.90	z.75	z.65	z.70	z.65	z.60	z.90	3.20	3.15	3.15	3.10	3.05	3.10	3.05	z.95	3.05	3.00	3.15 s	u 3.15 s	3.00 s	u 3.05 s	z.75	z.70 s	z.80
21	z.85	z.80	z.75	z.95	z.70	z.55	3.10	3.20	3.10	3.15 R	z.90	z.95	3.00	z.90	z.90	z.95	z.95	3.00 s	u z.80 s	z.90 s	u z.90 s	I 3.00 s	z.70 s	z.80
22	z.50	z.75	z.85	3.00	z.65	z.65	3.05	J 3.20 s	3.25	3.05	3.00	3.00	z.95	z.95	z.85	z.90	3.00	3.00	3.05	I 3.05 s	z.75 s	u z.80 s	u z.80 s	z.80
23	z.60	z.65	z.70	z.90	z.80	z.65	J 3.15 s	J 3.25 s	3.20	3.00	z.95	z.95	z.85	z.90	z.90	z.95	z.95	3.00	3.15	3.05	J z.85 s	z.90	u z.90 s	z.85
24	z.70	z.70 s	z.75	z.95	z.75	z.80	u 3.10 s	3.10 s	3.15	3.15	z.85	z.90	z.80	z.90	z.75	z.85	z.90	3.00	3.00	J z.90 s	J z.85 s	S	S	u z.90 s
25	z.80 s	z.70	z.65	z.40	z.55	z.55	u 3.00 s	I 3.05 s	J 3.05 s	z.90	z.95	z.90	z.80	z.80	z.80	z.80	z.95	3.00	u z.95 s	u 3.15 s	u z.70 s	I z.80 s	u z.80 s	I z.70 s
26	u z.70 s	u z.70 s	I z.90 s	3.10	z.75	z.60	z.95	u 3.10 s	u 3.05 s	z.90	z.95	z.90	z.85	z.75	z.90	z.85	3.00	3.05 s	J 3.00 s	I 3.05 s	u z.85 s	u z.75 s	I z.75 s	I z.85 s
27	u z.85 s	z.60	J z.80 s	z.85	z.70	z.85	u 3.20 s	3.20	3.25	3.00	z.90	z.90	z.85	z.75	z.75	z.80	z.85	z.95	u 3.00 s	u 3.00 s	I z.90 s	u z.95 s	u z.70 s	u z.60 s
28	J z.70 s	u z.85 s	z.90 s	z.70	z.80	z.90	u 3.25 s	u 3.25 s	3.15	z.90	z.90	z.80	z.90	z.85	z.85	z.75	z.90	z.95	z.95	I 3.00 s	J z.85 s	J z.65 s	z.65 s	J z.55 s
29	u 3.10 s	z.90	z.75	z.50	z.40	z.55	3.10	u 3.15 s	z.95	3.05	z.90	z.80	z.75	z.70	J z.80 s	z.80	z.80	z.95	I z.90 s	z.85 s	u z.75 s	z.90 s	z.75 s	I z.85 s
30	u z.75 s	z.80	z.70	z.50	z.60	z.70	3.20	u 3.05 s	3.00	z.80	z.95	z.80	z.85	z.80	z.80	z.80	z.85	z.95	u 3.05 s	I 3.10 s	u z.70 s	J z.60 s	I z.75 s	z.75
31	z.65	u z.80 s	z.50	z.50	z.40	z.40	u z.95 s	3.10	3.10	3.00	z.90	z.75	z.75	z.75	z.80	z.85	z.95	u z.85 s	u 3.05 s	u z.90 s	u z.75 s	I z.45 s	I z.40 s	I z.60 s
No.	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	29	28	28	28	30	31
Median	u z.70	z.75	z.75	z.70	z.65	z.65	3.00	3.20	3.20	3.15	3.00	3.00	3.00	z.90	z.90	z.95	3.00	3.00	3.05	3.00	u z.85	u z.80	u z.80	z.75

The Radio Research Laboratories, Japan.

(M3000)F2 Sweep 1.0 Mc to 20.0 Mc in 20 min/sec in automatic operation.

K 7

IONOSPHERIC DATA

Mar. 1960 | (M3000)F1 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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											L													
2														L										
3																								
4																								
5														L										
6																								
7													L			/								
8												L	L	L										
9											L	L												
10												L												
11										C														
12											L													
13												L												
14												L	L											
15											L	L		L										
16											L	L												
17												L												
18																								
19							C	C	C			L	L	L		L								
20													L											
21												L												
22												L		L										
23											L	L	L											
24												L	L	S		L								
25											L	L		L										
26												L			L									
27											L	L	L			L								
28												L	L	L	L									
29													L	L	L									
30											L	L		L	L									
31											S	L	S	L	L									
No.																								
Median																								

(M3000)F1 Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 8

IONOSPHERIC DATA

Mar. 1960 | h'F2 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N, Long. 139° 29.3' 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											z60													
2														z75										
3																								
4																								
5														z50										
6																								
7													z55											
8												z55	z60	z55										
9											z80	z80												
10												z55												
11										C														
12											z50													
13												z55												
14												z80	z60											
15											z80	z60		z60										
16											z80	z80												
17												z55												
18																								
19							C	C	C			z50	z55	z55		z60								
20													z55											
21												z70												
22												z60		z70										
23											z70	z75	z80											
24												z70	z75	300		300								
25											z60	z60		z90										
26												z55			z60									
27											z70	z55	z80			z60								
28												z55	z80	z60	z55									
29													z80	300	z80									
30											z60	z65		z95	z60									
31											z60	z60	z60	305	z90									
No.											10	19	11	12	5	3								
Median											z65	z60	z60	z70	z60	z60								

h'F2

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

The Radio Research Laboratories, Japan.

K 9

IONOSPHERIC DATA

Mar. 1960 | h'F | 135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo Lat. 35° 42.4' N Long. 139° 29.3' 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	z90	z55	305	z75	z20	305	z80	z35	z35	z40	z10	z35	z40	z30	z45	z30	z50	z45	z20	z55	z55	z80	300	z75
2	300	z50	z50	z80	350	345	z50	z35	z40	z30	z20	z30	z30	z30	z35	z30	z35	z40	z40	z50	z50	E z60^{s}	z45	300
3	305	300	z45	z50	310	360^{A}	z75	z40	z35	z40	z25	z30	z50	z30	z25	z30	z50	z45	z45	z20	z55	z80	z80	300
4	300	305	z95	z50	300	E 320^{s}	z50	z30	z30	z40	z30	z45	z55^{A}	z35	z30	z40	z45	z35	z10	z50	z50	z60^{A}	z80	315
5	310	340^{A}	305	300	310	z80	z50	z30	z25	z20	z25	z35	z25	z05	z35	z50	z50	z45^{s}	z40	z45	z50	z35	300^{s}	300
6	300^{s}	z90^{s}	z60	z60	z55	305	z70	z40^{s}	z30	z20	z20	z15	z20	z40^{s}	z25	z30	z45^{s}	z50	z30	z50	z70	I z65^{s}	z90^{s}	z50
7	z55	z95^{s}	z65	z60	z50^{s}	z55^{s}	z65	z40^{s}	z40	z45	z25	z50	z10	z45	z40	z30	z20	z50	z50	z45^{s}	z50	z50^{s}	300^{s}	z85^{s}
8	z80^{s}	300	300	z50	z55^{s}	z90^{s}	z65^{s}	z30^{s}	z30	z35	z25^{s}	z25	z20	z20	z20	z35^{s}	z40^{s}	z50^{s}	z25^{s}	z45^{s}	z55^{s}	z50	z55^{s}	325^{s}
9	330^{s}	330^{s}	z95	z60	300	305^{s}	z80^{s}	z35^{s}	z45^{s}	z30	z20	z30	z45	z40	z40	z45	z50	z50	z45	z45	z50	z60	300	310
10	z95	300	310	z80	z60	300	300	z45	z30	z20	z20	z05	z20^{s}	z25	z25^{s}	z35	z35^{s}	z50	z40	z45^{s}	z55^{s}	z90^{s}	z55	z50^{s}
11	z55^{s}	300^{s}	340^{s}	320	350^{s}	315	z55^{s}	z25^{s}	z30	I z25^{C}	z20	z20	z20	z20	z10	z40^{s}	z40^{s}	z40^{s}	z25^{s}	z40^{s}	z70^{s}	z60^{s}	z75^{s}	345^{s}
12	300^{s}	300	z55^{s}	z70	400^{s}	370^{s}	z55	z25^{s}	z40	z30	z10	z30	z30	z30	z30	z30	z30	z35	z30	z35	z70	E z55^{s}	z55	z60
13	305	z90	300	300	345	z80	z45	z45	z40	z35	z30	z10	z45	z20	z20	z45	z50	z45	z40	z50	z50	z45	z55	320
14	305	300	z80	z50	z45	z75	z50	z30	z40	z10	z45	z30	z45	z20	z25	z40	z45	z50	z45	z20	z80	E 300^{s}	310	E z95^{s}
15	z70	z75	z95	z80	z90	305	z50	z45	z45	z50	z45	z05	z50	z10	z50	z40	z50	z50	z30	z10	z55	z90	z70	z95
16	300	300	320	300	300	360	z45	z45	z40	z40	z30	z40	z40	z35	z50	z45	z35	z60	z30	z45	300	z60	z55	z50
17	310	z95	z90	310	350	360	z75	z45	z40	z45	z30	z30	z40	z40	z25	z30	z45	z50	z45	z30	z60	z95	z50	z95
18	300	300	300	305	300	310	z55	z50	z45	z30	z20	z10	z30	z20	z35	z10	z50	z50	z45	z50	z50	z55	z55	305
19	320	305	z90	z60	300	300	z50	z50	z50	z45	z25	z10	z30	z10	z40	z05	z40	z50	z40	z20	z50	z80	z90	z80
20	z80	z80	300	z70	z60	300	z50	z40	z40	z40	z45	z30	z30	z35	z20	z40	z40	z45	z45	z50	z50	z60	z80	z80
21	z55	z95	z65	z50	z35	300	z50	z35	z35	z40	z05	z10	z50	z40	z30	z40	z40	z50	z40	z50	z50	z50	z55	z60
22	345	z95	z50	z40	z50	305	z50	z45	z40	z30	z30	z30	z30	z30	z40	z30	z50	z50	z50	z20	z50	z60	z55	z80
23	300	z95	z55	z50	z50	z80	z50	z40	z40	z30	z25	z05	z30	z45	z25	z30	z40	z50	z40	z30	z45	z50	z50	z60
24	z55	300	z60	z50	z50	z55	z50	z45	z40	z30	z20	z10	z30	I z20^{s}	z30	z35	z50	z45	z50	z45	z45	z60	z55	z50
25	z55	z90	300	330	305	345	z50	z45	z35	z20	z10	z30	z45	z30	z50	z30	z40	z50	z45	z20	z50	z90	z70	z95
26	300	300	z50	z35	z30	z95	z50	z40	z30	z30	z30	z10	z10	z50	z10	z30	z50	z40	z50	z45	z30	z50	z90	z55
27	z80	300	z90	z50	z50	z50	z40	z40	z45	z30	z10	z10	z05	z40	z30	z40	z50	z50	z50	z50	z50	z60	z80	300
28	300	z75	z50	z50	z70	z55	z30	z40	z40	z30	z40	z20	z20	z40	z20	z30	z50	z50	z50	z45	z50	z80	300	300
29	z50	z50	z55	330	390	305	z45	z45	z50	z50	z40	z60	z30	z30	z40	z45	z50	z50	z50	z50	z70	z50	E z95^{s}	z80
30	300	z95	300	305	300	z95	z40	z30	z30	z40	z20	z10^{s}	E z60^{B}	E z55^{A}	z30	z35	z40	z45	z50	z30	z10	z85	z90	z60
31	300	z80	300	300	340	350	z50	z45	z45	z30	z20	z30	I z30^{s}	z45^{s}	E z70^{s}	z30	z45	z55	z50	z50	z55	330	370	340
No.	31	31	31	31	31	30	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	30	30	31
Median	300	z95	z90	z60	300	300	z50	z40	z40	z30	z25	z30	z30	z30	z30	z35	z45	z50	z45	z45	z50	z60	z80	E z95

h'F

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

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1960 | h'Es | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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	S	E	S	E	S	S	S	S	G	G	130	G	110	G	105	G	S	S	S	S	S	S	S	S
2	S	E	E	105	E	E	S	S	G	115	110	110	105	105	G	105	105	S	S	S	S	110	E	S
3	S	S	110	105	105	105	105	S	G	110	G	G	G	G	G	G	S	S	S	E	S	S	E	S
4	S	105	105	105	105	S	B	S	G	G	145	110	105	105	105	G	S	S	E	S	S	100	S	S
5	S	105	S	E	S	S	S	125	S	G	105	105	S	S	100	100	100	S	E	E	E	S	S	E
6	S	E	S	S	100	E	S	S	130	S	G	S	S	G	G	105	S	S	100	100	100	S	S	S
7	S	S	E	S	S	S	S	S	G	G	S	S	S	G	G	G	S	S	S	S	S	S	S	S
8	S	S	S	E	S	S	S	S	G	150	140	S	S	G	G	S	S	S	S	S	S	E	S	S
9	E	S	E	E	E	E	S	S	S	G	B	130	S	110	110	120	150	S	100	100	S	S	S	S
10	S	S	S	S	E	S	S	S	140	G	S	G	S	G	S	S	S	S	S	S	S	S	S	S
11	S	S	E	C	S	105	S	S	G	C	115	G	G	G	G	G	S	S	S	S	S	S	S	S
12	S	E	S	E	S	S	S	S	G	120	130	115	G	105	G	S	S	S	S	S	S	S	S	S
13	S	S	S	E	S	S	S	S	G	110	G	S	S	S	G	G	S	S	S	S	S	E	E	S
14	S	S	S	E	E	S	S	S	G	S	G	C	G	G	G	G	S	S	S	S	S	S	S	S
15	S	S	S	S	S	S	S	S	S	110	G	S	S	G	G	G	S	S	S	E	S	E	S	S
16	E	E	E	E	E	E	S	S	G	110	S	G	110	G	110	G	G	S	105	E	E	E	S	E
17	S	S	E	E	E	S	S	S	110	105	145	130	110	105	110	G	100	S	S	S	105	S	E	E
18	E	E	E	E	E	S	S	G	G	110	125	110	105	105	110	105	S	105	105	S	C	C	C	C
19	C	C	C	E	C	C	C	C	C	110	C	G	G	105	100	G	G	S	S	S	E	E	S	E
20	E	E	E	E	E	E	B	140	G	G	G	110	110	G	G	G	G	G	S	S	S	E	E	E
21	E	E	E	E	E	E	G	S	G	110	G	110	G	G	G	G	G	S	S	S	E	E	E	E
22	105	E	E	E	E	E	S	S	S	110	110	110	110	G	G	G	G	S	S	E	E	E	E	105
23	E	E	E	E	E	E	S	S	130	G	G	G	105	G	G	G	G	G	S	E	E	S	E	E
24	E	E	E	E	E	E	S	G	G	110	130	S	G	G	G	G	S	S	S	S	E	E	E	E
25	E	E	E	E	E	E	S	110	G	G	120	110	G	G	G	G	S	S	S	E	S	S	E	S
26	S	E	E	E	E	E	B	G	G	110	G	105	G	G	G	G	G	S	S	S	E	S	S	S
27	S	E	E	E	E	E	S	S	G	G	110	S	G	G	G	G	115	G	S	S	E	E	E	E
28	E	E	E	E	E	S	S	G	G	S	130	105	G	G	G	S	S	G	S	S	E	E	E	E
29	E	E	E	E	E	E	S	G	G	G	140	110	S	130	G	145	B	S	S	E	S	E	110	S
30	S	S	E	E	E	E	G	S	140	G	G	G	B	100	B	155	G	S	S	115	E	E	E	E
31	S	E	E	E	E	E	S	G	G	G	G	G	G	G	100	G	S	G	S	E	E	S	E	E
No.	1	2	2	3	3	2	1	3	5	14	15	14	9	9	9	7	5	1	4	3	2	2	1	1
Median	105	105	110	105	105	105	105	125	130	110	130	110	110	105	105	105	105	105	100	100	100	105	110	105

h'Es

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

The Radio Research Laboratories, Japan.

K 11

IONOSPHERIC DATA

Mar. 1960

Types of Es

135° E Mean Time (G.M.T. + 9h.)

Kokubunji Tokyo

Lat. 35° 42.4' N
Long. 139° 29.3' 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											C		l		l									
2				f						l	l	l	l	l		l	l					f		
3			fz	f	fz	f	l			l														
4		fz	f	f	f						h	l	lz	l	l							f		
5		f						l			l	l			l	lz	l							
6					f				h							l			f	f	f			
7																								
8										h	h													
9												l		l	l	l	h		f	f				
10									h															
11						f					C													
12										C	h	l		l										
13										l														
14																								
15										l														
16										l			l		l				f					
17									l	l	h	h	l	l	l		l				f			
18										l	C	l	l	l	l	l		l	f					
19										l				l	l									
20								h				l	l											
21										l		l												
22	f									l	l	l	l											fz
23									C				l											
24										C	h													
25								l			l	l												
26										l		l												
27											l						l							
28											h	l												
29											h	l		h		h							fz	
30									h					l		h				f				
31															l									
No.																								
Median																								

Types of Es

Sweep 1.0 Mc to 21.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 12

IONOSPHERIC DATA

Mar. 1960 | hpF2 | 135° E Mean Time (G.M.T.+ 9h.) | Kokubunji Tokyo | Lat. 35° 42.4' N | Long. 139° 29.3' 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	U350 S	J320 S	U410 S	375	U300 S	405	345	U300 S	305	310	325	310	350	345	330	J330 S	330	305	305	350 S	U355 S	I345 S	U355 S	I375 S
2	I365 S	U350 S	U320 S	395	405	455	310 S	280	300	300	330	345	U335 R	J340 S	I340 S	U330 S	335	315	310	J320 S	J330 S	I320 S	I335 S	400 S
3	U390 S	I360 S	300	305	405	440	330	260	300	305	340	320 S	315	340	345	335	325	305	I310 S	315	345 S	U380 S	355	390 S
4	I390 S	I395 S	380	350	375	400	310	J305 S	300	300	305	315	320	335	320	320	305 S	305	305	320	U330 S	U320 S	355 S	395
5	I390 S	405	400	410	385 S	360	310	U305 S	305	300	U331 S	310 S	325	320 S	330 S	330	305	300	I305 S	315 S	S	S	U350 S	400 S
6	J370 S	375	U320 S	340	I350 S	390	305 S	U275 S	J300 S	300	305	310	325	325	330	350	330 S	U305 S	J300 S	I320 S	I335 S	I345 S	I340 S	I330 S
7	I350 S	J350 S	U340 S	320 S	320 S	350 S	315 S	300 S	300	J300 S	330	320	320	330	325	320	305 S	315 S	U300 S	I300 S	J310 S	I320 S	U350 S	U350 S
8	U350 S	365	I350 S	300	330	360	305 S	275 S	290 S	300	300	325	320 S	310	335	320 S	325 S	300	S	S	S	S	I365 S	I390 S
9	I400 S	U400 S	365 S	350	U400 S	400 S	U355 S	I300 S	U290 S	335	350	J330 S	J325 S	335	350	340	315	305	J305 S	J305 S	U330 S	I340 S	380 S	U390 S
10	I340 S	U395 S	U390 S	360	380	U385 S	U335 S	I305 S	300	300	335	J325 S	S	S	315 S	325 S	305 S	300 S	U300 S	S	S	I350 S	I350 S	U340 S
11	320 S	375 S	425	405	I420 S	400	325 S	300 S	300 S	I305 C	300	315	J320 S	330 S	315	315	305 S	300 S	S	S	U350 S	I330 S	U390 S	U400 S
12	400 S	J370 S	U320 S	370	U490 S	455	U330 S	I300 S	300 S	305	335	I335 S	J335 S	J335 S	I325 S	I310 S	305	J305 S	J305 S	J305 S	I330 S	I320 S	305 S	350 S
13	I380 S	350	370 S	355 S	J400 S	350	300	U280 S	J300 S	300	310	300	310	335	325	320	315	300 S	U300 S	I310 S	U305 S	I300 S	315	400
14	U380 S	350	350 S	300	285	U350 S	300	I285 S	290	300	310	335	315	325	345	325	320	345	300	I315 S	365	U355 S	I370 S	380 S
15	I340 S	350	355	350	395	380	305	U295 S	290	300	305	305	325	345	310	335	I320 S	J305 S	300	305 S	350	355	345	375
16	400	400	405	400	405	355	305	280	295	325	305	345	350	345	390	355	335	335	I310 S	355	U405 S	I350 S	I320 S	405 H
17	400	360 S	390	445	450 F	495 F	350	350 S	300	305	310	310	310 S	345	340	330	305	305	305	305 S	355	355	315	390
18	395	400	405	390	410	400	350	300 S	300	300	305	305	330	340	310	330	310	305	U305 S	U305 S	325	I310 C	U320 C	I360 C
19	U390 C	U390 C	355	355	400	U355 C	U300 C	I300 C	300	300	300	340	325	325	325	330	305	305	300 R	300	345	365	350 S	380 S
20	335	355	380	390	390	400	310	300	300	305	310	315	305	305	335	310	310	300 S	U300 S	310 S	U310 S	355	355 S	355
21	350	355	355	310	350	400	300	295	295	300 R	330	345	325	350	345	330	335	J305 S	U300 S	320 S	U335 S	I320 S	355 S	350
22	405	365	345	310	375	395	300	J300 S	300	305	320	320	335	345	335	350	330	335	305	I305 S	355 S	U355 S	U350 S	350
23	400	400	375	325	345	380	J300 S	J300 S	295	310	335	335	350	350	350	350	335	310	305	300	J345 S	330	U335 S	350
24	355	385 S	355	320	355	355	U300 S	300 S	300	300	345	350	355	355	360	355	335	330	335	J310 S	J350 S	S	S	U335 S
25	350 S	385	400	445	405	445	U310 S	I300 S	J305 S	350	345	345	355	355	355	350	345	320	U310 S	U300 S	U375 S	I360 S	U365 S	I390 S
26	U390 S	U385 S	I325 S	300	355	390	315	U305 S	U310 S	320	320	330	340	350	350	345	335	305 S	J310 S	I310 S	U350 S	U355 S	I350 S	I340 S
27	U335 S	400	J370 S	350	360	345	U300 S	295	290	320	350	335	335	375	355	350	335	330	U325 S	U330 S	I340 S	U350 S	U380 S	U400 S
28	J395 S	U355 S	335 S	360	355	345	U290 S	U290 S	305	335	350	350	350	350	350	360	350	330	330	I305 S	J360 S	J400 S	400 S	J400 S
29	U305 S	330	355	450	460	400	305 S	U300 S	335	310	340	350	380	390	J370 S	355	350	340	I335 S	345 S	U360 S	330 S	380 S	I350 S
30	U390 S	380	395	410	405	395	300	U300 S	305	350	320	350	350	375	355	365	350	345	U310 S	I300 S	U365 S	J400 S	I370 S	360
31	400	U360 S	405	425	450	455	U310 S	300	305	320	350	350	355	380	355	350	350	U350 S	U315 S	U340 S	U365 S	I450 S	I455 S	I400 S
No.	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	29	28	28	28	30	31
Median	U380	370	365	355	390	395	310	300	300	305	325	330	330	340	340	330	325	305	305	310	U350	U350	U350	380

hpF2 | Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

K 13

IONOSPHERIC DATA

Mar. 1960 | ypF2 | 135° E Mean Time (G.M.T.+ 9h.) | **Kokubunji Tokyo** | Lat. 35° 42.4' N | Long. 139° 29.3' 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	u 100 s	J 80 s	u 115 s	80	u 85 s	100	60	u 55 s	60	70	60	75	55	100	80	J 110 s	90	95	80	105 s	u 130 s	I 85 s	u 90 s	I 100 s
2	I 80 s	u 100 s	u 130 s	105	95	90	95 s	70	55	55	75	55	u 65 R	J 50 s	I 65 s	u 70 s	95	90	90	J 85 s	J 65 s	I 80 s	I 130 s	100 s
3	u 105 s	I 90 s	95	95	100	100	80	80	55	90	45	80 s	80	80	75	95	80	80	I 90 s	90	60 s	u 110 s	100	105 s
4	I 95 s	I 80 s	115	105	120	95	85	J 95 s	55	55	90	85	85	70	80	75	70 s	90	90	85	u 90 s	u 85 s	100 s	90
5	I 100 s	95	95	95	100 s	95	95	u 90 s	75	75	u 60 s	125 s	85	80 s	120 s	95	90	50	I 85 s	85 s	S	S	u 90 s	125 s
6	J 115 s	75	u 95 s	85	I 105 s	75	95 s	u 100 s	J 50 s	95	85	90	75	75	95	85	95 s	u 100 s	J 90 s	I 90 s	I 100 s	I 80 s	I 70 s	I 90 s
7	I 100 s	J 75 s	u 80 s	95 s	110 s	100 s	95 s	100 s	55	J 70 s	105	80	80	100	95	80	110 s	85 s	u 90 s	I 100 s	J 90 s	I 100 s	u 95 s	u 65 s
8	u 65 s	120	I 90 s	80	95	95	95 s	75 s	65 s	50	75	75	80 s	90	85	90 s	75 s	75	S	S	S	S	I 110 s	I 70 s
9	I 100 s	u 90 s	85 s	125	u 95 s	85 s	u 85 s	I 105 s	u 60 s	95	95	J 65 s	J 70 s	65	90	65	80	85	J 80 s	J 85 s	u 85 s	I 110 s	110 s	u 95 s
10	I 80 s	u 100 s	u 90 s	130	115	u 100 s	u 75 s	I 80 s	50	80	90	J 75 s	S	S	95 s	85	95 s	70 s	u 90 s	S	S	I 85 s	I 90 s	u 70 s
11	70 s	110 s	75	145	I 90 s	100	85 s	100 s	80 s	I 80 C	90	85	J 80 s	70 s	90	95	95 s	115 s	S	S	u 55 s	I 95 s	u 90 s	u 95 s
12	125 s	J 85 s	u 120 s	115	u 100 s	95	u 100 s	I 90 s	50 s	90	85	I 65 s	J 60 s	J 65 s	I 75 s	I 90 s	90	95	J 90 s	J 90 s	I 70 s	I 85 s	100 s	95 s
13	I 90 s	100	120 s	90 s	J 100 s	105	95	u 70 s	J 50 s	75	90	80	95	65	75	80	90	65 s	u 100 s	I 85 s	u 80 s	I 90 s	85	100
14	u 80 s	90	u 50 s	100	110	u 95 s	95	I 70 s	60	55	75	65	85	80	85	80	80	60	55	I 85 s	90	u 95 s	I 100 s	75 s
15	I 90 s	95	90	105	100	115	95	u 60	55	55	90	85	80	60	95	75	I 90 s	J 90 s	95	95 s	105	105	105	75
16	95	95	140	80	100	100	95	70	50	70	50	60	95	85	75	100	85	60	I 80 s	110	u 130 s	I 90 s	I 90 s	100 H
17	100	95 s	105	100	100 F	105 F	95	110 s	95	80	85	50	95 s	65	70	65	75	80	90	80 s	100	75	85	100
18	90	95	130	95	135	100	135	90 s	70	90	85	90	65	65	95	75	85	75	u 90 s	u 95 s	75	I 95 C	u 85 C	I 85 C
19	u 65 C	u 95 C	100	100	95	u 100 C	u 95 C	I 70 C	45	55	55	95	75	70	80	75	90	80	95 R	90	85	95	60 s	70 s
20	70	95	75	105	95	95	90	60	55	55	50	80	90	80	65	85	95	95 s	u 55 s	90 s	u 85 s	125	105 s	90
21	90	90	95	90	110	100	55	55	100	70 R	80	55	90	65	65	65	70	J 90 s	u 95 s	125 s	u 85 s	I 80 s	100 s	100
22	95	85	100	85	95	60	95	J 55 s	55	90	85	85	75	95	75	80	70	70	90	I 95 s	95 s	u 100 s	u 105 s	90
23	100	100	120	75	95	115	J 55 s	J 50 s	55	85	90	90	80	70	95	55	70	90	50	95	J 65 s	75	u 110 s	100
24	100	115 s	90	85	100	95	u 55 s	95 s	55	55	95	95	100	85	95	90	75	75	65	J 90 s	J 95 s	S	S	u 110 s
25	100 s	110	100	110	100	60	u 90 s	I 85 s	J 90 s	90	65	75	100	95	90	95	70	80	u 95 s	u 95 s	u 75 s	I 85 s	u 70 s	I 75 s
26	u 65 s	u 70 s	I 85 s	95	95	105	90	u 55 s	u 95 s	85	95	110	100	120	95	95	105	100 s	J 105 s	I 95 s	u 95 s	u 90 s	I 95 s	I 95 s
27	u 95 s	105	J 110 s	95	95	100	u 85 s	95	70	120	90	95	110	85	100	90	70	70	u 80 s	u 75 s	I 100 s	u 75 s	u 75 s	u 105 s
28	J 100 s	u 95 s	110 s	110	95	95	u 65 s	u 70 s	90	95	70	95	90	95	105	100	90	70	70	I 110 s	J 90 s	J 90 s	95 s	J 115 s
29	u 90 s	120	100	95	90	105	90	u 55 s	95	85	105	105	110	90	J 75 s	95	95	105	I 85 s	u 100 s	u 150 s	125 s	75 s	I 100 s
30	u 105 s	115	100	135	95	105	85	u 95 s	100	105	100	95	105	80	95	85	105	100	u 105 s	I 95 s	u 140 s	J 95 s	I 80 s	100
31	105	u 90 s	100	120	105	140	u 95 s	85	90	85	90	105	105	95	105	95	95	u 95 s	u 85 s	u 90 s	u 120 s	I 100 s	I 140 s	I 100 s
No.	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	29	28	28	28	30	31
Median	u 95	95	100	95	100	100	90	80	60	80	85	85	85	80	90	85	90	85	90	90	u 90	u 90	u 95	95

ypF2 | Sweep 1.0 Mc to 20.0 Mc in 20 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1960 | foF2 | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' 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	7.0	7.1	5.3	5.3	4.1	3.8	4.0	6.9^{S}	J9.9^{S}	11.3	12.6	13.1	13.6^{H}	12.9	13.2	12.4^{H}	11.9	12.2	11.1	8.8	J8.1^{S}	J7.9^{S}	U7.5^{S}	6.8
2	6.7	I7.3^{S}	6.4	5.0	4.8	4.9	5.2	8.2^{S}	10.8	12.5	12.0	13.5^{H}	14.6	15.7^{SH}	I6.1^{S}	L5.7^{S}	14.3	13.7	14.1^{S}	13.1	10.9	9.1	J8.4^{S}	6.9
3	7.2	6.9	J7.6^{S}	6.2	3.8	3.7	3.8	J7.3^{S}	J9.7^{S}	11.0	12.3	13.5^{H}	13.5^{H}	13.3^{H}	12.6	13.3^{H}	13.0	11.8	11.2	11.2	10.3^{S}	J8.0^{S}	J7.8^{S}	J7.3^{S}
4	I7.4^{S}	7.1^{S}	6.7	6.3	5.6^{H}	5.2	5.4	J8.0^{S}	9.2	11.2	13.0	13.2	14.1^{H}	13.1	12.5^{H}	12.6	12.5	11.6	10.8	I9.7^{S}	U9.3^{S}	9.0	I7.8^{S}	I7.4^{S}
5	U7.2^{S}	6.9	6.5	5.9	5.9	6.2	6.0	8.0	10.4	11.5	12.8	13.5	14.5^{H}	13.2	13.0^{H}	13.3	13.7	13.1	11.8	10.5	8.9	8.8	I7.5^{S}	6.6
6	6.7	6.2	6.2	6.0	5.3	4.3	4.6	8.1	U9.5^{S}	11.2	12.0	12.7^{H}	13.6^{H}	14.0^{H}	13.9^{S}	13.1	13.2	12.9	12.2	U11.2^{S}	U9.4^{S}	9.4^{S}	9.1	8.9
7	J7.4^{S}	7.3^{S}	7.1	6.9	5.4	4.2^{H}	4.0	6.8	10.5^{S}	10.5	10.8	11.3^{H}	14.0^{H}	14.7	14.7^{S}	14.7	14.2	13.6^{S}	13.1	11.7	J10.1^{S}	9.3	J8.1^{S}	6.8
8	U7.2^{S}	6.4	6.1	6.3	5.6	3.8^{H}	3.9	U7.3^{S}	9.0	10.2	11.3	11.9	13.5^{H}	13.4^{H}	12.5	12.9	12.6	12.5	12.0	10.6	8.6	J8.0^{S}	I7.4^{S}	6.5
9	I6.4^{S}	6.6	7.2^{S}	7.0	5.5	5.2	5.4	J7.6^{S}	9.3^{S}	10.8	12.1	13.9	14.7^{H}	14.8	14.5	13.8	U14.2^{S}	12.9	12.5	J12.2^{S}	I10.0^{S}	J8.4^{S}	J8.2^{S}	I7.6^{S}
10	J8.3^{S}	8.0^{S}	7.3^{S}	7.3^{S}	6.3	5.5	5.2	7.5^{S}	10.5^{S}	11.0	11.4	13.3^{H}	14.4^{H}	14.9^{SH}	13.8^{H}	13.5	12.7	12.7	12.5^{S}	11.4	J8.2^{S}	S	S	7.0
11	7.0	5.8	5.7	5.7	5.0	5.0	5.3	U7.5^{S}	10.9	12.1	12.5	13.3	14.6^{SH}	U15.2^{S}	U14.8^{S}	14.0^{S}	12.7	12.6	12.8	10.7	J8.4^{S}	J8.2^{S}	J7.9^{S}	I7.7^{S}
12	J8.2^{S}	I7.6^{S}	U7.4^{S}	6.0	4.9	3.5	F	9.3	9.7	11.8	12.7	14.2^{H}	15.1^{H}	SH	S	S	S	S	I14.0^{R}	I12.4^{S}	I10.9^{S}	10.0	U9.2^{S}	6.8
13	U6.5^{S}	7.1	6.8	5.7	4.9	4.9	4.8	7.4^{S}	J10.0^{S}	10.5	11.5^{H}	13.2^{H}	12.7^{H}	12.7	12.8^{H}	12.6	12.4	12.1	11.6	11.2	9.2^{S}	7.7^{S}	7.2^{S}	6.3
14	6.2^{S}	6.2	6.3	6.5	6.2	3.6	3.4	6.5	8.4	J9.9^{S}	11.2^{H}	12.5^{H}	13.4^{H}	13.6	13.0^{H}	13.2^{H}	13.8^{SH}	13.1^{S}	12.2	11.2	9.0	U7.4^{S}	7.0	J7.0^{S}
15	U7.3^{S}	7.0	6.5	5.7	4.9	4.5	4.6	I7.2^{S}	9.0	10.5	11.0	11.7^{H}	12.4	12.7^{H}	12.6^{H}	12.2	12.2	11.5	11.6	J10.6^{S}	J8.3^{S}	S	S	7.1^{S}
16	6.7	J6.6^{S}	6.2^{S}	6.2	5.6	5.3	5.5	8.6	9.0	11.1	11.8^{S}	11.9^{H}	13.6^{H}	12.5	11.4	12.4^{H}	12.7	11.1	11.7	9.1	I7.5^{S}	I7.1^{S}	6.5^{S}	U6.3^{S}
17	6.0^{S}	6.8	6.7	5.7	5.5	5.5	5.4	6.6	10.9	12.9	14.7^{S}	U5.1^{S}	14.3^{H}	14.8^{H}	15.4	14.8^{H}	14.1	13.5^{S}	13.0	11.4^{S}	9.4	J8.5^{S}	J7.8^{S}	J6.6^{S}
18	I6.8^{S}	6.2^{S}	5.7	5.2	5.0	4.5	4.8^{S}	J7.7^{S}	11.5	13.3	12.8	13.4	14.2^{SH}	J15.5^{SH}	S	S	13.4	12.8	12.8	11.8^{S}	9.5	J8.3^{S}	I7.3^{S}	I7.1^{S}
19	U7.0^{S}	U6.5^{S}	6.1	5.8	4.9	4.6	4.9	8.0	10.7	11.0	11.5	12.2^{H}	13.3^{H}	U13.9^{SH}	U14.0^{SH}	13.5^{S}	13.6^{H}	13.3	12.7	I11.7^{S}	I9.8^{S}	S	S	S
20	I7.2^{S}	6.7	5.9	5.8	5.5^{H}	5.4	5.7	J8.4^{S}	10.6	12.1^{S}	12.2	12.3^{H}	13.2^{H}	12.0^{H}	11.7	11.6^{H}	11.6^{SH}	11.6	11.9^{S}	11.4^{S}	J10.7^{S}	U9.1^{S}	J8.1^{S}	J8.0^{S}
21	J7.9^{S}	U7.2^{S}	6.6	6.7	5.1	4.5	4.7^{S}	8.1	I9.9^{S}	U11.1^{S}	11.2	12.0^{H}	12.7^{H}	12.7^{H}	12.7^{H}	12.5	12.2^{S}	11.7	11.9	11.3	I9.4^{S}	J8.1^{S}	J7.7^{S}	J7.5^{S}
22	I6.9^{S}	6.9^{S}	6.8^{S}	5.6	5.0	4.5	4.7	8.8	11.1	11.8^{S}	12.1	12.5^{H}	12.9^{H}	14.0^{H}	13.8^{SH}	13.1	12.6	12.8	12.7	12.1	J10.4^{S}	9.2	9.3	8.9
23	J7.9^{S}	7.7^{S}	J8.2^{S}	J8.1^{S}	6.4	5.3	5.7	8.9	10.2	11.5^{S}	11.8	12.6^{H}	U13.9^{SH}	14.8^{SH}	U14.5^{SH}	13.7^{H}	13.5^{H}	14.0^{S}	U13.9^{S}	12.7	12.1^{S}	I11.9^{S}	U11.5^{S}	I9.9^{S}
24	8.9	8.9	8.7	8.6	6.9^{S}	5.2	5.6	8.2	11.1	I11.6^{C}	11.5^{H}	13.1^{H}	14.8^{H}	J15.6^{SH}	I15.3^{SH}	I15.2^{SH}	15.1^{H}	U15.1^{H}	I14.6^{R}	I14.0^{R}	12.3^{S}	I10.9^{S}	J10.1^{S}	9.3
25	I7.8^{S}	6.7	U6.6^{S}	5.7	5.9	5.4	5.8	8.8	J10.4^{S}	10.9	11.6	12.4^{H}	U13.6^{SH}	13.8^{H}	13.1	13.0^{H}	13.0	13.1	12.5	11.0	9.0	8.9	9.5	U9.5^{S}
26	I9.4^{S}	9.1	9.2^{S}	8.7	5.8	4.9	5.1	8.1^{S}	J10.2^{S}	11.0	12.1^{H}	12.9	U14.1^{SH}	14.2^{H}	13.7^{H}	12.9^{H}	12.7	12.8	U12.6^{S}	11.9	J10.6^{S}	I10.6^{S}	U10.9^{S}	U11.5^{S}
27	I9.6^{S}	J8.4^{S}	J8.0^{S}	J8.6^{S}	6.6	5.5	5.4	8.0	J10.2^{S}	11.4	11.4	12.6	12.9^{H}	13.7^{SH}	13.6^{H}	13.5^{H}	13.3^{H}	12.8	12.5	U11.4^{S}	I10.4^{S}	U9.5^{S}	8.8	J8.4^{S}
28	8.7	8.6	J8.2^{S}	J7.8^{S}	7.4^{S}	6.5	6.2	7.7^{S}	9.4^{S}	10.7	12.0^{H}	13.1^{H}	13.2^{H}	13.3^{H}	12.5^{H}	12.3^{H}	12.9^{H}	12.5	12.5	12.2^{S}	I10.2^{S}	9.0	8.7	J8.3^{S}
29	8.3^{S}	J7.8^{S}	6.2	5.5	5.5	5.9	6.6	9.2^{S}	11.2	13.0	12.8	12.7^{H}	14.5^{H}	14.9^{SH}	U14.8^{SH}	14.6^{H}	14.2	13.7^{S}	12.7	11.6	I9.7^{S}	J8.5^{S}	J7.7^{S}	J8.0^{S}
30	I7.7^{S}	U7.2^{S}	U7.3^{S}	I7.3^{S}	6.8	6.5	7.0	C	C	C	13.0^{H}	13.4^{H}	13.8^{H}	14.3^{H}	14.7^{SH}	14.9^{SH}	14.8^{S}	14.6	14.4^{S}	12.5^{S}	I9.8^{S}	9.1	U9.3^{S}	I9.6^{C}
31	J8.2^{S}	J8.3^{S}	J7.4^{S}	7.0	6.5	6.6	I7.3^{S}	I9.4^{S}	I10.7^{C}	I11.8^{C}	11.0	12.1^{H}	13.5^{H}	13.8^{H}	13.9^{H}	13.3	12.6^{H}	11.5	12.4	10.9^{S}	I9.8^{S}	S	S	S
No.	31	31	31	31	31	31	30	30	30	30	31	31	31	30	29	29	30	30	31	31	31	27	27	29
Median	7.2	7.1	6.7	6.2	5.5	5.2	5.2	8.0	10.2	11.2	12.0	12.9	13.6	13.8	13.7	13.3	13.0	12.8	12.5	11.4	9.7	8.9	8.1	7.4
U.Q	8.2	7.7	7.4	7.0	6.2	5.5	5.7	8.4	10.7	11.8	12.6	13.4	14.4	14.8	14.6	13.9	13.8	13.3	12.8	12.1	10.4	9.3	9.2	8.6
L.Q	6.8	6.6	6.2	5.7	5.0	4.5	4.7	7.4	9.5	10.9	11.4	12.3	13.3	13.2	12.6	12.6	12.6	12.1	11.9	10.9	9.0	8.1	7.5	6.8
Q.R	1.4	1.1	1.2	1.3	1.2	1.0	1.0	1.0	1.2	0.9	1.2	1.1	1.1	1.6	2.0	1.3	1.2	1.2	0.9	1.2	1.4	1.2	1.7	1.8

foF2

Sweep 1.0 Mc to 20.3 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 1

IONOSPHERIC DATA

Mar. 1960 | foF1 | 135° E Mean Time (G.M.T. + 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' 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
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foF1

Sweep 1.0 Mc to 20.3 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar.1960 | foE | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' 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								S	2.60^{H}	3.10	3.40	3.60	3.60	3.70	3.65	3.50	3.20	2.60	B					
2								1.85	2.70	3.10	3.40	3.50	I3.75^{A}	I3.80^{A}	3.70	3.55	3.20	I2.60^{A}	B					
3								2.10	2.70^{H}	3.10	3.40	3.50	3.60	3.70	3.50	I3.35^{A}	I3.05^{A}	2.60	A					
4								2.00	2.70^{F}	3.20	3.40	3.65	3.70	3.80	I3.75^{A}	A	A	A	A					
5								1.75	2.70	3.25	3.40	3.60	3.80	3.80	3.70	3.60	3.20^{H}	I2.65^{A}	B					
6								2.00^{H}	2.70	3.10	3.30	3.40	A	A	I3.65^{A}	3.50	I3.20^{A}	2.80	A					
7								2.00	2.80	3.15^{H}	3.50	3.70	3.80	3.80	3.80	3.60	3.30	2.70	S					
8								2.15^{H}	2.80	3.20	3.50	3.60	3.60	3.70	3.60	3.40	3.20	2.75	S					
9								2.00	2.80	3.20	3.45	3.65	3.65	3.70	3.60	3.40	3.10	2.50	S					
10								2.00	2.80	3.10	3.40	3.45	I3.55^{A}	3.70	3.60	I3.45^{A}	3.20	2.70	S					
11								B	2.80	3.20^{H}	I3.35^{R}	I3.60^{A}	3.75	3.80	3.70	3.35	3.15	2.70	B					
12								2.10	2.75	3.10	3.40	3.50	3.60	I3.60^{A}	3.50	3.50	3.15	2.60	A					
13								1.90	2.80	3.20	3.35	3.60	3.70	3.80	3.70	3.60	3.30	2.90	1.80					
14								1.70	2.60	3.25	3.40	3.65	I3.70^{R}	3.70	3.70	3.50	3.20	2.70	B					
15								1.80	2.80^{H}	3.20	3.50	3.70	I3.80^{R}	3.80^{R}	3.70	3.50	3.10	2.90	S					
16								2.00	2.70^{H}	3.10	3.40	3.60^{R}	I3.60^{R}	3.65	I3.60^{A}	3.35	3.20	2.75	2.00					
17								1.90	2.70	3.10	3.30	3.65	3.75^{R}	3.70	3.60	3.50	3.20	2.75	2.00					
18								1.80	2.80	3.20	3.40	3.50	3.60	I3.65^{B}	I3.65^{B}	3.50	3.20	2.80	2.15					
19								1.80	2.70	3.10	3.40	3.60	I3.70^{A}	3.70	3.65	I3.45^{A}	3.25	2.70	1.90^{H}					
20								1.80	2.65	3.30	3.60	I3.65^{R}	3.70	I3.80^{R}	3.80	3.60	3.30	2.90	2.00					
21								1.80	2.60	3.20	3.45	I3.60^{B}	3.75	3.75	3.70	3.50	3.35	2.85	2.00					
22								2.25	2.80	I3.30^{R}	3.60	3.70	3.80	3.85	3.80	I3.55^{A}	3.20	2.70	2.05					
23								2.30^{H}	2.90	3.25	3.60	3.75	3.90	3.90^{R}	3.85	3.70	3.40	2.90	1.95					
24								2.20	2.90	I3.30^{C}	3.45	3.60	I3.85^{B}	3.95	3.90	3.70	3.50	2.90	2.00					
25								2.20	2.80	3.30	3.60	3.70	3.80^{R}	A	A	A	A	2.90	2.10					
26								2.40^{H}	3.00^{H}	3.40	3.50	I3.70^{A}	I3.90^{B}	I3.95^{B}	3.90	3.70	3.40	2.85	2.00					
27								2.40^{H}	3.00	3.30	3.45	I3.60^{B}	I3.80^{R}	400	4.00	3.70	I3.40^{A}	I3.00^{A}	2.10					
28								2.20	3.10	3.35	3.50	A	A	A	3.80	3.70	3.40	3.00	2.20^{H}					
29								2.20	3.00	3.40	3.55	3.80	R	R	B	3.70	I3.55^{B}	I3.25^{B}	2.40					
30								C	C	C	3.75^{R}	A	A	I3.80^{A}	I3.75^{B}	3.70^{R}	3.40	3.05	2.20					
31								S	2.20^{R}	I2.80^{C}	3.30	3.60	3.65	I3.80^{R}	I3.90^{R}	I3.85^{R}	3.70	3.40	2.90	2.10					
No.								28	30	30	31	29	27	27	29	29	29	30	17					
Median								2.00	2.80	3.20	3.45	3.60	3.75	3.80	3.70	3.50	3.20	2.80	2.00					

foE

Sweep 1.0 Mc to 20.3 Mc in 30 ~~min~~ sec in automatic operation.

IONOSPHERIC DATA

Mar. 1960 | foEs | 135° E Mean Time (G.M.T. + 9h.)

Yamagawa Lat. 31° 12.5' N Long. 130° 37.7' 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	S	S	E	E	E	E	S	G	G	G	3.7	4.0	3.9	4.0	3.8	G	3.4	2.8	2.0	S	S	S	S	S
2	S	S	E	E	E	1.7	S	2.1	3.0	3.8	4.1	4.1	3.8	5.0	G	G	G	2.9	G	J1.9	S	S	S	S
3	S	S	1.7	E	J3.3	S	J2.1	J2.1G	G	3.2	3.5	3.7	3.8	3.8	3.7	3.5	3.1	2.4G	2.1	2.2	J1.9	S	S	S
4	S	S	E	E	E	E	S	G	G	G	3.8	4.3	G	G	3.8	4.5	J4.9	3.7	J2.5	2.3	J2.5	J2.2	2.1	S
5	S	E	J1.9	J2.3	E	E	S	G	G	G	G	4.3	3.0G	3.6G	4.2	G	G	2.8	B	D1.5S	S	S	S	S
6	S	S	E	E	E	E	S	G	G	G	3.5	3.6	3.8	J5.4	3.8	3.3G	3.2	2.4G	2.4	3.2	J2.4	J2.2	S	S
7	S	S	E	E	E	E	S	G	2.0G	J2.5G	J4.8	G	G	G	G	G	G	2.9	G	2.2	S	S	2.0	S
8	S	S	E	E	E	E	S	G	G	G	3.7	4.1	4.0	3.8	3.7	3.6	3.1G	G	S	S	J2.2	J2.2	S	S
9	S	S	J2.3	E	E	E	S	G	2.9	3.4	3.9	4.3	4.0	4.1	4.0	3.7	3.4	3.5	2.1	S	S	J2.0	S	S
10	S	S	E	E	E	E	S	G	G	3.3	3.6	3.8	3.7	3.5G	3.5G	3.5	3.1G	3.0	S	2.5	S	S	S	S
11	S	S	E	1.3	E	E	S	G	G	G	3.7	4.1	3.8	4.0	3.8	3.7	3.5	3.2	2.3	1.9	1.9	J2.4	1.9	J2.3
12	J2.5	S	J1.7	1.7	J2.2	E	S	G	G	3.3	4.4	3.9	4.4	4.4	6.0	4.1	4.5	3.4	J2.9	J2.4	J2.2	S	S	S
13	S	S	E	E	E	E	S	G	G	3.3	3.5	G	2.9G	3.1G	G	G	G	G	G	S	S	S	S	S
14	S	S	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	3.0	G	S	S	S	S	S
15	S	E	E	E	E	E	S	G	G	3.6	G	G	4.5	4.1	G	G	G	3.1	G	S	S	S	S	S
16	S	E	E	E	E	E	S	G	G	3.5	3.6	4.0	G	3.2G	3.9	G	G	G	G	S	S	S	S	S
17	S	S	E	E	E	J2.0	J1.8	G	G	G	J3.2G	3.8	G	G	G	G	J3.1G	2.6G	G	S	S	S	S	S
18	S	E	E	E	E	E	S	G	G	G	G	G	3.9	3.6G	3.4G	3.4G	G	G	G	1.9	J2.6	S	S	S
19	S	S	2.4	2.1	S	E	S	G	G	3.3	3.3G	3.6G	3.8	G	3.1G	J3.8	2.2G	2.1G	G	S	S	S	S	S
20	S	S	E	E	E	E	S	G	J2.7	G	G	G	G	5.4	G	G	G	G	G	S	S	S	S	S
21	S	S	E	E	E	E	S	G	G	G	G	3.4G	G	G	G	G	G	G	G	S	S	S	S	S
22	S	S	E	E	E	E	S	G	3.3	3.7	G	3.8	J3.7G	3.5G	J3.8G	3.7	3.7	3.2	2.5	J2.1	J2.5	2.2	J2.1	S
23	S	S	S	E	E	E	S	G	G	G	J5.4	G	G	G	G	3.1G	2.3G	3.1	G	S	S	S	S	S
24	S	S	S	E	E	E	S	G	G	C	3.6	3.8	3.7G	G	G	G	G	G	G	S	E	S	E	S
25	S	S	E	E	E	E	S	G	G	J5.2	3.8	3.8	G	3.9	3.8	3.6	3.3	G	2.3	S	S	S	S	S
26	S	S	E	E	E	E	S	G	G	G	3.8	3.7	4.8	4.3	G	3.9	G	3.5	3.3	J3.2	4.5	S	S	S
27	S	E	E	E	E	E	S	G	G	3.5	3.7	B	G	G	G	4.2	3.8	3.2	G	S	S	S	S	S
28	S	S	E	E	E	E	S	G	G	G	G	3.8	4.1	4.1	3.6G	G	G	G	3.1	1.9	S	S	S	S
29	S	S	E	E	E	E	S	G	G	3.7	G	G	G	G	B	G	B	B	G	1.8	S	S	S	2.1
30	J2.1	S	E	E	E	E	S	C	C	C	4.1	4.1	3.8	3.9	B	G	G	G	2.7	1.9	S	S	S	S
31	S	S	E	E	E	E	G	G	C	G	G	G	G	G	4.6	4.2	G	G	G	S	S	S	3.1	S
No.	2	5	29	31	30	30	3	30	29	29	31	30	31	31	29	31	30	30	28	14	10	6	6	2
Median	2.3	E	E	E	E	E	1.8	G	G	G	3.6	3.8	G	G	G	G	G	G	G	2.2	2.3	2.2	2.0	2.2
U.Q		E	E	E	E	E	2.0	G	G	3.4	3.8	4.0	3.9	4.1	3.8	3.7	3.3	3.1	2.4	2.4	2.5	2.2	2.1	
L.Q		E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	1.9	1.9	2.2	1.9	
Q.R																				0.5	0.6	0	0.2	

foEs

Sweep 1.0 Mc to 20.3 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar.1960 | f_bE_s | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' 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	S	S					S				Cr	G	Cr	Cr	Cr		Cr	Cr	Cr	S	S	S	S	S
2	S	S				1.7	S	Cr	Cr	3.7	4.1	4.0	Cr	4.2				Cr		1.5	S	S	S	S
3	S	S	1.7		2.5	S	1.8	Cr	Cr	Cr	Cr	G	Cr	Cr	Cr	Cr	Cr	2.4Cr	Cr	2.2	1.8	S	S	S
4	S	S					S				Cr	4.2			Cr	3.8	4.0	3.7	2.3	2.3	2.5	2.0	1.9	S
5	S		1.6	1.8			S					4.2	2.7Cr	2.8Cr	4.1			Cr	B	D1.5B	S	S	S	S
6	S	S					S				Cr	Cr	Cr	4.0	Cr	3.3Cr	Cr	2.2Cr	1.9	2.8	2.0	1.9	S	S
7	S	S					S		1.8Cr	2.2Cr	2.4							Cr		E	S	S	1.8	S
8	S	S					S				Cr	4.0	Cr	Cr	Cr	Cr	2.0Cr		S	S	E	E	S	S
9	S	S	E				S		Cr	Cr	3.9	4.2	Cr	Cr	Cr	Cr	Cr	Cr	Cr	S	S	1.7	S	S
10	S	S					S			Cr	Cr	3.8	Cr	3.5Cr	3.3Cr	Cr	3.1Cr	2.2	S	S	S	S	S	S
11	S	S		1.3			S				Cr	Cr	3.6	3.7	3.6	3.7	3.4	3.1	Cr	1.8	1.8	2.1	1.8	1.9
12	1.9	S	1.7	1.5	1.7		S			Cr	Cr	Cr	4.2	Cr	Cr	Cr	4.2	3.3	Cr	1.9	E	S	S	S
13	S	S					S			Cr	Cr		2.2Cr	2.6Cr						S	S	S	S	S
14	S	S					S											Cr		S	S	S	S	S
15	S						S			Cr			4.5	4.1				Cr		S	S	S	S	S
16	S						S			Cr	Cr	4.0		3.2Cr	Cr					S	S	S	S	S
17	S	S				1.8	1.7				3.2Cr	Cr					2.8Cr	2.5Cr		S	S	S	S	S
18	S						S						Cr	E3.6B	Cr	3.3Cr				1.8	2.5	S	S	S
19	S	S	E	1.8	S		S			G	3.3Cr	3.5Cr	Cr		3.0Cr	Cr	2.1Cr	1.9Cr		S	S	S	S	S
20	S	S					S		2.6					Cr						S	S	S	S	S
21	S	S					S					Cr								S	S	S	S	S
22	S	S					S		Cr	Cr		3.3	2.9Cr	3.0Cr	2.8Cr	Cr	3.6	Cr	Cr	1.7	2.5	E	1.9	S
23	S	S					S				Cr					2.4Cr	2.3Cr	2.0		S	S	S	S	S
24	S	S					S			C	Cr	Cr	Cr							S		S		S
25	S	S					S			Cr	Cr	Cr		Cr	Cr	Cr	Cr		Cr	S	S	S	S	S
26	S	S					S				3.8	Cr	4.6	4.2		Cr		3.4	3.3	1.8	3.9	S	S	S
27	S						S			G	Cr	B				4.0	Cr	Cr		S	S	S	S	S
28	S	S					S					Cr	E4.1B	Cr	3.5Cr				Cr	1.8	S	S	S	S
29	S	S					S			Cr					B		B	B		1.7	S	S	S	1.8
30	E	S					S	C	C	C	E4.1B	Cr	Cr	Cr	B				Cr	1.7	S	S	S	S
31	S	S							C						4.6	4.2				S	S	S	1.9	S
No.	2		5	4	2	2	2	2	6	14	20	21	18	19	17	16	15	19	12	13	9	6	5	2
Median	E		1.6	1.6	2.1	1.8	1.8	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	Cr	1.8	2.0	1.8	1.9	1.8

f_bE_s

Sweep 1.0 Mc to 20.3 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 5

IONOSPHERIC DATA

Mar. 1960 | f-min | 135° E Mean Time (G.M.T.+ 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' 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	E1.65s	E1.70s	1.10	1.00	E	1.40	E1.70s	1.70	1.65	1.25	1.70	1.85	1.80	1.90	1.90	1.80	1.70	1.60	1.60	E1.60s	E1.60s	E1.75s	E1.70s	E1.70s
2	E1.70s	E1.70s	1.00	E	E	1.15	E1.60s	1.60	1.50	1.70	E1.15s	1.70	1.90	1.70	1.85	1.60	1.70	1.60	1.60	1.25	E1.60s	E1.70s	E1.60s	E1.60s
3	E1.60s	E1.70s	1.10	1.15	E	E1.60s	E1.65s	1.60	1.60	1.40	1.65	1.80	1.90	1.80	1.90	1.70	1.60	E1.60s	1.40	E1.70s	E1.65s	E1.70s	E1.70s	E1.70s
4	E1.70s	E1.80s	E	E	1.25	1.40	E1.65s	1.60	1.70	1.50	1.80	1.80	2.00	1.90	1.70	1.90	1.80	E1.60s	E1.60s	1.20	E1.65s	E1.60s	E1.70s	E1.60s
5	E1.70s	1.70	1.20	1.20	1.30	1.60	E1.70s	1.60	1.70	1.80	1.85	1.90	1.90	1.70	1.70	1.90	1.80	1.80	2.00	1.20	E1.70s	E1.70s	E1.75s	E1.70s
6	E1.70s	E1.60s	1.30	1.30	E	1.40	E1.70s	1.60	1.80	1.60	1.80	1.80	1.90	2.20	2.20	1.80	1.70	1.60	1.40	E1.60s	E1.40s	E1.60s	E1.80s	E1.80s
7	E1.80s	E1.70s	1.10	E	E	1.20	E1.80s	1.70	1.30	1.50	1.85	1.70	1.80	1.80	2.60	2.20	1.80	E1.60s	1.90	E1.70s	E1.70s	E1.70s	E1.70s	E1.60s
8	E1.70s	E1.70s	1.20	E	1.05	1.10	E1.70s	1.60	1.60	1.65	1.80	1.90	1.80	1.90	1.90	1.65	1.70	E1.70s	1.95	E1.60s	E1.50s	E1.50s	E1.70s	E1.70s
9	E1.70s	E1.70s	1.15	1.00	E	1.35	E1.70s	1.70	1.80	1.70	1.90	1.80	1.80	2.00	1.90	1.90	1.90	E1.90s	E1.60s	E1.70s	E1.40s	E1.30s	E1.70s	E1.70s
10	E1.70s	E1.65s	1.30	E	E	1.20	E1.70s	1.70	1.40	1.60	1.60	1.80	1.80	1.80	1.80	1.60	1.85	E1.60s	1.95	E1.80s	E1.80s	E1.70s	E1.65s	E1.70s
11	E1.75s	E1.70s	1.25	1.00	1.40	1.80	E1.75s	1.80	1.60	1.55	1.70	1.80	1.90	2.40	2.10	2.25	1.90	E1.80s	1.70	E1.60s	E1.70s	E1.70s	E1.70s	E1.70s
12	E1.70s	E1.80s	E	1.10	E	1.60	E1.70s	1.80	1.80	1.90	1.70	1.85	2.25	1.90	1.70	1.90	1.60	1.30	1.60	1.25	E1.80s	E1.80s	E1.70s	E1.70s
13	E1.60s	E1.80s	E	1.15	1.40	1.80	E1.50s	1.70	1.70	1.70	1.80	1.80	1.80	1.70	1.80	2.20	1.70	1.80	1.60	E1.70s	E1.70s	E1.70s	E1.70s	E1.50s
14	E1.70s	E1.50s	1.20	E	1.00	1.10	E1.60s	1.60	1.70	1.75	1.70	1.95	2.60	2.00	2.25	1.80	1.95	E1.70s	1.70	E1.65s	E1.70s	E1.70s	E1.70s	E1.70s
15	E1.80s	1.60	E	E	1.05	1.40	E1.60s	1.60	1.70	1.70	1.80	1.90	2.00	1.90	1.90	1.75	1.80	1.80	E1.80s	E1.70s	E1.70s	E1.70s	E1.70s	E1.70s
16	E1.80s	1.90	1.40	1.00	1.05	1.40	E1.80s	1.70	1.70	1.70	1.85	1.80	1.90	1.90	2.20	2.20	1.80	1.70	E1.80s	E1.70s	E1.80s	E1.60s	E1.70s	E1.70s
17	E1.80s	E1.60s	1.00	1.10	1.20	1.20	E1.45s	1.70	1.60	1.60	1.80	1.90	2.00	1.85	2.20	1.90	1.60	E1.70s	1.70	E1.80s	E1.65s	E1.70s	E1.60s	E1.70s
18	E1.70s	1.80	1.25	E	E	1.10	E1.45s	1.60	1.50	1.70	1.90	2.00	1.85	2.20	1.90	2.05	1.70	E1.60s	1.70	E1.70s	E1.80s	E1.70s	E1.75s	E1.70s
19	E1.60s	E1.70s	E	1.00	E	1.20	E1.70s	1.65	1.50	1.50	1.80	1.80	2.00	2.20	1.90	1.80	1.60	1.20	1.60	E1.70s	E1.70s	E1.60s	E1.70s	E1.70s
20	E1.65s	E1.70s	1.15	E	E	1.20	E1.60s	1.70	1.70	1.70	1.80	2.05	1.90	2.05	1.90	1.80	1.85	E1.60s	1.70	E1.70s	E1.70s	E1.70s	E1.70s	E1.70s
21	E1.70s	E1.50s	1.20	E	E	1.25	E1.40s	1.75	1.60	1.65	1.65	1.90	1.90	2.20	2.00	1.90	1.80	E1.70s	1.65	E1.65s	E1.50s	E1.65s	E1.75s	E1.70s
22	E1.60s	E1.80s	E	E	E	1.10	E1.50s	1.70	1.70	1.60	1.90	1.90	1.90	1.90	1.90	1.80	1.80	1.80	1.70	E1.40s	E1.70s	E1.80s	E1.80s	E1.70s
23	E1.60s	E1.75s	E1.70s	1.00	1.10	1.30	E1.70s	1.70	1.60	1.85	1.90	1.90	2.00	2.20	2.00	1.70	1.65	1.55	E1.60s	E1.85s	E1.80s	E1.70s	E1.70s	E1.70s
24	E1.70s	E1.65s	E1.75s	1.00	E	1.10	E1.60s	1.60	1.60	I1.60C	1.90	2.30	2.25	2.00	2.40	2.20	1.80	1.50	1.30	E1.70s	1.10	E1.65s	1.50	E1.70s
25	E1.70s	E1.70s	1.10	E	1.00	1.20	E1.65s	1.50	1.60	1.70	2.00	2.30	2.20	2.40	2.30	1.90	1.85	1.60	1.70	E1.60s	E1.70s	E1.70s	E1.70s	E1.70s
26	E1.70s	E1.60s	E	E	E	1.20	E1.70s	1.60	1.70	1.90	1.90	1.90	2.20	2.20	1.90	1.90	1.85	E1.60s	E1.60s	1.20	1.15	E1.70s	E1.80s	E1.70s
27	E1.70s	1.75	E	E	E	1.30	E1.50s	1.70	1.70	1.70	1.90	4.50	2.40	1.90	2.40	2.20	1.70	1.80	1.60	E1.90s	E1.80s	E1.80s	E1.70s	E1.70s
28	E1.60s	E1.70s	1.10	1.00	1.10	1.20	E1.60s	1.70	1.70	1.80	2.20	2.00	2.00	2.00	2.00	1.90	1.90	1.85	E1.60s	E1.60s	E1.70s	E1.60s	E1.60s	E1.70s
29	E1.50s	E1.70s	1.00	1.00	1.20	1.60	E1.80s	1.80	1.70	1.80	1.90	2.40	2.60	2.55	4.20	2.40	4.50	4.10	1.70	1.10	E1.60s	E1.80s	E1.70s	E1.60s
30	E1.60s	E1.60s	1.15	1.05	E	1.00	E1.60s	2.20	C	C	1.90	2.50	2.50	2.80	4.20	2.50	2.20	1.80	1.30	1.30	E1.60s	E1.60s	E1.60s	E1.70s
31	E1.60s	E1.60s	E	E	E	1.20	1.70	1.60	I1.70C	1.80	2.05	2.20	2.30	2.40	2.10	2.10	1.70	1.60	E1.60s	E1.70s	E1.90s	E1.70s	E1.60s	E1.70s
No.	31	31	29	31	31	30	31	31	30	30	30	31	31	31	31	31	31	25	29	31	31	31	31	31
Median	E1.70	E1.70	1.10	1.00	E	1.20	E1.65	1.70	1.70	1.70	1.80	1.90	1.90	2.00	1.90	1.90	1.80	1.60	1.60	E1.65	E1.70	E1.70	E1.70	E1.70

f-min

Sweep 1.0 Mc to 20.3 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Mar. 1960 | (M3000)F2 | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' 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	2.80	3.10	2.70	2.85	3.55	2.60	2.60	3.20	3.35	3.05	3.10	3.05	2.95	2.85	2.95	2.90	2.95	3.05	3.05	2.85	2.90	2.85	2.70	2.80
2	2.70	2.90	3.15	2.90	2.50	2.55	2.55	3.20	3.05	3.25	2.90	2.95	2.90	2.90	2.85	2.80	2.85	2.80	2.95	2.90	2.95	2.95	2.75	2.65
3	2.50	2.80	3.10	3.40	2.45	2.55	2.50	3.30	3.30	3.15	3.15	3.05	2.95	3.00	2.85	2.90	2.95	2.95	2.90	3.25	3.05	2.70	2.80	2.75
4	2.65	2.65	2.75	2.85	2.75	2.70	2.70	3.40	3.25	3.10	3.05	3.10	3.10	3.00	2.95	2.95	3.05	3.00	3.05	3.00	2.90	3.10	2.85	2.75
5	2.65	2.70	2.75	2.60	2.55	2.80	2.85	3.30	3.25	3.00	3.10	3.05	3.10	2.95	2.85	2.95	3.05	3.05	3.05	3.10	2.90	3.10	3.00	2.80
6	2.70	2.95	2.90	3.00	3.25	2.65	2.80	3.40	3.25	3.10	3.10	3.00	2.95	2.90	2.95	2.80	2.95	3.00	3.00	3.05	3.00	2.90	2.90	3.05
7	3.15	2.85	3.10	2.90	3.30	2.60	2.60	3.00	3.35	3.25	3.15	2.75	3.00	3.00	2.90	2.90	3.00	3.00	3.10	3.15	2.90	2.90	2.85	2.80
8	2.80	3.00	2.90	3.15	3.40	2.85	2.65	3.30	3.30	3.25	3.20	3.00	3.05	3.00	2.90	2.95	2.95	3.05	3.10	3.00	2.95	2.85	2.90	2.60
9	2.60	2.65	2.85	2.95	2.90	2.55	2.75	3.15	3.20	3.05	2.90	3.00	3.05	2.95	2.90	2.90	2.95	2.95	2.95	3.15	3.00	2.60	2.90	2.70
10	2.90	2.90	2.75	2.85	3.00	2.70	2.70	3.05	3.15	3.15	2.95	3.00	3.05	3.05	2.95	2.95	2.90	3.00	3.05	3.15	2.80	S	S	2.85
11	3.05	2.75	2.70	2.80	2.70	2.50	2.55	2.95	3.30	3.15	3.10	2.95	2.95	2.95	2.95	3.00	2.95	3.00	3.15	3.10	2.90	2.90	2.65	2.55
12	2.85	2.90	2.90	3.00	2.45	2.50	F	3.25	3.30	3.15	3.00	3.00	3.00	SH	S	S	S	S	3.15	3.00	2.90	3.00	3.10	S
13	2.80	2.90	3.15	3.00	2.65	2.75	2.90	3.25	3.40	3.20	2.95	3.10	3.00	2.95	2.90	2.95	3.00	3.10	3.10	3.10	3.25	2.75	2.85	2.70
14	2.75	2.85	2.95	3.15	3.40	3.05	2.75	3.25	3.20	3.15	3.05	3.10	3.00	3.00	2.85	2.85	2.95	3.05	3.10	3.15	3.00	2.55	2.55	2.65
15	2.80	3.05	3.10	3.00	2.90	2.75	2.85	3.15	3.25	3.15	3.00	3.00	3.00	2.85	2.90	2.85	2.95	3.00	3.00	3.00	2.65	S	S	2.70
16	2.70	2.70	2.60	2.75	2.65	2.45	2.50	3.30	3.25	3.05	3.15	2.95	2.95	2.80	2.65	2.75	2.90	2.90	3.00	2.90	2.75	2.85	2.60	2.65
17	2.65	2.80	3.00	2.80	2.40	2.50	2.45	2.80	3.05	3.10	3.20	3.10	2.95	2.95	2.90	2.95	3.05	2.95	3.15	3.10	2.90	2.75	2.90	2.75
18	2.70	2.75	2.80	2.70	2.80	2.60	2.65	3.05	3.35	3.25	3.05	3.00	2.95	2.85	S	S	2.95	3.00	3.05	3.05	3.00	2.90	2.85	2.75
19	2.75	2.85	2.85	2.90	2.80	2.80	2.85	2.95	3.35	3.20	3.05	3.05	3.00	2.90	2.95	2.80	2.95	3.00	3.05	3.00	3.00	S	S	S
20	2.80	3.00	2.75	2.70	2.60	2.70	2.70	3.20	3.15	3.20	3.10	3.00	3.05	2.95	3.00	2.85	2.85	2.95	3.05	3.00	2.90	2.90	2.75	2.75
21	2.90	2.95	2.85	3.05	3.15	2.75	2.75	3.25	3.20	3.15	3.10	3.00	3.00	3.00	2.90	2.90	2.90	2.95	2.95	3.05	3.05	2.90	2.80	2.85
22	2.70	2.75	3.00	2.95	2.95	2.55	2.75	3.20	3.25	3.25	3.15	3.00	2.90	2.85	2.85	2.85	2.85	2.95	3.05	3.15	3.05	2.50	2.80	2.95
23	2.70	2.75	2.85	3.15	3.25	2.85	2.80	3.25	3.10	3.15	2.90	2.85	2.80	2.80	2.85	2.80	2.80	2.95	2.95	3.00	2.85	2.80	2.80	2.85
24	2.85	2.75	2.80	3.05	3.15	2.85	2.85	3.15	3.10	3.00	2.80	2.80	2.80	2.75	2.80	2.75	2.80	2.85	2.90	2.90	2.85	2.70	2.95	3.00
25	2.80	2.75	2.65	2.45	2.70	2.55	2.50	3.10	3.20	3.00	2.85	2.80	2.80	2.80	2.75	2.75	2.85	3.00	3.05	2.90	2.65	2.55	2.85	2.75
26	2.80	2.85	3.05	3.20	3.10	2.55	2.75	3.10	3.05	3.05	2.95	2.95	2.85	2.90	2.80	2.80	2.85	2.90	2.95	2.95	2.85	2.65	2.75	2.80
27	3.05	2.75	2.65	2.90	3.05	2.90	2.85	3.10	3.15	3.05	2.90	2.90	2.85	2.80	2.70	2.75	2.85	2.80	2.90	3.00	2.85	2.65	2.60	2.60
28	2.65	3.15	2.80	2.80	2.95	3.05	2.90	3.25	3.10	2.95	2.85	2.90	2.85	2.85	2.75	2.70	2.80	2.90	2.95	3.00	2.90	2.65	2.70	2.65
29	2.90	3.10	2.80	2.45	2.35	2.70	3.00	3.10	3.05	3.05	2.90	2.60	2.75	2.70	2.70	2.70	2.75	2.80	2.90	2.90	2.80	2.80	2.70	2.75
30	2.80	2.70	2.60	2.75	2.80	2.90	2.85	C	C	C	2.85	2.85	2.75	2.70	2.70	2.70	2.70	2.80	2.90	2.95	2.70	2.50	2.70	2.90
31	2.70	2.80	2.75	2.50	2.45	2.45	2.50	3.10	3.05	3.10	2.95	2.65	2.75	2.75	2.75	2.70	2.80	2.70	2.90	2.85	2.60	S	S	S
No.	31	31	31	31	31	31	30	30	30	30	31	31	31	30	29	29	30	30	31	31	31	27	27	29
Median	2.80	2.85	2.85	2.90	2.80	2.70	2.75	3.20	3.20	3.15	3.05	3.00	2.95	2.90	2.85	2.85	2.90	2.95	3.05	3.00	2.90	2.80	2.80	2.75

(M3000)F2 Sweep 1.0 Mc to 20.3 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 7

IONOSPHERIC DATA

Mar. 1960 | (M3000)F1 | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' 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																								
3																								
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26																								
27																								
28																								
29																								
30								C	C	C														
31									C															
No.																								
Median																								

(M3000)F1 Sweep 1.0 Mc to 20.3 Mc in 30 ~~min~~ sec in automatic operation.

IONOSPHERIC DATA

Mar. 1960 | h'F2 | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' 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																								
3																								
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26																								
27																								
28																								
29																								
30								C	C	C														
31									C															
No.																								
Median																								

h'F2

Sweep 1.0 Mc to 20.3 Mc in 30 ~~min~~ sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 9

55

IONOSPHERIC DATA

Mar. 1960 | h'F | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N, Long. 130° 37.7' 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	290	250	260	260	200	310	335	250	245	240	240	220	205H	220	225	220H	230	250	235	240	255	265	250	255
2	295	250	235	245	265	340	340	245	250	245	240	240H	240	240H	230	230	230	250	250	240	245	235	230	250
3	300	285	245	225	A	350	355	245	240	240	240	225H	225H	235H	230	210H	235	245	250	250	225	255	255	295
4	290	300	250	230	240H	300	315	235	240	240	235	245	205H	245	230H	240	250	250	240	240	255	245	250	290
5	290	280	295	290	295	285	250	245	245	240	235	245	235H	245	225H	225	245	250	250	245	240	250	230	295
6	285	275	255	250	240	250	300	245	235	230	240	200H	205H	210H	215	225	230	250	245	250	240	270	250	250
7	250	275	250	245	215	200H	300	255	245	240	230	210H	210H	240	220	240	240	250	250	225	240	250	235	260
8	275	250	275	250	205	200H	285	250	235	240	230	230	210H	220H	230	235	240	245	250	225	240	250	250	300
9	305	305	285	255	240	250	295	250	240	220	230	230	200H	245	240	240	245	250	250	240	205	250	285	300
10	275	255	275	255	210	250	290	250	245	235	225	225H	205H	200H	220H	235	230	245	250	240	225	295	255	250
11	250	295	305	280	250	300	335	250	240	235	235	210	205H	240	225	230	240	250	250	225	245	255	265	330
12	275	245	245	250	370	355	280	235	245	240	230	205H	225H	210H	225	240	250	250	245	225	245	250	240	225
13	285	275	240	245	250	280	250	245	240	230	205H	225H	200H	220	210H	225	250	245	245	240	225	230	245	270
14	300	285	270	250	225	220	300	245	245	230	225H	250H	200H	230	225H	230H	220H	250	250	240	220	260	300	285
15	275	255	250	250	245	250	275	245	245	245	240	220H	250	225H	220H	225	245	250	250	230	220	275	280	260
16	300	300	300	295	275	340	350	240	240	245	240	245H	230H	230	220	245H	245	250	245	225	265	250	250	260
17	295	295	250	250	345	355	370	250	240	240	230	225	210H	205H	245	230H	235	245	245	240	235	250	245	275
18	280	290	265	295	250	250	300	250	240	235	230	220	205H	250H	245	240	225	245	250	230	240	230	245	270
19	275	265	250	250	240	285	295	245	240	230	230	215H	195H	200H	225H	230	225H	240	250	235	230	240	280	280
20	280	250	275	275	225H	280	305	245	245	240	230	230H	230H	220H	220	210H	200H	250	250	245	240	240	260	280
21	255	250	270	250	205	260	305	250	240	245	230	230H	220H	200H	230H	230	245	250	255	240	230	230	250	270
22	300	300	220	220	245	290	325	250	240	240	230	210H	205H	200H	200H	245	250	250	250	240	230	250	270	255
23	280	300	255	240	205	250	290	245	235	240	240	210H	200H	225H	215H	210H	240H	255	250	240	240	245	250	240
24	250	270	275	250	210	240	285	245	245	I225C	220H	220H	200H	200H	245H	225H	245H	250	250	245	220	250	255	245
25	245	275	295	325	300	280	340	250	240	240	225	225H	205H	230H	250	240H	250	250	250	240	240	240	290	280
26	280	275	250	240	210	250	320	250	250	240	235H	240	250H	245H	220H	225H	245	250	270	240	250	250	275	260
27	250	275	280	245	220	210	265	250	250	240	225	240	220H	210H	210H	220H	240H	250	255	250	250	250	280	300
28	300	270	250	255	250	240	245	235	245	240	230H	210H	225H	235H	240H	215H	205H	255	255	250	245	250	280	300
29	250	240	250	345	350	290	255	250	250	245	240	225H	230H	225H	240H	235H	260	270	260	255	250	240	250	300
30	290	290	290	270	250	260	250	C	C	C	240H	205H	240H	200H	240H	240H	250	250	250	230	220	280	295	270
31	275	290	265	300	320	330	300	245	I240C	240	230	235H	240H	250H	250H	240	240H	245	250	250	300	310F	355	295F
No.	31	31	31	31	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	280	275	260	250	240	280	300	245	240	240	230	225	210	225	225	230	240	250	250	240	240	250	255	270

h'F

Sweep 1.0 Mc to 20.3 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y10

IONOSPHERIC DATA

Mar. 1960 | h'Es | 135° E Mean Time (G.M.T.+ 9h.) | Yamagawa | Lat. 31° 12.5' N | Long. 130° 37.7' 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	S	S	E	E	E	E	S	G	G	G	140	125	130	135	150	G	145	140	125	S	S	S	S	S
2	S	S	E	E	E	100	S	165	150	125	125	120	105	100	G	G	G	115	G	110	S	S	S	S
3	S	S	105	E	100	S	105	105	G	145	140	140	135	135	140	105	110	110	110	105	105	S	S	S
4	S	S	E	E	E	E	S	G	G	G	150	140	G	G	105	105	100	100	105	100	100	100	100	S
5	S	E	100	100	E	E	S	G	G	G	G	145	100	100	130	G	G	105	B	100	S	S	S	S
6	S	S	E	E	E	E	S	G	G	G	135	125	105	105	110	105	105	105	100	100	100	100	S	S
7	S	S	E	E	E	E	S	G	100	100	100	G	G	G	G	G	G	145	G	100	S	S	100	S
8	S	S	E	E	E	E	S	G	G	G	145	130	130	135	135	135	105	G	S	S	100	100	S	S
9	S	S	105	E	E	E	S	G	E/50G	145	140	130	140	130	125	130	125	120	115	S	S	100	S	S
10	S	S	E	E	E	E	S	G	G	150	145	130	100	100	105	100	120	100	S	100	S	S	S	S
11	S	S	E	105	E	E	S	G	G	G	140	100	100	115	110	125	125	120	110	110	110	105	105	100
12	100	S	100	100	100	E	S	G	G	145	125	125	125	120	120	130	125	125	100	100	100	S	S	S
13	S	S	E	E	E	E	S	G	G	145	145	G	100	100	G	G	G	G	G	S	S	S	S	S
14	S	S	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	125	G	S	S	S	S	S
15	S	E	E	E	E	E	S	G	G	165	G	G	150	155	G	G	G	100	G	S	S	S	S	S
16	S	E	E	E	E	E	S	G	G	180	175	150	G	105	105	G	G	G	G	S	S	S	S	S
17	S	S	E	E	E	105	105	G	G	G	105	E/55G	G	G	G	G	100	105	G	S	S	S	S	S
18	S	E	E	E	E	E	S	G	G	G	G	G	130	105	105	105	G	G	G	105	105	S	S	S
19	S	S	115	105	S	E	S	G	G	145	100	105	105	G	100	100	100	100	G	S	S	S	S	S
20	S	S	E	E	E	E	S	G	110	G	G	G	G	105	G	G	G	G	G	S	S	S	S	S
21	S	S	E	E	E	E	S	G	G	G	G	105	G	G	G	G	G	G	G	S	S	S	S	S
22	S	S	E	E	E	E	S	G	130	125	G	105	105	105	105	105	125	125	135	120	105	100	100	S
23	S	S	S	E	E	E	S	G	G	G	100	G	G	G	G	100	100	100	G	S	S	S	S	S
24	S	S	S	E	E	E	S	G	G	C	140	130	105	G	G	G	G	G	G	S	E	S	E	S
25	S	S	E	E	E	E	S	G	G	105	145	145	G	110	115	110	110	G	175	S	S	S	S	S
26	S	S	E	E	E	E	S	G	G	G	140	105	145	150	G	145	G	155	140	120	105	S	S	S
27	S	E	E	E	E	E	S	G	G	130	130	B	G	G	G	130	115	115	G	S	S	S	S	S
28	S	S	E	E	E	E	S	G	G	G	G	105	105	100	100	G	G	G	140	120	S	S	S	S
29	S	S	E	E	E	E	S	G	G	145	G	G	G	G	B	G	B	B	G	120	S	S	S	105
30	100	S	E	E	E	E	S	C	C	C	150	105	105	105	B	G	G	G	145	120	S	S	S	S
31	S	S	E	E	E	E	G	G	C	G	G	G	G	G	150	150	G	G	G	S	S	S	110	S
No.	2		5	4	2	2	2	2	4	14	21	20	19	20	17	16	15	19	12	15	9	6	5	2
Median	100		105	100	100	100	105	135	120	145	140	125	105	105	110	110	110	115	120	105	105	100	100	100

h'Es

Sweep 1.0 Mc to 20.3 Mc in 30 ~~min~~ sec in automatic operation.

IONOSPHERIC DATA

Mar. 1960

Types of Es

135° E Mean Time (G.M.T.+ 9h.)

Yamagawa

Lat. 31° 12.5' N
Long. 130° 37.7' 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	h	h	h	h		h	h2	C					
2						f		h2	h2	h2	h	h	l2	l3				l2		f				
3			f		f5		f3	l		h l2	h	h	h	h	h	l	l	l2	l	f2	f			
4											h	h			l	l2	l3	l2	l3	f2	f3	f4	f	
5			f	f								h l	l2	l2	h			l2		f				
6											h	h	l	l	l	l	l2	l	l	f5	f2	f2		
7									l	l	l							h2		f			f	
8											h	h l	h	h	h l	h	l				f	f		
9			f						h	h	h2	h	h	h	h	h	h	C3	l			f2		
10										h	h	h	l	l	l	l	l	l2		f				
11				f							h	l	l	l	l	h	h2	C2	C2	f	f	f6	f	f2
12	f2		f	f	f					h	h	h l	C2	l l	C l	h l	C l2	C2 l	l2	f	f			
13										h	h		l	l										
14																		h2						
15										h			h l	h				l						
16										h	h	h		l	l									
17						f3	f2				l2	h					l3	l2						
18													h	l	l	l				f	f4			
19			f2	f3						h	l	l2	l		l2	l2	l2	l						
20									l					l										
21												l												
22									h	h		l	l	l	l	l	h2	h2	h2	f	f3	f	f	
23											l					l	l	l						
24											h	h	l											
25										l	h l	h		l	l	l	l		h					
26											h	l	h l	h l2		h		h2	h5	f2	f4			
27										h	h					h	l	l2						
28												l	l	l2	l2				h2	f2				
29										h										f				f
30	f										h	l	l	l					h3 l	f				
31															h	h							f3	
No.																								
Median																								

Types of Es

Sweep 1.0 Mc to 20.3 Mc in 30 min/sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 12

SOLAR RADIO EMISSION 200 Mc/s

Flux in 10^{-22} w.m.$^{-2}$ (c/s)$^{-1}$, 2 polarizations

HIRAISO

Time in U.T.

Mar.	Steady Flux					Variability				
1960	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	8	11	9	-	9	0	0	0	-	0
2	9	8	10	-	9	0	0	0	-	0
3	7	7	-	-	7	0	0	-	-	0
4	6	7	6	-	6	0	0	0	-	0
5	7	6	6	-	6	0	0	0	-	0
6	7	8	8	-	8	0	0	0	-	0
7	7	7	6	-	7	0	0	0	-	0
8	6	6	(6)	-	6	0	0	0	-	0
9	6	6	6	-	6	1	1	0	-	1
10	6	6	6	-	6	0	0	0	-	0
11	8	8	6	-	7	0	0	0	-	0
12	6	6	6	-	6	0	0	0	-	0
13	6	6	(6)	-	6	0	0	0	-	0
14	6	6	5	(6)	6	0	0	0	0	0
15	7	7	(5)	-	6	0	0	0	-	0
16	8	7	9	-	8	0	0	0	-	0
17	8	10	10	-	9	1	1	0	-	1
18	9	6	6	-	7	0	0	0	-	0
19	9	6	7	-	7	0	0	0	-	0
20	9	9	8	-	9	0	0	0	-	0
21	10	8	9	-	9	0	0	0	-	0
22	9	10	-	-	10	0	0	-	-	0
23	11	16	(13)	-	13	1	1	1	-	1
24	14	14	12	-	13	1	1	1	-	1
25	8	7	-	-	8	0	0	-	-	0
26	10	11	-	-	11	0	0	-	-	0
27	11	9	8	-	9	0	0	0	-	0
28	8	8	(8)	150	8	0	0	0	2	0
29	199	63	29	31	110	2	2	2	1	2
30	31	204	87	37	88	2	2	2	2	2
31	32	31	19	(60)	30	1	2	1	(2)	2

Outstanding Occurrences

Mar. 1960	Start-time	Dura-tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
9	0021.0	3.5	F/3	>800	-	0022.5	
	0222.0	5	F/3	330	-	0226.2	
	0326.9	0.7	CD/4	>880	240	-	
	0427.5	0.5	CD/4	>900	80	-	
10	0604.5	0.5	CD/4	1100	110	-	
25	0259.2	0.8	CD/4	>1200	250	-	
	0307.1	1.6	CD/4	>1200	210	-	
27	0139.4	1.7	CD/4	360	60	0139.8	
28	2201.5	55	CD/8	>700	>700	-	off scale
29	0701	≥110	CD/9	>25000	>5000	-	off scale

RADIO PROPAGATION QUALITY FIGURES

HIRAISO — Time in U.T.

Mar. 1960	Whole Day Index	W W V 00 06 12 18 / 06 12 18 24	S. F. 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	2-	2 2 1 3	1 1 2 2	1 3 2 2	N N N N			
2	2-	3 3 1 3	1 (1) 1 1	2 1 1 1	N N N N			
3	2o	2 2 3 3	(2 2) 1 1	1 1 1 2	N N N N			
4	1+	1 2 2 2	1 (1) 2 2	2 3 3 2	N N N N			
5	2-	2 2 1 3	1 2 1 2	2 1 1 2	N N N N			
6	3-	3 3 3 3	2 2 2 2	2 3 2 1	N N N N			
7	2-	1 2 2 2	2 2 C 1	1 1 2 2	N N N N			
8	1+	1 1 1 2	2 2 1 1	1 1 2 1	N N N N			
9	2-	2 2 2 1	2 2 2 2	2 1 2 2	N N N N			
10	2o	2 2 3 3	1 1 2 1	1 2 3 2	N N N N			
11	2o	3 3 3 2	1 1 1 2	2 3 2 2	N N U U			
12	2+	1 3 2 2	3 3 3 2	3 2 3 2	U U U N			
13	2o	1 3 1 3	2 3 2 2	2 2 3 2	N N N N			
14	2-	3 2 1 1	1 2 2 1	1 2 3 2	N N N N			
[15]	1o	1 2 1 1	1 C C 1	2 2 2 2	N N N N	1200	---	
[16]	2+	3 2 3 2	1 1 (3) 3	2 2 2 2	N N N N	---	---	
[17]	3-	4 3 2 2	3 2 2 2	2 3 3 2	U U U U	---	---	
18	2-	1 2 2 1	1 (3 3) 1	2 3 3 2	U U U U	---	1700	138 γ
19	1+	1 2 3 2	1 1 1 1	2 2 2 1	U N N N			
20	1+	1 3 2 1	1 - 1 2	2 2 2 2	N N N N			
21	1+	1 2 1 1	1 1 2 2	1 1 1 1	N N N N			
22	1+	2 1 1 1	1 2 2 2	2 1 1 2	N N N N			
23	1+	1 2 1 1	2 2 2 -	1 1 1 2	N N N N			
24	2-	1 1 1 (2)	2 3 3 -	2 1 2 2	N N N N			
25	2-	3 2 2 1	2 (1) 1 -	1 1 1 1	N N N N			
26	1+	1 1 1 1	2 2 (2) 2	1 2 2 2	N N N N			
27	1+	1 1 1 1	2 (2) 1 2	2 1 1 2	N N N N			
28	2+	2 2 1 3	2 2 2 3	1 1 1 2	N N N N			
29	3o	4 3 1 3	3 3 3 3	3 2 3 2	U U U U			
30	2o	3 C 1 3	2 - - 1	3 1 1 2	U U U U			
31*	4o	4 4 4 (5)	3 3 3 5	2 1 3 S	U U U U	0954	---	319 γ

* = day of Special World Interval

[ ] = Regular World Day

( ) = inaccurate

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Mar. 1960	S W F								S E A			Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.	Start-time	Dura-tion	Imp.	Flare	Solar Noise	Mag.
	WS	SF	HA	TO	LN										
14										01.15	55	2	X		
27	7"	20				01.50	15	S	1+				X		
28										01.20	40	1			
28	15"	36	10	7'		21.19	78	Slow	3				X	X	
29	-	-	16	12'	34	06.55	60	S	3+	06.55	100	3	X	X	
29	12"	32	-	-	-	20.43	70	S	2+				X	X	

Jan. 1960

foF2

45° E Mean Time (G.M.T.+3h.)

Showa 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	4.9F	5.7F	F	F	F	6.6F	6.2F	6.7F	7.0	7.2	7.3	7.3	7.4	7.3	7.3	7.4	7.3	7.4	7.2	6.6	6.2	6.1	6.2	6.0
2	5.8	5.6F	5.9F	F	6.8	7.6F	8.8	9.1	9.0	8.8	8.9	9.0	8.9	8.7	8.5	8.4	8.0	7.8	7.5	6.8	6.4	5.4	5.1F	5.2
3	5.6	5.7F	5.7F	5.8F	6.8F	6.5F	6.5F	6.4	5.8	6.5	6.7	6.8	6.9	6.8	7.0	7.0	6.8	6.8	6.5	5.4	5.6F	5.0	5.6	5.3
4	5.9	6.6	6.6	5.4F	5.8F	F	6.0	U6.2R	6.3	6.4	6.6	6.8	6.5	6.9	C	6.6	7.0	C	6.2	5.8	6.5	6.0	5.8	5.7
5	C	5.2F	6.0F	C	F	F	F	5.8F	F	5.6	6.5	5.8F	6.4	6.4	6.5	6.8	5.6	5.3	4.5	6.4	5.8	6.0	5.6	5.6
6	C.0	F	F	F	C	F	E3.9G	C	E4.5G	F	5.4	5.7	6.0	6.0	6.2	5.8	6.0	5.9	C	6.0	6.0	5.5	5.4	5.6
7	5.6	5.5	5.2F	5.4F	5.7F	5.0F	F	F	F	F	C	6.5	6.2	6.9	6.9	7.0	7.0	C	C	6.3	6.5	5.5	5.0F	5.0F
8	U5.8F	5.6F	5.7F	5.2F	5.2F	5.1F	5.3F	F	6.0F	7.2	6.9	6.5	6.4	6.3	5.9	6.4	6.7	6.6	6.6	6.1	5.9	6.0	6.1	5.9
9	6.0F	5.4	5.2	5.8	5.7F	U5.3F	5.9F	5.9F	7.2F	7.7	7.5	7.6	7.5	7.2	7.8	7.5	7.1	7.2	7.3	7.3	6.8	6.4	6.4	6.5
10	U5.0F	4.8F	5.8F	6.0F	U6.3F	6.3F	6.6F	7.2F	8.0F	8.9	9.3	8.0	8.3	U8.5R	8.8	6.8	5.7	4.6	D4.6R	F	A	4.8	A	5.0F
11	A	A	4.8F	4.3F	4.4	4.5F	U5.3F	5.1F	5.6F	5.7F	6.2F	6.4F	B	7.1F	7.3F	U7.2S	5.5	4.6	4.6	5.2	5.0F	4.8	5.4F	6.4
12	4.4	4.6F	5.0	A	B	B	U5.6R	F	D5.5R	6.8	7.0	7.1	U7.2R	6.9	6.6	6.6	6.6	6.5	5.9	D4.5R	5.6	5.6	5.0	A
13	B	B	B	4.5	5.5	5.5	B	B	6.0	6.3	6.5	6.7	7.0	U7.6R	7.7	7.8	J8.0R	7.3	6.7	5.7	5.3	5.2	5.5	B
14	B	B	B	B	B	B	B	B	B	B	B	5.8	5.9	6.5	7.0	D6.2R	U5.4R	6.0	5.5	5.3	C	5.6	6.4	E3.6G
15	A	B	4.5	A	A	4.2	F	A	A	A	A	4.8	5.3	5.5	5.3	C	C	C	C	C	C	C	C	C
16	D5.0R	4.8	4.8	5.4F	5.9	5.6F	5.1F	5.6F	6.3F	6.8F	6.8F	7.1F	7.6F	7.2	7.0	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	6.5	6.7	C	5.7F	C	U5.3F	4.9F
18	5.6F.	U4.9F	F	4.7F	F	F	F	6.6F	7.1F	7.2F	6.8F	6.9F	7.2	C	C	7.6F	F	U5.2F	5.3	5.1	4.6	4.8	4.2	4.3F
19	F	F	F	4.7F	5.3F	B	5.0	5.1F	5.5F	C	C	C	C	C	7.1	7.0	7.0	6.7	6.6	6.7	6.8	6.7	6.1	7.0
20	6.1	4.8	5.7	5.6F	5.8	5.7	5.7F	F	5.0F	5.2F	5.8F	5.9F	F	7.6F	7.7	8.0	7.4	7.4	8.0	7.3	7.1	6.0	4.8F	U5.7F
21	4.5F	5.1F	5.6F	F	F	3.8F	4.5F	4.6F	F	F	A	F	5.0F	F	5.3F	5.8F	E2.8G	4.9F	5.0F	4.5F	F	F	F	B
22	B	F	F	A	3.9F	F	4.3F	F	5.0F	5.1F	F	C	6.0F	6.7F	6.9F	B	C	C	C	C	C	5.2F	4.7F	
23	4.4F	4.4F	4.3F	4.6F	4.9F	F	U6.1F	F	5.0	5.8	F	5.5	5.8	6.0	C	C	6.4F	6.0F	5.3F	4.7F	F	4.4	4.5F	U4.9F
24	F	R	U4.7F	5.3	4.6F	U5.0R	F	C	R	5.7	6.3F	6.0F	6.2F	6.6F	6.7F	7.0F	7.6	6.8F	5.6	5.2F	5.4	4.4F	4.8F	4.7F
25	4.9F	4.6	5.0F	5.4F	5.9	5.6F	5.4F	6.0	6.5	6.7	6.8	7.0	7.0	6.8	7.1	6.9	U6.6F	6.3	6.2	6.2	5.9	6.2	4.6F	U5.3F
26	6.0F	U5.7F	5.0	5.8F	6.0F	5.9F	6.8F	6.5	U6.3F	6.4F	6.3F	6.4F	C	6.7F	C	7.0F	6.9F	6.7	6.6	6.4	5.8	6.0	5.6F	4.9F
27	5.0F	F	4.9	5.8F	F	5.3F	6.3	U6.1R	6.4	F	U6.5F	6.7F	6.8F	7.1F	7.2	7.5	7.3	6.8	6.9	6.7	6.5	6.5	6.6	6.4
28	6.2F	F	6.1	F	U6.5F	6.1F	U7.0F	7.0F	7.7F	8.4	8.2	8.0	8.0	7.8	7.5	7.2	7.1	7.0	6.8	6.2	6.5	6.7	6.9F	F
29	U4.6F	4.7F	R	U5.7F	F	6.8F	F	F	F	6.6F	7.3F	8.0	8.0	8.0	8.3	8.4	8.0F	7.9	7.5	7.0F	7.0	6.9	6.4F	6.4F
30	U5.8F	5.2F	F	5.8F	6.5F	7.2F	7.8F	8.7F	9.3F	9.5	8.8	8.3	8.2	7.9	7.7	7.7	7.4	6.9	6.7	6.6	6.6	6.3	6.3	6.4
31	6.6	6.8F	7.2F	7.6F	U8.0R	7.6F	8.6F	9.3F	U10.6R	10.8	10.4	C	9.5	9.4	9.2	9.0	8.6	8.5	8.1	7.4	7.3	7.3	7.2	6.7
No.	21	20	21	20	20	21	22	18	22	23	23	26	26	27	26	26	27	26	25	25	25	26	27	25
Median	5.6	5.2	5.2	5.4	5.8	5.6	6.0	6.2	6.3	6.7	6.8	6.8	7.0	6.9	7.1	7.0	7.0	6.7	6.6	6.2	6.0	5.8	5.6	5.3
U.Q.	6.0	5.6	5.8	5.8	6.4	6.6	6.5	7.0	7.2	7.7	7.5	7.3	7.5	7.6	7.7	7.6	7.4	7.2	7.0	6.7	6.6	6.3	6.2	6.2
L.Q.	4.9	4.8	4.8	4.8	5.2	5.0	5.3	5.8	5.6	5.8	6.5	6.0	6.2	6.6	6.7	6.8	6.4	6.0	5.6	5.4	5.4	5.0	5.0	4.9
Q.R.	1.1	0.8	1.0	1.0	1.2	1.6	1.2	1.2	1.6	1.9	1.0	1.3	1.3	1.0	1.0	0.8	1.0	1.2	1.4	1.3	1.2	1.3	1.2	1.3

foF2

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

The Radio Research Laboratories, Japan.

PROVISIONAL IONOSPHERIC DATA

IONOSPHERIC DATA IN JAPAN FOR MARCH 1960
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