

F—208

# IONOSPHERIC DATA IN JAPAN

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KOKUBUNJI, TOKYO, JAPAN

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## SITE 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. | Midori-cho, Wakkanai-shi, Hokkaido         |
| Akita     | 39°43.5'N. | 140°08.2'E. | Tegata Sumiyoshi-cho, Akita-shi, Akita-ken |
| Kokubunji | 35°42.4'N. | 139°29.3'E. | Nukuikita-machi, Koganei-shi, Tokyo-to     |
| Yamagawa  | 31°12.1'N. | 130°37.1'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. | Isozaki-machi, Nakaminato-shi, Ibaraki-ken |

## SYMBOLS AND TERMINOLOGY

### A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction," 1961.

#### Terminology

|             |   |   |
|-------------|---|---|
| $f_oF2$     | } | The ordinary wave critical frequency for the $F2$ , $F1$ and $E$ layers, respectively.  |
| $f_oF1$     |   |   |
| $f_oE$      |   |   |
| $f_oE_s$    |   | The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.  |
| $f_oE_s$    |   | The lowest ordinary wave frequency at which the $E_s$ layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.   |
| $f$ -min    |   | The frequency below which no echoes are observed.   |
| $M(3000)F2$ |   | 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 $f_oE_s$ .  |
| $h_pF2$     |   | The virtual height of the $F2$ layer measured on the ordinary   |

$ypF2$

wave branch at a frequency equal to  $0.834f_0F2$ .

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  $0.969f_0F2$ ).

**a. Descriptive Letters**

The following letters are entered after or used to replace a numerical value on the 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 normal 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 of the layer is too small to enable it to be made accurately.
- H Measurement influenced by, or impossible because of, the presence of a stratification.
- L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
- M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
- N Conditions are such that the measurement cannot be interpreted.
- O Measurement refers to the ordinary component.
- R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
- S Measurement influenced by, or impossible because of, interference or atmospherics.
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- 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 Letters**

The following letters are entered in the first column before a numerical

value on the 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.                                    |
| O | Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.) |
| 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 magneto-ionic component.  |

### c. Description of Standard Types of $E_s$ .

The eight standard types of  $E_s$  are identified by corresponding lower case letters: *f, l, c, h, q, r, a, s*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. It is strongly emphasized that these names are not restrictive. The letter 'n' is used to designate any  $E_s$  trace that does not correspond to any of the eight types.

- 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*.
- l* A flat  $E_s$  trace at or below the normal  $E$  layer minimum virtual height in the day or below the night  $E$  layer minimum virtual height at night.
- c* An  $E_s$  trace showing a relatively symmetrical cusp at or below  $f_oE$ . This is usually continuous with the normal  $E$  trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)
- h* An  $E_s$  trace showing a discontinuity in height with the normal  $E$  layer trace at or above  $f_oE$ . 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. (Usually a daytime type.)
- 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 showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick  $E$  layer) by the lack of group retardation in the  $F$  layer traces at corresponding frequencies and the lack of complete blanketing.
- a* An  $E_s$  having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These

sometimes extend over several hundred kilometers of virtual height.

*s* A diffuse  $E_s$  trace which rises steadily with frequency and usually emerges from another type  $E_s$  trace. The rising trace alone is classified as 's'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal  $E_s$  trace such as  $E_s-l$  or  $E_s-f$ , at frequencies which greatly exceed the  $E$  layer critical frequency, whereas at low latitudes it usually rises from  $E_s-q$ ,  $E_s-c$ , or  $E_s-h$  at frequencies near the regular  $E$  critical frequency. Type *s* is never used to determine  $f_oE_s$  and  $h'E_s$ . The slant trace is sometimes observed to start at  $f_oE$  without echoes clearly identifiable as  $E_s$  echoes being seen.

*n* The designation 'n' is used to denote an  $E_s$  trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. 'n' should be used sparingly.

**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 observations are carried out on 200 and 500 Mc/s at Hiraiso Radio Wave Observatory.

Antennas are a broadside array of 6×4 doublets for 200 Mc/s and a parabolic reflector of 5 meter for 500 Mc/s, each having the total power receiver.

Observations are feasible almost from sunrise to sunset.

**a. Time and Unit**

The time is expressed as U.T.

The unit is  $10^{-22}$  W·m<sup>-2</sup>·(c/s)<sup>-1</sup> for both components of polarization.

**b. Daily Data**

*Flux density*

The three-hourly and daily mean values are given.

*Variability*

The three-hourly and daily mean values are given at 200 Mc/s only.

Variability is expressed in the following four grades:

0=Quiet or no burst,

1=A few bursts,

2=Many bursts,

3=Very many bursts.

The number of bursts exceeding the flux level is counted.

### c. Distinctive Events

The phenomena are picked up on the following criteria:

1. Distinct from the prevailing kind of activity,
2. Correlated with other known solar phenomena,
3. Remarkable change-over from one situation to another.

*Starting time* and *Time of maximum* are given to nearest minute in general, but to nearest a tenth minute for short intense occurrences or clear commencements.

*Duration* is given in minutes and to nearest a tenth minute, if short or clear.

*Descriptive type* is denoted by the following symbols:

S = Simple rise and fall of intensity;

C = Complex variation of intensity,

C+ = Prolonged broad-band enhancement of radiation, generally of spectral type IV;

F = Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;

RF = More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;

e = Sudden beginning of burst with steep rise of intensity;

E = Steep rise of intensity of continuum background;

p.i. = post-burst increase;

onset storm = clear-cut beginning of a noise storm.

*Peak intensity* is the flux density of the highest peak reached during the occurrence, measured above the pre-burst level.

*Mean intensity* is the flux density averaged over the burst's duration, measured above the pre-burst level; therefore, multiplying the duration, the total energy of the occurrence can be estimated.

## C. RADIO PROPAGATION CONDITIONS

### a. Field Intensities of WWV and WWVH

Field intensity observations of WWV and WWVH transmitted from Washington D.C. and Hawaii, respectively, are carried out at Hiraio Radio Wave Observatory. In order to avoid interferences with several standard frequency waves on the same frequency, the upper side-band of 440 c/s is picked up by the use of a narrow band pass filter of  $\pm 40$  c/s bandwidth.

Tabulated *field intensity* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

**Transmitter**

|          | WWV  | WWVH  |
|----------|--|---|
| Location | Washington, D.C. Long. 76°51' W<br>Lat. 39°00' N | Maui, Hawaii Long. 156°28' W<br>Lat. 20°46' N |
| Power    | 3 kW for the upper side-band                     | 0.5kW * for the upper side-band               |
| Antenna  | $\lambda/2$ vertical                             | $\lambda/2$ vertical                          |
| Distance | 10050 km   | 6270 km                                       |

\* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

**Receiver**

|             |                                      |
|-------------|--------------------------------------|
| Antenna     | 4.5m vertical rod                    |
| Bandwidth   | $\pm 40$ c/s for the upper side-band |
| Calibration | each half hour                       |

*Descriptive symbols* are as follows:

- C: Measurement influenced by, or impossible because of, any non-propagational reasons.
- S: Measurement influenced by, or impossible because of, interferences or atmospheric.
- ( ): Unaccurate measurement influenced by interferences, atmospheric, or non-propagational reasons.
- <: Less than the following figure.

**b. Radio Propagation Quality Figures**

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

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

The tabulated circuits contain Hamburg (commercial circuit), WWV (frequencies 10, 15, 20Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15Mc 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 averages of the 6-hourly indices of Hamburg WWV and S. F.

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

**c. Sudden Ionospheric Disturbance (S. I. D.)**

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

*Circuits and Drop-out intensity*

WS ..... WWV 20 Mc, 15 Mc and 10 Mc (Washington)  
 S F ..... Various commercial circuits (San Francisco)  
 H A ..... WWVH 15 Mc and 10 Mc (Hawaii)  
 T O ..... JJY 15 Mc and 10 Mc (Tokyo)  
 S H ..... BPV 15 Mc and 10 Mc (Shanghai)  
 H B ..... Various commercial circuits (Hamburg)

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 (none) and 20 Mc (").

*Start-times and Durations*

*Types*

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

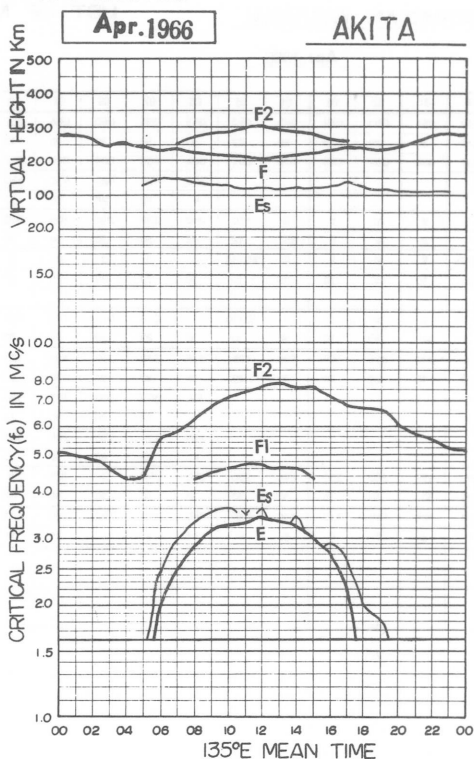
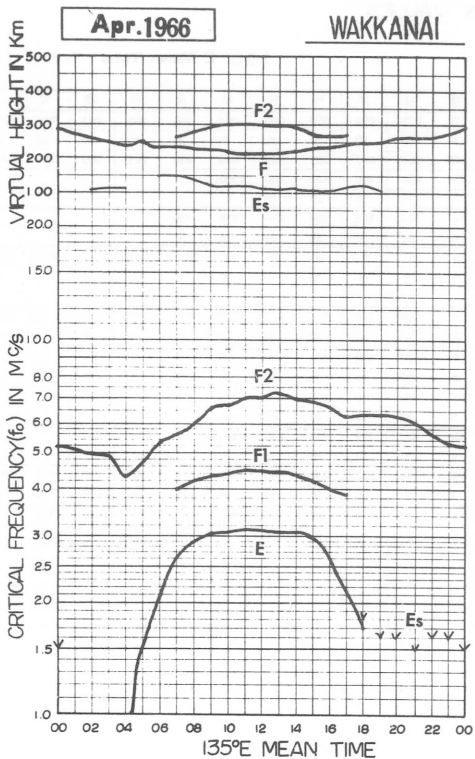
*Importances*

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

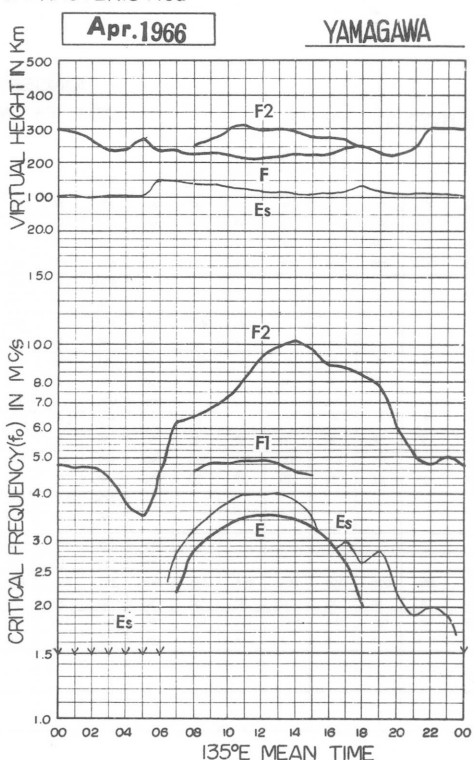
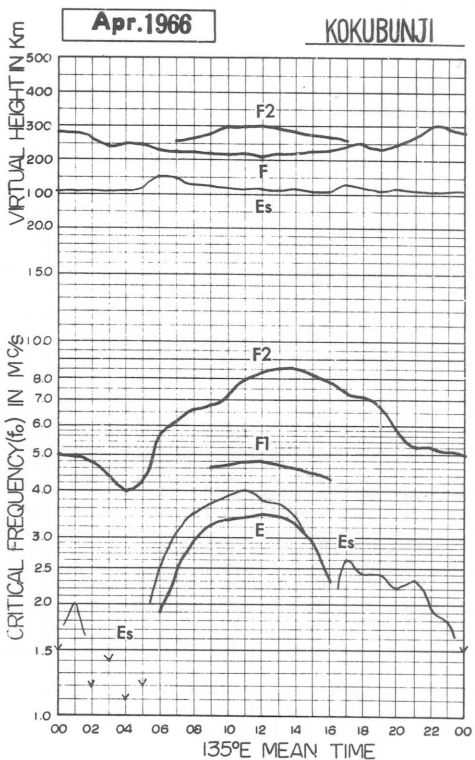
|    |   |    |
|----|---|----|
| 1— | 1 | 1+ |
| 2— | 2 | 2+ |
| 3— | 3 | 3+ |

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



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS







Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. + 9h)

f<sub>o</sub>F<sub>2</sub>

Apr. 1966

| 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      | SF    | 044F | 044   | 044   | 040F  | 041F  | 050  | 060   | 066   | 075   | 077 | 072  | 068   | 057   | 054   | 059 | 063 | 065 | 066 | 060 | 053   | 050   | 043   | 043   |
| 2      | 040   | 037  | 038   | 050   | 034F  | 033   | 046  | 051   | 054   | 060   | 079 | 081  | 066   | 066   | 067   | 067 | 073 | 065 | 064 | 061 | 050   | 044   | 043   | 044   |
| 3      | 043   | 043  | 047   | 049   | 044   | 046   | 044  | 055H  | 067   | 070   | 073 | 067  | 065   | 068   | 075   | 069 | 066 | 059 | 055 | 054 | 048   | 043   | SF    | SF    |
| 4      | 044F  | 043F | SF    | SF    | SF    | SF    | SF   | 051   | 050   | 068   | 076 | 079  | 071   | 070   | 073   | 071 | 064 | 060 | 066 | 074 | 063   | SF    | SF    | 043F  |
| 5      | 043F  | 043  | 043   | 043   | U043S | 045   | 050  | 054   | 057   | 069   | 072 | 077  | 077   | 074   | 067   | 066 | 065 | 058 | 064 | 065 | 060   | 057   | 051   | 051   |
| 6      | 048   | 046  | 045F  | 044F  | 044F  | U048F | 053  | 056   | 062   | 063   | 065 | 066  | 067   | 066   | 067   | 072 | 063 | 062 | 063 | 061 | 057   | 057   | 056   | 055   |
| 7      | 053   | 050  | 053   | 053   | 049   | 053   | 053  | 062   | 064   | 077   | 075 | 070  | 075   | 073   | 083   | 076 | 072 | 067 | 066 | 061 | 057   | 058   | 058   | 053   |
| 8      | 053   | 051  | 050   | 050   | 048   | 050   | 053  | 058H  | 070   | 069   | 076 | 092  | 076   | 077   | 081   | 076 | 073 | 065 | 060 | 053 | I050S | I050S | I050S | 050   |
| 9      | I050S | 049F | 046F  | 045F  | 040F  | I046S | 059  | 065   | 078   | 078   | 074 | 081  | 079   | 074   | 072   | 074 | 072 | 071 | 070 | 064 | 057   | 056   | 056   | 054   |
| 10     | 051   | 051  | 050   | 053   | 043H  | 048   | 051  | 052   | 056   | 062   | 073 | 084  | 076   | 074   | 073   | 072 | 068 | 062 | 063 | 061 | 058   | 056   | 053   | 053   |
| 11     | 053   | 050  | 050   | 048   | 040   | 043   | 053  | 058H  | 065   | 066   | 065 | 070  | 082   | 083   | 076   | 069 | 067 | 068 | 070 | 072 | 068   | 066   | 063   | 060   |
| 12     | 057   | 058  | 054   | 054   | 053   | 052   | 053  | 061   | 062   | 064   | 065 | 066  | 071   | 066   | 067   | 063 | 062 | 063 | 067 | 074 | 070   | 063   | 058S  | SF    |
| 13     | U057F | 057F | U058F | U058F | 044F  | 049F  | 053  | 063   | 065   | 066   | 066 | 068  | 070   | 067   | 072   | 066 | 068 | 062 | 056 | 058 | 058   | 060   | 058   | 055   |
| 14     | 054   | 054  | 050   | 046   | 042   | 044   | 051  | 053   | 051   | 056   | 059 | 053H | 062H  | 067   | 064   | 065 | 065 | 061 | 056 | 058 | 057   | 058   | SF    | U055F |
| 15     | 054   | 055  | 055   | 055   | 045   | 044   | 045  | 049H  | 051   | 056   | 067 | 071  | I072C | 075   | 070   | 057 | 064 | 059 | 059 | 065 | 063   | 063   | 058   | 051   |
| 16     | 047   | 047  | 046   | 046   | 043   | 043   | 046  | 047   | 054   | 058   | 064 | 074  | 077   | 074   | 070   | 072 | 066 | 058 | 055 | 058 | 058   | C     | C     | C     |
| 17     | C     | 049  | 044   | 043   | 043   | 047   | 053  | I057C | I058C | 057   | 069 | 061H | 069   | 073   | 073   | 067 | 065 | 066 | 066 | 065 | 063   | 061   | 057   | 053   |
| 18     | 051   | 052  | 050   | 050   | 048   | 053   | 054  | 054   | 060   | 064   | 066 | 067  | 069   | 074   | 074   | 072 | 066 | 058 | 054 | 062 | 063   | 061   | 056   | 051   |
| 19     | 053   | 053  | 052   | 051   | 053   | 049   | 054  | 059   | 061   | 062   | 067 | 067  | 070   | 074   | 071   | 071 | 065 | 057 | 056 | 063 | 064   | 061   | 053   | 050   |
| 20     | 052   | 051  | 048   | 049   | 048   | 057   | 053  | 054H  | 061   | 065   | 064 | 063  | 068   | 068   | 069   | 069 | 063 | 060 | 058 | 069 | 070   | 066   | 059   | 055   |
| 21     | 055   | 051  | 050   | 046   | 043   | 043   | 043  | 043H  | 045   | 055   | 055 | 067  | 066   | 065   | 061   | 063 | 060 | 056 | 054 | 060 | 063   | 054   | 057   | 049   |
| 22     | 044   | 043  | 041   | 040   | 041   | 046   | 051  | 055   | 056   | 061   | 068 | 071  | 074   | 073   | 083   | 082 | 069 | 050 | 056 | 066 | 067   | 063   | 061   | 055   |
| 23     | 051   | 049  | 049   | 050   | 043   | 037   | 051  | 056   | 056   | 068   | 071 | 069  | 069   | I068A | I065A | 069 | 070 | 057 | 073 | 073 | 068   | 060   | 055   | 053   |
| 24     | 051   | 050  | 050   | 043   | 043   | 048   | 054  | 057   | 056   | 062   | 063 | 066  | 065   | 065   | 066   | 067 | 067 | 064 | 064 | 066 | 065   | 061   | 061   | 059   |
| 25     | 057   | 055  | 055   | 049   | 047   | 050   | 061  | 064   | 066   | 061   | 064 | 074  | 076   | 073   | 066   | 071 | 070 | 064 | 063 | 063 | 060   | 060   | 055   | 051   |
| 26     | 051   | 051  | 054   | 038   | 034   | 045   | 051  | 050   | 059   | 075   | 073 | 071  | 067   | 067   | 067   | 069 | 065 | 063 | 063 | 067 | 065   | 063   | 060   | 056   |
| 27     | 054   | 053  | 053   | 048   | 047   | 057   | 060  | 070   | 080   | 073   | 066 | 067  | 068   | 070   | 074   | 073 | 070 | 070 | 070 | 076 | 067   | 065   | 060   | 058   |
| 28     | 058   | 057  | 056   | 050   | 048   | 060   | 067  | 064   | 069   | 074   | 076 | 074  | 074   | 078   | 074   | 076 | 079 | 076 | 081 | 086 | 073   | 060   | 056   | 051   |
| 29     | 053   | 051  | 050   | 048   | 049   | 063   | 070H | 065H  | 065   | 072   | 067 | 069  | 074   | 079   | 084   | 076 | 077 | 077 | 075 | 081 | 079   | 066   | 056   | 054   |
| 30     | 053   | 051  | 050   | 051   | 039   | 043   | 050  | 055   | 060   | I056C | 060 | 061  | 062   | 062   | 07C   | 064 | 071 | 065 | 054 | 070 | 071   | 072   | 068   | 054   |
| 31     |       |      |       |       |       |       |      |       |       |       |     |      |       |       |       |     |     |     |     |     |       |       |       |       |
| No.    | 28    | 30   | 29    | 29    | 29    | 29    | 30   | 30    | 30    | 30    | 30  | 30   | 30    | 30    | 30    | 30  | 30  | 30  | 30  | 30  | 30    | 28    | 26    | 27    |
| Median | 052   | 051  | 050   | 049   | 043   | 047   | 053  | 056   | 060   | 066   | 067 | 070  | 070   | 072   | 070   | 069 | 066 | 063 | 064 | 064 | 063   | 060   | 056   | 053   |
| U. Q.  | 054   | 053  | 053   | 050   | 048   | 051   | 054  | 061   | 065   | 070   | 073 | 074  | 075   | 074   | 074   | 072 | 070 | 066 | 065 | 070 | 067   | 063   | 059   | 055   |
| L. Q.  | 049   | 047  | 046   | 044   | 042   | 044   | 050  | 053   | 056   | 061   | 065 | 067  | 067   | 067   | 067   | 067 | 065 | 060 | 056 | 061 | 058   | 057   | 055   | 051   |
| Q. R.  | 005   | 006  | 007   | 006   | 006   | 007   | 004  | 008   | 009   | 009   | 008 | 007  | 008   | 007   | 007   | 005 | 005 | 006 | 010 | 009 | 009   | 006   | 004   | 004   |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

f<sub>o</sub>F<sub>2</sub>

W I

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G. M. T. + 9h)

foF1

Apr. 1966

| 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      |    |    |    |    |    |    |     |     | 400   | 420 | 430 | 430   | 430  | 430  | 420H  | 400L  |       |       |       |    |    |    |    |    |
| 2      |    |    |    |    |    |    | 350 |     | 390   | 440 | 430 | 430   | 430  | 430  | 400   | 400   | 380   |       |       |    |    |    |    |    |
| 3      |    |    |    |    |    |    |     |     | 410H  | 420 | 420 | 430   | 440H | 440H | 420   | 400   |       |       |       |    |    |    |    |    |
| 4      |    |    |    |    |    |    |     |     | U400L | 430 | 440 | 450   | 450  | 430  | 420   | 410H  | 380L  |       |       |    |    |    |    |    |
| 5      |    |    |    |    |    |    |     |     | 420   | 420 | 430 | 450   | 440  | 440  | 430   | 400   | 370L  |       |       |    |    |    |    |    |
| 6      |    |    |    |    |    |    |     |     | 410   | 430 | 430 | U430C | 410  | 430  | 430   | 410   |       |       |       |    |    |    |    |    |
| 7      |    |    |    |    |    |    |     |     | 390   | 430 | 440 | 460   | 450  | 430  | 430   | 420   | 370   |       |       |    |    |    |    |    |
| 8      |    |    |    |    |    |    |     |     | 430   | 430 | 440 | 450   | 450  | 450H | 440H  | U430L |       |       |       |    |    |    |    |    |
| 9      |    |    |    |    |    |    |     |     | 440   | 440 | 440 | 450H  | 440  | 460  | 430   | 420   | 400   |       |       |    |    |    |    |    |
| 10     |    |    |    |    |    |    |     |     | 420   | 440 | 460 | 450   | 450  | 440  | 440   | 400   | 400   |       |       |    |    |    |    |    |
| 11     |    |    |    |    |    |    |     |     | 410   | 410 | 430 | 460H  | 460  | 450  | 440   | 420   | 400   |       |       |    |    |    |    |    |
| 12     |    |    |    |    |    |    |     |     | 420   | 430 | 440 | 450   | 440  | 450  | 440   | 410   | 380   |       |       |    |    |    |    |    |
| 13     |    |    |    |    |    |    |     |     | 400   | 420 | 430 | 440   | 450  | 440  | 440   | 400   | 380   |       |       |    |    |    |    |    |
| 14     |    |    |    |    |    |    |     |     | 360   | 420 | 430 | 460   | 400  | 450H | 440H  | 420   | 380   |       |       |    |    |    |    |    |
| 15     |    |    |    |    |    |    |     |     | 400   | 430 | 440 | 440   | 450C | 430  | 430   | 410   | U400L |       |       |    |    |    |    |    |
| 16     |    |    |    |    |    |    |     |     | 400   | 430 | 440 | 460   | 450  | 460  | 440   | 420   | 400   |       |       |    |    |    |    |    |
| 17     |    |    |    |    |    |    |     |     | U420C | 430 | 440 | 440   | 440  | 430  | 430H  | 420   | 400   | 330L  |       |    |    |    |    |    |
| 18     |    |    |    |    |    |    |     |     | 420   | 430 | 440 | 450   | 450  | 460H | 450   | 420   | 400   |       |       |    |    |    |    |    |
| 19     |    |    |    |    |    |    |     |     | 420   | 450 | 440 | 450   | 450  | 440  | 410   | 430   | 400   |       |       |    |    |    |    |    |
| 20     |    |    |    |    |    |    |     |     | 420   | 440 | 440 | 450H  | 460  | 450  | 440   | 430H  | 400   |       |       |    |    |    |    |    |
| 21     |    |    |    |    |    |    |     |     |       | 430 | 450 | 440   | 450  | 440  | 430   | 420   | U380L |       |       |    |    |    |    |    |
| 22     |    |    |    |    |    |    |     |     | 400L  | 410 | 440 | 450   | 460  | 460H | 450   | 430   | 380   |       |       |    |    |    |    |    |
| 23     |    |    |    |    |    |    |     |     | 370L  | 420 | 450 | U460A | 460  | 450  | U440A | 430   | 400   |       |       |    |    |    |    |    |
| 24     |    |    |    |    |    |    |     |     | 400   | 440 | 440 | 480   | 460  | 460  | 470H  | 450   | 410   |       |       |    |    |    |    |    |
| 25     |    |    |    |    |    |    |     |     | 360   | 420 | 440 | 460   | 440  | 460  | 450   | 440   | 400   |       |       |    |    |    |    |    |
| 26     |    |    |    |    |    |    |     |     | 440   | 460 | 460 | 470   | 490  | 470  | 460   | 430   | 420   | U400L |       |    |    |    |    |    |
| 27     |    |    |    |    |    |    |     |     | 400   | 410 | 440 | 490   | 460  | 470  | U470A | 460   | 430   | 410   | U400L |    |    |    |    |    |
| 28     |    |    |    |    |    |    |     |     | 400   | 430 | 450 | 470   | 470  | 450  | 440   | 440   | 410   | 380   |       |    |    |    |    |    |
| 29     |    |    |    |    |    |    |     |     | 410   | 440 | 470 | 450   | 480  | 450  | 460   | 440   | 410   | 400L  |       |    |    |    |    |    |
| 30     |    |    |    |    |    |    |     |     | 380   | 420 | 430 | U430C | 460  | 470  | 460   | 450   | 410   | U360L |       |    |    |    |    |    |
| 31     |    |    |    |    |    |    |     |     |       |     |     |       |      |      |       |       |       |       |       |    |    |    |    |    |
| No.    |    |    |    |    |    |    |     | 4   | 12    | 28  | 30  | 30    | 29   | 30   | 30    | 29    | 27    | 6     |       |    |    |    |    |    |
| Median |    |    |    |    |    |    |     | 380 | 400   | 420 | 430 | 440   | 450  | 450  | 440   | 420   | 400   | U390L |       |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |     |     |       |     |     |       |      |      |       |       |       |       |       |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |     |     |       |     |     |       |      |      |       |       |       |       |       |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |     |     |       |     |     |       |      |      |       |       |       |       |       |    |    |    |    |    |

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

foF1

The Radio Research Laboratories, Japan

W 2

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.01 Mc  $f_oE$  135° E Mean Time (G. M. T. +9h)

$f_oE$

Apr. 1966

| 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     | 195 | 235   | 285   | 300   | 300 | 300   | 300   | 305   | 300   | 285   | 240 | 205   | S   |    |    |    |    |    |
| 2      |    | S  | E  |    |    | S     | 195 | 235   | 290   | 295   | 300 | 305   | 300   | 300   | 300   | 275   | 230 | 200   | S   |    |    |    |    |    |
| 3      |    |    |    |    |    | S     | S   | 230   | 280   | 295   | 300 | I300A | I300R | 300   | 290   | 275   | 250 | 200   | S   |    |    |    |    |    |
| 4      |    |    |    |    |    | S     | 200 | 245   | 280   | 295   | 300 | 300   | 310   | 305   | I300A | 290   | 250 | 200   | S   |    |    |    |    |    |
| 5      |    |    |    |    |    | E     | S   | 250   | 290   | 305   | 330 | 325   | 310   | 320   | 300   | 290   | 235 | 205   | S   |    |    |    |    |    |
| 6      |    |    |    |    |    | E     | 200 | 235   | 290   | 300   | 300 | 310   | I300A | I300A | 305   | 295   | 255 | 210   | S   |    |    |    |    |    |
| 7      |    |    |    |    |    | S     | 200 | 260   | 290   | 300   | 300 | 300   | I300A | 300   | 300   | A     | A   | A     | S   |    |    |    |    |    |
| 8      |    |    |    |    |    | S     | 195 | 260   | 290   | 305   | 300 | I310A | 310   | 300   | 300   | 290   | 260 | 210   | S   |    |    |    |    |    |
| 9      |    |    |    |    |    | S     | 215 | 260   | 300   | 300   | 300 | 305   | 300   | 305   | 310   | 290   | 265 | 215   | S   |    |    |    |    |    |
| 10     |    |    |    |    |    | S     | 205 | 245   | 290   | 300   | 305 | 300   | 310   | 305   | 305   | 300   | 255 | 215   | S   |    |    |    |    |    |
| 11     |    |    |    |    |    | S     | 205 | 250   | 295   | 305   | 305 | 310   | 315   | 305   | 300   | 300   | 260 | 205   | S   |    |    |    |    |    |
| 12     |    |    | E  | E  | E  | S     | 205 | 255   | 290   | 300   | 305 | 305   | 305   | 315   | 310   | 300   | 255 | 215   | S   |    |    |    |    |    |
| 13     |    |    |    |    |    | S     | 210 | 250   | 295   | 300   | 300 | 315   | 310   | 315   | 305   | 290   | 260 | 215   | S   |    |    |    |    |    |
| 14     |    |    | E  | E  | E  | S     | 200 | 235   | 285   | 305   | 305 | 330   | 320   | 315   | 300   | 295   | 260 | 220   | S   |    |    |    |    |    |
| 15     |    |    |    |    | E  | 115   | 200 | 250   | 300   | 305   | 325 | 320   | I310C | 325   | 315   | 300   | 265 | 215   | 150 |    |    |    |    |    |
| 16     |    |    |    |    | E  | S     | 200 | 260   | 290   | 305   | 320 | 320   | 315   | 295   | 300   | 300   | 260 | 220   | S   |    |    |    |    |    |
| 17     |    |    |    |    | S  | S     | 225 | I255C | I290C | 305   | 330 | 315   | 315   | 305   | 310   | 295   | 265 | 225   | C   |    |    |    |    |    |
| 18     |    |    |    | E  | E  | S     | 205 | 255   | 290   | 305   | 305 | 305   | 310   | 305   | 305   | 300   | 250 | I195A | A   |    |    |    |    |    |
| 19     |    |    |    |    |    | S     | 205 | 260   | 290   | 315   | 310 | 330   | 330   | 300   | 300   | 300   | 280 | 215   | S   |    |    |    |    |    |
| 20     |    |    |    |    | E  | 180   | 210 | 265   | 290   | 305   | 310 | 315   | 315   | 305   | 300   | 300   | 265 | 215   | S   |    |    |    |    |    |
| 21     |    |    |    | E  | E  | 140   | 210 | 260   | 300   | 305   | 315 | 325   | 300   | 325   | 305   | 290   | 260 | 215   | 135 |    |    |    |    |    |
| 22     |    |    |    | E  | E  | A     | 215 | 260   | 295   | 310   | 330 | 330   | 325   | 310   | 290   | 300   | 275 | 225   | S   |    |    |    |    |    |
| 23     |    |    | E  | E  | E  | 140   | 215 | 280   | 300   | 315   | 330 | 330   | 335   | 310   | I295A | I290A | 280 | 235   | 175 |    |    |    |    |    |
| 24     |    |    |    |    | E  | I175S | 230 | 280   | 300   | 320   | 335 | 335   | 330   | 305   | 310   | 300   | 280 | 230   | 180 |    |    |    |    |    |
| 25     |    |    |    |    | E  | S     | 225 | 285   | 305   | 305   | 320 | 320   | 335   | 310   | 310   | 305   | 270 | 215   | S   | S  |    |    |    |    |
| 26     |    |    |    |    | E  | A     | 210 | 270   | 300   | 320   | 310 | 325   | 310   | U330R | 315   | I300A | 290 | A     | S   |    |    |    |    |    |
| 27     |    |    |    |    | E  | 160   | 225 | 270   | 300   | 315   | 325 | 325   | 335   | 315   | 315   | 300   | 290 | 230   | A   |    |    |    |    |    |
| 28     |    |    |    |    | E  | 175   | 230 | 280   | 300   | 320   | 330 | 340   | 335   | 335   | 330   | 305   | 280 | 230   | 160 | S  |    |    |    |    |
| 29     |    |    |    |    | E  | 180   | 230 | 280   | 300   | 320   | 320 | 310   | 305   | 300   | 325   | 305   | 270 | 225   | S   |    |    |    |    |    |
| 30     |    |    |    |    | E  | 190   | 225 | 270   | 300   | I315C | 335 | 340   | 330   | 325   | 305   | 300   | 270 | 230   | 180 | S  |    |    |    |    |
| 31     |    |    |    |    |    |       |     |       |       |       |     |       |       |       |       |       |     |       |     |    |    |    |    |    |
| No.    |    | 2  | 4  | 6  | 16 | 12    | 28  | 30    | 30    | 30    | 30  | 30    | 30    | 30    | 30    | 29    | 29  | 28    | 6   |    |    |    |    |    |
| Median |    | E  | E  | E  | E  | 150   | 210 | 260   | 290   | 305   | 310 | 315   | 310   | 305   | 305   | 300   | 260 | 215   | 170 |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |       |     |       |       |       |     |       |       |       |       |       |     |       |     |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |       |     |       |       |       |     |       |       |       |       |       |     |       |     |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |       |     |       |       |       |     |       |       |       |       |       |     |       |     |    |    |    |    |    |

$f_oE$

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. + 9h)

foEs

Apr. 1966

| 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      | E015S | E     | E     | E018 | E018 | E017S | G     | G   | G   | G    | G   | G   | G   | G    | G    | G    | 015G | G    | E016S | E016S | E017S | E020S | E015S | E017S |
| 2      | E011S | E015S | E     | E    | E    | E017S | G     | G   | G   | G    | G   | 043 | 036 | G    | G    | G    | 020G | 018G | E017S | E018S | E018S | E015S | E020S | E018S |
| 3      | E016S | E013S | E013S | E    | E    | E015S | E020S | G   | G   | G    | G   | G   | G   | G    | G    | G    | G    | 023  | E017S | E012S | E012S | E016S | E015S | E017S |
| 4      | E015S | J024  | J023  | J020 | E    | E015S | 023   | G   | G   | 034  | 038 | 037 | G   | G    | 031  | 022G | G    | 019G | E018S | J025  | E020S | E015S | E015S | E015S |
| 5      | E016S | E     | E     | E    | E    | E     | E020S | G   | G   | G    | G   | G   | G   | G    | G    | 020G | 015G | G    | E015S | E015S | E015S | E021S | E016S | E016S |
| 6      | E015S | E017S | E     | E    | E    | E     | E     | G   | G   | G    | G   | G   | 036 | 039  | 026G | G    | 015G | G    | E018S | E017S | E011S | E015S | E012S | E016S |
| 7      | E015S | E     | E     | E    | E017 | E015S | 023   | G   | G   | G    | 035 | 038 | 034 | G    | 024G | 031  | J032 | 040  | 027   | J033  | J021  | E015S | E016S | E015S |
| 8      | E015S | E     | E     | E    | E013 | E013S | 023   | G   | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E017S | E015S | E020S | E     | E014S | E014S |
| 9      | 035   | 015   | 018   | 021  | J023 | J021  | G     | G   | G   | G    | G   | G   | G   | G    | G    | 020G | G    | G    | E017S | J021  | E016S | E012S | E015S | E017S |
| 10     | E     | E     | E     | E    | E    | E015S | G     | G   | G   | G    | G   | G   | G   | 024G | G    | 020G | G    | G    | E017S | J021  | E016S | E014S | E015S | E012S |
| 11     | E016S | E     | E     | E    | E    | E017S | G     | G   | G   | G    | G   | G   | G   | G    | 035  | 023G | 020G | 013G | E018S | E016S | E016S | E016S | E015S | E016S |
| 12     | E018S | E     | E     | E    | E    | E     | G     | 024 | 030 | G    | G   | G   | G   | G    | 038  | G    | G    | G    | E016S | E016S | E015S | E015S | E017S | E018S |
| 13     | E015S | E     | E     | E    | E    | E018S | G     | G   | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E020S | E015S | E016S | E015S | E015S | E012S |
| 14     | E016S | E     | E     | E    | E    | E017S | G     | 028 | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E016S | E016S | E015S | E     | E015S | E015S |
| 15     | E016S | E     | E     | E    | E    | E     | G     | G   | 034 | 022G | 038 | 042 | C   | G    | G    | G    | 028  | 028  | 028   | 023   | E013S | E015S | E016S | E016S |
| 16     | E015S | E     | E     | E    | E    | E015S | 026   | 030 | G   | 035  | 037 | 039 | 040 | J053 | 041  | 015G | G    | 015G | J032  | E016S | E015S | C     | C     | C     |
| 17     | C     | E     | E     | E    | E    | E016S | G     | C   | C   | G    | G   | G   | G   | G    | G    | G    | G    | G    | C     | E014S | E012S | E018S | E015S | E015S |
| 18     | E012S | E     | E     | E    | E    | E018S | G     | G   | G   | G    | G   | G   | G   | G    | G    | G    | 031  | 023  | 020   | J021  | E020S | E015S | E017S | E018S |
| 19     | E023S | E015S | E015S | E    | E    | E020S | G     | G   | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E017S | E016S | E012S | E015S | E015S | E015S |
| 20     | E     | E     | E     | E    | E    | E     | G     | 024 | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E020S | E015S | E016S | E015S | E016S | E017S |
| 21     | E017S | E     | E     | E    | E    | E     | G     | G   | G   | G    | G   | G   | 034 | G    | G    | G    | G    | G    | 020   | E018S | E018S | E015S | E020S | E015S |
| 22     | E017S | E     | 015   | E    | E    | 023   | J031  | 031 | 033 | 038  | G   | 037 | 038 | 040  | 033  | G    | 023G | G    | E019S | E015S | E     | E016S | E016S | E016S |
| 23     | E016S | E015S | E     | E    | E    | E     | 021   | 026 | G   | 043  | 051 | 043 | 041 | J091 | J073 | 036  | G    | 031  | 028   | J050  | J033  | 016   | E016S | E015S |
| 24     | E015S | E     | E     | E    | E    | E020S | 027   | G   | 038 | 040  | G   | G   | G   | G    | G    | G    | G    | G    | G     | 020   | E015S | E015S | E     | E016S |
| 25     | E014S | E     | E     | E    | E    | E020S | G     | 032 | 038 | G    | G   | G   | G   | G    | G    | G    | G    | G    | E020S | E016S | E016S | E016S | E016S | E016S |
| 26     | E015S | E015S | 015   | 014  | 013  | 020   | 028   | 035 | 034 | G    | G   | G   | G   | G    | 036  | 033  | G    | 032  | 028   | J035  | J030  | E018S | E017S | E015S |
| 27     | E018S | J021  | J020  | J024 | 020  | G     | G     | 034 | G   | 040  | 043 | G   | G   | J070 | 044  | 036  | 018G | 031  | J031  | E020S | J034  | J028  | E021S | J023  |
| 28     | E015S | E015S | 017   | 018  | 023  | G     | G     | 037 | 037 | 040  | 041 | G   | G   | G    | G    | G    | G    | G    | G     | E     | E020S | E015S | E020S | E020S |
| 29     | E018S | E     | J023  | 015  | E    | G     | 028   | G   | G   | 040  | 040 | G   | G   | G    | G    | G    | G    | 030  | 021   | E016S | E016S | E015S | E015S | E015S |
| 30     | E015S | E013S | E     | E    | E    | E     | G     | G   | G   | C    | 043 | G   | 038 | 038  | G    | G    | G    | 029  | 024   | E015S | E015S | E015S | E015S | E015S |
| 31     |       |       |       |      |      |       |       |     |     |      |     |     |     |      |      |      |      |      |       |       |       |       |       |       |
| No.    | 29    | 30    | 30    | 30   | 30   | 30    | 30    | 29  | 29  | 29   | 30  | 30  | 29  | 30   | 30   | 30   | 30   | 30   | 29    | 30    | 30    | 29    | 29    | 29    |
| Median | E015S | E     | E     | E    | E    | E015S | G     | G   | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E018S | E016S | E016S | E015S | E016S | E016S |
| U. Q.  | E016  | E015  | 015   | 014  | E    | E018  | 024   | 029 | G   | 036  | 038 | 035 | 034 | G    | 031  | G    | G    | 023  | 022   | 020   | E018  | E016  | E016  | E017  |
| L. Q.  | E015  | E     | E     | E    | E    | E     | G     | G   | G   | G    | G   | G   | G   | G    | G    | G    | G    | G    | E017  | E015  | E015  | E015  | E015  | E015  |
| Q. R.  |       |       |       |      |      |       |       |     |     |      |     |     |     |      |      |      |      |      | 0005  | 0005  |       |       |       |       |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

foEs

W 4



Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

fbEs

0.1 Mc 135° E Mean Time (G. M. T. + 9h)

Apr. 1966

| 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   | 015 | S   |     |    |    | G    | G   |       |     |      |      |      | 015G | S    | S   | S   | S   | S   | S  | S   |     |
| 2      | S   | S   |     |     |     | S   |     |    |    | G    | 041 | 040   | G   |      |      |      | 018G | 016G | S   | S   | S   | S   | S  | S   | S   |
| 3      | S   | S   | S   |     |     | S   | S   |    |    |      |     | 033   |     |      |      |      |      | G    | S   | S   | S   | S   | S  | S   | S   |
| 4      | S   | S   | E   | E   |     | S   | G   |    |    | G    | G   | G     |     |      | 031  | 021G | 017G | S    | 024 | S   | S   | S   | S  | S   | S   |
| 5      | S   |     |     |     |     |     | S   |    |    |      |     |       |     |      |      | 020G | 015G | S    | S   | S   | S   | S   | S  | S   | S   |
| 6      | S   | S   |     |     |     |     |     |    |    |      |     |       | 036 | 033  | 027G |      | 014G | S    | S   | S   | S   | S   | S  | S   | S   |
| 7      | S   |     |     | E   |     | S   | G   |    |    |      | G   | G     | 034 |      | 025G | 028  | 025  | 022  | 026 | 020 | S   | S   | S  | S   | S   |
| 8      | S   |     |     | E   |     | S   | G   |    |    |      |     | B033R |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 9      | 020 | 012 | 016 | E   | E   | 019 |     |    |    |      |     |       |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 10     |     |     |     |     |     | S   |     |    |    |      |     |       |     | 022G |      | 017G |      | S    | 018 | S   | S   | S   | S  | S   | S   |
| 11     | S   |     |     |     |     | S   |     |    |    |      |     |       |     |      | G    | 023G | 020G | S    | S   | S   | S   | S   | S  | S   | S   |
| 12     | S   |     |     |     |     |     | G   | G  |    |      |     |       |     |      | G    |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 13     | S   |     |     |     |     | S   |     |    |    |      |     |       |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 14     | S   |     |     |     |     | S   |     |    |    |      |     |       |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 15     | S   |     |     |     |     | S   |     | G  | G  | 022G | G   | G     | C   |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 16     | S   |     |     |     |     | S   | G   | G  |    |      | G   | G     | G   | 045  | G    | 015G | G    | 014G | G   | 016 | S   | S   | S  | S   | S   |
| 17     | C   |     |     |     |     | S   |     | C  |    |      |     |       |     |      |      |      | 015G | 015G | 020 | S   | S   | C   | C  | C   | C   |
| 18     | S   |     |     |     |     | S   |     |    |    |      |     |       |     |      |      |      | G    | 022  | 018 | 015 | S   | S   | S  | S   | S   |
| 19     | S   | S   | S   |     |     | S   |     |    |    |      |     |       |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 20     |     |     |     |     |     |     | G   |    |    |      | G   |       |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 21     | S   |     |     |     |     |     |     |    |    |      |     |       | G   |      |      |      |      | G    | S   | S   | S   | S   | S  | S   | S   |
| 22     | S   |     | 015 |     |     | 018 | 014 | G  | G  | G    | G   | G     |     |      |      |      | 020G |      | S   | S   | S   | S   | S  | S   | S   |
| 23     | S   | S   |     |     |     | G   | G   |    |    | 040  | 049 | 040   | 040 | A    | A    | 031  |      | G    | 031 | 017 | 015 | S   | S  | S   | S   |
| 24     | S   |     |     |     |     | S   | G   |    | G  | G    |     |       |     |      |      |      |      |      | 019 | S   | S   | S   | S  | S   | S   |
| 25     | S   |     |     |     |     | S   |     | G  | G  |      |     |       |     |      |      |      |      | S    | S   | S   | S   | S   | S  | S   | S   |
| 26     | S   | S   | E   | E   | E   | 020 | G   | G  | G  |      |     |       |     |      |      |      |      | 024  | 020 | 030 | 026 | S   | S  | S   | S   |
| 27     | S   | E   | 018 | 017 | 048 |     |     | G  |    | 040  | G   |       |     | 056  | G    | G    | 017G | G    | 020 | S   | 030 | 024 | S  | 020 | 020 |
| 28     | S   | S   | 012 | 014 | 012 |     |     | G  | G  | G    | G   |       |     |      |      |      |      |      | S   | S   | S   | S   | S  | S   | S   |
| 29     | S   | S   | 020 | 012 |     |     |     | G  | G  | G    | G   |       |     |      |      |      |      | G    | G   | S   | S   | S   | S  | S   | S   |
| 30     | S   | S   |     |     |     |     |     | C  | G  |      | G   |       | G   |      |      |      |      | G    | G   | S   | S   | S   | S  | S   | S   |
| 31     | S   |     |     |     |     |     |     |    |    |      |     |       |     |      |      |      |      | G    | G   | S   | S   | S   | S  | S   | S   |
| No.    |     |     |     |     |     |     |     |    |    |      |     |       |     |      |      |      |      |      |     |     |     |     |    |     |     |
| Median |     |     |     |     |     |     |     |    |    |      |     |       |     |      |      |      |      |      |     |     |     |     |    |     |     |
| U. Q.  |     |     |     |     |     |     |     |    |    |      |     |       |     |      |      |      |      |      |     |     |     |     |    |     |     |
| L. Q.  |     |     |     |     |     |     |     |    |    |      |     |       |     |      |      |      |      |      |     |     |     |     |    |     |     |
| Q. R.  |     |     |     |     |     |     |     |    |    |      |     |       |     |      |      |      |      |      |     |     |     |     |    |     |     |

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

Apr. 1966

f-min

| 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      | E015S | E     | E     | E  | E     | E017S | 011   | 011 | 016 | 020 | 020 | 020 | 020 | 020 | 016 | 018 | 011 | 011 | E016S | E016S | E017S | E020S | E017S | E018S |  |
| 2      | E011S | E015S | E     | E  | E017S | 011   | 012   | 012 | 011 | 018 | 017 | 018 | 020 | 012 | 019 | 011 | E   | E   | E017S | E018S | E017S | E015S | E020S | E018S |  |
| 3      | E016S | E013S | E013S | E  | E     | E015S | E020S | E   | 011 | 016 | 018 | 017 | 018 | 017 | 020 | 012 | 013 | 015 | E017S | E012S | E012S | E015S | E017S | E017S |  |
| 4      | E015S | E     | E     | E  | E     | E015S | 015   | 011 | 011 | 020 | 018 | 028 | 020 | 021 | 020 | 011 | 011 | 011 | E018S | E     | E020S | E015S | E015S | E015S |  |
| 5      | E016S | E     | E     | E  | E     | E     | E020S | 016 | 011 | 011 | 011 | 021 | 021 | 020 | 020 | 011 | 011 | 011 | E015S | E015S | E021S | E016S | E016S | E016S |  |
| 6      | E015S | E017S | E     | E  | E     | E     | 016   | 011 | 011 | 017 | 018 | 018 | 021 | 020 | 020 | 011 | 011 | 011 | E018S | E017S | E011S | E015S | E012S | E016S |  |
| 7      | E015S | E     | E     | E  | E     | E015S | 015   | 011 | 010 | 012 | 017 | 018 | 018 | 020 | 018 | 013 | E   | E   | E015S | E     | E     | E015S | E016S | E015S |  |
| 8      | E015S | E     | E     | E  | E     | E013S | 015   | 011 | 011 | 017 | 017 | 018 | 020 | 020 | 020 | 012 | 011 | 014 | E017S | E015S | E019S | E020S | E     | E014S |  |
| 9      | E     | E     | E     | E  | E     | E015S | 016   | 011 | 012 | 012 | 020 | 020 | 018 | 018 | 020 | 018 | 012 | 010 | E017S | E016S | E015S | E012S | E017S | E017S |  |
| 10     | E     | E     | E     | E  | E     | E015S | 015   | 011 | 012 | 020 | 020 | 020 | 028 | 016 | 020 | 011 | 018 | 012 | E017S | E016S | E014S | E015S | E012S | E012S |  |
| 11     | E016S | E     | E     | E  | E     | E017S | E     | 011 | 012 | 020 | 018 | 025 | 021 | 022 | 020 | 017 | 011 | 010 | E018S | E016S | E016S | E015S | E015S | E016S |  |
| 12     | E018S | E     | E     | E  | E     | E     | E     | 011 | 011 | 020 | 017 | 020 | 020 | 020 | 018 | 016 | 012 | 010 | E016S | E016S | E015S | E017S | E018S | E018S |  |
| 13     | E015S | E     | E     | E  | E     | E018S | 015   | 011 | 012 | 018 | 020 | 017 | 020 | 020 | 018 | 011 | 011 | 011 | E020S | E015S | E016S | E015S | E012S | E012S |  |
| 14     | E016S | E     | E     | E  | E     | E017S | 011   | E   | 011 | 011 | 020 | 020 | 020 | 020 | 018 | 019 | 011 | 012 | E016S | E016S | E015S | E     | E015S | E015S |  |
| 15     | E016S | E     | E     | E  | E     | E     | 011   | 011 | 018 | 012 | 012 | 017 | C   | 018 | 011 | 017 | 011 | 011 | 011   | E014S | E013S | E015S | E016S | E016S |  |
| 16     | E015S | E     | E     | E  | E     | E015S | 011   | 011 | 011 | 012 | 020 | 021 | 021 | 017 | 020 | 011 | 012 | 011 | E015S | E016S | E015S | C     | C     | C     |  |
| 17     | C     | E     | E     | E  | E     | E016S | 016   | C   | C   | 015 | 020 | 020 | 020 | 020 | 020 | 020 | 011 | 011 | C     | E014S | E012S | E018S | E020S | E015S |  |
| 18     | E012S | E     | E     | E  | E     | E018S | E     | 011 | 011 | 018 | 020 | 020 | 020 | 020 | 018 | 020 | 012 | 011 | E     | E     | E020S | E015S | E017S | E018S |  |
| 19     | E023S | E015S | E015S | E  | E     | E020S | E     | 011 | 012 | 018 | 020 | 020 | 020 | 020 | 019 | 016 | 012 | 011 | E017S | E016S | E012S | E015S | E015S | E015S |  |
| 20     | E     | E     | E     | E  | E     | E     | 011   | 011 | 012 | 011 | 017 | 020 | 020 | 020 | 019 | 020 | 011 | 011 | E020S | E015S | E016S | E015S | E016S | E017S |  |
| 21     | E017S | E     | E     | E  | E     | E     | E     | 011 | 011 | 012 | 020 | 020 | 020 | 020 | 017 | 017 | 011 | 011 | 011   | E018S | E018S | E015S | E020S | E015S |  |
| 22     | E017S | E     | E     | E  | E     | E     | E     | 012 | 011 | 020 | 020 | 021 | 020 | 017 | 017 | 012 | 011 | E   | E019S | E015S | E     | E016S | E016S | E016S |  |
| 23     | E016S | E015S | E     | E  | E     | E     | 011   | 011 | 012 | 018 | 020 | 020 | 020 | 020 | 020 | 020 | 011 | 011 | E     | E     | E016S | E     | E016S | E015S |  |
| 24     | E015S | E     | E     | E  | E     | E020S | 011   | 011 | 011 | 017 | 017 | 020 | 020 | 020 | 018 | 018 | 011 | 017 | E     | E015S | E015S | E015S | E     | E016S |  |
| 25     | E014S | E     | E     | E  | E     | E020S | 011   | 011 | 011 | 018 | 018 | 020 | 016 | 020 | 020 | 019 | 011 | 011 | E020S | E016S | E016S | E016S | E016S | E016S |  |
| 26     | E015S | E015S | E     | E  | E     | E     | 011   | E   | 018 | 020 | 017 | 020 | 020 | 025 | 020 | 011 | 012 | E   | E016S | E014S | E018S | E016S | E017S | E015S |  |
| 27     | E018S | E015S | E     | E  | E     | E     | 017   | 012 | 020 | 020 | 020 | 021 | 020 | 020 | 017 | 018 | 011 | E   | E     | E020S | E017S | E021S | E015S | E015S |  |
| 28     | E015S | E015S | E     | E  | E     | E     | 011   | E   | 012 | 021 | 021 | 018 | 020 | 021 | 017 | 012 | 018 | 011 | E     | E020S | E     | E020S | E015S | E020S |  |
| 29     | E018S | E     | E     | E  | E     | E015S | 012   | 012 | 011 | 017 | 020 | 020 | 020 | 020 | 020 | 020 | 017 | 011 | E016S | E016S | E016S | E015S | E015S | E015S |  |
| 30     | E015S | E013S | E     | E  | E     | E     | 012   | 012 | 011 | C   | 020 | 020 | 020 | 020 | 020 | 020 | 011 | 011 | 011   | E015S | E015S | E015S | E015S | E015S |  |
| 31     |       |       |       |    |       |       |       |     |     |     |     |     |     |     |     |     |     |     |       |       |       |       |       |       |  |
| No.    | 29    | 30    | 30    | 30 | 30    | 30    | 30    | 29  | 29  | 29  | 30  | 30  | 29  | 30  | 30  | 30  | 30  | 30  | 29    | 30    | 30    | 29    | 29    | 29    |  |
| Median | E015S | E     | E     | E  | E     | E015S | 011   | 011 | 011 | 018 | 020 | 020 | 020 | 020 | 020 | 016 | 011 | 011 | E016S | E016S | E016S | E015S | E016S | E016S |  |
| U. Q.  |       |       |       |    |       |       |       |     |     |     |     |     |     |     |     |     |     |     |       |       |       |       |       |       |  |
| L. Q.  |       |       |       |    |       |       |       |     |     |     |     |     |     |     |     |     |     |     |       |       |       |       |       |       |  |
| Q. R.  |       |       |       |    |       |       |       |     |     |     |     |     |     |     |     |     |     |     |       |       |       |       |       |       |  |

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

f-min

The Radio Research Laboratories, Japan

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

0.01

M(3000)F2

Apr. 1966

| 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      | SF 300F | 295  | 320   | 300F  | 340   | 350   | 345  | 335   | 350   | 345 | 340  | 335  | 345   | 320   | 335 | 340 | 335 | 340 | 335   | 320 | 320 | 310   | 290   | 280   |
| 2      | 300     | 290  | 320   | 295F  | 340   | 330   | 320  | 335   | 300   | 330 | 320  | 320  | 320   | 315   | 330 | 340 | 340 | 340 | 330   | 330 | 310 | 300   | 280   | 295   |
| 3      | 280     | 295  | 305   | 315   | 365   | 345H  | 345  | 355   | 330   | 330 | 330  | 330  | 325   | 335   | 330 | 330 | 340 | 340 | 330   | 320 | 310 | 300   | SF    | SF    |
| 4      | 295F    | 295F | SF    | SF    | 370   | 555   | 555  | 335   | 320   | 335 | 330  | 330  | 325   | 330   | 340 | 330 | 320 | 320 | 325   | 325 | 315 | SF    | SF    | 290F  |
| 5      | 300F    | 290  | 290   | 280   | U305S | 350   | 360  | 365   | 340   | 340 | 335  | 320  | 325   | 330   | 335 | 330 | 340 | 325 | 330   | 310 | 305 | 300   | 295   | 300   |
| 6      | 310     | 305  | 295F  | 300F  | 325F  | 340   | 340  | 340   | 350   | 340 | 335  | 325  | 335   | 315   | 335 | 315 | 325 | 315 | 325   | 335 | 310 | 295   | 300   | 295   |
| 7      | 300     | 285  | 300   | 310   | 305   | 320   | 335  | 355   | 330   | 330 | 330  | 315  | 320   | 300   | 315 | 330 | 330 | 330 | 335   | 310 | 300 | 280   | 300   | 300   |
| 8      | 285     | 295  | 290   | 300   | 300   | 320   | 320  | 310H  | 345   | 335 | 315  | 330  | 315   | 315   | 310 | 330 | 330 | 335 | 330   | 315 | 290 | I280S | U270F | 300   |
| 9      | I280S   | 300F | 325F  | 310F  | 300F  | I310S | 340  | 310   | 335   | 335 | 320  | 315  | 330   | 320   | 320 | 320 | 325 | 335 | 335   | 315 | 300 | 290   | 305   | 295   |
| 10     | 295     | 295  | 280   | 315   | 300H  | 335   | 335  | 330   | 330   | 300 | 315  | 325  | 315   | 330   | 330 | 335 | 350 | 340 | 320   | 310 | 310 | 300   | 290   | 285   |
| 11     | 300     | 290  | 300   | 335   | 285   | 300   | 340  | 310H  | 340   | 340 | 340  | 300  | 310   | 320   | 330 | 335 | 345 | 330 | 325   | 315 | 310 | 305   | 300   | 305   |
| 12     | 295     | 295  | 300   | 300   | 300   | 310   | 325  | 330   | 325   | 345 | 315  | 335  | 340   | 315   | 330 | 335 | 340 | 315 | 315   | 315 | 310 | 295   | 309S  | SF    |
| 13     | U300F   | 300F | U295F | U310F | 295F  | 320F  | 335  | 330   | 340   | 335 | 335  | 325  | 330   | 330   | 335 | 330 | 345 | 320 | 300   | 300 | 280 | 285   | 295   | 290   |
| 14     | 295     | 295  | 300   | 305   | 290   | 310   | 335  | 315   | 295   | 295 | 295H | 280H | 330   | 310   | 330 | 330 | 330 | 330 | 320   | 295 | 280 | 275   | SF    | U290F |
| 15     | 280     | 290  | 290   | 310   | 345   | 340   | 345  | 330H  | 335   | 305 | 315  | 325  | I310C | 325   | 330 | 330 | 330 | 325 | 320   | 295 | 290 | 295   | 305   | 300   |
| 16     | 290     | 285  | 280   | 305   | 295   | 315   | 325  | 330   | 335   | 325 | 315  | 315  | 325   | 325   | 330 | 335 | 335 | 315 | 325   | 300 | 295 | 300   | 305   | 300   |
| 17     | G       | 290  | 295   | 295   | 300   | 320   | 330  | I330C | 330   | 325 | 295H | 320  | 315   | 330   | 335 | 325 | 325 | 335 | I320C | 300 | 300 | 300   | 300   | 300   |
| 18     | 295     | 290  | 300   | 295   | 315   | 330   | 350  | 320   | 330   | 330 | 335  | 315  | 305   | 310   | 325 | 330 | 325 | 325 | 320   | 300 | 300 | 300   | 310   | 295   |
| 19     | 290     | 285  | 290   | 310   | 320   | 340   | 365  | 340   | 330   | 325 | 330  | 315  | 315   | 325   | 320 | 325 | 325 | 335 | 320   | 310 | 295 | 315   | 300   | 290   |
| 20     | 290     | 295  | 290   | 285   | 315   | 350   | 360  | 335H  | 330   | 335 | 325  | 315  | 310   | 315   | 310 | 335 | 320 | 315 | 310   | 295 | 300 | 305   | 295   | 295   |
| 21     | 290     | 295  | 295   | 285   | 290   | 325   | 325  | 325H  | 335   | 295 | 285  | 330  | 350   | 325   | 315 | 315 | 335 | 340 | 315   | 295 | 285 | 300   | 320   | 305   |
| 22     | 275     | 280  | 295   | 300   | 295   | 335   | 350  | 345   | 325   | 315 | 325  | 325  | 310   | 300   | 315 | 330 | 350 | 335 | 315   | 290 | 300 | 300   | 300   | 300   |
| 23     | 280     | 280  | 285   | 290   | 300   | 315   | 315  | 320   | 305   | 320 | 330  | 320  | I320A | I320A | 320 | 330 | 330 | 330 | 320   | 315 | 310 | 295   | 300   | 285   |
| 24     | 280     | 280  | 300   | 285   | 300   | 325   | 320  | 335   | 320   | 325 | 280  | 330  | 310   | 310   | 320 | 310 | 330 | 315 | 315   | 310 | 295 | 290   | 285   | 290   |
| 25     | 285     | 290  | 295   | 295   | 320   | 320   | 330  | 345   | 330   | 315 | 315  | 315  | 330   | 330   | 320 | 320 | 330 | 330 | 300   | 295 | 300 | 300   | 305   | 295   |
| 26     | 290     | 295  | 320   | 320   | 300   | 320   | 335  | 325   | 300   | 335 | 320  | 325  | 315   | 315   | 315 | 335 | 325 | 320 | 315   | 315 | 300 | 315   | 300   | 305   |
| 27     | 295     | 300  | 300   | 315   | 305   | 345   | 335  | 335   | 330   | 325 | 310  | 300  | 310   | 315   | 315 | 335 | 330 | 320 | 315   | 315 | 300 | 310   | 300   | 295   |
| 28     | 275     | 280  | 300   | 320   | 300   | 335   | 300  | 325   | 320   | 325 | 330  | 320  | 300   | 320   | 295 | 305 | 315 | 315 | 310   | 315 | 330 | 295   | 305   | 295   |
| 29     | 290     | 295  | 295   | 290   | 305   | 335   | 330H | 330H  | 325   | 335 | 315  | 280  | 305   | 310   | 310 | 315 | 305 | 315 | 305   | 310 | 325 | 300   | 290   | 285   |
| 30     | 280     | 285  | 285   | 315   | 305   | 300   | 295  | 315   | I315C | 305 | 310  | 310  | 310   | 295   | 315 | 315 | 330 | 325 | 330   | 285 | 290 | 295   | 285   | 285   |
| 31     |         |      |       |       |       |       |      |       |       |     |      |      |       |       |     |     |     |     |       |     |     |       |       |       |
| No.    | 28      | 30   | 29    | 29    | 29    | 30    | 30   | 30    | 30    | 30  | 30   | 30   | 30    | 30    | 30  | 30  | 30  | 30  | 30    | 30  | 30  | 28    | 26    | 27    |
| Median | 290     | 290  | 295   | 305   | 300   | 325   | 335  | 330   | 330   | 330 | 320  | 320  | 320   | 320   | 320 | 330 | 330 | 330 | 320   | 310 | 300 | 300   | 300   | 295   |
| U. Q.  |         |      |       |       |       |       |      |       |       |     |      |      |       |       |     |     |     |     |       |     |     |       |       |       |
| L. Q.  |         |      |       |       |       |       |      |       |       |     |      |      |       |       |     |     |     |     |       |     |     |       |       |       |
| Q. R.  |         |      |       |       |       |       |      |       |       |     |      |      |       |       |     |     |     |     |       |     |     |       |       |       |

M(3000)F2

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G. M. T. + 9h)

M(3000)F1 0.01

Apr. 1966

| 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      |    |    |    |    |    |    |     |      | 380   | 375 | 380   | 390   | 395   | 375   | 370H  |       | 375L  |       |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    |     | 375  | 380   | 350 | A     | A     | 380   | 360   | 375   | 375   | 395   |       |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    |     |      | 370H  | 380 | 405   | 395   | 385H  | 365H  | 360   | 375   |       |       |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |     |      | U400L | 370 | 370   | 380   | 370   | 370   | 405   | 365H  | 370L  |       |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |     |      |       | 370 | 375   | 375   | 380   | 365   | 375   | 400   | 405L  |       |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    |     |      | 370   | 370 | 395   | U395C | 385   | 380   | 370   | 365   |       |       |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    |     |      | 385   | 370 | 370   | 370   | 380   | 370   | 370   | 370   | 390   |       |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |     |      | 370   | 375 | 385   | 360   | 385   | 375H  | 365H  | U370L |       |       |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |     |      | 365   | 380 | 385   | 380H  | 380   | 370   | 370   | 370   | 375   |       |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |     |      | 365   | 350 | 360   | 380   | 380   | 385   | 370   | 360   | 380   |       |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    |     |      | 390   | 365 | 395   | 375H  | 350   | 360   | 365   | 355   | 375   |       |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    |     | 375L | 370   | 375 | 385   | 380   | 390   | 365   | 365   | 370   | 395   |       |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    |     | 375  | 380   | 385 | 390   | 385   | 380   | 385   | 365   | 375   | 375   |       |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |     | 375  | 355   | 355 | 360   | 405   | 360H  | 385H  | 370   | 355   | 375   |       |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    |     |      | 390   | 390 | 370   | 365   | U360C | 395   | 370   | 365   | U375L |       |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    |     |      | 390   | 375 | 385   | 370   | 380   | I360A | 370   | 360   | 375   |       |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    |     | C    | I385C | 380 | 385   |       | 385   | 395   | 370H  | 370   | 375   | 375L  |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |     |      | 375   | 375 | 385   | 395   | 375   | 360H  | 355   | 365   | 375   |       |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    |     | 385  | 380   | 360 | 375   | 380   | 385   | 385   | 365   | 355   | 375   |       |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    |     |      | 365   | 375 | 385   | 380H  | 370   | 380   | 365   | 355H  | 375   |       |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    |     |      |       | 370 | 375   | 370   | 365   | 385   | 375   | 365   | U395L |       |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    |     |      | 390   | 370 | 380   | 370   | 375   | 370H  | 355   | 355   | 395   |       |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    |     | 350L | 355   | 370 | I355A | 370   | 400   | I385A | I375A | 370   | 380   |       |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    |     |      | 380   | 365 | 365   | 375   | 390   | 385H  | 360   | 370   | 365   |       |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    |     |      | 390   | 370 | 385   | 375   | 410   | 385   | 380   | 395   | 360   | 375   |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    |     |      | 355   | 370 | 385   | 370   | 345   | 360   | 355   | 370   | 360   | U375L |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    |     |      | 370   | 410 | 365   | 385   | 385   | I380A | 360   | 370   | 365   | U375L |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    |     |      | 390   | 380 | 380   | 375   | 385   | 380   | 375   | 365   | 365   | 375   |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    |     |      | 380   | 385 | 360   | 395   | 365   | 380   | 355   | 365   | 370   | 375L  |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    |     |      | 340   | 365 | I375C | 370   | 380   | 370   | 355   | 355   | 385   | U390L |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |     |      |       |     |       |       |       |       |       |       |       |       |    |    |    |    |    |    |
| No.    |    |    |    |    |    |    | 4   | 12   | 28    | 30  | 29    | 28    | 30    | 30    | 30    | 29    | 27    | 6     |    |    |    |    |    |    |
| Median |    |    |    |    |    |    | 360 | 375  | 370   | 375 | 380   | 380   | 380   | 380   | 370   | 365   | 375   | U375L |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |     |      |       |     |       |       |       |       |       |       |       |       |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |     |      |       |     |       |       |       |       |       |       |       |       |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |     |      |       |     |       |       |       |       |       |       |       |       |    |    |    |    |    |    |

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

km

h'F2

Apr. 1966

| 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      |    |    |    |    |    |    |     |     | 260   | 265   | 250 | 260  | 270   | 270 | 270   |     | 265 |     |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    | 270 |     | 285   | 355   | 320 | 275  | 275   | 310 | 290   | 270 | 260 |     |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    |     |     | 265   | 260   | 275 | 275  | 290   | 300 | 270   | 265 |     |     |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |     |     | 285   | 295   | 260 | 265  | 280   | 275 | 280   | 260 | 270 |     |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |     |     |       | 280   | 290 | 295  | 280   | 270 | 280   | 270 | 255 |     |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    |     |     | 280   | 275   | 280 | 290  | 295   | 275 | 310   | 260 |     |     |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    |     |     | 275   | 270   | 280 | 300  | 295   | 310 | 290   | 275 | 260 |     |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |     |     | 275   | 290   | 300 | 270  | 275   | 300 | 290   | 285 |     |     |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |     |     | 275   | 265   | 270 | 275  | 275   | 295 | 285   | 280 | 260 |     |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |     |     | 290   | 300   | 300 | 270  | 290   | 275 | 275   | 275 | 260 |     |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    |     |     | 270   | 275   | 275 | 320  | 300   | 290 | 275   | 270 | 260 |     |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    |     | 270 | 275   | 270   | 290 | 295  | 290   | 310 | 300   | 265 | 265 |     |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    |     | 275 | 270   | 275   | 290 | 310  | 285   | 300 | 285   | 270 | 275 |     |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |     | 270 | 380   | 300   | 390 | 290H | 330H  | 295 | 315   | 290 | 285 |     |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    |     | 270 | 270   | 320   | 320 | 300  | I315C | 280 | 295   | 275 | 275 |     |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    |     |     | 295   | 300   | 310 | 300  | 290   | 290 | 275   | 270 | 260 |     |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    |     |     | I280C | 295   | 290 |      | 300   | 300 | 280   | 280 | 275 | 250 |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |     |     | 290   | 285   | 290 | 315  | 325   | 310 | 295   | 275 | 265 |     |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    |     | 260 | 270   | 310   | 300 | 320  | 310   | 295 | 300   | 295 | 275 |     |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    |     |     | 295   | 295   | 305 | 300  | 320   | 300 | 315   | 280 | 270 |     |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    |     |     |       | 365   | 420 | 300  | 280   | 315 | 310   | 305 | 270 |     |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    |     |     | 285   | 315   | 300 | 300  | 310   | 310 | 295   | 270 | 255 |     |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    |     |     | 315   | 310   | 320 | 300  | 300   | 310 | I310A | 300 | 280 |     |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    |     |     | 270   | 310   | 300 | 400  | 300   | 325 | 320   | 310 | 285 |     |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    |     |     | 275   | 300   | 325 | 320  | 300   | 290 | 300   | 270 |     |     |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    |     |     | 350   | 290   | 300 | 300  | 310   | 325 | 315   | 290 | 275 | 270 |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    |     |     | 275   | 275   | 340 | 300  | 310   | 320 | 300   | 275 | 275 | 270 |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    |     |     | 250   | 275   | 280 | 290  | 325   | 300 | 310   | 290 | 275 |     |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    |     |     | 290   | 285   | 305 | 300  | 320   | 300 | 300   | 290 | 265 |     |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    |     |     | 340   | I315C | 350 | 340  | 340   | 350 | 315   | 330 | 280 | 275 |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |     |     |       |       |     |      |       |     |       |     |     |     |    |    |    |    |    |    |
| No.    |    |    |    |    |    |    | 4   | 12  | 28    | 30    | 30  | 29   | 30    | 30  | 30    | 29  | 27  | 6   |    |    |    |    |    |    |
| Median |    |    |    |    |    |    | 295 | 270 | 280   | 295   | 300 | 300  | 300   | 300 | 295   | 275 | 270 | 270 |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |     |     |       |       |     |      |       |     |       |     |     |     |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |     |     |       |       |     |      |       |     |       |     |     |     |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |     |     |       |       |     |      |       |     |       |     |     |     |    |    |    |    |    |    |

The Radio Research Laboratories, Japan

W 9

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

h'F2

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

h'F

Apr. 1966

km

| 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      | 260 | 260 | 260 | 240 | 235 | 260 | 225  | 235   | 240   | 230   | 230   | 205  | 210   | 200   | 210H  | 245  | 250 | 250 | 240   | 230  | 250  | 250 | 260 | 290 |
| 2      | 310 | 320 | 300 | 230 | 225 | 250 | 230  | 235   | 235   | 245   | A     | A    | 225   | 225   | 225   | 245  | 245 | 245 | 250   | 235  | 250  | 260 | 300 | 300 |
| 3      | 290 | 280 | 255 | 235 | 200 | 245 | 220  | 230H  | 230H  | 235   | 210   | 210  | 200H  | 215H  | 205   | 240  | 245 | 240 | 230   | 235  | 250  | 275 | 290 | 290 |
| 4      | 275 | 265 | 285 | 250 | 225 | 235 | 225  | 235   | 220   | 220   | 260   | 225  | 200   | 215   | 225   | 210H | 230 | 250 | 250   | 250  | 250  | 235 | 275 | 280 |
| 5      | 280 | 265 | 280 | 260 | 250 | 225 | 230  | 240   | 205H  | 260   | 215   | 215  | 205   | 225   | 225   | 235  | 240 | 250 | 250   | 245  | 250  | 250 | 265 | 275 |
| 6      | 270 | 270 | 270 | 260 | 260 | 250 | 230  | 230   | 220   | 225   | 200   | 225  | 245   | 210   | 210   | 250  | 240 | 245 | 245   | 250  | 260  | 270 | 260 | 270 |
| 7      | 265 | 275 | 260 | 250 | 230 | 250 | 240  | 230   | 215   | 225   | 225   | 210  | 200   | 210   | 225   | 230  | 240 | 250 | 240   | 250  | 260  | 280 | 275 | 260 |
| 8      | 275 | 260 | 290 | 260 | 250 | 235 | 215  | 245H  | 255   | 235   | 210   | 205  | 215   | 200H  | 200H  | 240  | 245 | 250 | 225   | 245  | 270  | 300 | 310 | 275 |
| 9      | 285 | 260 | 250 | 250 | 250 | 250 | 240  | 240   | 250   | 225   | 220   | 215H | 215   | 210   | 205   | 250  | 240 | 240 | 240   | 240  | 250  | 260 | 270 | 295 |
| 10     | 260 | 280 | 290 | 250 | 205 | 220 | 230  | 235   | 210   | 210   | 215   | 210  | 215   | 205   | 245   | 210  | 245 | 245 | 240   | 245  | 255  | 260 | 260 | 290 |
| 11     | 280 | 270 | 260 | 225 | 230 | 260 | 230  | 210H  | 245   | 225   | 240   | 200H | 200   | 225   | 225   | 235  | 240 | 250 | 250   | 250  | 250  | 250 | 250 | 260 |
| 12     | 295 | 260 | 260 | 250 | 230 | 250 | 245  | 245   | 225   | 215   | 200   | 185  | 210   | 230   | 225   | 230  | 230 | 245 | 250   | 250  | 250  | 245 | 260 | 275 |
| 13     | 285 | 250 | 250 | 230 | 205 | 245 | 240  | 250   | 240   | 235   | 200   | 200  | 220   | 205   | 250   | 210  | 245 | 235 | 250   | 250  | 300  | 280 | 280 | 290 |
| 14     | 295 | 265 | 240 | 250 | 250 | 255 | 250H | 240   | 250   | 240   | 225   | 220  | 210H  | 200H  | 225   | 230  | 240 | 245 | 250   | 265  | 275  | 295 | 300 | 300 |
| 15     | 305 | 260 | 250 | 240 | 225 | 250 | 240  | 200H  | 225   | 210   | 240   | 250  | 1235C | 215   | 225   | 245  | 260 | 245 | 250   | 265  | 265  | 260 | 250 | 250 |
| 16     | 290 | 290 | 285 | 260 | 250 | 260 | 250  | 235   | 225   | 230   | 215   | 240  | 225   | 1225A | 215   | 215  | 240 | 245 | 245   | 260  | 270  | C   | C   | C   |
| 17     | C   | 275 | 260 | 250 | 230 | 250 | 225  | 1225C | 1220C | 215   | 220   | 200H | 195   | 210   | 200H  | 210  | 230 | 240 | 1245C | 250  | 265  | 260 | 250 | 260 |
| 18     | 300 | 275 | 250 | 250 | 235 | 225 | 245  | 235   | 215   | 235   | 210   | 205  | 205   | 210H  | 245   | 225  | 225 | 230 | 250   | 260  | 265  | 250 | 250 | 270 |
| 19     | 295 | 280 | 275 | 250 | 220 | 225 | 245  | 245   | 225   | 235   | 205   | 205  | 205   | 200   | 240   | 230  | 230 | 240 | 250   | 250  | 260  | 250 | 250 | 280 |
| 20     | 285 | 270 | 270 | 260 | 230 | 225 | 225  | 205H  | 235   | 235   | 220   | 215H | 205   | 225   | 210   | 225H | 240 | 240 | 260   | 260  | 260  | 250 | 260 | 275 |
| 21     | 290 | 250 | 260 | 255 | 265 | 250 | 250  | 250H  | 245   | 225   | 230   | 215  | 215   | 215   | 230   | 210  | 210 | 250 | 260   | 270  | 280  | 250 | 250 | 250 |
| 22     | 300 | 290 | 300 | 250 | 260 | 245 | 235  | 240   | 225   | 230   | 225   | 225  | 215   | 200H  | 210   | 245  | 230 | 235 | 250   | 270  | 255  | 255 | 255 | 270 |
| 23     | 300 | 300 | 275 | 260 | 220 | 260 | 260  | 250   | 235   | 250   | 1250A | 250  | 220   | 1220A | 1230A | 220  | 250 | 260 | 260   | 260  | 250  | 255 | 255 | 300 |
| 24     | 300 | 295 | 250 | 240 | 270 | 245 | 240  | 240   | 240   | 245   | 220   | 215  | 210   | 210H  | 215   | 235  | 245 | 240 | 250   | 250  | 255  | 260 | 260 | 275 |
| 25     | 280 | 275 | 260 | 240 | 250 | 245 | 250  | 235   | 215   | 225   | 240   | 210  | 230   | 215   | 215   | 210  | 220 | 250 | 250   | 250  | 260  | 260 | 250 | 300 |
| 26     | 300 | 280 | 245 | 215 | 260 | 250 | 240  | 250   | 240   | 220   | 210   | 210  | 220   | 210   | 225   | 200  | 240 | 240 | 250   | 260A | 265  | 250 | 250 | 260 |
| 27     | 290 | 270 | 275 | 260 | 250 | 240 | 235  | 245   | 215   | 220   | 215   | 235  | 200   | 1205A | 235   | 260  | 230 | 250 | 250   | 210  | 260A | 260 | 275 | 300 |
| 28     | 290 | 280 | 260 | 240 | 250 | 250 | 225  | 240   | 250   | 245   | 250   | 215  | 210   | 210   | 220   | 235  | 250 | 240 | 250H  | 240  | 220  | 250 | 250 | 300 |
| 29     | 290 | 275 | 295 | 260 | 260 | 230 | 225  | 230H  | 225   | 210   | 250   | 215  | 230   | 210   | 210   | 210  | 245 | 250 | 260   | 250  | 235  | 245 | 250 | 300 |
| 30     | 310 | 300 | 285 | 250 | 250 | 260 | 250  | 240   | 245   | 1225C | 250   | 230  | 220   | 230   | 205   | 225  | 250 | 250 | 260   | 260  | 270  | 270 | 260 | 275 |
| 31     |     |     |     |     |     |     |      |       |       |       |       |      |       |       |       |      |     |     |       |      |      |     |     |     |
| No.    | 29  | 30  | 30  | 30  | 30  | 30  | 30   | 30    | 30    | 30    | 29    | 29   | 30    | 30    | 30    | 30   | 30  | 30  | 30    | 30   | 30   | 29  | 29  | 29  |
| Median | 290 | 275 | 260 | 250 | 240 | 250 | 240  | 240   | 230   | 225   | 220   | 215  | 210   | 210   | 225   | 230  | 240 | 245 | 250   | 250  | 260  | 260 | 260 | 275 |
| U. Q.  |     |     |     |     |     |     |      |       |       |       |       |      |       |       |       |      |     |     |       |      |      |     |     |     |
| L. Q.  |     |     |     |     |     |     |      |       |       |       |       |      |       |       |       |      |     |     |       |      |      |     |     |     |
| Q. R.  |     |     |     |     |     |     |      |       |       |       |       |      |       |       |       |      |     |     |       |      |      |     |     |     |

h'F

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan  
W 10

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

h'Es

Apr. 1966

km

135° E Mean Time (G.M.T. + 9h)

| 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   | E   | 105 | S   | G   | G   | G   | G   | 120 | 120 | G   | G   | G   | G   | 105 | G   | S   | S   | S   | S   | S   | S   |     |
| 2      | S   | S   | E   | E   | S   | G   | G   | G   | G   | 120 | 115 | 115 | 110 | G   | G   | 105 | 100 | S   | S   | S   | S   | S   | S   |     |
| 3      | S   | S   | S   | E   | S   | S   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | 145 | S   | S   | S   | S   | S   |     |
| 4      | S   | 105 | 105 | 100 | E   | S   | 150 | G   | G   | 120 | 110 | 120 | G   | G   | 105 | 105 | G   | 100 | S   | 100 | S   | S   | S   |     |
| 5      | S   | E   | E   | E   | E   | S   | G   | G   | G   | G   | G   | G   | G   | G   | G   | 105 | 100 | G   | S   | S   | S   | S   | S   |     |
| 6      | S   | S   | E   | E   | E   | E   | G   | G   | G   | G   | G   | G   | 105 | 105 | 105 | G   | 105 | G   | S   | S   | S   | S   | S   |     |
| 7      | S   | E   | E   | 110 | E   | S   | 150 | G   | G   | G   | 120 | 110 | 110 | G   | 105 | 105 | 100 | 100 | 100 | 100 | S   | S   | S   |     |
| 8      | S   | E   | E   | 100 | E   | S   | 180 | G   | G   | G   | G   | 105 | G   | G   | G   | G   | G   | G   | S   | S   | S   | E   | S   |     |
| 9      | 105 | 105 | 100 | 120 | 110 | 110 | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | S   | S   | S   | S   | S   |     |
| 10     | E   | E   | E   | E   | E   | S   | G   | G   | G   | G   | G   | G   | G   | 105 | G   | 105 | G   | G   | S   | 100 | S   | S   | S   |     |
| 11     | S   | E   | E   | E   | E   | S   | G   | G   | G   | G   | G   | G   | G   | G   | 125 | 105 | 105 | 105 | S   | S   | S   | S   | S   |     |
| 12     | S   | E   | E   | E   | E   | G   | 175 | 170 | G   | G   | G   | G   | G   | G   | 120 | G   | G   | G   | S   | S   | S   | S   | S   |     |
| 13     | S   | E   | E   | E   | E   | S   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | S   | S   | S   | S   | S   |     |
| 14     | S   | E   | E   | E   | E   | S   | G   | 160 | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | S   | S   | E   | S   | S   |     |
| 15     | S   | E   | E   | E   | E   | G   | G   | G   | 115 | 105 | 150 | 135 | C   | G   | G   | G   | 145 | 150 | 135 | 105 | S   | S   | S   |     |
| 16     | S   | E   | E   | E   | E   | S   | 150 | 150 | G   | 150 | 145 | 120 | 115 | 105 | 110 | 100 | G   | 105 | 115 | S   | S   | C   | C   |     |
| 17     | C   | E   | E   | E   | E   | S   | G   | C   | C   | G   | G   | G   | G   | G   | G   | G   | G   | G   | C   | S   | S   | S   | S   |     |
| 18     | S   | E   | E   | E   | E   | S   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | 115 | 110 | 105 | 105 | S   | S   | S   |     |
| 19     | S   | S   | S   | E   | E   | S   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | S   | S   | S   | S   | S   |     |
| 20     | E   | E   | E   | E   | E   | G   | 170 | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | G   | S   | S   | S   | S   | S   |     |
| 21     | S   | E   | E   | E   | E   | G   | G   | G   | G   | G   | G   | G   | 110 | G   | G   | G   | G   | G   | 150 | S   | S   | S   | S   |     |
| 22     | S   | E   | 105 | E   | E   | 100 | 105 | 155 | 150 | 125 | G   | 120 | 120 | 120 | 110 | G   | 105 | G   | S   | S   | E   | S   | S   |     |
| 23     | S   | S   | E   | E   | E   | 150 | 150 | G   | G   | 125 | 120 | 125 | 120 | 110 | 110 | 110 | G   | 145 | 120 | 115 | 120 | 110 | S   |     |
| 24     | S   | E   | E   | E   | E   | S   | 150 | G   | 135 | 125 | G   | G   | G   | 110 | G   | G   | G   | G   | G   | 115 | S   | S   | E   |     |
| 25     | S   | E   | E   | E   | E   | S   | G   | 145 | 120 | G   | G   | G   | G   | G   | G   | G   | G   | G   | S   | S   | S   | S   | S   |     |
| 26     | S   | S   | 105 | 105 | 105 | 160 | 155 | 140 | 145 | G   | G   | G   | G   | G   | 120 | 110 | G   | 100 | 125 | 115 | 120 | S   | S   |     |
| 27     | S   | 110 | 110 | 110 | 110 | G   | G   | 140 | 125 | 125 | 125 | G   | G   | 110 | 120 | 120 | 105 | 125 | 100 | S   | 115 | 115 | S   |     |
| 28     | S   | S   | 110 | 110 | 110 | G   | G   | 150 | 140 | 125 | 125 | G   | G   | G   | G   | G   | G   | G   | G   | S   | E   | S   | S   |     |
| 29     | S   | E   | 125 | 125 | E   | G   | 155 | G   | G   | 125 | 120 | G   | G   | G   | G   | G   | G   | 140 | 140 | S   | S   | S   | S   |     |
| 30     | S   | S   | E   | E   | E   | G   | G   | G   | G   | C   | 130 | G   | 150 | 140 | G   | G   | G   | 145 | 125 | S   | S   | S   | S   |     |
| 31     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| No.    | 1   | 3   | 7   | 9   | 5   | 4   | 11  | 8   | 6   | 11  | 11  | 9   | 8   | 8   | 10  | 9   | 10  | 13  | 10  | 8   | 4   | 2   | 1   |     |
| Median | 105 | 105 | 105 | 110 | 110 | 130 | 150 | 150 | 140 | 125 | 120 | 120 | 110 | 110 | 110 | 105 | 105 | 105 | 110 | 120 | 105 | 120 | 110 | 110 |
| U. Q.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| L. Q.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Q. R.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

h'Es

W 11

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G.M.T. +9h)

Types of Es

Apr. 1966

| 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  |    | f2 |    |    |    | c  | c  |    |    |    |    |    |    | l  |    |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    |    |    | c  | c  | c  | c  |    |    |    |    | l  | l  |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    |    |    |    |    | l  |    |    |    |    |    |    | h  |    |    |    |    |    |    |
| 4      |    | f  | f  | f2 |    |    | h  |    | c  | c  | c  |    |    |    | l  | l  | l  | l  |    | f  |    |    |    |    |
| 5      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | l  | l  |    |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    |    |    |    |    |    | l  | l  | l  | l  | l  | l  | l2 | l  | f2 | f  |    |    |    |
| 7      |    |    | f  |    |    |    | h  |    | c  | c  | c  | l  | l  | l  | l  | l  |    |    |    |    |    |    |    |    |
| 8      |    |    | f  |    |    |    | h  |    |    | l  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 9      | f  | f  | f  |    |    | l  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |    |    |    |    |    |    | l  | l  | l  | l  |    |    |    | f  |    |    |    |    |
| 11     |    |    |    |    |    |    |    |    |    |    |    |    |    |    | c  | l  | l  | l  |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    | h  | h  |    |    |    |    |    |    | c  |    |    |    |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |    | h  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    |    |    | c  | l  | h  | h  |    |    |    |    | h  | h  | l  | h  | f  |    |    |    |
| 16     |    |    |    |    |    |    | h  | h  | h  | h  | h  | c  | c  | c2 | c  | l  |    | l  | c  |    |    |    |    |    |
| 17     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | c  | l  | l  | f  |    |    |    |    |
| 19     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    | h  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | h  |    |    |    |    |    |
| 22     |    |    | f  |    |    | l  | l  | h  | h  | c  | c  | c  | c  | c  | c  | l  |    |    |    |    |    |    |    |    |
| 23     |    |    |    |    | h  | h  | h  | h  | c  | c  | c  | c  | c2 | l2 | l  | l  | h  | c  | f6 | f  | f  |    |    |    |
| 24     |    |    |    |    | h  | h  | h  | h  | h  | c  | c  | c  | c  | c  |    |    |    |    |    | f  |    |    |    |    |
| 25     |    |    |    |    |    |    | h  | h  | c  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 26     |    |    | f  | f  | l  | h  | h  | h  | h  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 27     |    | f  | f2 | f2 | l  | h  | h  | h  | c  | c  | c  | c2 | c  | c  | l  | l  | l  | c  | l  | f2 | f  |    |    | f  |
| 28     |    | f  | f  | f  | l  | h  | h  | h  | h  | c  | c  | c  |    |    |    |    |    |    |    |    |    |    |    |    |
| 29     |    |    | f2 | f  |    | h  | h  | h  | c  | c  | c  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 30     |    |    |    |    |    | h  | h  | h  | h  | h  | h  | h  | h  | h  |    |    |    |    |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| No.    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Median |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

Sweep 1.0 Mc to 8.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 12

Types of Es



Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.1 Mc **135° E Mean Time (G.M.T. +9h)**

f<sub>o</sub>F<sub>2</sub>

Apr. 1966

| 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      | 053  | 051  | 051  | 049  | 039  | 038S | 052  | 059  | 068  | 073  | 077 | 080   | 069 | 069 | 065  | 063 | 065 | 076 | 076 | 062   | 052  | 045  | 045   | FS    |
| 2      | 041F | 041S | 038F | 046  | 028  | 036  | 050  | 058  | 063H | 072H | 087 | 094R  | 083 | 072 | 072  | 076 | 081 | 072 | 069 | 066   | 048R | 040  | 040   | 043   |
| 3      | 044  | 045  | 045  | 046  | 038  | 037  | 050  | 057H | 075  | 075  | 072 | 074   | 075 | 080 | 077  | 075 | 075 | 070 | 064 | 056   | 050  | F    | FS    | FS    |
| 4      | FS   | FS   | FS   | F    | F    | F    | 047  | 054  | 059  | 066  | 079 | I090R | 084 | 072 | 077  | 075 | 070 | 076 | 078 | 072   | 057  | 038  | 038   | 037F  |
| 5      | 036  | 039  | 040  | 041  | 041  | FS   | 047  | 054  | 056  | 066  | 081 | 092   | 086 | 079 | 074  | 073 | 071 | 070 | 075 | 071   | 055  | 048  | 045   | 045   |
| 6      | 047  | 044  | FS   | 037  | 036  | 039  | 054  | 056  | 057  | 066  | 067 | 073   | 076 | 078 | 083  | 084 | 074 | 068 | 068 | 058   | 050  | 049F | FS    | 046F  |
| 7      | 045  | 045  | 043  | 046S | 044  | 043  | 060  | 060  | 061  | 070  | 081 | 077   | 076 | 078 | 083  | 084 | 074 | 068 | 070 | 062   | 059  | 056  | 056   | 053   |
| 8      | 052  | 051  | 049  | 050F | 046S | 048F | 055  | 058  | 073  | 086  | 083 | 086   | 088 | 083 | 087  | 086 | 077 | 066 | 069 | 055   | 049  | 046S | I044R | 048F  |
| 9      | 049S | 048  | 046  | 043  | 042  | 044  | 061  | 064  | 073  | 085  | 076 | 077   | 086 | 081 | 078  | 077 | 078 | 082 | 075 | 065   | 056  | 053  | 053   | 052   |
| 10     | 051  | 051  | 051S | 047F | 045  | 042  | 057  | 058  | 067  | 065  | 078 | 091   | 100 | 088 | 086  | 081 | 071 | 068 | 066 | 059   | 052  | FS   | FS    | I051R |
| 11     | 051S | 050S | 048  | 045  | 043  | 040  | 059  | 060  | 066  | 068  | 068 | 070   | 080 | 091 | 092  | 080 | 068 | 069 | 072 | 073S  | 065  | 058  | 055   | 056   |
| 12     | 052  | 050  | 048  | 047  | 043  | 044  | 056  | 059  | 063  | 068  | 067 | 068   | 070 | 070 | 073  | 072 | 067 | 062 | 068 | 072   | 063  | 056  | 056   | 054   |
| 13     | 053  | 052  | 051  | 043  | 037  | 039  | 052  | 062  | 064  | 064  | 069 | 074   | 071 | 076 | 082  | 076 | 069 | 063 | 060 | 064   | 057  | 057  | 058   | 057   |
| 14     | 056  | 052  | 051  | 045  | 043  | 046S | 056  | 054H | 055H | 068  | 074 | 082   | 081 | 083 | 079  | 076 | 072 | 066 | 063 | 066   | 061  | 059  | 061   | 061   |
| 15     | 058  | 058  | 057  | 059  | 043  | 043  | 051  | 056  | 055  | 063  | 064 | 074   | 079 | 078 | 073  | 072 | 066 | 065 | 063 | 061   | 062  | 060  | 059   | 055   |
| 16     | 051  | 046  | 046  | 045  | 044  | 050  | 056  | 059  | 060  | 065  | 067 | 072   | 081 | 085 | 085  | 080 | 071 | 057 | 057 | 059   | 057  | 056  | I052R | 048   |
| 17     | 048  | 050  | 046  | 043  | 040  | 043  | 055  | 057  | 059  | 066  | 070 | 071   | 074 | 079 | 075  | 074 | 069 | 070 | 066 | 068   | 060F | 056  | 055   | 052   |
| 18     | 050  | 050  | 052  | 050  | 045  | 045  | 051  | 056  | 063  | 067  | 068 | 068   | 073 | 078 | 082  | 077 | 067 | 059 | 063 | 065   | 065  | 057  | 049   | 048   |
| 19     | 049  | 049  | 049  | 049  | 043  | 048  | 053  | 056  | 059  | 059  | 071 | 074   | 073 | 074 | 079  | 075 | 066 | 064 | 059 | 065   | 061  | 058  | 052   | 052   |
| 20     | 050  | 051  | 050  | 046  | 048  | 053  | 053  | 057  | 059  | 063  | 069 | 067   | 073 | 073 | 072  | 076 | 069 | 058 | 061 | 067   | 068  | 061  | 059   | 056   |
| 21     | 055  | 055  | 052  | 050  | 044  | 046  | 044  | 047R | 053  | 058  | 069 | 074   | 074 | 071 | 069  | 062 | 061 | 065 | 063 | 067   | 066  | 065  | 055   | 048   |
| 22     | 048  | 047  | 046  | 042  | 041  | 049  | 053  | 054  | 060  | 064  | 071 | 077   | 083 | 086 | 085  | 087 | 074 | 064 | 056 | 062   | 068  | 067  | 057   | 052   |
| 23     | 052  | 048S | 046  | 045  | FS   | 042  | 058  | 071  | 072  | 071  | 078 | 077   | 079 | 080 | 075  | 068 | 068 | 066 | 066 | 070   | 068  | 059  | 057   | 055   |
| 24     | 054  | 056  | 060  | 036  | 032  | 043  | 056  | 063  | 069  | 080  | 089 | 082   | 083 | 079 | 075  | 073 | 077 | 078 | 074 | 076   | 061  | 051  | 050   | 050   |
| 25     | 049  | 047  | 047  | 045  | 042  | 048  | 058  | 061  | 063  | 063  | 066 | 067   | 069 | 069 | 073  | 077 | 074 | 075 | 071 | 067   | 060  | 059  | 060   | 059   |
| 26     | 056  | 056  | 056  | 050  | 040  | 046  | 057  | 070  | 075  | 077  | 072 | 071   | 074 | 078 | 073  | 075 | 075 | 067 | 066 | 070   | 069  | 061  | 056   | 056   |
| 27     | 054  | 052  | 052  | 048  | 044  | 053  | 057H | 071  | 079  | 073  | 069 | 074   | 074 | 074 | 074  | 087 | 082 | 076 | 077 | 069   | 066  | 061  | 060   | 059   |
| 28     | 058  | 057  | 056  | 052  | 044  | 054  | 063  | 068  | 065H | 070  | 079 | 079   | 078 | 088 | 090R | 091 | 090 | 085 | 089 | I086R | 065  | 057  | 055   | 051   |
| 29     | 052  | 052  | 049  | 048  | 047  | 061  | 064  | 070  | 066  | 069  | 077 | 077   | 079 | 085 | 088  | 093 | 093 | 085 | 083 | 088R  | 077S | 052  | 054   | 052   |
| 30     | 051  | 049  | 048  | 047  | 045  | 049  | 057  | 064  | 066H | 059, | 069 | 062   | 073 | 069 | 075  | 077 | 078 | 076 | 066 | 071S  | 071S | 072  | 067   | 064   |
| 31     |      |      |      |      |      |      |      |      |      |      |     |       |     |     |      |     |     |     |     |       |      |      |       |       |
| Count  | 29   | 29   | 28   | 29   | 28   | 28   | 30   | 30   | 30   | 30   | 30  | 30    | 30  | 30  | 30   | 30  | 30  | 30  | 30  | 30    | 30   | 28   | 27    | 28    |
| Median | 051  | 050  | 049  | 046  | 043  | 044  | 056  | 058  | 063  | 068  | 072 | 074   | 077 | 078 | 076  | 076 | 072 | 068 | 067 | 066   | 061  | 057  | 055   | 052   |
| U. Q.  | 054  | 052  | 049  | 044  | 044  | 048  | 057  | 063  | 068  | 072  | 078 | 080   | 083 | 083 | 083  | 080 | 077 | 076 | 074 | 071   | 066  | 060  | 058   | 056   |
| L. Q.  | 048  | 047  | 046  | 044  | 040  | 042  | 052  | 056  | 059  | 064  | 069 | 071   | 073 | 072 | 073  | 074 | 068 | 065 | 063 | 062   | 056  | 052  | 050   | 048   |
| Q. R.  | 006  | 005  | 006  | 005  | 004  | 006  | 005  | 007  | 009  | 008  | 009 | 009   | 010 | 011 | 010  | 006 | 009 | 011 | 011 | 009   | 010  | 008  | 008   | 008   |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

f<sub>o</sub>F<sub>2</sub>

A 1

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

0.01 Mc **f<sub>o</sub>F<sub>1</sub>** 135° E Mean Time (G. M. T. +9h)

f<sub>o</sub>F<sub>1</sub>

Apr. 1966

| 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      |    |    |    |    |    |    |    |    | 390L  | 420   | 430  | 440  | 440   | 420   | 420L  | 400L  | L    | L   |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    | L  |    | L     | 420   | 440  | L    | 440   | L     | 430L  | L     | L    | L   |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    |    |    | 420L  | 410   | 430L | 420  | 470   | 450   | 430L  | 400L  | L    | L   |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |    |    | 400L  | 430   | 430  | LH   | 450L  | 430L  | L     | 420L  | L    | L   |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |    |    | L     | L     | 430  | 460  | 460   | 440   | 450L  | 420L  | L    |     |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    | L  |    | LH    | 430   | 450  | 460  | 450   | 420   | 420   | 430   | L    |     |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    | L  |    | 410L  | 430   | 450  | 460  | 470   | 470L  | 470   | 410L  | L    | L   |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |    |    | 430L  | 440   | 470  | 450  | 470   | 460   | 460   | 410L  | L    |     |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |    |    | L     | 450   | 460L | 460  | L     | 450L  | 450   | 420L  | L    |     |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |    |    | L     | L     | 460  | 460L | 470   | 450   | 450   | L     | L    |     |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    | L  |    | L     | 450   | 460  | 470  | 480L  | 480L  | 460   | 430L  | L    | L   |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    | L  |    | L     | 430   | 460  | 460  | 470   | 470   | 450L  | 430L  | L    |     |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    | L  |    | L     | 450H  | 470  | 470  | 460   | 460   | 450   | L     | 370L | L   |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |    |    | L     | 470L  | 470  | 470  | 430   | 450   | 450L  | 440L  | L    |     |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    | L  |    | 390L  | 450   | 460  | 470  | 470   | 460R  | 460L  | 430   | LH   | L   |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    | L  |    | 450L  | L     | L    | L    | 460L  | 470L  | 460L  | L     | LH   | 320 |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    | L  |    | 430L  | 440   | 460  | 480L | 470R  | 460R  | 460   | 430L  | L    | L   |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    | LH |    | L     | 450   | 460  | 470  | 460   | 460   | 450   | 430   | L    | L   |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    | L  |    | L     | 460   | 470  | 460  | 460   | 460   | 440H  | 440   | L    | L   |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    | L  |    | 430L  | 460L  | 450H | 470H | 460   | 460   | 460L  | 440L  | L    | L   |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    | L  |    | 440L  | 450   | 450  | 460  | 470   | 470   | 450   | 420L  | LH   | L   |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    | L  |    | 430L  | 460   | 470  | 470  | 470   | 470   | 450   | 440   | L    | L   |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    | L  |    | 440L  | 460L  | 470  | 480L | 480   | 460   | 460   | 450L  | L    | L   |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    | L  |    | L     | 460   | 470  | 470  | I490A | I480A | 470   | L     | L    | L   |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    | L  |    | 440L  | 460   | 470  | 480  | 490   | 490   | 470   | 460   | L    | L   |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    | L  |    | 450   | 450   | 480  | 510  | 470H  | 500   | 470   | 450L  | L    | L   |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    | L  |    | I430A | I450A | 470H | 480  | 480   | 470   | I460A | I440A | A    | L   |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    | L  |    | 450L  | 460L  | 470  | 480  | 510   | 480   | I460A | 450   | 420L | L   |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    | L  |    | 420L  | 470L  | 470L | 470  | 480L  | 470   | 470   | 460L  | 410L | A   |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    | L  |    | 440L  | 430   | 470  | 500H | 480   | I480A | I470A | 430L  | LH   | A   |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |    |    |       |       |      |      |       |       |       |       |      |     |    |    |    |    |    |    |
| Count  |    |    |    |    |    |    |    |    | 18    | 27    | 29   | 27   | 29    | 29    | 29    | 25    | 3    | 1   |    |    |    |    |    |    |
| Median |    |    |    |    |    |    |    |    | 430L  | 450   | 460  | 470  | 470   | 460   | 460   | 430L  | 410L | 320 |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |    |    |       |       |      |      |       |       |       |       |      |     |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |    |    |       |       |      |      |       |       |       |       |      |     |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |    |    |       |       |      |      |       |       |       |       |      |     |    |    |    |    |    |    |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

f<sub>o</sub>F<sub>1</sub>

A 2

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.01 Mc  $f_oE$  135° E Mean Time (G. M. T. +9h)

$f_oE$

Apr. 1966

| Day    | 00 | 01 | 02 | 03 | 04 | 05 | 06  | 07    | 08    | 09    | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17  | 18 | 19 | 20 | 21 | 22 | 23 |
|--------|----|----|----|----|----|----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|----|----|----|----|----|----|
| 1      |    |    |    |    |    |    | B   | 235   | 275   | 285   | 300   | 310   | I320A | 330   | 320   | 290   | I255A | 215 |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    | B   | 235   | 270   | 295   | 310   | 320   | I320A | I325A | I315A | I285A | 250   | 210 | E  |    |    |    |    |    |
| 3      |    |    |    |    |    |    | 170 | 240   | 270   | 295   | 310A  | 320   | 320   | 315   | 300   | 280   | 250   | 210 | E  |    |    |    |    |    |
| 4      |    |    |    |    |    |    | 190 | 230   | 270   | 305   | 315   | B     | A     | 330   | 325   | 300   | 270   | 210 | E  |    |    |    |    |    |
| 5      |    |    |    |    |    |    | E   | 235   | 270   | 305   | 320   | 325   | 335   | 335   | 325   | 290   | 255   | 215 | E  |    |    |    |    |    |
| 6      |    |    |    |    |    |    | 180 | 240   | 280   | 310   | 325   | 325A  | I330A | 335   | 315   | 290   | 260   | 220 | E  |    |    |    |    |    |
| 7      |    |    |    |    |    |    | 185 | 245   | 280   | 315   | 325   | 325A  | I330A | 325   | 320   | I295A | A     | A   | E  |    |    |    |    |    |
| 8      |    |    |    |    |    |    | 180 | I240A | 280   | 315   | 330   | I335R | 330R  | 325R  | 310   | 290   | 265   | 215 | E  |    |    |    |    |    |
| 9      |    |    |    |    |    |    | 200 | 245   | 290   | 315   | I320A | 325   | I335A | 335   | 320   | 300   | 260   | 215 | E  |    |    |    |    |    |
| 10     |    |    |    |    |    |    | 205 | 255   | 285   | 320   | 325   | I330R | 340   | 340   | 330   | 305   | 270   | 220 | E  |    |    |    |    |    |
| 11     |    |    |    |    |    |    | 205 | 260   | 285   | 315R  | 325   | 330   | A     | A     | A     | A     | 275   | 230 | E  |    |    |    |    |    |
| 12     |    |    |    |    |    |    | 185 | 245   | 280   | I310R | 325   | R     | A     | A     | 325   | 310   | 265   | 220 | E  |    |    |    |    |    |
| 13     |    |    |    |    |    |    | 190 | I250A | 290   | 310   | 325R  | I335R | 340R  | 340   | 320   | 290   | 270   | 225 | E  |    |    |    |    |    |
| 14     |    |    |    |    |    |    | 180 | 240   | 280   | 310   | 325   | A     | A     | 335   | 330   | 315   | 265   | 220 | E  |    |    |    |    |    |
| 15     |    |    |    |    |    |    | 185 | 240   | 285   | 310   | 325   | 335R  | 340   | 330   | 320   | 300   | 265   | 220 | E  |    |    |    |    |    |
| 16     |    |    |    |    |    | E  | 185 | 250   | 285   | 310   | 320   | 325   | 330   | I330R | 315   | 300   | 275   | 225 | E  |    |    |    |    |    |
| 17     |    |    |    |    |    | E  | 200 | 250   | I280A | I310A | 325   | 330   | 340   | 335   | 330   | 305   | 270   | 225 | E  |    |    |    |    |    |
| 18     |    |    |    |    |    | E  | 200 | 255   | 290   | 315   | 325   | 330R  | 340   | 340R  | 330   | 310   | 270   | 225 | E  |    |    |    |    |    |
| 19     |    |    |    |    |    | E  | 195 | 250   | 285   | 320   | 330   | 335R  | 340   | 340   | 320R  | 300R  | I265A | 235 | E  |    |    |    |    |    |
| 20     |    |    |    |    |    | E  | 185 | 250   | 290   | 315   | 325   | 335   | 340   | 345   | 330   | 305   | 270   | 220 | E  |    |    |    |    |    |
| 21     |    |    |    |    |    | E  | 205 | 255   | 290   | 320   | 325   | 330   | I335A | A     | A     | 305   | 270   | 220 | E  |    |    |    |    |    |
| 22     |    |    |    |    |    | E  | 220 | 255   | 285   | 315   | 325   | 335   | 340   | 335   | A     | A     | 275   | 225 | E  |    |    |    |    |    |
| 23     |    |    |    |    |    | E  | 200 | 260   | 290   | 315   | 325   | 335   | 335   | I340A | I330A | 310   | I275A | 225 | E  |    |    |    |    |    |
| 24     |    |    |    |    |    | E  | 215 | 260   | 295   | 315   | 320   | 330   | 350   | I345A | I330A | 320   | 295   | 235 | E  |    |    |    |    |    |
| 25     |    |    |    |    |    | E  | 205 | 265   | 300   | A     | A     | A     | I340A | I345A | 335   | A     | A     | A   | E  |    |    |    |    |    |
| 26     |    |    |    |    |    | E  | 215 | 275   | 300   | 325   | 330   | 340R  | 350A  | 340A  | 320A  | 300   | A     | A   | E  |    |    |    |    |    |
| 27     |    |    |    |    |    | E  | A   | 265   | 300   | 320   | A     | A     | A     | A     | 330   | A     | A     | A   | E  |    |    |    |    |    |
| 28     |    |    |    |    |    | E  | 225 | I270A | 305   | 325   | 330   | 335   | A     | A     | A     | 315   | 280   | 250 | A  |    |    |    |    |    |
| 29     |    |    |    |    |    | E  | 210 | 265   | 305   | 325   | 325   | 335   | I340R | 340   | 335   | 315   | 280   | 225 | A  |    |    |    |    |    |
| 30     |    |    |    |    |    | E  | 225 | 265   | 295   | 320   | 325R  | I335R | 340R  | 335   | 330   | 310   | 275   | 235 | B  |    |    |    |    |    |
| 31     |    |    |    |    |    |    |     |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |    |    |
| Count  |    |    |    |    |    | 15 | 27  | 30    | 30    | 29    | 28    | 25    | 24    | 25    | 26    | 26    | 26    | 26  | 26 |    |    |    |    |    |
| Median |    |    |    |    |    | E  | 200 | 250   | 285   | 315   | 325   | 330   | 340   | 335   | 325   | 300   | 270   | 220 | E  |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |     |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |     |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |     |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |    |    |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

$f_oE$

A 3

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.1 Mc **f<sub>o</sub>F<sub>2</sub>** 1.35° E Mean Time (G.M.T. +9h)

**f<sub>o</sub>F<sub>2</sub>**

Apr. 1966

| 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     | J020  | E     | E     | J022  | 022 | G   | 029 | 033  | 035  | 037   | 033  | 026G | 024G | G    | 026  | J029 | E     | J012E | E     | E     | E     | E     |   |
| 2      | E     | E     | E     | E     | E     | E     | 023 | G   | 029 | 035  | 037  | 041   | 035  | 037  | J035 | J035 | 032  | 025  | 017   | 019   | J015E | E     | E     | J017  |   |
| 3      | J013E | E     | J016E | E     | E     | E     | 021 | G   | 031 | 033  | 035  | G     | G    | G    | G    | G    | 030  | 027  | 018   | J018  | E     | J013E | E     | E     |   |
| 4      | J019  | E     | E     | E     | E     | E     | G   | 025 | 030 | G    | 036  | E042B | 038  | G    | G    | G    | 020G | G    | E     | J018  | E     | J012E | J014E | E     |   |
| 5      | E     | E     | J016E | J016E | E     | E     | 025 | 030 | G   | 033  | 036  | G     | G    | 027G | G    | G    | G    | G    | E     | E     | E     | E     | E     | E     |   |
| 6      | E     | E     | E     | E     | E     | E     | G   | 027 | G   | 033  | J035 | 036   | 034  | G    | G    | G    | 030  | 026  | J028  | J012E | E     | E     | E     | E     |   |
| 7      | E     | J014E | E     | E     | E     | J013E | 023 | 030 | 033 | G    | 038  | 040   | 038  | G    | G    | 030  | J035 | J028 | J036  | J021  | J018  | J015E | J018  | J014E |   |
| 8      | E     | E     | E     | E     | E     | J013E | G   | 032 | 036 | 035  | G    | G     | G    | 029G | G    | G    | G    | 025  | 022   | J016E | E     | E     | E     | E     |   |
| 9      | E     | J016E | J021  | J016E | E     | E     | G   | G   | G   | 037  | 035  | G     | J043 | G    | 034  | 032  | 032  | 033  | 019   | J014E | J013E | J011E | E     | E     |   |
| 10     | E     | E     | E     | E     | E     | E     | G   | 033 | 036 | G    | 036  | G     | G    | G    | G    | G    | 031  | G    | 021   | E     | E     | E     | E     | E     |   |
| 11     | J014E | E     | J013E | E     | E     | E     | G   | G   | G   | 037  | 037  | 037   | 035  | 034  | J035 | J034 | 032  | 028  | 022   | J017  | J018  | J016E | E     | E     |   |
| 12     | E     | E     | E     | J016E | J017  | J017  | 025 | 035 | 033 | G    | G    | G     | J034 | J047 | 038  | 035  | 036  | 035  | E     | J014E | J035  | J028  | J013E | E     |   |
| 13     | E     | E     | E     | E     | E     | E     | G   | 030 | 032 | G    | G    | G     | 037  | G    | G    | G    | G    | G    | E     | E     | E     | J012E | E     | E     |   |
| 14     | E     | E     | E     | E     | E     | J016E | 025 | 029 | 035 | 035  | 036  | 035   | 036  | G    | G    | G    | G    | G    | 018   | J016E | J013E | E     | J014E | J013E |   |
| 15     | J017  | E     | E     | E     | E     | E     | 024 | 027 | 033 | 037  | 034  | G     | 040  | 039  | 038  | 039  | G    | G    | 022   | J029  | J025  | J026  | J016E | J013E |   |
| 16     | E     | E     | E     | E     | E     | E     | 023 | 032 | 037 | 043  | 044  | J044  | J046 | 043  | 038  | 041  | 032  | 027  | E     | J025  | J025  | J037  | J013E | J016E |   |
| 17     | E     | E     | E     | E     | E     | E     | 028 | 030 | 034 | 037  | 035  | G     | G    | G    | 034  | 031  | 032  | 028  | 020   | E     | E     | J029  | J027  | J018  |   |
| 18     | J013E | E     | E     | E     | E     | E     | G   | G   | G   | G    | 035  | G     | G    | G    | 035  | G    | 028  | 021G | E     | J015E | E     | E     | E     | E     |   |
| 19     | E     | E     | E     | E     | E     | E     | G   | 031 | 032 | G    | G    | G     | G    | G    | 030G | 033  | 029  | G    | 019   | J019  | J012E | J018  | J025  | J012E |   |
| 20     | E     | E     | E     | E     | E     | E     | 025 | 031 | 032 | 035  | G    | G     | G    | G    | G    | 022G | G    | G    | J014E | E     | E     | E     | E     | E     |   |
| 21     | E     | E     | E     | E     | E     | E     | 025 | 030 | 033 | 036  | 037  | 035   | J039 | 037  | J033 | G    | G    | G    | 022   | 019   | J013E | E     | E     | E     |   |
| 22     | E     | E     | E     | E     | E     | E     | 018 | 027 | 031 | 035  | 038  | 039   | 037  | 035  | 034  | 033  | G    | 024  | J021  | J035  | J013E | E     | E     | E     |   |
| 23     | E     | E     | E     | E     | E     | E     | 018 | 026 | 033 | 035  | 036  | 036   | 037  | 036  | J040 | 034  | 034  | 023  | 019   | J021  | J025  | J021  | J016E | E     |   |
| 24     | E     | E     | E     | J012E | E     | E     | 018 | 028 | 035 | 040  | 040  | 038   | J052 | J060 | J041 | J047 | G    | 035  | J043  | J020  | J040  | J040  | J020  | J047  |   |
| 25     | E     | E     | E     | J012E | E     | E     | 020 | 027 | 032 | 035  | 044  | 042   | 038  | 037  | J039 | J040 | J053 | J043 | 023   | J029  | J033  | J025  | E     | E     |   |
| 26     | E     | E     | E     | J016E | E     | J016E | 028 | 033 | G   | 035  | 039  | G     | 040  | J055 | J049 | J050 | J035 | J029 | J035  | J024  | E     | E     | J013E | J026  |   |
| 27     | E     | J017  | J017  | J020  | E     | E     | 018 | 023 | 036 | J047 | J054 | 038   | J052 | 041  | 044  | J076 | J060 | J050 | J026  | J032  | J038  | J034  | J020  | J013E |   |
| 28     | J026  | J026  | J014E | J012E | J017  | 018   | 027 | 030 | 037 | 038  | 036  | 039   | J063 | J055 | J076 | G    | G    | 026  | J026  | J053  | J063  | E     | J013E | J011E |   |
| 29     | J015E | J022  | J014E | J027  | J012E | E     | 034 | 036 | 037 | 039  | 042  | 040   | G    | G    | G    | G    | 029  | J056 | J074  | J068  | J017  | E     | E     | E     |   |
| 30     | E     | E     | E     | E     | E     | E     | 025 | 034 | 035 | 037  | G    | G     | 042  | J067 | J061 | G    | G    | J055 | J049  | J030  | J017  | J025  | E     | J022  |   |
| 31     |       |       |       |       |       |       |     |     |     |      |      |       |      |      |      |      |      |      |       |       |       |       |       |       |   |
| Count  | 30    | 30    | 30    | 30    | 30    | 30    | 30  | 30  | 30  | 30   | 30   | 30    | 30   | 30   | 30   | 30   | 30   | 30   | 30    | 30    | 30    | 30    | 30    | 30    |   |
| Median | E     | E     | E     | E     | E     | E     | 024 | 030 | 033 | 035  | 036  | E035G | 036  | G    | 034  | G    | 029  | 026  | 020   | J018  | E     | E     | E     | E     |   |
| U. Q.  | E     | E     | E     | E     | E     | E     | 017 | 026 | 033 | 035  | 037  | 038   | 040  | 040  | 038  | 035  | 032  | 029  | 026   | 025   | 025   | 025   | 025   | E     | E |
| L. Q.  | E     | E     | E     | E     | E     | E     | G   | 027 | 029 | G    | 035  | G     | G    | G    | G    | G    | G    | G    | E     | E     | E     | E     | E     | E     |   |
| Q. R.  |       |       |       |       |       |       | 006 | 006 | 006 | 003  |      |       |      |      |      |      |      |      |       |       |       |       |       |       |   |

**f<sub>o</sub>F<sub>2</sub>**

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

0.1 Mc Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

fbEs

Apr. 1966

| 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  | 022 |     | 029 | 033   | 034   | 034   | 033   | 026G  | 024G  |       | U026R | 017  |     |     |     |     |    |     |  |
| 2      |    |    |    |    |    |    | 023 |     | 029 | 035   | 037   | 039   | 035   | 035   | 032   | 033   | 031   | 024  | 017 | 019 |     |     |    | E   |  |
| 3      |    |    |    |    |    |    | 021 |     | 031 | 033   | 034   |       |       |       |       |       | 029   | 026  | 017 | E   |     |     |    |     |  |
| 4      | E  |    |    |    |    |    |     | 024 | 030 |       | 035   | B     | 035   |       |       |       | 020G  |      |     | E   |     |     |    |     |  |
| 5      |    |    |    |    |    |    | 024 | 029 |     | 033   | 034   |       |       | 027G  |       |       |       |      |     |     |     |     |    |     |  |
| 6      |    |    |    |    |    |    |     | 027 |     | 033   | 035   | 035   | 034   |       |       |       | 029   | 026  | 027 |     |     |     |    |     |  |
| 7      |    |    |    |    |    |    | 023 | 029 | 031 | 033   | 038   | 037   | 036   |       |       | 030   | 035   | 023  | 026 | E   |     |     | E  |     |  |
| 8      |    |    |    |    |    |    |     | 030 | 034 | 035   |       |       |       |       | 027G  |       |       | 025  | 021 |     |     |     |    |     |  |
| 9      |    |    |    |    |    |    |     | 030 |     | 036   | 035   |       | 037   |       | 034   | U032R | 032   | 033  | E   |     |     |     |    |     |  |
| 10     |    |    |    |    |    |    |     | 033 |     | U036R |       |       |       |       | 034   |       | 031   |      | 017 |     |     |     |    |     |  |
| 11     |    |    |    |    |    |    |     |     | 033 |       | 035   | 035   | U035R | 034   | 035   | 033   | 029   | 025  | 019 | E   |     |     |    |     |  |
| 12     |    |    |    |    |    |    |     | 030 | 033 |       |       |       | U034R | 045   | 037   | 034   | 034   | 034  |     |     |     |     |    |     |  |
| 13     |    |    |    |    |    |    |     | 030 | 032 |       |       |       | 037   |       |       |       |       |      |     |     |     |     |    |     |  |
| 14     |    |    |    |    |    |    | 025 | 029 | 034 | 035   | 035   | U035R | 036   |       |       |       |       |      | E   |     |     |     |    |     |  |
| 15     |    |    |    |    |    |    | 024 | 027 | 032 | 035   | 034   |       | 038   | 038   | 037   |       |       |      | E   | 023 | 022 | 020 |    |     |  |
| 16     |    |    |    |    |    |    | 023 | 032 | 037 | 043   | 044   | 044   | 043   | 043   | 037   | 041   | 031   | 026  |     | E   | 020 | E   |    |     |  |
| 17     |    |    |    |    |    |    | 028 | 030 | 034 | 035   | 035   |       |       |       | U034R | 031   | 032   | 028  | 019 |     |     |     |    | E   |  |
| 18     |    |    |    |    |    |    |     |     |     |       | 035   |       |       |       | 035   |       | 028   | 021G |     |     |     |     |    | E   |  |
| 19     |    |    |    |    |    |    |     |     | 031 | 032   |       |       |       |       | 030G  | 033   | 029   |      | 019 | 019 | E   |     |    | 025 |  |
| 20     |    |    |    |    |    |    | 025 | 031 | 032 | 034   |       |       |       |       | 021G  |       |       |      |     |     |     |     |    |     |  |
| 21     |    |    |    |    |    |    | 024 | 029 | 033 | 035   | 037   | 035   | 036   | 037   | 033   |       |       |      | 020 | 018 |     |     |    |     |  |
| 22     |    |    |    |    |    |    | 018 | 026 | 030 | 038   | 039   | 037   | 037   | U035R | 034   | 033   |       | 024  | C20 | 033 |     |     |    |     |  |
| 23     |    |    |    |    |    |    | 017 | 025 | 031 | 036   | 036   | 037   | 036   | 040   | 034   |       | 029   | 023  | 019 | 020 | 023 | 021 |    |     |  |
| 24     |    |    |    |    |    |    | 018 | 028 | 034 | 039   | 040   | 039   | 038   | 051   | 057   | 041   | 041   | 032  | 038 | 018 | 035 | 039 | E  | 038 |  |
| 25     |    |    |    |    |    |    | 019 | 027 | 035 | 039   | 038   | 038   | 037   | 037   | 039   | 039   | 039   | 033  | 023 | 029 | E   |     |    |     |  |
| 26     |    |    |    |    |    |    | 028 | 032 |     | 035   | 036   |       | 036   | 045   | 042   | 038   | 031   | 027  | 035 | 024 |     |     |    | E   |  |
| 27     |    |    |    |    |    |    | 017 | 023 | 034 | 045   | 037   | 047   | 040   | 042   | 058   | 051   | 045   | 036  | 021 | 029 | 034 | 027 | E  |     |  |
| 28     |    |    |    |    |    |    | 018 | 027 | 030 | 038   | U036R | 039   | 045   | 040   | 074   |       | 029   | 026  | 026 | 050 | 040 |     |    |     |  |
| 29     |    |    |    |    |    |    |     | 033 | 035 | 038   | 040   | 038   |       |       |       |       | 029   | 050  | 065 | 034 | E   |     |    |     |  |
| 30     |    |    |    |    |    |    | 025 | 033 | 034 | 037   |       |       | 041   | 048   | 057   |       |       | 052  | 048 | 026 | E   | 022 |    | 022 |  |
| 31     |    |    |    |    |    |    |     |     |     |       |       |       |       |       |       |       |       |      |     |     |     |     |    |     |  |
| Count  |    |    |    |    |    |    |     |     |     |       |       |       |       |       |       |       |       |      |     |     |     |     |    |     |  |
| Median |    |    |    |    |    |    |     |     |     |       |       |       |       |       |       |       |       |      |     |     |     |     |    |     |  |
| U. Q.  |    |    |    |    |    |    |     |     |     |       |       |       |       |       |       |       |       |      |     |     |     |     |    |     |  |
| L. Q.  |    |    |    |    |    |    |     |     |     |       |       |       |       |       |       |       |       |      |     |     |     |     |    |     |  |
| Q. R.  |    |    |    |    |    |    |     |     |     |       |       |       |       |       |       |       |       |      |     |     |     |     |    |     |  |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

fbEs

A 5

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

f-min 0.1 Mc 1 35° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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  | 017 | E  | 017 | 017 | 017 | 017 | 018 | 017 | 018 | 017 | E   | E   | E   | E  | E  | E  | E  | E  |
| 2      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 019 | 020 | 021 | 017 | 018 | E   | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 3      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 019 | 017 | 017 | 017 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 4      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 019 | 042 | 023 | 020 | 021 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 5      | E  | E  | E  | E  | E  | E  | E   | E  | E   | 017 | 018 | 017 | 021 | 018 | 017 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 6      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 018 | 019 | 018 | 018 | 018 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 7      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 017 | 018 | 017 | 017 | 017 | 017 | E   | E   | E   | E  | E  | E  | E  | E  |
| 8      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 020 | 018 | 017 | 017 | 017 | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 9      | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 017 | 018 | 017 | 018 | 018 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 10     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 018 | 017 | 017 | 018 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 11     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 019 | 017 | 022 | 019 | 018 | 017 | 017 | E   | E   | E   | E  | E  | E  | E  | E  |
| 12     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 018 | 019 | 023 | 020 | 017 | 018 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 13     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 018 | 018 | 018 | 018 | 019 | E   | 017 | E   | E  | E  | E  | E  | E  |
| 14     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 018 | 017 | 017 | 017 | 018 | 017 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 15     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 017 | 017 | 017 | 018 | 019 | 018 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 16     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 019 | 017 | 018 | 017 | 017 | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 17     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 019 | 020 | 018 | 018 | 017 | 017 | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 18     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 018 | 020 | 018 | 017 | 018 | 017 | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 19     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 019 | 017 | 018 | 018 | 019 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 20     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 017 | 019 | 018 | 018 | 019 | E   | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 21     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 018 | 017 | 018 | 017 | 017 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 22     | E  | E  | E  | E  | E  | E  | E   | E  | E   | 017 | 018 | 017 | 017 | 017 | 018 | 018 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 23     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 017 | 018 | 018 | 017 | 017 | 017 | 018 | E   | E   | E  | E  | E  | E  | E  |
| 24     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 022 | 018 | 018 | 017 | 017 | 018 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 25     | E  | E  | E  | E  | E  | E  | 019 | E  | 019 | 017 | 018 | 019 | 019 | 019 | 018 | 017 | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 26     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 018 | 019 | 018 | 017 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| 27     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 018 | 019 | 017 | 018 | 017 | 017 | 019 | 017 | E   | E  | E  | E  | E  | E  |
| 28     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 019 | 018 | 020 | 017 | 017 | 017 | 017 | 018 | 017 | E   | E  | E  | E  | E  | E  |
| 29     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 018 | 018 | 019 | 020 | 018 | 018 | 017 | 017 | E   | E   | E  | E  | E  | E  | E  |
| 30     | E  | E  | E  | E  | E  | E  | 017 | E  | 017 | 017 | 018 | 018 | 018 | 017 | 017 | 017 | 017 | 017 | 017 | E  | E  | E  | E  | E  |
| 31     |    |    |    |    |    |    |     |    |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |
| Count  | 30 | 30 | 30 | 30 | 30 | 30 | 30  | 30 | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30 | 30 | 30 | 30 | 30 |
| Median | E  | E  | E  | E  | E  | E  | E   | E  | 017 | 017 | 018 | 018 | 018 | 018 | 018 | 017 | 017 | 017 | E   | E  | E  | E  | E  | E  |
| U. Q.  |    |    |    |    |    |    |     |    |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |     |    |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |     |    |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

f-min

A 6

# IONOSPHERIC DATA

Akita

Lat. 39° 43.5'N  
Long. 140° 08.2'E

0.01 M(3000) F2 1 35° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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      | 295  | 300  | 305  | 320  | 310  | 305S | 340  | 345  | 355  | 340  | 335 | 345   | 360 | 340 | 330  | 340 | 325 | 330 | 340 | 340   | 325  | 305  | 285   | FS    |
| 2      | 290F | 275S | 285F | 320  | 305  | 305  | 335  | 355  | 310H | 300H | 300 | 330R  | 325 | 330 | 315  | 320 | 330 | 340 | 335 | 335R  | 270  | 275  | 305   | FS    |
| 3      | 315  | 310  | 305  | 320  | 320  | 315  | 350  | 330H | 350  | 355  | 325 | 335   | 320 | 320 | 325  | 335 | 335 | 345 | 340 | 330   | 325  | F    | FS    | FS    |
| 4      | FS   | FS   | FS   | F    | F    | F    | 350  | 350  | 345  | 355  | 315 | 1335R | 340 | 315 | 320  | 325 | 330 | 340 | 330 | 350   | 350  | 295  | 290   | 295   |
| 5      | 325  | 310  | 295  | 300  | 330  | FS   | 360  | 365  | 330  | 345  | 325 | 330   | 330 | 330 | 325  | 330 | 330 | 325 | 340 | 340   | 340  | 290  | 290   | 295   |
| 6      | 285  | 290  | FS   | 300  | 310  | 310  | 355  | 360  | 350  | 335  | 345 | 345   | 335 | 320 | 320  | 330 | 335 | 340 | 340 | 340   | 300  | 280F | FS    | 280F  |
| 7      | 290  | 285  | 300  | 310S | 300  | 330  | 365  | 315  | 330  | 310  | 345 | 330   | 300 | 280 | 285  | 340 | 335 | 335 | 315 | 305   | 285  | 290  | 290   | 290   |
| 8      | 290  | 290  | 285  | 295F | 295S | 310F | 350  | 335  | 330  | 340  | 320 | 315   | 320 | 305 | 310  | 330 | 340 | 335 | 340 | 310   | 290  | 300S | 1280R | 270F  |
| 9      | 305S | 305  | 305  | 305  | 285  | 300  | 345  | 335  | 335  | 355  | 310 | 320   | 310 | 310 | 320  | 315 | 325 | 330 | 320 | 315   | 305  | 295  | 285   | 290   |
| 10     | 295  | 295  | 295S | 310F | 335  | 310  | 350  | 355  | 345  | 295  | 315 | 300   | 320 | 305 | 315  | 325 | 340 | 350 | 340 | 320   | 295  | FS   | FS    | I290R |
| 11     | 290  | 300  | 295  | 295  | 285  | 295  | 340  | 350  | 325  | 345  | 320 | 315   | 310 | 315 | 325  | 320 | 325 | 325 | 330 | 315S  | 310  | 295  | 290   | 295   |
| 12     | 275  | 300  | 300  | 285  | 300  | 305  | 350  | 340  | 335  | 330  | 340 | 315   | 330 | 315 | 325  | 335 | 330 | 325 | 325 | 320   | 315  | 285  | 290   | 290   |
| 13     | 290  | 310  | 320  | 315  | 295  | 315  | 345  | 345  | 345  | 325  | 330 | 330   | 315 | 320 | 325  | 340 | 335 | 340 | 315 | 275   | 280  | 290  | 290   | 280   |
| 14     | 285  | 290  | 305  | 295  | 280  | 310S | 345  | 305H | 295H | 310  | 300 | 305   | 315 | 325 | 315  | 330 | 335 | 340 | 320 | 305   | 285  | 275  | 280   | 275   |
| 15     | 275  | 265  | 295  | 325  | 320  | 325  | 335  | 340  | 330  | 320  | 310 | 310   | 320 | 325 | 325  | 335 | 320 | 325 | 325 | 305   | 295  | 290  | 290   | 295   |
| 16     | 300  | 305  | 305  | 300  | 295  | 310  | 360  | 365  | 335  | 335  | 320 | 315   | 310 | 320 | 330  | 330 | 350 | 335 | 325 | 320   | 290  | 290  | 1300R | 280   |
| 17     | 290  | 295  | 300  | 305  | 305  | 320  | 350  | 365  | 340  | 325  | 315 | 320   | 315 | 325 | 305  | 325 | 320 | 345 | 325 | 325   | 300F | 285  | 290   | 290   |
| 18     | 280  | 285  | 295  | 320  | 320  | 335  | 335  | 340  | 335  | 335  | 320 | 320   | 305 | 320 | 320  | 340 | 325 | 325 | 320 | 320   | 325  | 315  | 285   | 290   |
| 19     | 290  | 290  | 305  | 315  | 320  | 335  | 360  | 360  | 325  | 320  | 325 | 325   | 320 | 315 | 330  | 335 | 335 | 335 | 320 | 315   | 315  | 310  | 290   | 295   |
| 20     | 290  | 300  | 300  | 300  | 320  | 340  | 360  | 360  | 350  | 320  | 330 | 300   | 320 | 325 | 305  | 325 | 335 | 330 | 325 | 315   | 310  | 295  | 295   | 290   |
| 21     | 285  | 295  | 295  | 320  | 300  | 315  | 340  | 305R | 310  | 305  | 315 | 315   | 325 | 320 | 335  | 335 | 325 | 325 | 320 | 305   | 305  | 310  | 310   | 285   |
| 22     | 285  | 285  | 295  | 305  | 295  | 320  | 345  | 345  | 330  | 325  | 320 | 320   | 305 | 315 | 315  | 335 | 340 | 330 | 320 | 280   | 300  | 315  | 315   | 285   |
| 23     | 285  | 290S | 290  | 285  | FS   | 295  | 325  | 325  | 340  | 330  | 320 | 310   | 310 | 325 | 330  | 320 | 315 | 320 | 310 | 310   | 305  | 290  | 290   | 285   |
| 24     | 285  | 290  | 340  | 320  | 295  | 325  | 340  | 335  | 325  | 315  | 335 | 315   | 315 | 315 | 320  | 310 | 320 | 320 | 335 | 305   | 330  | 295  | 295   | 280   |
| 25     | 285  | 300  | 305  | 300  | 295  | 340  | 335  | 345  | 340  | 325  | 320 | 315   | 320 | 310 | 315  | 320 | 325 | 335 | 340 | 315   | 300  | 285  | 270   | 290   |
| 26     | 290  | 285  | 305  | 320  | 300  | 330  | 320  | 335  | 335  | 340  | 325 | 310   | 310 | 310 | 315  | 330 | 335 | 330 | 320 | 315   | 320  | 305  | 290   | 290   |
| 27     | 290  | 290  | 305  | 315  | 300  | 325  | 320H | 340  | 345  | 345  | 330 | 315   | 315 | 310 | 310  | 315 | 325 | 320 | 325 | 320   | 305  | 285  | 290   | 295   |
| 28     | 295  | 295  | 305  | 330  | 310  | 335  | 340  | 340  | 325H | 315  | 315 | 310   | 290 | 305 | 310R | 295 | 315 | 310 | 315 | 1320R | 330  | 290  | 290   | 290   |
| 29     | 290  | 295  | 295  | 300  | 295  | 325  | 340  | 345  | 335  | 310  | 335 | 295   | 295 | 305 | 295  | 305 | 320 | 310 | 305 | 330R  | 340S | 295  | 285   | 290   |
| 30     | 275  | 275  | 295  | 300  | 300  | 310  | 335  | 325  | 320H | 300  | 305 | 330   | 310 | 315 | 315  | 320 | 325 | 335 | 315 | 285S  | 285  | 290  | 285   | 290   |
| 31     |      |      |      |      |      |      |      |      |      |      |     |       |     |     |      |     |     |     |     |       |      |      |       |       |
| Count  | 29   | 29   | 28   | 29   | 28   | 28   | 30   | 30   | 30   | 30   | 30  | 30    | 30  | 30  | 30   | 30  | 30  | 30  | 30  | 30    | 30   | 28   | 27    | 28    |
| Median | 290  | 295  | 300  | 305  | 300  | 315  | 345  | 340  | 335  | 325  | 320 | 315   | 315 | 315 | 320  | 330 | 330 | 330 | 325 | 315   | 310  | 290  | 290   | 290   |
| U. Q.  |      |      |      |      |      |      |      |      |      |      |     |       |     |     |      |     |     |     |     |       |      |      |       |       |
| L. Q.  |      |      |      |      |      |      |      |      |      |      |     |       |     |     |      |     |     |     |     |       |      |      |       |       |
| Q. R.  |      |      |      |      |      |      |      |      |      |      |     |       |     |     |      |     |     |     |     |       |      |      |       |       |

M(3000) F2 Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation The Radio Research Laboratories, Japan

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

M(3000)F1 0.01 135° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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      |    |    |    |    |    |    | 385L  | 375   | 380  | 375   | 380   | 375   | 380  | 395   | 370L | 375L | L    | L   |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    | L     | 370   | 365  | L     | 375   | L     | 375  | L     | 360L | L    | L    | L   |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    | 375L  | 405   | 390L | 405   | 355   | 380   | 370L | 390L  | 375L | 375L | L    | L   |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    | 385L  | 380   | 390  | LH    | 370L  | LH    | 370L | 390L  | L    | 360L | L    | L   |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    | L     | L     | 375  | 375   | 355   | 365   | 365  | 375   | 365L | 375L | L    | L   |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    | LH    | 375   | 375  | 370   | 380   | 380   | 380  | 405   | 400  | 375  | L    | L   |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    | 385L  | 375   | 360  | 370   | 365   | 350L  | 340  | 350L  | 340  | 375L | L    | L   |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    | 370L  | 325   | 365  | 400   | 365   | 400   | 360  | 360   | 360  | 360L | L    | L   |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    | L     | 360   | 370L | 390   | L     | 380L  | 360  | 375L  | 360  | 375L | L    | L   |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    | L     | L     | 355  | 370L  | 360   | 380   | 360  | 380   | 375  | L    | L    | L   |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    | L     | 370   | 375  | 365   | 365L  | 365   | 365L | 355L  | 365  | 370L | L    | L   |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    | L     | 385   | 370  | 375   | 360   | 375   | 360  | I360A | 355L | 365L | L    | L   |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    | L     | 370H  | 365  | 375   | 375   | 375   | 370  | 370   | 360  | L    | 395L | L   |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    | L     | 340L  | 350  | 360   | 400   | 360   | 400  | 360   | 360L | 355L | L    | L   |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    | 390L  | 355   | 370  | 355   | 370   | 370   | 370R | 365L  | 360  | 360  | LH   | L   |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    | 365L  | L     | L    | L     | 370L  | 345L  | 360L | 360L  | L    | 375L | LH   | 390 |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    | 380L  | 385   | 360  | 360L  | 365R  | 390R  | 360  | 375L  | 360  | 375L | L    | L   |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    | LH    | L     | 360  | 370   | 365   | 375   | 375  | 370   | 370  | 360  | L    | L   |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    | L     | 370   | 385  | 375   | 385   | 375   | 385  | 375   | 370H | 360  | L    | L   |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    | 375L  | 370L  | 380H | 370H  | 380   | 370   | 370  | 370   | 360L | 360L | L    | L   |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    | L     | 340L  | 345  | 360   | 370   | 370   | 370  | 360   | 365  | 375L | LH   | L   |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    | L     | 360L  | 360  | 370   | 365   | 370   | 370  | 365   | 380  | 355  | L    | L   |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    | 365L  | 370L  | 365  | 360L  | 375   | 365   | 375  | 375   | 365  | 350L | L    | L   |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    | L     | 370   | 360  | 395   | I370A | I365A | 360  | L     | 360  | L    | L    | L   |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    | L     | 370L  | 360  | 375   | 365   | 365   | 355  | 355   | 360  | 345  | L    | L   |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    | L     | 365   | 370  | 375   | 355   | 485H  | 345  | 360   | 365L | L    | L    |     |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    | I385A | I390A | 365  | I350A | 375   | 385   | A    | A     | A    | A    | L    | L   |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    | L     | 380L  | 365L | 380   | 365   | 355   | 355  | I370A | 350  | 355L | L    | L   |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    | L     | 385L  | 365L | 360L  | 385   | 360L  | 365  | 360   | 350L | 355L | A    | A   |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    | L     | 365L  | 390  | 360   | 340H  | 365   | A    | A     | 355L | LH   | A    | A   |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |       |       |      |       |       |       |      |       |      |      |      |     |    |    |    |    |    |    |
| Count  |    |    |    |    |    |    | 18    | 27    | 29   | 27    | 29    | 28    | 27   | 24    | 3    | 1    |      |     |    |    |    |    |    |    |
| Median |    |    |    |    |    |    | 375L  | 370   | 370  | 370   | 370   | 370   | 370  | 360   | 360L | 355L | 390  |     |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |       |       |      |       |       |       |      |       |      |      |      |     |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |       |       |      |       |       |       |      |       |      |      |      |     |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |       |       |      |       |       |       |      |       |      |      |      |     |    |    |    |    |    |    |

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 8

M(3000)F1



# IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

km **135° E Mean Time (G.M.T. +9h)**

hF2

Apr. 1966

| 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  | 270  | 275 | 255 | 285 | 285 | 285 | 285 | 285 | 260 |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    |    | 250  | 335L | 280  | 285 | 270 | 300 | 295 | 290 | 270 | 270 | 255 |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    |    |      | 375L | 255  | 285 | 275 | 300 | 285 | 280 | 270 | 260 | 245 |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |    |      | 260  | 285  | 295 | 270 | 270 | 290 | 295 | 285 | 260 | 265 |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |    |      | 240  | 280  | 290 | 280 | 275 | 270 | 295 | 280 | 260 |     |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    |    | 240  | 250  | 285  | 290 | 285 | 285 | 280 | 290 | 285 | 250 |     |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    |    | 250  | 250  | 295  | 270 | 290 | 320 | 305 | 305 | 265 | 260 | 255 |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |    |      | 290  | 270  | 290 | 290 | 300 | 300 | 285 | 270 | 250 |     |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |    |      | 260  | 245  | 280 | 290 | 290 | 280 | 275 | 265 |     |     |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |    |      | 275  | 260  | 280 | 305 | 280 | 280 | 275 | 260 | 255 |     |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    |    | 250  | 255  | 270  | 280 | 300 | 310 | 290 | 270 | 260 | 255 | 260 |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    |    | 255  | 270  | 275  | 280 | 300 | 300 | 305 | 280 | 275 | 265 |     |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    |    | 260  | 250  | 290  | 295 | 295 | 300 | 300 | 295 | 260 | 250 |     |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |    |      | 290L | 330  | 315 | 290 | 300 | 280 | 285 | 265 | 260 |     |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    |    | 255  | 250  | 305  | 320 | 325 | 295 | 295 | 300 | 275 | 270 | 265 |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    |    | 245  | 280  | 285  | 300 | 310 | 315 | 295 | 285 | 280 | 245 |     |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    |    | 245  | 260  | 280  | 300 | 310 | 310 | 280 | 285 | 270 | 295 | 255 |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |    | 250  | 290  | 280  | 310 | 300 | 310 | 295 | 285 | 260 | 255 | 245 |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    |    | 245  | 275  | 300  | 300 | 290 | 300 | 300 | 280 | 270 | 260 |     |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    |    | 240  | 280  | 300  | 285 | 345 | 300 | 300 | 315 | 275 | 270 | 250 |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    |    | 255H | 345  | 350  | 305 | 300 | 300 | 300 | 295 | 280 | 285 | 280 |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    |    | 240  | 290  | 310  | 300 | 300 | 295 | 285 | 275 | 265 | 260 |     |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    |    | 265  | 275  | 290  | 300 | 305 | 285 | 295 | 280 | 285 | 260 |     |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    |    | 255  | 285  | 280  | 275 | 275 | 300 | 300 | 285 | 305 | 260 |     |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    |    | 260  | 280  | 300  | 310 | 315 | 305 | 325 | 305 | 300 | 275 | 265 |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    |    | 265  | 280  | 275  | 290 | 325 | 310 | 295 | 300 | 290 | 270 | 260 |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    |    | 260  | 255  | 285  | 280 | 305 | 300 | 310 | 305 | 300 | 265 | 280 |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    |    | 255  | 260  | 300  | 300 | 310 | 350 | 305 | 325 | 305 | 285 | 275 |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    |    | 255  | 270  | 295  | 300 | 300 | 325 | 300 | 310 | 300 | 285 | 275 |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    |    | 280  | 285  | 270L | 320 | 340 | 320 | 295 | 310 | 295 | 290 | 270 |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |    |      |      |      |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
| Count  |    |    |    |    |    |    |    | 22   | 30   | 30   | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 23  |    |    |    |    |    |    |
| Median |    |    |    |    |    |    |    | 255  | 275  | 285  | 290 | 300 | 300 | 295 | 290 | 280 | 265 | 260 |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |    |      |      |      |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |    |      |      |      |     |     |     |     |     |     |     |     |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |    |      |      |      |     |     |     |     |     |     |     |     |    |    |    |    |    |    |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

hF2

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

h'F 1.35° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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      | 265 | 260 | 245 | 235 | 225 | 255  | 245  | 245  | 235   | 220   | 235   | 205   | 195   | 220   | 220   | 220   | 245   | 255   | 240   | 220 | 220 | 250   | 280 | 305  |     |
| 2      | 320 | 310 | 325 | 245 | 250 | 255  | 220  | 245  | 230   | 230   | 250   | 1240A | 240   | 220   | 230   | 245   | 250   | 250   | 240   | 220 | 210 | 280   | 320 | 270  |     |
| 3      | 265 | 255 | 255 | 240 | 240 | 245  | 220  | 230  | 225H  | 205   | 200   | 195   | 205   | 190H  | 200H  | 235   | 245   | 240   | 230   | 220 | 225 | 260   | 315 | 290  |     |
| 4      | 265 | 275 | 290 | 260 | 235 | 235  | 230  | 235  | 210   | 220   | 205   | 1225B | 220   | 200   | 205   | 225   | 250   | 250   | 240   | 220 | 205 | 265   | 305 | 310  |     |
| 5      | 265 | 265 | 285 | 260 | 225 | 235  | 210  | 230  | 210H  | 220   | 190H  | 220   | 230   | 220   | 205   | 205   | 240   | 250   | 240   | 220 | 215 | 255   | 290 | 270  |     |
| 6      | 265 | 275 | 295 | 275 | 265 | 260  | 215  | 230  | 190H  | 200H  | 235   | 205   | 200   | 205   | 200   | 200H  | 245   | 240   | 240   | 220 | 240 | 300   | 300 | 295  |     |
| 7      | 270 | 280 | 280 | 250 | 255 | 245  | 230  | 215  | 215   | 205H  | 245   | 230   | 220   | 195   | 210   | 225   | 1220A | 230A  | 240   | 235 | 245 | 285   | 300 | 310  |     |
| 8      | 275 | 265 | 285 | 265 | 255 | 250  | 220  | 240  | 250   | 245   | 220   | 210   | 200   | 195   | 230   | 220   | 245   | 240   | 230   | 245 | 230 | 265   | 295 | 280  |     |
| 9      | 275 | 295 | 275 | 245 | 270 | 265  | 240  | 245  | 240   | 230   | 210   | 210   | 200   | 200H  | 225   | 230   | 245   | 245   | 230   | 230 | 230 | 265   | 295 | 280  |     |
| 10     | 270 | 255 | 245 | 260 | 220 | 250  | 240  | 240  | 240   | 220   | 200H  | 200H  | 200H  | 220   | 200H  | 200   | 235   | 240   | 230   | 225 | 250 | 305   | 275 | 275  |     |
| 11     | 285 | 260 | 255 | 235 | 290 | 275  | 220  | 240  | 215   | 230   | 215   | 190   | 210   | 195H  | 215   | 230   | 220   | 230   | 240   | 235 | 230 | 255   | 275 | 265  |     |
| 12     | 275 | 280 | 275 | 275 | 255 | 260  | 240  | 240  | 235   | 210   | 205   | 215   | 215   | 1240A | 240   | 240   | 250A  | 255   | 245   | 235 | 245 | 255   | 285 | 275  |     |
| 13     | 280 | 260 | 240 | 240 | 240 | 255  | 235  | 240  | 235   | 205   | 195   | 200   | 210   | 205   | 195   | 220   | 235   | 245   | 250   | 240 | 265 | 295   | 285 | 290  |     |
| 14     | 275 | 280 | 245 | 270 | 280 | 260  | 235  | 240  | 220   | 215H  | 235   | 220   | 205   | 225   | 225   | 225H  | 225   | 240   | 240   | 255 | 245 | 295   | 300 | 295  |     |
| 15     | 285 | 275 | 270 | 225 | 245 | 230  | 240  | 235  | 215   | 210   | 205   | 190H  | 205   | 230   | 245   | 220A  | 205H  | 245   | 245   | 260 | 265 | 280   | 255 | 260  |     |
| 16     | 260 | 265 | 270 | 250 | 265 | 255  | 235  | 235  | 230   | A     | 1230A | 250A  | 1230A | 250   | 1235A | 225   | 225   | 245   | 240   | 270 | 240 | 250   | 250 | 280  |     |
| 17     | 295 | 260 | 260 | 255 | 255 | 255  | 235  | 230  | 225   | 215   | 195   | 190H  | 205   | 200   | 185H  | 230   | 250   | 250   | 240   | 230 | 255 | 270   | 255 | 275  |     |
| 18     | 305 | 290 | 275 | 245 | 235 | 245  | 205  | 185H | 200H  | 220   | 215   | 195H  | 200   | 220   | 205   | 220   | 225   | 230   | 255   | 250 | 245 | 255   | 270 | 270  |     |
| 19     | 290 | 295 | 275 | 245 | 215 | 240  | 220  | 230  | 225   | 200H  | 200   | 200   | 200   | 200   | 180H  | 225   | 235   | 245   | 250   | 240 | 240 | 245   | 290 | 280  |     |
| 20     | 280 | 280 | 280 | 265 | 245 | 225  | 220H | 230  | 215   | 210H  | 200H  | 205   | 200   | 190H  | 230   | 225   | 225   | 225   | 250   | 255 | 255 | 260   | 255 | 265  |     |
| 21     | 285 | 280 | 275 | 240 | 260 | 250H | 240  | 235  | 220   | 240   | 220   | 215   | 210   | 200   | 225   | 200   | 205   | 270   | 260   | 260 | 255 | 245   | 230 | 270  |     |
| 22     | 290 | 290 | 270 | 255 | 270 | 240  | 235  | 235  | 230   | 230   | 235   | 220   | 200   | 210   | 205   | 235   | 240   | 240   | 305   | 260 | 260 | 245   | 240 | 275  |     |
| 23     | 290 | 300 | 285 | 290 | 245 | 245  | 245  | 245  | 240   | 225   | 225   | 210   | 205   | 220A  | 235   | 215   | 235   | 240   | 255   | 245 | 255 | 260   | 255 | 280  |     |
| 24     | 285 | 280 | 225 | 230 | 295 | 240  | 240  | 240  | 250A  | 240A  | 235   | 225   | 1215A | 1225A | 230A  | 250A  | 245   | 245   | 240   | 240 | 245 | 1275A | 300 | 350A |     |
| 25     | 295 | 285 | 275 | 260 | 260 | 240  | 245  | 240  | 225   | 240   | 220   | 200   | 200   | 210   | 240   | 250   | 1250A | 1250A | 240   | 250 | 240 | 295   | 290 | 270  |     |
| 26     | 275 | 275 | 265 | 225 | 275 | 245  | 240  | 245  | 215   | 210   | 205   | 200   | 200   | 240A  | 240A  | 240   | 235   | 240   | 255   | 245 | 235 | 240   | 260 | 265  |     |
| 27     | 280 | 285 | 260 | 240 | 260 | 240  | 200H | 240  | 1235A | 1225A | 200   | 1215A | 220   | 225   | 1235A | 1245A | 1240A | 255A  | 245H  | 240 | 250 | 290   | 275 | 265  |     |
| 28     | 270 | 285 | 255 | 235 | 245 | 240  | 230  | 225  | 220   | 220   | 215   | 220   | 1220A | 210   | 1220A | 215   | 220   | 240   | 270   | 245 | 240 | 245   | 265 | 290  |     |
| 29     | 295 | 285 | 265 | 255 | 270 | 235  | 240  | 245  | 215   | 230   | 230   | 200   | 190H  | 210   | 215   | 205   | 205H  | 1250A | 1280A | 245 | 215 | 245   | 275 | 285  |     |
| 30     | 310 | 305 | 275 | 250 | 260 | 255  | 245  | 240  | 215   | 225   | 215   | 220   | A     | A     | A     | 240   | 185H  | A     | A     | 275 | 270 | 290   | 255 | 290  |     |
| 31     |     |     |     |     |     |      |      |      |       |       |       |       |       |       |       |       |       |       |       |     |     |       |     |      |     |
| Count  | 30  | 30  | 30  | 30  | 30  | 30   | 30   | 30   | 30    | 29    | 29    | 30    | 29    | 29    | 29    | 30    | 30    | 29    | 29    | 30  | 30  | 30    | 30  | 30   | 30  |
| Median | 280 | 280 | 270 | 250 | 255 | 245  | 235  | 240  | 225   | 220   | 215   | 210   | 205   | 210   | 220   | 225   | 235   | 245   | 240   | 240 | 245 | 260   | 275 | 280  | 280 |
| U. Q.  |     |     |     |     |     |      |      |      |       |       |       |       |       |       |       |       |       |       |       |     |     |       |     |      |     |
| L. Q.  |     |     |     |     |     |      |      |      |       |       |       |       |       |       |       |       |       |       |       |     |     |       |     |      |     |
| Q. R.  |     |     |     |     |     |      |      |      |       |       |       |       |       |       |       |       |       |       |       |     |     |       |     |      |     |

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

h'F

The Radio Research Laboratories, Japan

A 10

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

km 1 3.5° E Mean Time (G. M. T. +9h)

f<sub>o</sub>F<sub>2</sub>

Apr. 1966

| 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   | 115 | 155   | G     | E145G | 125   | 120 | 120 | 115 | 105 | 105   | G   | 105 | 105 | E   | E   | E   | E   | E   | E   |
| 2      | E   | E   | E   | E   | E   | 145 | 145   | G     | 155   | 135   | 125 | 120 | 120 | 125 | 105   | 100 | 145 | 140 | 135 | 115 | E   | E   | E   | 110 |
| 3      | E   | E   | E   | E   | E   | 155 | 155   | G     | 145   | 130   | 120 | G   | G   | G   | G     | G   | 150 | 140 | 125 | 120 | E   | E   | E   | E   |
| 4      | 110 | E   | E   | E   | E   | E   | G     | 145   | E145G | G     | 130 | B   | 120 | G   | G     | G   | 105 | G   | E   | 115 | E   | E   | E   | E   |
| 5      | E   | E   | E   | E   | E   | E   | E170G | 155   | G     | 145   | 130 | G   | G   | 105 | G     | G   | G   | G   | E   | E   | E   | E   | E   | E   |
| 6      | E   | E   | E   | E   | E   | E   | G     | 155   | G     | E155G | 120 | 110 | 110 | G   | G     | G   | 165 | 145 | 135 | E   | E   | E   | E   | E   |
| 7      | E   | E   | E   | E   | E   | E   | 155   | 145   | 150   | G     | 130 | 115 | 110 | G   | G     | 105 | 105 | 105 | 100 | 105 | 100 | E   | 100 | E   |
| 8      | E   | E   | E   | E   | E   | E   | G     | 150   | 140   | 140   | G   | G   | G   | 105 | G     | G   | G   | 155 | 135 | E   | E   | E   | E   | E   |
| 9      | E   | E   | 100 | E   | E   | E   | G     | G     | G     | 125   | 115 | G   | 105 | G   | 130   | 130 | 155 | 140 | 125 | E   | E   | E   | E   | E   |
| 10     | E   | E   | E   | E   | E   | E   | G     | 170   | 150   | G     | 130 | G   | G   | G   | G     | G   | 150 | G   | 130 | E   | E   | E   | E   | E   |
| 11     | E   | E   | E   | E   | E   | E   | G     | G     | G     | G     | 120 | 130 | 125 | 120 | 120   | 125 | 150 | 140 | 130 | 100 | 110 | E   | E   | E   |
| 12     | E   | E   | E   | E   | E   | 100 | 150   | 140   | 150   | G     | G   | G   | 120 | 115 | E170G | 150 | 145 | 140 | E   | E   | 105 | 105 | E   | E   |
| 13     | E   | E   | E   | E   | E   | E   | G     | 165   | 155   | G     | G   | G   | 130 | G   | G     | G   | G   | G   | E   | E   | E   | E   | E   | E   |
| 14     | E   | E   | E   | E   | E   | E   | 145   | 145   | 145   | 130   | 125 | 120 | 115 | G   | G     | G   | G   | G   | 150 | E   | E   | E   | E   | E   |
| 15     | 105 | E   | E   | E   | E   | E   | 155   | E170G | 140   | 150   | 125 | G   | 145 | 150 | 150   | 140 | G   | G   | 130 | 130 | 120 | 125 | E   | E   |
| 16     | E   | E   | E   | E   | E   | E   | 150   | 150   | 140   | 130   | 125 | 125 | 125 | 125 | 125   | 125 | 125 | 120 | E   | 125 | 125 | 125 | E   | E   |
| 17     | E   | E   | E   | E   | E   | E   | 150   | 150   | 140   | 135   | 135 | G   | G   | G   | 120   | 125 | 145 | 140 | 130 | E   | E   | 125 | 120 | 120 |
| 18     | E   | E   | E   | E   | E   | E   | G     | G     | G     | G     | 140 | G   | G   | G   | 140   | G   | 125 | 110 | E   | E   | E   | E   | E   | E   |
| 19     | E   | E   | E   | E   | E   | E   | G     | 160   | 165   | G     | G   | G   | G   | G   | 115   | 160 | 125 | G   | 125 | 120 | E   | 110 | 110 | E   |
| 20     | E   | E   | E   | E   | E   | E   | 150   | 150   | 150   | E140G | G   | G   | G   | G   | G     | 105 | G   | G   | E   | E   | E   | E   | E   | E   |
| 21     | E   | E   | E   | E   | E   | E   | 160   | 155   | 140   | 140   | 140 | 140 | 115 | 110 | 110   | G   | G   | G   | 140 | 130 | E   | E   | E   | E   |
| 22     | E   | E   | E   | E   | E   | E   | 155   | 145   | 145   | 135   | 130 | 130 | 130 | 125 | 115   | 110 | G   | 130 | 105 | 105 | E   | E   | E   | E   |
| 23     | E   | E   | E   | E   | E   | E   | 150   | 145   | 140   | 140   | 140 | 130 | 125 | 120 | 120   | G   | 120 | 150 | 140 | 130 | 125 | 115 | E   | E   |
| 24     | E   | E   | E   | E   | E   | E   | 150   | 140   | 135   | 140   | 130 | 135 | 120 | 115 | 115   | 120 | G   | 140 | 125 | 110 | 110 | 110 | 115 | 110 |
| 25     | E   | E   | E   | E   | E   | E   | 160   | 150   | 145   | 140   | 130 | 125 | 120 | 130 | 120   | 115 | 105 | 105 | 125 | 120 | 120 | 115 | E   | E   |
| 26     | E   | E   | E   | E   | E   | E   | 150   | 130   | G     | 135   | 110 | G   | 115 | 125 | 125   | 120 | 125 | 120 | 110 | 115 | E   | E   | E   | 115 |
| 27     | E   | 105 | 105 | 105 | 105 | E   | 120   | 125   | 140   | 130   | 125 | 115 | 130 | 130 | 125   | 120 | 125 | 125 | 120 | 115 | 110 | 110 | 110 | E   |
| 28     | 105 | 105 | E   | E   | E   | 110 | 115   | E170G | 135   | 130   | 140 | 120 | 115 | 115 | 115   | G   | G   | 130 | 115 | 115 | 110 | E   | E   | E   |
| 29     | E   | 100 | E   | 105 | E   | E   | 145   | 140   | 135   | 125   | 120 | 120 | G   | G   | G     | G   | 150 | 120 | 105 | 115 | 105 | E   | E   | E   |
| 30     | E   | E   | E   | E   | E   | E   | 155   | 135   | 140   | 145   | G   | G   | 140 | 130 | 130   | G   | G   | 145 | 125 | 115 | 110 | 110 | E   | 105 |
| 31     |     |     |     |     |     |     |       |       |       |       |     |     |     |     |       |     |     |     |     |     |     |     |     |     |
| Count  | 3   | 3   | 3   | 2   | 2   | 8   | 21    | 24    | 24    | 22    | 24  | 15  | 21  | 16  | 20    | 15  | 19  | 21  | 22  | 18  | 12  | 10  | 5   | 5   |
| Median | 105 | 105 | 105 | 105 | 110 | 135 | 150   | 150   | 140   | 130   | 130 | 120 | 120 | 120 | 120   | 120 | 125 | 140 | 125 | 115 | 110 | 110 | 110 | 110 |
| U. Q.  |     |     |     |     |     |     |       |       |       |       |     |     |     |     |       |     |     |     |     |     |     |     |     |     |
| L. Q.  |     |     |     |     |     |     |       |       |       |       |     |     |     |     |       |     |     |     |     |     |     |     |     |     |
| Q. R.  |     |     |     |     |     |     |       |       |       |       |     |     |     |     |       |     |     |     |     |     |     |     |     |     |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

f<sub>o</sub>F<sub>2</sub>

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

Apr. 1966

| 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  |    |    |    | h2 |    | h   | h  | h  | h  | c  | 1   | 1  | 13  | 1    |      |      |       |    |    |       |    |    |  |
| 2      |    |    |    |    |    |    | h2 |    | h   | h  | h2 | h2 | h  | c 1 | 12 | 12  | h2   | h3   | h    | f     |    |    |       |    | f  |  |
| 3      |    |    |    |    |    |    | h2 |    | h   | h  | h2 |    |    |     |    |     | h2   | h3   | c2   | f     |    |    |       |    |    |  |
| 4      | f2 |    |    |    |    |    | h  | h  | h   | h2 | h2 |    | c  |     |    |     | 1    |      |      | f     |    |    |       |    |    |  |
| 5      |    |    |    |    |    |    | h2 | h  | h   | h  | h  |    |    | 1   |    |     |      |      |      |       |    |    |       |    |    |  |
| 6      |    |    |    |    |    |    | h  | h  | h   | h  | h  | c  | c2 |     |    |     | h    | h2   | h2   |       |    |    |       |    |    |  |
| 7      |    |    |    |    |    |    | h  | h  | h   | h  | h  | h  | c  |     |    | 12  | 13   | 12   | 13   | f2    |    |    |       |    | f2 |  |
| 8      |    |    |    |    |    |    | h2 | h2 | h   | h  | h  | h  |    |     | 1  |     | h2 1 | h3   |      |       |    |    |       |    |    |  |
| 9      |    |    | f  |    |    |    |    |    | h   | h  | h  | h  | 12 |     | h  | h   | h2   | h    | h    |       |    |    |       |    |    |  |
| 10     |    |    |    |    |    |    | h  | h  | h   | h  | h  | h  |    |     |    | h 1 | h    | h    | h    |       |    |    |       |    |    |  |
| 11     |    |    |    |    |    |    |    |    | h   | h  | h  | h  | h  | c   | c  | h   | h    | h    | h 12 | f     |    |    |       |    |    |  |
| 12     |    |    |    |    | f2 |    | h2 | h  | h   | h  | h  | h  | h  | c2  | h  | h   | h2   | h3   |      | f3    | f2 |    |       |    |    |  |
| 13     |    |    |    |    |    |    | h2 | h2 | h   | h  | h  | h  | h  |     |    |     |      |      | h    |       |    |    |       |    |    |  |
| 14     |    |    |    |    |    |    | h2 | h2 | h   | h  | h  | h  | h  |     |    |     |      |      |      |       |    |    |       |    |    |  |
| 15     | f  |    |    |    |    |    | h2 | h  | h2  | h  | h  | h  | h  | h2  | h  | h   | h2   | h2   | h3   | f3    | f3 | f5 | f3 f2 |    |    |  |
| 16     |    |    |    |    |    |    | h  | h2 | h2  | h2 | h  | h  | h2 | h2  | h  | h2  | h2   | h2   |      |       |    |    |       |    |    |  |
| 17     |    |    |    |    |    |    | h2 | h  | h   | h  | h  | h  | h  |     | h  | h   | h    | h2   | h2   |       |    |    |       |    | f2 |  |
| 18     |    |    |    |    |    |    |    |    | h   | h  | h  | h  |    |     | h  | h   | h2   | 1    |      |       |    |    |       |    |    |  |
| 19     |    |    |    |    |    |    |    |    | h 1 | h  | h  | h  |    |     | 1  | h c | h    | h    | h2   | f2    |    |    |       |    |    |  |
| 20     |    |    |    |    |    |    | h  | h  | h   | h  | h  | h  |    |     |    | 12  |      |      |      |       |    |    |       |    |    |  |
| 21     |    |    |    |    |    |    | h2 | h2 | h   | h  | h  | h  | c  | c2  | 12 |     |      |      | h5   | f2    |    |    |       |    |    |  |
| 22     |    |    |    |    |    |    | h  | h2 | h2  | h  | h  | h  | h  | h   | c2 | 12  |      | h    | 12   | f4    |    |    |       |    |    |  |
| 23     |    |    |    |    |    |    | h2 | h2 | h2  | h  | h  | h  | h  | h2  | h  |     | c    | h    | h2   | f3    | f6 | f5 |       |    |    |  |
| 24     |    |    |    |    |    |    | h2 | h2 | h   | h  | h  | h  | h  | h2  | h2 | h2  | h2   | h2   | h4   | f3    | f4 | f7 | f2    |    | f7 |  |
| 25     |    |    |    |    |    |    | h2 | h2 | h2  | h  | h  | h  | h  | h   | h2 | c2  | 12   | 13   | c4   | f3    | f  |    |       |    |    |  |
| 26     |    |    |    |    |    |    | h2 | h2 | h   | h  | c  | h2 | h2 | h2  | h2 | h2  | h    | h2   | 14   | f3    |    |    |       |    | f2 |  |
| 27     |    |    | f2 |    |    |    | h2 | h2 | h3  | h2 | h  | h2 | h  | h   | h3 | h3  | h2   | h2   | c2   | f2    | f6 | f2 |       |    | f3 |  |
| 28     |    |    |    |    |    |    | h  | h  | h2  | h  | h  | h  | c2 | c2  | c3 |     |      | h2   | c4   | f3    | f6 |    |       |    |    |  |
| 29     |    |    |    |    |    |    | h2 | h2 | h   | h  | h  | h  | h  | h   | h  | h   | h    | c3 1 | 12   | f2 f2 | f  |    |       |    |    |  |
| 30     |    |    |    |    |    |    | h  | h2 | h   | h  | h  | h  | h  | h2  | h2 |     |      | h4   | h3   | f2    | f2 |    |       |    | f3 |  |
| 31     |    |    |    |    |    |    |    |    |     |    |    |    |    |     |    |     |      |      |      |       |    |    |       |    |    |  |
| Count  |    |    |    |    |    |    |    |    |     |    |    |    |    |     |    |     |      |      |      |       |    |    |       |    |    |  |
| Median |    |    |    |    |    |    |    |    |     |    |    |    |    |     |    |     |      |      |      |       |    |    |       |    |    |  |
| U. Q.  |    |    |    |    |    |    |    |    |     |    |    |    |    |     |    |     |      |      |      |       |    |    |       |    |    |  |
| L. Q.  |    |    |    |    |    |    |    |    |     |    |    |    |    |     |    |     |      |      |      |       |    |    |       |    |    |  |
| Q. R.  |    |    |    |    |    |    |    |    |     |    |    |    |    |     |    |     |      |      |      |       |    |    |       |    |    |  |

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

Types of Es

A 12

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 1 35° E Mean Time (G.M.T. +9h)

foF2

Apr. 1966

| 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      | 051   | 050   | 048   | 046   | 035   | 034  | 053  | 062   | 067   | 073S  | 075   | 086   | 1075S | 068  | 066   | 069   | 070   | 1077S | 1078S | 065S  | 048   | 039   | 041S  | F     | F     |
| 2      | 036   | 1032S | 035S  | 1040S | 028   | 032  | 050  | 060   | 059   | 084   | 090   | 096S  | 093   | 084  | 074S  | 1079S | 086S  | 1076S | 1072S | 1062S | 043   | 037S  | F     | 038S  | 038S  |
| 3      | 039S  | 042S  | 040S  | 042   | 031   | 030  | 052  | 063S  | 069   | 069   | 071S  | 1073S | 081   | 085  | 086   | 079S  | 1078S | 080S  | 1071S | 056   | 044   | 036S  | 036S  | 1031F | 1031F |
| 4      | 1034S | F     | 1037S | 031S  | 030S  | 030S | 049  | 060S  | 064   | 067   | 070   | 090   | 094   | 084  | 091   | 082   | 1078S | 091   | 094   | 070   | 036   | 1034S | F     | F     | F     |
| 5      | 038F  | F     | 1036F | F     | F     | F    | 048  | 054   | 057   | 069   | 077   | 1098S | 1103S | 084  | 083   | 085   | 1077S | 080S  | 1072S | 1072S | 049   | 042   | 041   | 1041S | 1041S |
| 6      | 1041S | 1037S | 038   | 037   | 037   | 038  | 059  | 058   | 060   | 064   | 073S  | 080   | 072   | 080  | 1075S | 078   | 087   | 074   | 070S  | 058S  | 048S  | 044S  | 1045S | 1042F | 1042F |
| 7      | 043F  | 042S  | 043   | 044   | 1040S | 037  | 054  | 062   | 062   | 065   | 078   | 081   | 085   | 086  | 090   | 089   | 1077S | 072   | 068   | 061   | 058   | 054   | 054   | 054   | 054   |
| 8      | 050   | 048   | 048   | 049   | 045   | 043  | 056  | 062   | 069   | 084   | 097S  | 084   | 095   | 098S | 1102S | 097   | 084   | 070   | 066S  | 058S  | 047   | 045   | 045S  | 048S  | 048S  |
| 9      | 1047S | 1047S | 042   | 039   | 037   | 037  | 061  | 066   | 072S  | 082   | 072   | 079R  | 084   | 089  | 090   | 083   | 085S  | 1079S | 1072S | 1067S | 050   | 1046S | F     | F     | F     |
| 10     | F     | F     | 047S  | 1043S | 041S  | 040  | 057  | 065S  | 062   | 067   | 074   | 091   | 110   | 111  | 092S  | 091   | 087   | 1073S | 069S  | 057   | 047   | 1048S | 1045S | 046S  | 046S  |
| 11     | 1047F | 049S  | 043   | 037S  | 036   | 035  | 058  | 062   | 066   | 071   | 068   | 077   | 085   | 093S | 1102S | 090   | 1073S | 1069S | 1075S | 1070S | 1053F | 1048S | F     | F     | F     |
| 12     | 1050F | F     | 1044F | 042   | 039S  | F    | 058  | 060   | 069   | 068   | 073   | 074   | 073   | C    | C     | 080   | 069   | 079   | 071S  | C     | C     | 054   | 054   | 054   | 054   |
| 13     | 053   | 053   | 048   | 044   | 034   | 033  | 058  | 064   | 066   | C     | 073   | 079   | C     | C    | C     | C     | C     | 063   | 069   | 068   | 055   | 054   | 055   | 055S  | 055S  |
| 14     | 054S  | 051   | 052   | 041S  | 042   | 044S | 064  | 063   | 067   | 074   | C     | 1102R | 095S  | 097S | 1094S | 081   | 1075S | 064   | 066   | 1066S | 056   | 052   | 057   | 056   | 056   |
| 15     | 054S  | 054   | 056   | 049   | 038   | 040  | 054  | 057   | 058   | 060   | 069   | 1076R | 089   | 082  | 085   | 070   | 068   | 072S  | 069S  | 062   | 059S  | 057S  | 1056S | 057S  | 057S  |
| 16     | 056S  | C     | C     | C     | C     | C    | C    | C     | C     | 066   | 074   | 074S  | C     | C    | C     | C     | C     | C     | C     | C     | C     | C     | C     | C     | C     |
| 17     | C     | C     | C     | C     | C     | C    | C    | C     | C     | 064   | 068   | 083   | 080   | 081S | 080   | 076   | 1080S | 072S  | 073S  | 1071S | 1055S | F     | 1052S | 049S  | 049S  |
| 18     | 050S  | 1046S | 050   | 048   | C     | C    | C    | C     | C     | 067   | 1070R | 075   | 084   | 086  | 085   | 1076R | 069   | 066   | 068   | 071   | 064S  | 052   | 048   | 047   | 047   |
| 19     | 048   | 047   | 049   | 048   | 042   | 046  | 055  | 055   | 056   | 061   | 075   | 082   | 079   | 081  | 082   | 080R  | 068   | 066   | 069   | 067   | 060S  | 052   | 051S  | 051S  | 051S  |
| 20     | 1049S | 050S  | 049   | 045   | 047   | 046  | 054  | 058   | 058   | 061   | 066   | 078R  | 075S  | 078  | 080   | 085   | 070   | 066   | 065S  | 069S  | 1063S | 059S  | 057S  | 058   | 058   |
| 21     | 053S  | 056   | 053   | 051   | 047   | 047  | 049  | 054   | 057   | 066   | 078   | 083   | 079   | 081R | 076   | 062   | 067   | 070S  | 1071S | 1071S | 1071S | 059S  | 052   | 1048S | 1048S |
| 22     | 1050S | 048   | 047   | 044   | 042   | 047  | 053  | 060   | 060   | 069   | 070   | 076R  | 090S  | 095  | 091   | 092   | 067   | 070S  | 070S  | 060   | 1062S | 1071S | 049S  | 047S  | 047S  |
| 23     | 049   | 1044S | 043S  | 040   | 1041F | 044  | 060  | 1072S | 072S  | 071R  | 082S  | 083   | 1078R | 083R | 090   | 070S  | 069   | 069S  | 071S  | 1066S | 070S  | 058   | 1053S | 1053S | 1053S |
| 24     | 1054S | 054S  | 054F  | 033S  | 1033S | 042S | 060  | 066   | 071S  | 1079R | 087   | 083   | 089   | 085  | 084   | 081   | 085   | 089S  | 1082S | 1071S | 060S  | 044S  | 048   | 049   | 049   |
| 25     | 046F  | 1046S | 1048F | 1047S | 044   | 049  | 057  | 064   | 067   | 063   | 067   | 071   | 078   | 079R | 084   | 081   | 085S  | S     | 1073S | 1068S | 058   | 058   | 1053S | 058F  | 058F  |
| 26     | 1058S | 058S  | 057S  | 050S  | 039   | 045  | 059S | 067   | 1077S | 080   | 075   | 075   | 1076R | 099R | 091   | 073R  | R     | A     | A     | 072S  | 070   | 058   | 057   | 056   | 056   |
| 27     | 056   | 054   | 054   | 050   | 043   | 048  | 064  | 1079R | 1076R | 076   | 074R  | 072S  | 086   | 085S | 084   | 1090S | 1090S | 090S  | 1074S | 1067S | 059S  | 057   | 052F  | 052F  | 052F  |
| 28     | 057S  | 055   | 055S  | 050S  | 042   | 050  | 059  | 1073S | 063   | 068   | 072   | 080   | 085R  | 093S | 103   | 104   | S     | 1095S | S     | S     | 070S  | 054S  | 051S  | 054   | 054   |
| 29     | 1052S | 057S  | 058S  | 1054S | 049   | 062S | 063S | 069   | 071S  | 069   | 1076R | 083   | 091   | 092  | 094   | 105   | 104   | 094   | 1105S | 1104S | A     | 051   | 051   | 050   | 050   |
| 30     | 050   | 049F  | 049F  | 050   | 045F  | 053  | 070  | 1071R | 064   | 067   | 070R  | 075   | 078   | A    | 083   | 085   | 085R  | 1077S | 067   | 1068S | 1068A | 1067S | 069   | 064   | 064   |
| 31     |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |       |
| Count  | 28    | 24    | 28    | 27    | 26    | 25   | 27   | 27    | 27    | 29    | 29    | 30    | 28    | 26   | 27    | 28    | 26    | 27    | 27    | 27    | 27    | 28    | 25    | 25    | 25    |
| Median | 050   | 049   | 048   | 044   | 040   | 043  | 057  | 062   | 066   | 068   | 073   | 080   | 084   | 085  | 085   | 081   | 078   | 073   | 071   | 067   | 058   | 052   | 052   | 051   | 051   |
| U. Q.  | 054   | 054   | 052   | 049   | 043   | 047  | 060  | 066   | 069   | 074   | 076   | 083   | 090   | 093  | 091   | 090   | 085   | 080   | 074   | 071   | 063   | 058   | 055   | 056   | 056   |
| L. Q.  | 046   | 046   | 043   | 040   | 036   | 036  | 053  | 060   | 060   | 066   | 070   | 075   | 078   | 081  | 082   | 077   | 073   | 069   | 068   | 062   | 048   | 044   | 046   | 047   | 047   |
| Q. R.  | 008   | 008   | 009   | 009   | 007   | 011  | 007  | 006   | 009   | 008   | 006   | 008   | 012   | 012  | 009   | 013   | 012   | 011   | 006   | 009   | 015   | 014   | 009   | 009   | 009   |

The Radio Research Laboratories, Japan

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

foF2

K 1

IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

0.01 Mc **foF1** 135° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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     | 450L | 450L | 460L  | 460L  | 450L  | 450L  | 430L  | L     | L  |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    | L  | L  | L     | 420L | 460L | 470L  | A     | L     | L     | 430L  | L     | L  |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    | L  | L  | L     | 430L | 470L | 470L  | 460L  | 460L  | 450L  | 410L  | L     | L  |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |    |    | L     | L    | 440  | 430L  | U490L | U450L | L     | L     | L     | L  |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |    |    | L     | 440L | 460L | 460L  | 480L  | 470L  | 460L  | 420L  | L     | L  |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    | L  | L  | L     | 450L | 460L | 470L  | 450L  | 470L  | R     | A     |       |    |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    | L  | L  | L     | L    | 490L | 460L  | 490L  | U480L | U470L | L     | L     |    |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |    |    | L     | 450L | 470L | 460L  | 480L  | 470L  | 480L  | 450L  | L     |    |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |    |    | L     | 470L | 480L | 480L  | 480L  | 480L  | 470L  | L     | L     | L  |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |    | L  | L     | 450L | 460  | R     | L     | 480L  | 460L  | 450L  | L     | L  |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    |    | L  | L     | 470L | 480L | 480L  | 480L  | 480L  | 470L  | 430L  | A     |    |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    |    | L  | L     | 460L | 490L | 480   | 490   | C     | C     | U450L | L     |    |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    |    | L  | L     | U    | 480L | 460L  | C     | C     | C     | C     | C     | L  |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |    | L  | L     | 480L | C    | 480L  | 470L  | 470L  | 460L  | 430L  | L     | L  |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    | L  | L  | U430L | 450L | 460L | 480L  | 470L  | 480   | 430L  | L     | L     | L  |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    |    | C  | C     | 470L | A    | 470L  | C     | C     | C     | C     | C     | C  |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    |    | C  | C     | 450L | 490L | 480L  | 480L  | 470L  | 460L  | 430L  | 430L  | L  |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |    | C  | C     | 460  | 470L | 480L  | 480   | 480L  | 470L  | L     | L     | L  |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    |    |    | L     | 470L | 470L | 470   | 470   | 470L  | 450L  | 450L  | L     | L  |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    |    | L  | L     | 400L | 460L | 480L  | 480   | 460L  | 460L  | 450L  | 400L  | L  |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    | L  | L  | 440L  | 450L | 470L | 470L  | 470L  | 460   | 450L  | 400   | L     | L  |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    | L  | L  | L     | 460L | 470L | 480L  | 480L  | 480L  | 470L  | 440L  | L     | L  |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    |    | L  | L     | L    | A    | 460L  | 470L  | U500R | 470L  | L     | 400L  | L  |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    |    | L  | L     | A    | L    | 480L  | 500L  | 470L  | A     | 470L  | L     | L  |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    |    | L  | L     | 480L | 480L | U490L | 500L  | 480L  | 480L  | 470L  | 430L  | L  |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    |    | L  | L     | 470L | 480L | L     | 530L  | 490   | 470L  | 470   | L     | A  | A  |    |    |    |    |    |
| 27     |    |    |    |    |    |    |    | L  | L     | 470L | 480  | U510L | 500L  | R     | R     | R     | A     | L  |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    |    | L  | L     | 490L | 470L | A     | A     | 490L  | 460L  | 450L  | L     | L  |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    |    | L  | L     | A    | L    | A     | 480   | L     | 470L  | 470   | U430L | L  |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    |    | L  | L     | A    | A    | 470L  | 490L  | A     | A     | 460L  | 430L  | L  |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |    |    |       |      |      |       |       |       |       |       |       |    |    |    |    |    |    |    |
| Count  |    |    |    |    |    |    |    |    | 3     | 23   | 26   | 26    | 24    | 23    | 21    | 20    | 6     |    |    |    |    |    |    |    |
| Median |    |    |    |    |    |    |    |    | 430L  | 460L | 470L | 480L  | 480L  | 470L  | 460L  | 450L  | 430L  |    |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |    |    |       |      |      |       |       |       |       |       |       |    |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |    |    |       |      |      |       |       |       |       |       |       |    |    |    |    |    |    |    |
| G. R.  |    |    |    |    |    |    |    |    |       |      |      |       |       |       |       |       |       |    |    |    |    |    |    |    |

The Radio Research Laboratories, Japan

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

foF1

K 2

Apr. 1966

f<sub>o</sub>E

0.01 Mc 135° E Mean Time (G.M.T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4' N  
Long. 139° 29.3' E

### IONOSPHERIC DATA

| 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      |    |     |     |     |     | 180 | 240   | I280R | I300R | 305   | 315   | I330A | 340R  | I320R | 310   | 260  | A   | B   |     |    |    |    |    |    |
| 2      |    |     |     |     |     | B   | 225   | 280   | 300   | 325   | 330   | 330   | I325A | 315   | 290   | 255  | 200 | B   |     |    |    |    |    |    |
| 3      |    |     |     |     |     | 175 | 235   | 270   | 300   | 310   | 320   | 330   | 335R  | 315   | 310   | 255  | 220 | B   |     |    |    |    |    |    |
| 4      |    |     |     |     |     | 170 | 220   | 290   | 315   | 335   | I335B | I340R | I330A | I310A | 315   | 280  | 230 | B   |     |    |    |    |    |    |
| 5      |    |     |     |     |     | 150 | 250   | I280A | 305   | I320A | I330A | 345   | I345R | 335R  | 315   | 265  | 220 | B   |     |    |    |    |    |    |
| 6      |    |     |     |     |     | B   | 245   | 280R  | 315   | I340R | 325   | 325   | 335   | 325   | 310   | 280  | 225 | B   |     |    |    |    |    |    |
| 7      |    |     |     |     |     | 185 | A     | 295   | 330   | 335   | 335   | 325   | A     | A     | A     | A    | A   | A   |     |    |    |    |    |    |
| 8      |    |     |     |     |     | 170 | 255   | 300   | 320   | 330   | A     | A     | 330   | I330R | 310   | 270  | 220 | B   |     |    |    |    |    |    |
| 9      |    |     |     |     |     | 195 | 250   | 295   | I320R | 330   | A     | 355   | I330A | 325   | I310R | 275  | 220 | B   |     |    |    |    |    |    |
| 10     |    |     |     |     |     | 195 | 255   | 300   | 325   | 330   | R     | R     | 340   | I330A | 315   | A    | 235 | B   |     |    |    |    |    |    |
| 11     |    |     |     |     |     | 200 | 250   | 300   | I325R | 330   | R     | A     | A     | A     | 330   | 330R | A   | R   | B   |    |    |    |    |    |
| 12     |    |     |     |     |     | 190 | 245   | 295   | 320R  | 340   | 345   | 350   | C     | C     | C     | 330  | 280 | 250 | A   |    |    |    |    |    |
| 13     |    |     |     |     |     | 200 | 265   | 290   | I320C | I330R | 365   | C     | C     | C     | C     | C    | C   | C   | 230 | B  |    |    |    |    |
| 14     |    |     |     |     |     | 185 | 235   | 280   | 315   | C     | A     | R     | 360R  | 335   | 315   | 280  | 220 | B   |     |    |    |    |    |    |
| 15     |    |     |     |     |     | 180 | 250   | A     | 320   | 335   | I350R | 360   | 355   | 325   | 300   | 270  | 245 | B   |     |    |    |    |    |    |
| 16     |    |     |     |     |     | C   | C     | C     | 325   | 335   | R     | C     | C     | C     | C     | C    | C   | C   | C   |    |    |    |    |    |
| 17     |    |     |     |     |     | C   | C     | C     | 315   | 330   | 345   | 350   | 335   | 330   | 315   | 280  | 220 | B   |     |    |    |    |    |    |
| 18     |    |     |     |     |     | C   | C     | C     | 325   | 335   | 340   | I345R | I340R | 335   | 305   | 275  | 230 | A   |     |    |    |    |    |    |
| 19     |    |     |     |     |     | 180 | I255A | 295   | 330   | 345   | 350   | 350   | 365R  | 330R  | I310R | 280  | 250 | B   |     |    |    |    |    |    |
| 20     |    |     |     |     |     | 185 | 245   | 295   | 330   | I335R | 330   | 345   | 350   | 350   | 330   | 275  | 215 | B   |     |    |    |    |    |    |
| 21     |    |     |     |     |     | 190 | 245   | 280   | I325R | I335R | I350R | 350   | 340   | I330R | 310R  | 260  | 235 | 150 |     |    |    |    |    |    |
| 22     |    |     |     |     | B   | 190 | I250R | 290   | 320   | 340   | 350   | 345   | 335   | 325   | I320A | 300  | 235 | B   |     |    |    |    |    |    |
| 23     |    |     |     |     | B   | 205 | 260   | 295   | 325   | 335   | 340   | 335   | A     | A     | A     | A    | 245 | 175 |     |    |    |    |    |    |
| 24     |    |     |     |     | B   | 185 | 260   | 305   | 330   | 345   | 355   | 355   | 355   | 340   | 330   | 305  | 255 | A   |     |    |    |    |    |    |
| 25     |    |     |     |     | B   | 200 | 270   | I310R | I330A | 340   | 350   | I360A | 350   | 335   | A     | A    | A   | A   |     |    |    |    |    |    |
| 26     |    |     |     |     | B   | 210 | 260   | 315   | A     | A     | A     | A     | I350A | 335   | 325   | 290  | A   | S   |     |    |    |    |    |    |
| 27     |    |     |     |     | B   | 230 | 280   | 310   | 330   | I345R | 350   | I350A | 360   | 335   | 315   | A    | A   | B   |     |    |    |    |    |    |
| 28     |    |     |     |     | B   | 200 | 255   | 305   | 325   | 340   | 340   | 345   | I340R | 330   | I330A | 290  | A   | B   |     |    |    |    |    |    |
| 29     |    |     |     |     | B   | 215 | 265   | 305   | 330   | 330   | 330   | I330A | 325   | A     | 330   | 285  | 200 | B   |     |    |    |    |    |    |
| 30     |    |     |     |     | B   | 230 | 280   | 310   | 325   | 330   | 340   | I355R | 350   | 340   | 320   | 300  | 225 | B   |     |    |    |    |    |    |
| 31     |    |     |     |     |     |     |       |       |       |       |       |       |       |       |       |      |     |     |     |    |    |    |    |    |
| Count  | 2  | 25  | 26  | 26  | 26  | 29  | 28    | 23    | 23    | 24    | 24    | 25    | 22    | 22    | 2     |      |     |     |     |    |    |    |    |    |
| Median | E  | 190 | 250 | 295 | 325 | 335 | 340   | 345   | 340   | 340   | 330   | 315   | 280   | 230   | 160   |      |     |     |     |    |    |    |    |    |
| U. Q.  |    |     |     |     |     |     |       |       |       |       |       |       |       |       |       |      |     |     |     |    |    |    |    |    |
| L. Q.  |    |     |     |     |     |     |       |       |       |       |       |       |       |       |       |      |     |     |     |    |    |    |    |    |
| Q. R.  |    |     |     |     |     |     |       |       |       |       |       |       |       |       |       |      |     |     |     |    |    |    |    |    |

f<sub>o</sub>E

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

The Radio Research Laboratories, Japan

K 3

Lat. 35° 42. 4'N  
Long. 139° 29. 3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 1 35° E Mean Time (G. M. T. +9h)

foEs

Apr. 1966

| 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      | E013B | E013B | E011B | E     | E011B | E     | J028  | 028   | G     | G    | 035  | J040  | 038  | 028G | J028G | 027G  | 022G | 025  | J025  | 027   | 023   | E011B | E011B | E013B |
| 2      | 019   | 018   | E011B | E     | E     | E011B | E014B | 028   | 031   | 033  | 039  | 044   | 046  | 035  | J040  | G     | G    | 030  | J048  | J041  | E014B | 023   | E012B | 021   |
| 3      | 018   | 020   | E011B | E     | E011B | E012B | 035   | 027   | 031   | 036  | 033  | G     | G    | G    | G     | G     | G    | 029  | 020   | 022   | E015S | E015S | E016S | E015S |
| 4      | E015S | 021   | E     | E     | 019   | E012B | G     | 030   | 035   | G    | J042 | E038B | G    | 038  | J043  | 025G  | 030  | G    | E014B | J013S | J025  | J013  | J029  |       |
| 5      | J032  | J032  | 022   | J015  | E     | E     | 026   | 034   | J029  | G    | 038  | 037   | G    | G    | G     | G     | G    | G    | 018   | 020   | E012B | E013B | E     | E013B |
| 6      | E011B | E011B | E     | E     | E     | E011B | 024   | G     | 031   | 036  | 037  | 036   | 037  | G    | G     | 043   | 038  | 032  | J026  | J024  | J028  | J025  | J023  | E012B |
| 7      | E012B | 022   | 021   | J018  | 020   | E012B | 024   | 031   | 033   | 037  | 039  | 040   | 040  | 040  | J042  | J049  | 031  | J033 | J035  | J039  | J034  | J021  | J018  |       |
| 8      | J019  | J029  | J026  | J018  | J023  | E011B | G     | 032   | 034   | 038  | G    | J039  | 035  | G    | G     | 024G  | G    | 025  | J029  | J026  | E013B | E014B | E011B | E014B |
| 9      | E014B | 020   | 020   | 019   | 018   | E     | 026   | 031   | 035   | 038  | 039  | 037   | 034G | J043 | J044  | G     | G    | 025  | 021   | J043  | J025  | E014B | E016S | E013B |
| 10     | E015S | E011B | E     | E     | E     | E011B | 025   | 031   | G     | 036  | 039  | 038   | G    | 041  | 034   | G     | J034 | 026  | 020   | J024  | J018  | 020   | E015S | E013B |
| 11     | E014B | 020   | 021   | E     | 021   | E011B | G     | 032   | 035   | G    | 037  | J044  | J040 | 040  | G     | G     | J080 | J056 | J043  | J041  | J051  | J027  | J043  |       |
| 12     | J025  | J039  | E     | 023   | E011B | 021   | G     | 030   | 035   | G    | J042 | 047   | 040  | C    | C     | J030G | 035  | 036  | J030  | C     | C     | E015S | J030S | E011B |
| 13     | E016S | E011B | 019H  | E     | E     | E     | J024  | J034  | 033   | C    | G    | G     | C    | C    | C     | C     | C    | G    | E014B | E011B | E013B | E013B | E015S |       |
| 14     | E014B | E011B | E011B | E     | E     | E012B | 025   | 032   | 035   | 041  | C    | J043  | 039  | G    | G     | G     | G    | G    | 021   | J022  | 022   | 023   | 017   | E014B |
| 15     | E014B | 022   | 023   | 019   | E011B | E013B | 025   | 030   | 032   | G    | 042  | G     | G    | G    | 036   | G     | G    | G    | 020   | E     | E     | 023   | J027  | J025  |
| 16     | J026  | C     | C     | C     | C     | C     | C     | C     | C     | 042  | J037 | J043  | C    | C    | C     | C     | C    | C    | C     | C     | C     | C     | C     | C     |
| 17     | C     | C     | C     | C     | C     | C     | C     | C     | C     | 037  | 039  | G     | G    | 034  | G     | G     | 031  | 028  | 022   | J024  | 023   | 018   | J025  | 023   |
| 18     | 024   | 023   | E     | 020   | C     | C     | C     | C     | C     | 035  | 037  | G     | 033G | 032G | G     | G     | 023G | G    | 016   | J018  | 021   | 018   | E013B | E011B |
| 19     | E015S | E013B | E     | E     | E     | E011B | G     | J0253 | J029G | G    | G    | G     | G    | G    | G     | G     | 023G | 027  | 021   | J021  | 022   | E013B | E013B | J041  |
| 20     | E013B | 019   | E011B | E     | E011B | E014B | G     | 031   | 036   | 037  | 035  | G     | G    | G    | G     | J037  | 020G | 024  | J019  | 022   | E015S | E013B | E016S |       |
| 21     | E014B | 022   | E012B | 020   | E     | E011B | 024   | 031   | 035   | 034  | 042  | 041   | 040  | 038  | G     | G     | G    | G    | 021   | 020   | 022   | E015S | E015S | E011B |
| 22     | E015S | 021   | E     | E     | 022   | 019   | 026   | 033   | 035   | 041  | 044  | 041   | 039  | G    | 041   | 033   | G    | 027  | 026   | J024  | 025   | J024  | J026  | J026  |
| 23     | E014B | E011B | E     | E     | E     | E012B | 029   | 033   | 037   | 046  | 043  | 039   | 038  | 037  | 035   | 037   | J030 | G    | G     | J023  | J025  | J036  | J027  | 019   |
| 24     | E015S | E     | E     | 019   | E011B | 017   | 027   | 038   | 045   | 050  | 046  | 041   | 039  | 039  | J045  | G     | G    | J030 | J018  | 022   | J025  | J022  | J019  |       |
| 25     | J029  | J033  | J031  | 019   | E     | 022   | 030   | 034   | 041   | J044 | 042  | 043   | 040  | J043 | 039   | 037   | J032 | J028 | J029  | J026  | J052  | J044  | J030  | J026  |
| 26     | 023   | E011B | 022   | 024   | 021   | 022   | 033   | 034   | J042  | J056 | 041  | J050  | 043  | 040  | 028G  | 030G  | 037  | 084H | J107  | J039  | J042S | J040  | J023  | J024  |
| 27     | J024  | J019  | J019  | J015  | J019  | 019   | 027   | 033   | 037   | 043  | G    | G     | J042 | 050  | 049   | J045  | J055 | J042 | J041  | J035  | J043  | J020  | J028  |       |
| 28     | J025  | J030  | J035  | 022   | J024  | J035  | 028   | 031   | 039   | 036  | 041  | J055  | J072 | 050  | 043   | J058  | J041 | J030 | J025  | 026   | J020  | J041  | J029  |       |
| 29     | 020   | J026  | J036  | J021  | J025  | 023   | 028   | J043  | 049   | 080  | J051 | J051  | J043 | 039  | J039  | 031G  | J038 | 023  | J032  | J034  | J110  | J021  | 019M  | E015S |
| 30     | E015S | E011B | 018H  | E012B | J023  | 021   | G     | 040   | J049  | 049  | 044  | 040   | J064 | J080 | 050   | 045   | 037  | 030  | 023   | J041  | J085  | J051  | J025  | J025  |
| 31     |       |       |       |       |       |       |       |       |       |      |      |       |      |      |       |       |      |      |       |       |       |       |       |       |
| Count  | 29    | 28    | 28    | 28    | 27    | 27    | 27    | 27    | 27    | 29   | 29   | 30    | 28   | 27   | 27    | 28    | 28   | 29   | 29    | 28    | 28    | 29    | 29    | 29    |
| Median | E015  | 020   | E012  | E014  | E011  | E012  | 025   | 031   | 035   | 037  | 039  | 040   | 038  | 037  | 034   | G     | G    | 026  | 024   | 024   | 022   | 023   | 019   | 018   |
| U. Q.  | 024   | 022   | 022   | 019   | 021   | 019   | 028   | 034   | 037   | 042  | 042  | 043   | 040  | 040  | 042   | 037   | 036  | 030  | 030   | 034   | 030   | 035   | 026   | 026   |
| L. Q.  | E014  | E011  | E     | E     | E     | E011  | G     | 030   | 031   | G    | 036  | u     | G    | G    | G     | G     | G    | G    | 020   | 020   | 019   | E015  | E013  | E013  |
| Q. R.  | D010  | D011  |       |       |       | D008  | 004   | 006   | 006   | 006  |      |       |      |      |       |       |      |      | 010   | 014   | 011   | D020  | D013  | D013  |

The Radio Research Laboratories, Japan

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

foEs



Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 1.35° E Mean Time (G.M.T. +9h)

**fbEs**

**Apr. 1966**

| Day    | 00  | 01  | 02  | 03  | 04  | 05  | 06  | 07   | 08   | 09   | 10   | 11   | 12   | 13   | 14    | 15    | 16   | 17  | 18  | 19  | 20  | 21  | 22  | 23 |
|--------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|-------|-------|------|-----|-----|-----|-----|-----|-----|----|
| 1      | B   | B   | B   |     | B   |     | 014 | 027  |      |      | 034  | 037  | 037  | 028G | 028G  | 027G  | 022G | 023 | 023 | 017 | E   | B   | B   | B  |
| 2      | E   | E   | B   |     | B   | B   | B   | 027  | 030  | 033  | 037  | 043  | 045  | 035  | 040   |       | 027  | 027 | 033 | 033 | B   | E   | B   | E  |
| 3      | E   | E   | B   |     | B   | B   | B   | 023  | 030  | 034  | 033R |      |      |      |       |       | 025  | 018 | 016 | S   | S   | S   | S   |    |
| 4      | S   | E   |     |     | E   | B   |     | 027  | 033  |      | G    | B    |      | 037  | 040   | 025G  | 030  |     | B   | E   | E   | 014 | E   |    |
| 5      | 015 | 013 | E   | E   |     |     | 026 | 032  | 029  |      | 037  | 037R |      |      |       |       |      |     | 016 | E   | B   | B   | B   |    |
| 6      | B   | B   | B   |     | B   | B   | B   | 023  | 030  | 035  | 037  | 036  | 036  |      |       | 042   | 038  | 030 | 025 | 014 | 015 | 014 | 022 |    |
| 7      | B   | E   | 014 | E   | E   | B   | B   | 023  | 033  | 035  | 038  | 038  | 040  | 040  | 039   | 036   | 029  | 028 | 028 | 029 | 020 | 023 | E   |    |
| 8      | 016 | 018 | 015 | E   | E   | B   | B   | 031  | 033  | 036  | 039  | 039  | 035R |      | 024G  |       | 025  | 016 | E   | B   | B   | B   | B   |    |
| 9      | B   | E   | E   | E   | E   |     | 024 | 030  | 033  | 037  | 038  | 037  | 034G | 037  | 041   |       | 025  | 018 | 018 | 016 | B   | B   | B   |    |
| 10     | S   | B   |     |     | B   | B   | B   | 024  | 030  | 034  | 037  | 037  | 040  | 034  |       |       | 030  | 024 | 019 | 015 | 015 | E   | S   |    |
| 11     | B   | E   | E   |     | E   | B   | B   | 030  | 034  |      | 037  | 044  | 039  | 038  |       |       | 041  | 055 | 018 | E   | 043 | 017 | 016 |    |
| 12     | 015 | 025 |     | 013 | B   | E   |     | 029  | 034  |      | 040  | 045  | 040  | C    | C     | 029G  | 033  | 032 | 020 | C   | C   | S   | E   |    |
| 13     | S   | B   | E   |     |     | G   | G   | 030  | 032  | C    |      |      | C    | C    | C     |       | C    |     | B   | B   | B   | B   | S   |    |
| 14     | B   | B   | B   |     | B   | B   | B   | 024  | 031  | 034  | 038  | C    | 042  | 037  |       |       |      | 020 | 015 | E   | E   | E   | E   |    |
| 15     | B   | E   | E   | E   | B   | B   | B   | 024  | 028  | 032  |      | 041  |      |      | 036   |       |      | 016 |     |     |     | E   | 017 |    |
| 16     | E   | C   | C   | C   | C   | C   | C   | C    | C    | 040  | 052  | 042  | C    | C    | C     | C     | C    | C   | C   | C   | C   | C   | C   |    |
| 17     | C   | C   | C   | C   | C   | C   | C   | C    | C    | 037  | 038  |      |      | 034R |       |       | 030  | 025 | 018 | 017 | 018 | 016 | E   |    |
| 18     | 015 | 014 |     | E   | C   | C   | C   | C    | C    | 035  | 037  |      | 033R | 031G |       |       | 022G | 015 | 015 | E   | E   | B   | B   |    |
| 19     | S   | B   |     |     | B   | B   |     | 025G | 027G |      |      |      |      |      |       |       | 023G | 026 | 019 | 015 | E   | B   | B   |    |
| 20     | B   | E   | B   |     | B   | B   |     | 030  | 034  | 035  | 035R |      |      |      |       | 034   | 020G | 017 | 016 | 016 | E   | S   | S   |    |
| 21     | B   | E   | B   | E   | B   | B   | B   | 023  | 030  | 034  | 038  | 038  | 038  | 037  |       |       |      | 018 | E   | E   | E   | S   | S   |    |
| 22     | S   | E   | E   |     | E   | 017 | 025 | 032  | 034  | 040  | 040  | 040  | 038  |      | 040   | 032   |      | 025 | 017 | 020 | 016 | 016 | 016 |    |
| 23     | B   | B   | B   |     | B   | B   | B   | 026  | 031  | 036  | 045  | 040  | 038  | 037  | 035   | 034   | 029  |     | 017 | 017 | 025 | 016 | E   |    |
| 24     | S   |     |     | E   | B   | 016 | 025 | 037  | 044  | 050  | 045  | 040  | 038  | 039  | 0445R |       |      | 018 | 013 | 015 | 015 | 016 | 015 |    |
| 25     | 015 | 029 | E   | E   | 014 | 028 | 032 | 038  | 040  | 041  | 041  | 041  | 039  | 041  | 038   | 037   | 030  | 025 | 018 | 017 | 025 | 014 | 015 |    |
| 26     | E   | B   | 015 | 014 | E   | 018 | 026 | 030  | 036  | 040  | 040  | 040  | 040  | 038  | 025G  | 025G  | 035  | A   | A   | 020 | 040 | 018 | 015 |    |
| 27     | E   | B   | E   | E   | 015 | 017 | 025 | 032  | 035  | 041  |      | 041  | 041  | 047  | 046   | 0445R | 049  | 025 | 021 | 016 | 017 | 026 | 015 |    |
| 28     | 016 | 013 | 016 | 015 | 015 | 025 | 026 | 030  | 033  | 035  | 040  | 053  | 053  | 046  | 039   | 040   | 034  | 026 | 018 | 016 | E   | 018 | 039 |    |
| 29     | E   | 021 | 015 | 015 | 014 | G   | 026 | 038  | 045  | 060  | 047  | 051  | 037  | 039  | 035   | 030G  | 034  | 022 | 020 | A   | 015 | E   | S   |    |
| 30     | S   | B   | E   | B   | 015 | 018 |     | 035  | 049  | 049R | 039  | 038  | 053  | A    | 050R  | 040   | 035  | 026 | 020 | 040 | A   | 027 | E   |    |
| 31     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |       |       |      |     |     |     |     |     |     |    |
| Count  |     |     |     |     |     |     |     |      |      |      |      |      |      |      |       |       |      |     |     |     |     |     |     |    |
| Median |     |     |     |     |     |     |     |      |      |      |      |      |      |      |       |       |      |     |     |     |     |     |     |    |
| U. Q.  |     |     |     |     |     |     |     |      |      |      |      |      |      |      |       |       |      |     |     |     |     |     |     |    |
| L. Q.  |     |     |     |     |     |     |     |      |      |      |      |      |      |      |       |       |      |     |     |     |     |     |     |    |
| Q. R.  |     |     |     |     |     |     |     |      |      |      |      |      |      |      |       |       |      |     |     |     |     |     |     |    |

**fbEs**

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

**f - min** 0.1 Mc 1 3.5° E Mean Time (G.M.T. +9h)

**Apr. 1966**

| 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      | 013  | 013 | 011 | 010 | 011 | 010 | 012 | 014 | 015 | 016 | 015 | 017 | 017 | 016 | 018 | 016 | 014 | 014 | 014  | 010  | 011  | 011  | 011  | 013  |     |
| 2      | 011  | 010 | 011 | 010 | 010 | 011 | 014 | 014 | 015 | 015 | 017 | 018 | 016 | 018 | 016 | 014 | 015 | 014 | 013  | 014  | 013  | 013  | 012  | 015S |     |
| 3      | 011  | 014 | 011 | E   | 011 | 012 | 015 | 014 | 015 | 017 | 016 | 017 | 016 | 016 | 018 | 018 | 014 | 015 | 014  | 012  | 011  | 010  | 010  | 011  |     |
| 4      | 015S | 010 | 010 | 010 | 011 | 012 | 015 | 012 | 015 | 016 | 015 | 038 | 026 | 016 | 018 | 018 | 015 | 015 | 014  | 012  | 011  | 010  | 010  | 011  |     |
| 5      | 010  | 011 | 011 | 010 | E   | 010 | 012 | 013 | 014 | 015 | 016 | 016 | 018 | 017 | 020 | 015 | 015 | 014 | 013  | 012  | 012  | 013  | 010  | 013  |     |
| 6      | 011  | 014 | E   | 010 | 010 | 011 | 015 | 014 | 015 | 017 | 017 | 016 | 020 | 017 | 016 | 016 | 014 | 014 | 012  | 011  | 011  | 013  | 010  | 012  |     |
| 7      | 012  | 014 | 010 | E   | 010 | 012 | 013 | 013 | 014 | 016 | 016 | 017 | 016 | 016 | 015 | 015 | 015 | 012 | 014  | 015S | 010  | 010  | 010  | 011  |     |
| 8      | 010  | 010 | 010 | 010 | 010 | 011 | 012 | 015 | 015 | 015 | 017 | 017 | 017 | 017 | 016 | 015 | 015 | 014 | 014  | 014  | 013  | 014  | 011  | 014  |     |
| 9      | 014  | 010 | 011 | 010 | 011 | 010 | 012 | 015 | 014 | 015 | 016 | 017 | 016 | 015 | 015 | 015 | 014 | 013 | 013  | 012  | 014  | 014  | 016S | 013  |     |
| 10     | 015S | 011 | E   | 010 | 010 | 011 | 013 | 015 | 015 | 015 | 017 | 016 | 016 | 015 | 015 | 015 | 013 | 015 | 016  | 010  | 010  | 014  | 015S | 013  |     |
| 11     | 014  | 014 | 010 | E   | 011 | 011 | 015 | 014 | 017 | 023 | 017 | 018 | 017 | 016 | 017 | 016 | 014 | 014 | 014  | 011  | 012  | 011  | 011  | 013  |     |
| 12     | 013  | 011 | 010 | 011 | 011 | 013 | 012 | 014 | 014 | 015 | 016 | 018 | 020 | C   | C   | C   | 014 | 014 | 011  | C    | C    | 015S | 015S | 011  |     |
| 13     | 016S | 011 | 010 | 010 | 010 | 010 | 015 | 013 | 014 | C   | 016 | 017 | C   | C   | C   | C   | C   | 012 | 014  | 011  | 013  | 013  | 013  | 015S |     |
| 14     | 014  | 011 | 011 | E   | E   | 012 | 011 | 013 | 014 | 014 | C   | 016 | 017 | 016 | 017 | 015 | 014 | 014 | 014  | 012  | 013  | 014  | 015S | 014  |     |
| 15     | 014  | 013 | 013 | 010 | 011 | 013 | 014 | 013 | 015 | 015 | 015 | 015 | 015 | 015 | 017 | 016 | 015 | 015 | 013  | 015  | 010  | 011  | 013  | 013  |     |
| 16     | 015S | C   | C   | C   | C   | C   | C   | C   | C   | 015 | 016 | 013 | C   | C   | C   | C   | C   | C   | C    | C    | C    | C    | C    | C    |     |
| 17     | C    | C   | C   | C   | C   | C   | C   | C   | C   | 015 | 016 | 017 | 022 | 016 | 015 | 015 | 014 | 014 | 013  | 011  | 014  | 011  | 014  | 012  | 011 |
| 18     | 012  | 010 | 010 | 010 | C   | C   | C   | C   | C   | 017 | 018 | 017 | 022 | 020 | 022 | 016 | 015 | 014 | 011  | 011  | 015S | 015S | 013  | 011  |     |
| 19     | 015S | 013 | 010 | 010 | 010 | 011 | 012 | 016 | 014 | 015 | 015 | 022 | 017 | 016 | 022 | 018 | 016 | 014 | 014  | 012  | 014  | 013  | 013  | 010  |     |
| 20     | 013  | 013 | 011 | 010 | 011 | 014 | 014 | 014 | 014 | 016 | 017 | 017 | 017 | 016 | 016 | 015 | 013 | 011 | 011  | 011  | 013  | 015S | 013  | 016S |     |
| 21     | 014  | 013 | 012 | 010 | 010 | 011 | 014 | 015 | 015 | 015 | 017 | 017 | 015 | 017 | 016 | 015 | 015 | 014 | 011  | 010  | 012  | 015S | 015S | 011  |     |
| 22     | 015S | 013 | E   | E   | 010 | 012 | 012 | 014 | 015 | 016 | 017 | 017 | 016 | 016 | 016 | 014 | 014 | 014 | 014  | 011  | 012  | 010  | 010  | 010  |     |
| 23     | 014  | 011 | 010 | 010 | 010 | 012 | 014 | 014 | 015 | 015 | 016 | 016 | 017 | 017 | 015 | 013 | 013 | 012 | 010  | 012  | 012  | 010  | 010  | 011  |     |
| 24     | 015S | 010 | 010 | 010 | 011 | 010 | 013 | 014 | 015 | 016 | 017 | 018 | 027 | 020 | 016 | 016 | 016 | 016 | 011  | 011  | 010  | 011  | 013  | 011  |     |
| 25     | 013  | 013 | 012 | E   | E   | 012 | 012 | 014 | 015 | 015 | 016 | 016 | 016 | 017 | 017 | 015 | 015 | 013 | 010  | 011  | 013  | 013  | 013  | 014  |     |
| 26     | 011  | 011 | 010 | 010 | 010 | 012 | 014 | 013 | 015 | 016 | 016 | 016 | 016 | 016 | 016 | 015 | 015 | 014 | 015S | 015S | 010  | 010  | 010  | 013  |     |
| 27     | 015S | 012 | 010 | 010 | E   | 012 | 012 | 014 | 014 | 016 | 017 | 017 | 018 | 017 | 016 | 014 | 013 | 013 | 012  | 011  | 013  | 011  | 010  | 010  |     |
| 28     | 011  | E   | 013 | 010 | 010 | 010 | 012 | 014 | 015 | 018 | 016 | 020 | 018 | 016 | 015 | 015 | 015 | 013 | 013  | 011  | 011  | 012  | 010  | 011  |     |
| 29     | 012  | 014 | E   | 010 | 010 | 012 | 015 | 015 | 016 | 016 | 015 | 016 | 016 | 016 | 016 | 015 | 015 | 012 | 013  | 015S | 014  | 013  | 014  | 015S |     |
| 30     | 015S | 011 | 011 | 012 | 010 | 014 | 013 | 015 | 018 | 018 | 016 | 017 | 019 | 026 | 018 | 016 | 017 | 015 | 015  | 013  | 012  | 012  | 013  | 011  |     |
| 31     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |
| Count  | 29   | 28  | 28  | 28  | 27  | 27  | 27  | 27  | 27  | 29  | 29  | 30  | 28  | 27  | 27  | 28  | 28  | 28  | 29   | 28   | 28   | 29   | 29   | 29   |     |
| Median | 012  | 011 | 010 | 010 | 010 | 012 | 013 | 014 | 015 | 015 | 016 | 017 | 017 | 016 | 016 | 015 | 015 | 014 | 014  | 011  | 012  | 012  | 012  | 012  |     |
| U. Q.  |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |
| L. Q.  |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |
| Q. R.  |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |     |

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

The Radio Research Laboratories, Japan

**f - min**

**K 6**

# IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

135° E Mean Time (G.M.T. +9h)

0.01

M(3000) F2

Apr. 1966

| 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      | 280   | 305   | 315   | 340   | 285   | 295  | 330  | 340   | 330   | 330S  | 330   | 270   | U340S | 315  | 310   | 320   | 325   | U335S | I330S | 345S  | 320   | 285   | 280S  | F     |
| 2      | 270   | U270S | 265S  | U305S | 345   | 295  | 350  | 310   | 310   | 305   | 305   | 300S  | 315   | 325  | 310S  | U310S | 325S  | U335S | U340S | 340S  | 340   | 270S  | F     | 290S  |
| 3      | 295S  | 305S  | 305S  | 315   | 325   | 285  | 340  | 335S  | 325   | 340   | 320S  | U315S | 320   | 315  | 320   | 335S  | U330S | 350S  | U340S | 340   | 340   | 270S  | F     | U260F |
| 4      | U295S | F     | U275S | 290S  | 300S  | 300S | 345  | 335S  | 335   | 310   | 320   | 310   | 320   | 305  | 315   | 330   | I320S | 325   | 350   | 345   | 360   | J275S | F     | F     |
| 5      | 285F  | F     | U270F | F     | F     | F    | 350  | 365   | 335   | 315   | 310   | U320S | U330S | 300  | 315   | 325   | U315S | 335S  | I340S | U340S | 325   | 275   | 270   | U275S |
| 6      | U285S | U295S | 280   | 285   | 285   | 310  | 350  | 355   | 345   | 325   | 330S  | 325   | 325   | 335  | U320S | 315   | 325   | 345   | 330S  | 335S  | 315S  | 280S  | U290S | U285F |
| 7      | 280F  | 280S  | 290   | 310   | U310S | 315  | 345  | 340   | 345   | 305   | 310   | 315   | 305   | 300  | 310   | 315   | J320S | 340   | 325   | 315   | 325   | 285   | 285   | 295   |
| 8      | 310   | 290   | 280   | 305   | 305   | 295  | 330  | 320   | 310   | 315   | 335S  | 305   | 305   | 305S | U325S | 330   | 330   | 335   | 325S  | 320S  | 290   | 275   | 270S  | 285S  |
| 9      | U300S | U285S | 290   | 310   | 285   | 295  | 340  | 340   | 340S  | 325   | 330   | 320R  | 310   | 320  | 315   | 320   | 315S  | U330S | U345S | U335S | 315   | U285S | F     | F     |
| 10     | F     | F     | 310S  | U315S | 305S  | 300  | 345  | 340S  | 350   | 330   | 310   | 295   | 305   | 335  | 325S  | 315   | 325   | U335S | 330S  | 315   | 300   | U265S | U280S | 290S  |
| 11     | U290F | 305S  | 315   | 300S  | 270   | 290  | 335  | 330   | 350   | 330   | 305   | 295   | 300   | 310S | U325S | 330   | U335S | U325S | I335S | U320F | U290S | F     | F     | F     |
| 12     | U285F | F     | U285F | 295   | 285S  | F    | 340  | 345   | 340   | 325   | 315   | 310   | 315   | C    | C     | 325   | 325   | 320   | U320C | C     | C     | 280   | 275   | 280   |
| 13     | 285   | 300   | 315   | 315   | 290   | 295  | 340  | 340   | 330   | C     | 310   | 325   | C     | C    | C     | C     | C     | 295   | 315   | 320   | 290   | 270   | 275   | 285S  |
| 14     | 280S  | 295   | 310   | 275S  | 290   | 305S | 340  | 325   | 320   | 295   | C     | U305R | 305S  | 330S | U330S | 340   | U350S | 335   | 325   | U310S | 295   | 275   | 270   | 275   |
| 15     | 280S  | 280   | 295   | 305   | 295   | 295  | 345  | 325   | 335   | 300   | 320   | U300R | 310   | 315  | 320   | 325   | 325   | 320S  | 330S  | 305   | 300S  | 290S  | U270S | 290S  |
| 16     | 270S  | C     | C     | C     | C     | C    | C    | C     | C     | 315   | 295   | 305S  | C     | C    | C     | C     | C     | C     | C     | C     | C     | C     | C     | C     |
| 17     | C     | C     | C     | C     | C     | C    | C    | C     | C     | 320   | 290   | 320   | 310   | 310S | 320   | 315   | U325S | 315S  | 325S  | U320S | U295S | F     | U275S | 285S  |
| 18     | 270S  | U285S | 300   | 325   | C     | C    | C    | C     | C     | 325   | J325R | 315   | 310   | 315  | 320   | J315R | 320   | 310   | 325   | 325   | 320S  | 310   | 275   | 285   |
| 19     | 275   | 280   | 305   | 325   | 310   | 330  | 365  | 355   | 325   | 305   | 310   | 325   | 315   | 320  | 315   | 325R  | 340   | 325   | 315   | 315   | 320S  | 290   | 290S  | 285S  |
| 20     | U290S | 280S  | 290   | 305   | 315   | 325  | 355  | 355   | 335   | 305   | 300   | 320R  | 305S  | 305  | 315   | 315   | 340   | 310   | 310S  | 310S  | U315S | 295S  | 290S  | 295   |
| 21     | 290S  | 285   | 300   | 320   | 290   | 315  | 345  | 335   | 315   | 310   | 315S  | 315   | 325   | 320R | 330   | 325   | 300   | 310S  | U325S | U315S | 330S  | 290   | U290S | 290S  |
| 22     | U285S | 290   | 295   | 300   | 300   | 315  | 355  | 345   | 325   | 320   | 310   | 305R  | 310S  | 325  | 310   | 325   | 315S  | 325S  | 325   | 295S  | U320S | 300S  | 290   | U290S |
| 23     | 280   | U275S | 285S  | 275   | U285F | 300  | 325  | U335S | 320S  | 325R  | 305S  | 310   | U320R | 310R | 320   | 320S  | 300   | 315S  | 320S  | U330S | 315S  | 295   | U275S | U280S |
| 24     | U300S | 295S  | 360F  | 305S  | U275S | 310S | 335  | 325   | 320S  | U330R | 305   | 310   | 290   | 310  | 310   | 305   | 310   | 320S  | U325S | U325S | 325S  | 285S  | 270   | 280   |
| 25     | 290F  | U285S | U295F | U305S | 290   | 315  | 340  | 335   | 345   | 320   | 310   | 310   | 310   | 31R  | 305   | 310   | 325S  | S     | I350S | I340S | 295   | 270   | U290S | 295F  |
| 26     | U290S | 300S  | 315S  | 310S  | 300   | 325  | 340S | 330   | U325S | 330   | 320   | 305   | J310R | 320R | 320   | 335R  | R     | A     | A     | 320S  | 315   | 300   | 295   | 285   |
| 27     | 290   | 290   | 315   | 320   | 280   | 315  | 345  | J330R | J335R | 315   | 310R  | 310S  | 310   | 305S | 310   | U310S | U330S | 325S  | U330S | U325S | 310S  | 270   | 290F  | 295F  |
| 28     | 295S  | 285   | 300S  | 310S  | 315   | 310  | 310  | U350S | 345   | 290   | 305   | 305   | 300R  | 300S | 280   | 305   | S     | U290S | S     | S     | 325S  | 305S  | 280S  | 300   |
| 29     | U285S | 305S  | 300S  | U310S | 310   | 325S | 340  | 325S  | 340   | 325S  | A     | J310R | 300   | 305  | 285   | 295   | 310   | 300   | J315S | J325S | A     | 285   | 280   | 280   |
| 30     | 270   | 280F  | 285F  | 290   | 290F  | 295  | 330  | J340R | 290   | 305   | 330R  | 305   | 305   | A    | 305   | 305   | 330R  | U330S | U330S | U290S | I295A | U290S | 285   | 290   |
| 31     |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| Count  | 28    | 24    | 28    | 27    | 26    | 25   | 27   | 27    | 27    | 28    | 29    | 30    | 28    | 26   | 27    | 28    | 26    | 27    | 27    | 27    | 27    | 28    | 25    | 25    |
| Median | 285   | 290   | 300   | 305   | 290   | 305  | 340  | 340   | 330   | 320   | 310   | 310   | 310   | 315  | 315   | 320   | 325   | 325   | 325   | 325   | 315   | 285   | 280   | 285   |
| U. Q.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| L. Q.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| Q. R.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |

The Radio Research Laboratories, Japan

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

M(3000) F2

K 7

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

M(3000)F1 0.01 135° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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    | 355L | 365L | 355L | 355L  | 365L | 370L | 355L | 355L | L    | L  |    |    |    |    |    |    |  |
| 2      |    |    |    |    |    |    |    | L    | 360L | 365L | 355L | 355L  | A    | L    | L    | 350L | L    | L  |    |    |    |    |    |    |  |
| 3      |    |    |    |    |    |    |    | L    | 385L | 410L | 355L | 355L  | 380L | 345L | 355L | 375L | L    | L  |    |    |    |    |    |    |  |
| 4      |    |    |    |    |    |    |    | L    | L    | 405  | 420L | 360L  | 365L | 380L | L    | L    | L    | L  |    |    |    |    |    |    |  |
| 5      |    |    |    |    |    |    |    | L    | 355L | 365L | 355L | 355L  | 350L | 355L | 360L | 355L | L    | L  |    |    |    |    |    |    |  |
| 6      |    |    |    |    |    |    |    | L    | 355L | 365L | 355L | 355L  | 380L | 350L | R    | A    |      |    |    |    |    |    |    |    |  |
| 7      |    |    |    |    |    |    |    | L    | L    | 350L | 350L | 390L  | 345L | 360L | 350L | L    | L    |    |    |    |    |    |    |    |  |
| 8      |    |    |    |    |    |    |    | L    | 350L | 355L | 380L | 380L  | 375L | 360L | 340L | 350L | L    | L  |    |    |    |    |    |    |  |
| 9      |    |    |    |    |    |    |    | L    | 350L | 365L | 370L | 370L  | 355L | 370L | 390L | L    | L    | L  |    |    |    |    |    |    |  |
| 10     |    |    |    |    |    |    |    | L    | 365L | 380  | R    | L     | L    | 350L | 350L | 350L | L    | L  |    |    |    |    |    |    |  |
| 11     |    |    |    |    |    |    |    | L    | 355L | 360L | 350L | 350L  | 375L | 355L | 340L | 365L | A    |    |    |    |    |    |    |    |  |
| 12     |    |    |    |    |    |    |    | L    | L    | 370L | 365L | A     | 370  | C    | C    | 355L | L    |    |    |    |    |    |    |    |  |
| 13     |    |    |    |    |    |    |    | L    | L    | C    | 365L | 380L  | C    | C    | C    | 375L | C    | L  |    |    |    |    |    |    |  |
| 14     |    |    |    |    |    |    |    | L    | L    | 330L | C    | 345L  | 355L | 345L | 360L | 365L | L    | L  |    |    |    |    |    |    |  |
| 15     |    |    |    |    |    |    |    | L    | 355L | 370L | 380L | 370L  | 370L | 365  | 385L | L    | L    | L  |    |    |    |    |    |    |  |
| 16     |    |    |    |    |    |    |    | C    | C    | 360L | A    | A     | C    | C    | C    | C    | C    | C  |    |    |    |    |    |    |  |
| 17     |    |    |    |    |    |    |    | C    | C    | 370L | 360L | 350L  | 355L | 360L | 360L | 360L | 340L | L  |    |    |    |    |    |    |  |
| 18     |    |    |    |    |    |    |    | C    | C    | 370  | 365L | 360L  | 370  | 370L | 360L | L    | L    | L  |    |    |    |    |    |    |  |
| 19     |    |    |    |    |    |    |    | L    | 360L | 365L | 370  | 355   | 375L | 370L | 355L | L    | L    | L  |    |    |    |    |    |    |  |
| 20     |    |    |    |    |    |    |    | L    | 390L | 365L | 360L | 370L  | 370  | 365L | 365L | 350L | 370L | L  |    |    |    |    |    |    |  |
| 21     |    |    |    |    |    |    |    | L    | 355L | 360L | 340L | 370L  | 375L | 370  | 370L | 380  | L    | L  |    |    |    |    |    |    |  |
| 22     |    |    |    |    |    |    |    | L    | L    | 360L | 375L | 370L  | 370L | 360L | 355L | 355L | L    | L  |    |    |    |    |    |    |  |
| 23     |    |    |    |    |    |    |    | L    | L    | A    | 360L | 380L  | 370L | 370L | 375L | L    | 370L | L  |    |    |    |    |    |    |  |
| 24     |    |    |    |    |    |    |    | L    | A    | A    | L    | 365L  | 370L | 360L | A    | 340L | L    | L  |    |    |    |    |    |    |  |
| 25     |    |    |    |    |    |    |    | L    | L    | 345L | 365L | 360L  | 360L | 370L | 355L | 340L | 350L | L  |    |    |    |    |    |    |  |
| 26     |    |    |    |    |    |    |    | L    | L    | 385L | 385L | L     | 355L | 365  | 355L | 360  | L    | A  | A  |    |    |    |    |    |  |
| 27     |    |    |    |    |    |    |    | L    | L    | 350L | 380  | 3745L | 365L | R    | R    | R    | L    | A  | L  |    |    |    |    |    |  |
| 28     |    |    |    |    |    |    |    | L    | L    | 355L | 355L | A     | A    | 345L | 370L | 355L | L    | L  |    |    |    |    |    |    |  |
| 29     |    |    |    |    |    |    |    | L    | A    | A    | L    | A     | 375  | L    | 380L | 360  | 360L | L  |    |    |    |    |    |    |  |
| 30     |    |    |    |    |    |    |    | L    | A    | A    | 355L | 360L  | A    | A    | A    | 350L | 345L | L  |    |    |    |    |    |    |  |
| 31     |    |    |    |    |    |    |    |      |      |      |      |       |      |      |      |      |      |    |    |    |    |    |    |    |  |
| Count  |    |    |    |    |    |    |    | 3    | 23   | 26   | 24   | 24    | 24   | 23   | 21   | 20   | 6    |    |    |    |    |    |    |    |  |
| Median |    |    |    |    |    |    |    | 365L | 360L | 365L | 360L | 360L  | 370L | 360L | 360L | 355L | 360L |    |    |    |    |    |    |    |  |
| U. Q.  |    |    |    |    |    |    |    |      |      |      |      |       |      |      |      |      |      |    |    |    |    |    |    |    |  |
| L. Q.  |    |    |    |    |    |    |    |      |      |      |      |       |      |      |      |      |      |    |    |    |    |    |    |    |  |
| Q. R.  |    |    |    |    |    |    |    |      |      |      |      |       |      |      |      |      |      |    |    |    |    |    |    |    |  |

M(3000)F1

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

The Radio Research Laboratories, Japan

K 8

# IONOSPHERIC DATA

Apr. 1966

km  $f^oF_2$

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      |    |    |    |    |    |    |     |     | 270  | 280 | 275   | 265 | 270 | 280 | 280 | 275 | 260 |    |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    | 270 |     | 260  | 280 | 270   | 295 | 265 | 265 | 300 | 275 | 265 |    |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    | 255 |     | 250  | 255 | 280   | 315 | 270 | 280 | 275 | 270 | 265 |    |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |     |     | 250  | 275 | 280   | 300 | 280 | 280 | 280 | 260 | 290 |    |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |     |     | 250  | 300 | 300   | 285 | 270 | 290 | 285 | 270 | 270 |    |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    | 235 |     | 245  | 275 | 280   | 270 | 275 | 275 | 300 | 275 |     |    |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    | 260 |     | 255  | 280 | 305   | 295 | 300 | 305 | 290 | 270 | 255 |    |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |     |     | 275  | 295 | 265   | 300 | 290 | 295 | 280 | 260 | 260 |    |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |     |     | 260  | 270 | 275   | 290 | 285 | 300 | 285 | 275 | 245 |    |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |     |     | 250  | 275 | 300   | 330 | 300 | 260 | 265 | 285 | 260 |    |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    |     |     | 250  | 280 | 300   | 325 | 310 | 305 | 280 | 270 | 255 |    |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    |     |     | 250  | 260 | 290   | 300 | 300 | 300 | 300 | 290 | 260 |    |    |    |    |    |    |    |
| 13     |    |    |    |    |    |    |     |     | 245  | 260 | I3000 | 310 | 300 | 300 | 300 | 300 | 275 |    |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |     |     | 300  | 305 | 310   | 300 | 300 | 280 | 275 | 260 | 260 |    |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    |     |     | 255  | 275 | 305   | 300 | 325 | 285 | 275 | 260 | 260 |    |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    |     |     | C    | C   | 285   | 280 | 305 | C   | C   | C   | C   |    |    |    |    |    |    |    |
| 17     |    |    |    |    |    |    |     |     | C    | C   | 275   | 335 | 280 | 280 | 295 | 300 | 295 |    |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |     |     | C    | C   | 300   | 300 | 300 | 300 | 290 | 280 | 260 |    |    |    |    |    |    |    |
| 19     |    |    |    |    |    |    |     |     | 270L | 330 | 310   | 280 | 300 | 295 | 285 | 270 | 260 |    |    |    |    |    |    |    |
| 20     |    |    |    |    |    |    |     |     | 230  | 255 | 310   | 330 | 280 | 315 | 300 | 275 | 270 |    |    |    |    |    |    |    |
| 21     |    |    |    |    |    |    |     |     | 260  | 310 | 315   | 300 | 290 | 280 | 300 | 275 | 260 |    |    |    |    |    |    |    |
| 22     |    |    |    |    |    |    |     |     | 245  | 260 | 280   | 310 | 310 | 305 | 275 | 300 | 275 |    |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    |     |     | 260  | 275 | 275   | 300 | 280 | 300 | 310 | 275 | 265 |    |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    |     |     | 255  | 275 | 280   | 290 | 310 | 275 | 300 | 300 | 280 |    |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    |     |     | 255  | 255 | 305   | 300 | 310 | 315 | 300 | 295 | 275 |    |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    |     |     | 260  | 275 | 280   | 285 | 330 | 330 | 300 | 275 | 280 |    |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    |     |     | 255  | 250 | 255   | 310 | 330 | 310 | 305 | 300 | 270 |    |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    |     |     | 250  | 255 | 335   | 300 | 310 | 325 | 330 | 280 | 275 |    |    |    |    |    |    |    |
| 29     |    |    |    |    |    |    |     |     | 255  | 270 | 300A  | 300 | 310 | 320 | 310 | 300 | 270 |    |    |    |    |    |    |    |
| 30     |    |    |    |    |    |    |     |     | 250  | 320 | 305   | 280 | 315 | 320 | A   | 325 | 290 |    |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |     |     |      |     |       |     |     |     |     |     |     |    |    |    |    |    |    |    |
| Count  |    |    |    |    |    |    |     | 20  | 27   | 30  | 29    | 30  | 28  | 26  | 27  | 28  | 27  |    |    |    |    |    |    |    |
| Median |    |    |    |    |    |    |     | 255 | 260  | 280 | 300   | 300 | 300 | 295 | 285 | 275 | 270 |    |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |     |     |      |     |       |     |     |     |     |     |     |    |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |     |     |      |     |       |     |     |     |     |     |     |    |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |     |     |      |     |       |     |     |     |     |     |     |    |    |    |    |    |    |    |

\$f^oF\_2\$

IONOSPHERIC DATA

Apr. 1966

h'F

km

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      | 270 | 260 | 230 | 220 | 260 | 250 | 245 | 225 | 225   | 220   | 210   | 205   | 210  | 200  | 200  | 225   | 245   | 240 | 240 | 225   | 210   | 260 | 300 | 230  |
| 2      | 320 | 315 | 305 | 245 | 215 | 270 | 240 | 245 | 230H  | 235   | 245   | 260   | A    | 210H | 245  | 225   | 250   | 250 | 245 | 230   | 215   | 250 | 330 | 290  |
| 3      | 260 | 250 | 250 | 225 | 215 | 235 | 230 | 230 | 225H  | 220   | 200   | 220   | 220  | 210  | 235  | 225   | 225   | 240 | 225 | 210   | 210   | 300 | 325 | 340A |
| 4      | 285 | 275 | 265 | 250 | 235 | 230 | 220 | 230 | 225   | 220   | 205   | 185   | 180H | 220  | 245  | 205   | 250   | 250 | 230 | 205   | 200   | 275 | 305 | 295  |
| 5      | 290 | 290 | 260 | 240 | 210 | 225 | 220 | 225 | 200H  | 230   | 230   | 230   | 230  | 220  | 210  | 200   | 230H  | 250 | 240 | 220   | 210   | 300 | 280 | 305  |
| 6      | 280 | 275 | 275 | 270 | 255 | 260 | 220 | 230 | 225   | 230   | 215   | 220   | 215  | 200  | 215  | 275   | 265   | 240 | 230 | 225   | 225   | 285 | 290 | 285  |
| 7      | 305 | 280 | 275 | 250 | 230 | 230 | 230 | 230 | 225   | 205H  | 225   | 210   | 240  | 220  | 250A | 250   | 245   | 250 | 250 | 250   | 250   | 300 | 300 | 250  |
| 8      | 275 | 290 | 300 | 250 | 245 | 255 | 240 | 245 | 245   | 230   | 225   | 205   | 200  | 195H | 230  | 225   | 250   | 235 | 250 | 225   | 230   | 275 | 310 | 280  |
| 9      | 275 | 270 | 260 | 245 | 260 | 280 | 235 | 230 | 240   | 220   | 230   | 200   | 210  | 205  | 260  | 230   | 235   | 250 | 230 | 260   | 220   | 295 | 300 | 320  |
| 10     | 270 | 260 | 245 | 245 | 230 | 265 | 230 | 230 | 235   | 230   | 215   | 200   | 180H | 250  | 215  | 205   | 250   | 240 | 230 | 220   | 260   | 310 | 300 | 280  |
| 11     | 295 | 250 | 250 | 225 | 275 | 280 | 235 | 240 | 230   | 230   | 215   | 220   | 210  | 225  | 225H | 200   | 1255A | 275 | 275 | 225   | 270   | 300 | 300 | 315  |
| 12     | 275 | 305 | 280 | 255 | 265 | 280 | 230 | 230 | 235   | 205   | 225   | 1240A | 205  | C    | C    | C     | 225   | 230 | 250 | C     | C     | 290 | 300 | 275  |
| 13     | 280 | 250 | 240 | 225 | 260 | 280 | 245 | 250 | 220   | 1205C | 210   | 210   | C    | C    | C    | C     | C     | 230 | 250 | 230   | 245   | 300 | 310 | 300  |
| 14     | 280 | 275 | 250 | 245 | 300 | 275 | 225 | 230 | 230   | 250   | C     | 260   | 225  | 225  | 210  | 225   | 230   | 230 | 250 | 240   | 250   | 250 | 310 | 310  |
| 15     | 280 | 280 | 260 | 215 | 225 | 270 | 230 | 230 | 225   | 220   | 215   | 220   | 210  | 230  | 215  | 230   | 215   | 250 | 230 | 250   | 250   | 280 | 300 | 280  |
| 16     | 250 | C   | C   | C   | C   | C   | C   | C   | C     | 250   | A     | 225   | C    | C    | C    | C     | C     | C   | C   | C     | C     | C   | C   | C    |
| 17     | C   | C   | C   | C   | C   | C   | C   | C   | C     | 215   | 205   | 200H  | 230  | 200  | 210  | 220   | 230   | 250 | 240 | 225   | 240   | 260 | 280 | 265  |
| 18     | 300 | 300 | 250 | 225 | C   | C   | C   | C   | C     | 205   | 205   | 200   | 220  | 200H | 220  | 205   | 220   | 220 | 250 | 245   | 230   | 230 | 270 | 295  |
| 19     | 300 | 300 | 255 | 220 | 240 | 240 | 220 | 220 | 200   | 200   | 210   | 210   | 245  | 210H | 210  | 180H  | 230   | 235 | 245 | 230   | 250   | 250 | 260 | 300  |
| 20     | 280 | 280 | 270 | 250 | 230 | 210 | 230 | 225 | 225   | 215   | 210H  | 220   | 210  | 230  | 250  | 230   | 215   | 220 | 250 | 245   | 245   | 260 | 265 | 275  |
| 21     | 300 | 280 | 255 | 250 | 260 | 250 | 230 | 230 | 225   | 215   | 220   | 220   | 220  | 210  | 200  | 210   | 200H  | 250 | 250 | 250   | 245   | 230 | 255 | 280  |
| 22     | 280 | 275 | 250 | 250 | 250 | 240 | 215 | 230 | 225   | 245   | 245   | 230   | 210  | 205H | 220  | 210   | 225   | 250 | 280 | 280   | 255   | 230 | 250 | 305  |
| 23     | 305 | 300 | 270 | 295 | 280 | 250 | 245 | 240 | 230   | 1260A | 230   | 220   | 210  | 205H | 205  | 230   | 210   | 250 | 260 | 230   | 250   | 250 | 300 | 285  |
| 24     | 275 | 260 | 215 | 225 | 300 | 250 | 230 | 245 | A     | A     | E300A | 220   | 215  | 220  | A    | 220   | 220   | 250 | 245 | 225   | 215   | 260 | 330 | 305  |
| 25     | 310 | 310 | 270 | 230 | 290 | 235 | 225 | 230 | 250   | 240   | 220   | 215   | 205  | 230  | 210  | 220   | 215   | 230 | 240 | 250   | 260   | 275 | 300 | 305  |
| 26     | 275 | 265 | 250 | 210 | 250 | 250 | 235 | 235 | 230   | 205   | 200   | 205   | 200  | 205  | 245  | 210   | 255   | A   | A   | 250   | 250   | 260 | 295 |      |
| 27     | 290 | 275 | 245 | 230 | 260 | 250 | 245 | 245 | 220   | 200H  | 200H  | 250   | 220  | 240  | 250  | 1250H | 1240A | 250 | 250 | 255   | 300   | 315 | 275 |      |
| 28     | 275 | 310 | 260 | 230 | 250 | 250 | 225 | 220 | 225   | 205   | 250   | A     | A    | 250  | 220  | 255   | 250   | 225 | 260 | 225   | 210   | 235 | 350 | 300  |
| 29     | 305 | 280 | 270 | 260 | 250 | 250 | 225 | 250 | 1250A | 1230A | E300R | A     | 205  | 230  | 210  | 210   | 250   | 230 | 255 | 240   | A     | 250 | 300 | 300  |
| 30     | 310 | 300 | 295 | 255 | 270 | 255 | 250 | 245 | 1240A | A     | 255   | 210   | A    | A    | A    | 250   | 240   | 225 | 250 | E300A | I340A | 300 | 260 | 280  |
| 31     |     |     |     |     |     |     |     |     |       |       |       |       |      |      |      |       |       |     |     |       |       |     |     |      |
| Count  | 29  | 28  | 28  | 28  | 27  | 27  | 27  | 27  | 26    | 28    | 28    | 28    | 25   | 26   | 25   | 28    | 28    | 28  | 28  | 28    | 27    | 29  | 29  | 29   |
| Median | 280 | 280 | 260 | 245 | 250 | 250 | 230 | 230 | 225   | 220   | 220   | 220   | 210  | 220  | 220  | 225   | 230   | 245 | 250 | 230   | 245   | 275 | 300 | 295  |
| U. Q.  |     |     |     |     |     |     |     |     |       |       |       |       |      |      |      |       |       |     |     |       |       |     |     |      |
| L. Q.  |     |     |     |     |     |     |     |     |       |       |       |       |      |      |      |       |       |     |     |       |       |     |     |      |
| Q. R.  |     |     |     |     |     |     |     |     |       |       |       |       |      |      |      |       |       |     |     |       |       |     |     |      |

The Radio Research Laboratories, Japan

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

h'F

K 10

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

**IONOSPHERIC DATA**

**135° E Mean Time (G.M.T. +9h)**

**f<sub>o</sub>E<sub>s</sub>** km

**Apr. 1966**

| Day    | 00  | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  | 16    | 17  | 18  | 19  | 20  | 21  | 22  | 23  |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| 1      | B   | B   | B   | E   | B   | E   | 100 | 150 | G   | G   | 120 | 115 | 115 | 110 | 110 | 110 | 105   | 110 | 110 | 100 | 100 | B   | B   | B   |
| 2      | 120 | 130 | B   | E   | E   | B   | B   | 160 | 150 | 140 | 130 | 115 | 115 | 110 | 120 | G   | G     | 130 | 115 | 115 | B   | 125 | B   | 130 |
| 3      | 100 | 115 | B   | E   | B   | B   | 155 | 155 | 160 | 125 | 120 | G   | G   | G   | G   | G   | G     | 130 | 120 | 100 | S   | S   | S   | S   |
| 4      | S   | 105 | E   | E   | 115 | B   | G   | 155 | 130 | G   | 105 | B   | G   | 110 | 105 | 105 | 190   | G   | B   | S   | S   | 100 | 100 | 130 |
| 5      | 130 | 120 | 115 | 115 | E   | E   | 155 | 150 | 115 | G   | 110 | 110 | G   | G   | G   | G   | G     | G   | 105 | 100 | B   | B   | E   | B   |
| 6      | B   | B   | E   | E   | E   | B   | 150 | G   | 170 | 130 | 135 | 125 | 125 | G   | G   | 170 | 150   | 130 | 125 | 120 | 115 | 115 | 110 | B   |
| 7      | B   | 115 | 110 | 110 | 115 | B   | 155 | 150 | 145 | 130 | 125 | 110 | 110 | 110 | 105 | 105 | 100   | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 8      | 115 | 110 | 110 | 110 | 115 | B   | G   | 155 | 150 | 130 | G   | 110 | 110 | G   | G   | 100 | G     | 165 | 100 | 100 | B   | B   | B   | B   |
| 9      | B   | 100 | 115 | 100 | 110 | E   | 150 | 150 | 130 | 130 | 120 | 110 | 110 | 110 | 110 | G   | G     | 150 | 125 | 120 | 115 | B   | S   | B   |
| 10     | S   | B   | E   | E   | E   | B   | 160 | 155 | G   | 140 | 120 | 120 | G   | 165 | 105 | G   | 100   | 140 | 135 | 120 | 120 | 115 | S   | B   |
| 11     | B   | 110 | 110 | E   | 110 | B   | G   | 155 | 130 | G   | 125 | 110 | 110 | 110 | G   | G   | 115   | 130 | 130 | 115 | 115 | 125 | 115 | 115 |
| 12     | 115 | 115 | E   | 105 | B   | 115 | G   | 160 | 145 | G   | 120 | 115 | 125 | C   | C   | 105 | 145   | 120 | 125 | C   | C   | S   | 105 | B   |
| 13     | S   | B   | 100 | E   | E   | E   | 100 | 150 | 150 | C   | G   | G   | C   | C   | C   | C   | C     | G   | B   | B   | B   | B   | B   | S   |
| 14     | B   | B   | B   | E   | E   | B   | 150 | 145 | 150 | 125 | C   | 110 | 115 | G   | G   | G   | G     | G   | 130 | 120 | 120 | 115 | 125 | B   |
| 15     | B   | 100 | 100 | 100 | B   | B   | 160 | 150 | 170 | G   | 130 | G   | G   | G   | 175 | G   | G     | G   | 130 | E   | E   | 150 | 115 | 110 |
| 16     | 110 | C   | C   | C   | C   | C   | C   | C   | C   | 130 | 120 | 120 | C   | C   | C   | C   | C     | C   | C   | C   | C   | C   | C   | C   |
| 17     | C   | C   | C   | C   | C   | C   | C   | C   | C   | C   | 125 | 130 | G   | G   | 125 | G   | 180   | 125 | 120 | 105 | 100 | 100 | 120 | 115 |
| 18     | 115 | 110 | E   | 110 | C   | C   | C   | C   | C   | 130 | 125 | G   | 110 | 110 | G   | G   | 110   | G   | 100 | 100 | 100 | 100 | B   | B   |
| 19     | S   | B   | E   | E   | E   | B   | G   | 110 | 110 | G   | G   | G   | G   | G   | G   | G   | 110   | 145 | 120 | 115 | 115 | B   | B   | 115 |
| 20     | B   | 110 | B   | E   | B   | B   | G   | 150 | 150 | 130 | 135 | G   | G   | G   | G   | 115 | 100   | 100 | 100 | 100 | 120 | S   | B   | S   |
| 21     | B   | 100 | B   | 100 | E   | B   | 140 | 155 | 130 | 140 | 120 | 120 | 125 | 130 | G   | G   | G     | G   | 130 | 130 | 115 | S   | S   | B   |
| 22     | S   | 115 | E   | E   | 105 | 150 | 155 | 135 | 150 | 130 | 125 | 120 | 125 | G   | 120 | 115 | G     | 160 | 125 | 115 | 115 | 105 | 110 | 115 |
| 23     | B   | B   | E   | E   | E   | B   | 150 | 125 | 130 | 120 | 120 | 125 | 120 | 110 | 110 | 110 | 110   | G   | G   | 120 | 115 | 115 | 115 | 120 |
| 24     | S   | E   | E   | 100 | B   | 110 | 150 | 130 | 125 | 125 | 120 | 120 | 130 | 130 | 120 | G   | G     | G   | 115 | 115 | 115 | 110 | 110 | 110 |
| 25     | 110 | 110 | 130 | 110 | E   | 120 | 150 | 150 | 125 | 110 | 120 | 120 | 120 | 120 | 120 | 110 | 110   | 110 | 110 | 110 | 115 | 115 | 110 | 110 |
| 26     | 110 | B   | 110 | 110 | 115 | 110 | 130 | 125 | 130 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | E195G | 110 | 110 | 105 | 105 | 105 | 110 | 105 |
| 27     | 105 | 100 | 105 | 100 | 105 | 150 | 140 | 150 | 130 | 130 | G   | G   | 110 | 125 | 120 | 115 | 115   | 115 | 115 | 110 | 110 | 110 | 110 | 110 |
| 28     | 110 | 110 | 105 | 110 | 110 | 110 | 140 | 145 | 125 | 125 | 125 | 115 | 115 | 120 | 125 | 110 | 125   | 115 | 115 | 110 | 110 | 110 | 110 | 110 |
| 29     | 105 | 110 | 110 | 110 | 110 | 175 | 155 | 125 | 125 | 120 | 115 | 110 | 115 | 110 | 110 | 105 | 130   | 120 | 110 | 110 | 110 | 105 | 105 | S   |
| 30     | S   | B   | 105 | B   | 100 | 140 | G   | 130 | 130 | 125 | 125 | 145 | 130 | 125 | 130 | 125 | 150   | 150 | 125 | 115 | 115 | 110 | 115 | 110 |
| 31     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |     |     |
| Count  | 12  | 18  | 13  | 14  | 11  | 9   | 19  | 26  | 25  | 22  | 25  | 21  | 20  | 18  | 16  | 15  | 18    | 20  | 26  | 25  | 21  | 19  | 17  | 15  |
| Median | 110 | 110 | 110 | 110 | 110 | 120 | 150 | 150 | 130 | 130 | 120 | 115 | 115 | 110 | 115 | 110 | 110   | 110 | 130 | 120 | 110 | 115 | 110 | 110 |
| U. Q.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |     |     |
| L. Q.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |     |     |
| G. R.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |     |     |     |     |     |     |     |

The Radio Research Laboratories, Japan

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

**f<sub>o</sub>E<sub>s</sub>**

IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

1 35° E Mean Time (G.M.T. +9h)

Types of Es

Apr. 1966

| 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      |    |    |    |    |    | 1b2 | b2 |    |    | c  | c  | c1 | 1  | 1  | 12 | 12 | 1  | 13 | f2 | f  |    |    |    |    |  |
| 2      | f  | f  |    |    |    | h   | h  | h  | h  | h  | e2 | e2 | e2 | 1  | e2 |    | h2 | 15 | f5 |    | f  |    |    | f  |  |
| 3      | f  | f  |    |    |    | h4  | h  | h  | h  | h  | e2 |    |    |    |    |    | h2 | 12 | f  |    |    |    |    |    |  |
| 4      | f  | f  |    |    | f  |     | h2 | h2 | h2 | 1  | 1  | 1  |    | c  | 12 | 1  | h1 |    |    | f  | f2 | f  |    | f2 |  |
| 5      | f2 | f3 | f2 | f  |    | h   | h2 | 1  |    | 1  | 1  |    |    |    |    |    |    | 12 | f  |    |    |    |    |    |  |
| 6      |    |    |    |    |    | h3  | h  | h  | h  | h2 | h  | h  | h  |    |    | h  | h  | h4 | b5 | f  | f  | f  | f3 |    |  |
| 7      |    | f2 | f3 | f2 | f  | h3  | h  | h  | h  | h  | h  | c  | c  | c  | 12 | 12 | 12 | 14 | 15 | f5 | f4 | f3 | f2 | f  |  |
| 8      | f2 | f3 | f4 | f  | f  |     | h2 | h1 | h2 | h2 | 12 | 12 | 12 |    | 1  |    | h  | 1  | f  |    |    |    |    |    |  |
| 9      |    | f2 | f  | f  | f  | h2  | h2 | h  | n  | h  | c  | 1  | 1  | c  | e2 |    | h2 | h4 | f4 | f  |    |    |    |    |  |
| 10     |    |    |    |    |    | h3  | h2 | h2 | h  | h  | c  | c  |    | h1 | 12 | 13 | h  | h  | b2 | f  | f  | f  |    |    |  |
| 11     |    | f  | f  |    | f  |     | h2 | h2 | h2 | h  | h  | e2 | 1  | 1  |    | 12 | h2 | h3 | f  | f  | f4 | f2 | f2 | f2 |  |
| 12     | f2 | f6 |    | f  |    |     | h  | h  | h  | h  | h  | e2 | h  |    | 1  | h2 | h2 | h4 |    |    |    |    |    |    |  |
| 13     |    |    | f  |    |    | 1   | h2 | h1 | h  | h  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 14     |    |    |    |    |    | h2  | h2 | h  | h  | h2 |    | 12 | e  |    |    |    |    | h3 | f  | f  | f  | f2 | f  |    |  |
| 15     |    | f2 | f2 | f  |    | h   | h2 | h  | h  | h  | h  |    |    | h  |    |    |    | h  |    |    | f  | f  | f2 | f3 |  |
| 16     | f2 |    |    |    |    |     |    |    |    | h  | e2 | e2 |    |    |    |    |    |    |    |    |    |    |    |    |  |
| 17     |    |    |    |    |    |     |    |    |    | h  | h  | h  |    | h  |    | h  | h  | 12 | f2 | f2 | f2 | f  | f2 | f2 |  |
| 18     | f2 | f  |    | f  |    |     |    |    |    | h  | h  | 1  | 1  | 1  |    | 1  | 1  | 1  | f  | f2 | f2 | f  |    |    |  |
| 19     |    |    |    |    |    |     |    | 1  | 1  | 1  | h  |    |    |    |    | 1  | 1  | h  | 13 | f  | f  | f  |    | f3 |  |
| 20     | f  |    |    |    |    |     |    | h2 | h  | h  | h  |    |    |    | c  |    | 1  | 1  | 1  | f  | f  | f  |    |    |  |
| 21     | f  |    |    |    |    | h3  | h2 | h2 | h2 | h  | c  | c  | h  | h  |    |    |    | h4 | f  | f  | f  | f  |    |    |  |
| 22     | f  |    |    |    | f  | h   | h2 | h3 | h  | h  | h  | e  | h  | e2 | e2 | e2 | h2 | h2 | h2 | f3 | f3 | f  | f2 | f2 |  |
| 23     |    |    |    |    |    | h2  | h2 | h2 | h  | e2 | c  | h  | c  | 1  | 1  | 12 |    |    |    | f5 | f2 | f3 | f  |    |  |
| 24     |    |    |    |    |    | 12  | h2 | h2 | h2 | h  | e2 | c  | h  | h  | e2 |    |    | 13 | f  | f  | f2 | f2 | f2 | f2 |  |
| 25     | f2 | f7 | f  | f  |    | 1   | h2 | h  | h2 | 1  | c  | c  | c  | c  | 1  | 12 | 12 | 12 | f5 | f2 | f2 | f2 | f2 | f4 |  |
| 26     | f  |    |    |    | f2 | 1b2 | h7 | h2 | c  | c  | c  | 12 | 12 | 12 | 1  | h  | 14 | 14 | f3 | f3 | f3 | f3 | f2 | f2 |  |
| 27     | f2 | f  | f  | f  | f3 | h2  | h2 | h2 | h2 | h  | h  | 1  | h2 | e2 | e2 | 13 | 12 | 14 | f3 | f6 | f3 | f3 | f2 | f3 |  |
| 28     | f2 | f2 | f4 | f2 | f3 | 16  | h2 | h2 | h2 | h  | h  | e2 | e2 | e2 | h  | h2 | h2 | 12 | 1  | f  | f  | f3 | f3 | f2 |  |
| 29     | f  | f5 | f3 | f3 | f4 | h   | h2 | h2 | h2 | e3 | e2 | e2 | c  | c  | e  | 12 | h2 | h2 | f2 | f4 | f4 | f2 | f  |    |  |
| 30     |    |    |    |    | f2 | h   | h  | h2 | h  | h  | h  | h  | h2 | h2 | h2 | h  | h  | h2 | h2 | f6 | f6 | f5 | f2 | f4 |  |
| 31     |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| Count  |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| Median |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| U. Q.  |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| L. Q.  |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |
| G. R.  |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |  |

The Radio Research Laboratories, Japan

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

Types of Es

K 12



# IONOSPHERIC DATA

**Apr. 1966**

h<sub>p</sub>F<sub>2</sub>

km

**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      | 340   | 310   | 295   | 270   | 330   | 320  | 275  | 265   | 275   | 295   | 285   | 280   | U275S | 305  | 310   | 310   | 285   | U275S | U275S | 255S  | 275   | 330   | 355S  | F     |
| 2      | 365   | U370S | 370S  | U290S | 240   | 335  | 275  | 295   | 295   | 315   | 325   | 325S  | 290   | 280  | 305S  | U310S | 285S  | U275S | U275S | U260S | 280   | 350S  | F     | 330S  |
| 3      | 310S  | 300S  | 305S  | 280   | 260   | 315  | 265  | 275S  | 275   | 265   | 285S  | U330S | 285   | 320  | 300   | 280S  | U280S | U265S | U260S | 265   | 245   | 370S  | 375S  | U385F |
| 4      | U325S | F     | U330S | 315S  | 295S  | 295S | 230  | 265S  | 270   | 305   | 300   | 315   | 300   | 305  | 300   | 295   | I300S | 300   | 250   | 250   | 290   | J340S | F     | F     |
| 5      | 345F  | F     | U320F | F     | F     | F    | 250  | 250   | 295   | 305   | 305   | U305S | U280S | 325  | 315   | 295   | U300S | 280S  | U270S | U260S | 275   | 370   | 360   | U370S |
| 6      | U345S | U335S | 345   | 330   | 330   | 310  | 250  | 255   | 265   | 295   | 290S  | 280   | 300   | 280  | U310S | 310   | 275   | 260   | 275S  | 275S  | 300S  | 355S  | U330S | U345F |
| 7      | 350F  | 345S  | 330   | 305   | U280S | 285  | 255  | 265   | 260   | 305   | 315   | 300   | 305   | 330  | 305   | 300   | J290S | 270   | 295   | 300   | 305   | 345   | 360   | 340   |
| 8      | 340   | 350   | 350   | 315   | 305   | 355  | 280  | 280   | 310   | 310   | 280S  | 310   | 320   | 325S | U310S | 295   | 280   | 270   | 280S  | 285S  | 325   | 375   | 370S  | 345S  |
| 9      | U320S | U345S | 325   | 285   | 330   | 330  | 270  | 270   | 275S  | 285   | 295   | 305R  | 315   | 320  | 315   | 300   | 305S  | U285S | U265S | U270S | 285   | U345S | F     | F     |
| 10     | F     | F     | 305S  | U295S | 295S  | 315  | 255  | 265S  | 265   | 285   | 310   | 345   | 310   | 285  | 295S  | 310   | U265S | U275S | 275S  | 285   | 325   | U380S | U345S | 335S  |
| 11     | U360F | 305S  | 300   | 280S  | 360   | 325  | 270  | 260   | 260   | 295   | 315   | 340   | 330   | 325S | U300S | 290   | U265S | U275S | U270S | 285   | A     | U325S | F     | F     |
| 12     | U345F | F     | U335F | 330   | 330S  | F    | 255  | 265   | 265   | 295   | 300   | 305   | 300   | C    | C     | 300   | 295   | 290   | U270C | C     | C     | C     | C     | C     |
| 13     | 350   | 315   | 300   | 300   | 345   | 335  | 260  | 260   | 280   | C     | 325   | 315   | C     | C    | C     | C     | C     | 350   | 295   | 285   | 340   | 380   | 380   | 365S  |
| 14     | 365S  | 345   | 300   | 355S  | 350   | 315S | 250  | 315   | 315   | 325   | C     | U310R | 305S  | 300S | U295S | 275   | U270S | 270   | 285   | U305S | 330   | 375   | 385   | 375   |
| 15     | 365S  | 355   | 330   | 280   | 320   | 325  | 265  | 275   | 285   | 310   | 310   | U330R | 305   | 315  | 295   | 300   | 280   | 295S  | 265S  | 310   | 315S  | 355S  | U360S | 345S  |
| 16     | 375S  | C     | C     | C     | C     | C    | C    | C     | C     | 310   | 310   | 315S  | C     | C    | C     | C     | C     | C     | C     | C     | C     | C     | C     | C     |
| 17     | C     | C     | C     | C     | C     | C    | C    | C     | C     | 280   | 350   | 305   | 310   | 305S | 315   | 310   | U300S | 305S  | 275S  | U275S | U325S | F     | U360S | 335S  |
| 18     | 365S  | U355S | 325   | 275   | C     | C    | C    | C     | C     | 300   | J300R | 305   | 310   | 300  | 300   | J300R | 300   | 305   | 295   | 295   | 295S  | 300   | 360   | 350   |
| 19     | 365   | 360   | 330   | 280   | 300   | 235  | 250  | 295   | 295   | 345   | 320   | 300   | 315   | 305  | 310   | 280R  | 280   | 285   | 285   | 295   | 290S  | 340   | 340S  | 350S  |
| 20     | U335S | 335S  | 330   | 310   | 285   | 270  | 255  | 250   | 275   | 325   | 345   | 305R  | 325S  | 325  | 310   | 300   | 280   | 300   | 285S  | 315S  | U315S | 345S  | 350S  | 340   |
| 21     | 355S  | 340   | 325   | 305   | 330   | 295  | 260  | 280   | 315   | 325   | 310S  | 310   | 300   | 300R | 280   | 290   | 320   | 305S  | U295S | U305S | U295S | 290S  | 340   | U345S |
| 22     | U355S | 350   | 325   | 320   | 310   | 285  | 290  | 265   | 275   | 295   | 310   | 325R  | 310S  | 305  | 315   | 295   | U295S | 275S  | 285   | 340S  | U300S | U275S | 335S  | 375S  |
| 23     | 380   | U380S | 360S  | 365   | U355F | 325  | 295  | U275S | 300S  | 285R  | 315S  | 305   | U305R | 325R | 300   | 290S  | 325   | 320S  | 320S  | U275S | 300S  | 325   | U375S | U360S |
| 24     | U345S | 330S  | 255F  | 280S  | U370S | 290S | 275  | 285   | 300S  | U305R | 320   | 305   | 345   | 320  | 320   | 315   | 315   | 295S  | U280S | U280S | 275S  | 355S  | 400   | 365   |
| 25     | 365F  | U350S | U345F | U305S | 330   | 285  | 255  | 275   | 265   | 305   | 305   | 315   | 330   | 320R | 320   | 310   | 275S  | S     | I260S | I300S | 330   | 385   | U355S | 345F  |
| 26     | U355S | 335S  | 305S  | 295S  | 335   | 295  | 265S | 285   | U305S | 300   | 300   | 345   | J340R | 300R | 300   | 295R  | R     | A     | A     | 300S  | 300   | 330   | 350   | 350   |
| 27     | 355   | 350   | 310   | 300   | 350   | 305  | 255  | J270R | J250R | 315   | 325R  | 330S  | 325   | 330S | 320   | U325S | U300S | 275S  | U285S | U280S | 315S  | 375   | 355F  | 345F  |
| 28     | 345S  | 375   | 335S  | 275S  | 305   | 295  | 280  | U255S | 265   | 345   | 320   | 325   | 330R  | 350S | 350   | 315   | S     | U360S | S     | S     | 275S  | 325S  | 360S  | 355   |
| 29     | U385S | 335S  | 330S  | U310S | 325   | 275S | 270S | 275   | 280S  | A     | J310R | 315   | 315   | 350  | 340   | 320   | 310   | 320   | J310S | J290S | A     | 340   | 360   | 355   |
| 30     | 380   | 355F  | 355F  | 340   | 355F  | 330  | 280  | J250R | 330   | 315   | 295R  | 325   | 335   | A    | 335   | 320   | 285R  | U275S | 305   | U340S | I370A | U360S | 345   | 350   |
| 31     |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| Count  | 28    | 24    | 28    | 27    | 26    | 25   | 27   | 27    | 27    | 28    | 29    | 30    | 28    | 26   | 27    | 28    | 26    | 27    | 27    | 27    | 26    | 28    | 25    | 25    |
| Median | 355   | 345   | 330   | 300   | 330   | 310  | 260  | 265   | 275   | 305   | 310   | 310   | 310   | 320  | 310   | 300   | 290   | 285   | 280   | 285   | 300   | 350   | 360   | 350   |
| U. Q.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| L. Q.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| Q. R.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |

h<sub>p</sub>F<sub>2</sub>

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

The Radio Research Laboratories, Japan

K 13

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

km  
ypF2

Apr. 1966

| 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      | 075   | 055   | 050   | 040   | 055   | 060  | 050  | 035   | 050   | 055S  | 050   | 050   | U045S | 045  | 040   | 040   | 055   | U055S | I060S | 040S  | 050   | 070   | 065S  | F     |
| 2      | 055   | U060S | 080S  | U065S | 060   | 055  | 040  | 040   | 080   | 040   | 070   | 075S  | 065   | 055  | 060S  | U075S | 060S  | U055S | U045S | U055S | 065   | 065S  | F     | 065S  |
| 3      | 070S  | 045S  | 050S  | 055   | 050   | 055  | 045  | 040S  | 055   | 050   | 060S  | U035S | 060   | 050  | 045   | 050S  | U050S | 040S  | U035S | 040   | 055   | 055S  | 055S  | U065F |
| 4      | U060S | F     | U075S | 055S  | 055S  | 065  | 040S | 065   | 050   | 050   | 050   | 035   | 050   | 090  | 055   | 030   | I050S | 040   | 050   | 050   | 045   | J065S | F     | F     |
| 5      | 060F  | F     | U070F | F     | F     | F    | 050  | 045   | 025   | 045   | 050   | U070S | U065S | 040  | 050   | 055   | U040S | 055S  | U045S | U040S | 035   | 060   | 080   | U070S |
| 6      | U080S | U065S | 060   | 070   | 075   | 045  | 045  | 035   | 050   | 035   | 040S  | 070   | 035   | 050  | U045S | 065   | 050   | 045   | 040S  | 045S  | 035S  | 070S  | U070S | U060F |
| 7      | 065F  | 055S  | 065   | 050   | U055S | 045  | 050  | 045   | 045   | 070   | 060   | 055   | 070   | 065  | 075   | 050   | J040S | 045   | 050   | 055   | 045   | 065   | 055   | 060   |
| 8      | 060   | 055   | 070   | 080   | 050   | 065  | 050  | 080   | 045   | 045   | 055S  | 060   | 065   | 070S | U060S | 055   | 055   | 045   | 045S  | 050S  | 060   | 055   | 075S  | 075S  |
| 9      | U055S | U075S | 070   | 070   | 075   | 055  | 045  | 045   | 045S  | 060   | 050   | 045R  | 050   | 055  | 040   | 050   | 050S  | U055S | U045S | U045S | 060   | 050   | U070S | 075S  |
| 10     | F     | F     | 050S  | U050S | 050S  | 050  | 050  | 045S  | 040   | 050   | 055   | 055   | 065   | 065  | 050S  | 040   | 055   | U045S | 045S  | 060   | 050   | U070S | U070S | 075S  |
| 11     | U050F | 050S  | 035   | 045S  | 065   | 065  | 045  | 045   | 040   | 050   | 045   | 060   | 055   | 045S | U045S | 050   | U040S | U070S | U050S | U050S | A     | U070S | F     | F     |
| 12     | U060F | F     | U080F | 070   | 050S  | F    | 050  | 045   | 045   | 050   | 050   | 055   | 050   | C    | C     | 040   | 040   | 060   | U050C | C     | C     | 070   | 065   | 065   |
| 13     | 055   | 065   | 050   | 050   | 055   | 060  | 045  | 045   | 030   | C     | 060   | 055   | C     | C    | C     | C     | C     | 050   | 050   | 060   | 060   | 050   | 065   | 045S  |
| 14     | 060S  | 055   | 055   | 065S  | 055   | 055S | 050  | 040   | 045   | 070   | C     | U065R | 065S  | 060S | U050S | 045   | U045S | 045   | 060   | U055S | 055   | 050   | 065   | 060   |
| 15     | 065S  | 070   | 070   | 070   | 060   | 055  | 040  | 050   | 055   | 065   | 035   | U065R | 050   | 040  | 040   | 045   | 055   | 040S  | 050S  | 060   | 065S  | 055S  | U065S | 065S  |
| 16     | 050S  | C     | C     | C     | C     | C    | C    | C     | C     | 045   | 085   | 060S  | C     | C    | C     | C     | C     | C     | C     | C     | C     | C     | C     | C     |
| 17     | C     | C     | C     | C     | C     | C    | C    | C     | C     | 065   | 060   | 050   | 065   | 050S | 050   | 050   | U050S | 040S  | 060S  | U045S | U075S | F     | U070S | 075S  |
| 18     | 080S  | U070S | 065   | 060   | C     | C    | C    | C     | C     | 050   | J055R | 050   | 070   | 060  | 055   | J050R | 050   | 055   | 050   | 045   | 055S  | 060   | 090   | 050   |
| 19     | 085   | 065   | 060   | 060   | 055   | 045  | 035  | 050   | 055   | 055   | 045   | 055   | 050   | 050  | 050   | 050R  | 055   | 040   | 060   | 050   | 055S  | 070   | 070S  | 055S  |
| 20     | U070S | 070S  | 065   | 045   | 055   | 050  | 040  | 045   | 050   | 050   | 050   | 060R  | 050S  | 060  | 050   | 050   | 055   | 050   | 050S  | 045S  | U040S | 050S  | 065S  | 060   |
| 21     | 060S  | 065   | 060   | 045   | 055   | 055  | 040  | 050   | 050   | 050   | 045S  | 045   | 055   | 060R | 055   | 055   | 045   | 050S  | U035S | U035S | U040S | 055S  | 065   | U065S |
| 22     | U060S | 050   | 070   | 050   | 045   | 050  | 050  | 050   | 050   | 050   | 055   | 055R  | 050S  | 040  | 065   | 050   | U050S | 055S  | 050   | 045S  | U060S | U055S | 060S  | 055S  |
| 23     | 070   | U070S | 075S  | 060   | U060F | 075  | 055  | U050S | 045S  | 045R  | 060S  | 050   | U050R | 050R | 045   | 050S  | 060   | 045S  | 040S  | U055S | 050S  | 075   | U065S | U070S |
| 24     | U065S | 055S  | 050F  | 065S  | U075S | 055S | 060  | 045   | 045S  | U045R | 055   | 050   | 055   | 055  | 050   | 040   | 045   | 045S  | U050S | U045S | 050S  | 045S  | 050   | 055   |
| 25     | 040F  | U055S | U055F | U050S | 045   | 060  | 050  | 055   | 050   | 045   | 050   | 050   | 045   | 050R | 050   | 055   | 060S  | S     | I040S | I040S | 055   | 065   | U065S | 070F  |
| 26     | U065S | 065S  | 045S  | 055S  | 075   | 050  | 045S | 045   | U035S | 045   | 055   | 050   | J030R | 070R | 050   | 055R  | R     | A     | A     | 050S  | 050   | 070   | 060   | 065   |
| 27     | 060   | 060   | 060   | 050   | 060   | 065  | 050  | J050R | J050R | 055   | 045R  | 045S  | 050   | 040S | 050   | U045S | U035S | 045S  | U035S | U045S | 045S  | 065   | 055F  | 055F  |
| 28     | 060S  | 050   | 065S  | 045S  | 060   | 055  | 070  | U055S | 050   | 055   | 050   | 050   | 055R  | 050S | 060   | 055   | S     | U040S | S     | S     | 045S  | 055S  | 050S  | 030   |
| 29     | U030S | 040S  | 055S  | U050S | 040   | 040S | 045S | 035   | 045S  | A     | J050R | 065   | 065   | 050  | 055   | 060   | 065   | 065   | J060S | J040S | A     | 060   | 080   | 085   |
| 30     | 070   | 085F  | 055F  | 055   | 055F  | 050  | 050  | 050   | 075   | 055   | 045R  | 055   | 045   | A    | 040   | 050   | 050R  | U055S | 045   | U055S | I055A | U055S | 060   | 055   |
| 31     |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| Count  | 28    | 24    | 28    | 27    | 26    | 25   | 27   | 27    | 27    | 28    | 29    | 30    | 28    | 26   | 27    | 28    | 26    | 27    | 27    | 27    | 26    | 28    | 25    | 25    |
| Median | 060   | 060   | 060   | 055   | 055   | 055  | 050  | 045   | 050   | 050   | 050   | 055   | 050   | 050  | 050   | 050   | 050   | 045   | 050   | 045   | 050   | 060   | 065   | 065   |
| U. Q.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| L. Q.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |
| Q. R.  |       |       |       |       |       |      |      |       |       |       |       |       |       |      |       |       |       |       |       |       |       |       |       |       |

ypF2

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

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Apr. 1966

foF2

0.1 Mc

135° E Mean Time (G.M.T. +9h)

Yamagawa

Lat. 31° 12.1'N  
Long. 130° 37.1'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      | S     | S     | S     | 04.0S | 028   | 028   | 034S  | 055   | 069S  | 073   | 075S | 077   | 072   | 072   | 079  | 077   | 074   | I075S | 084   | 083   | 052   | 035   | 035S  | 034S  |
| 2      | J034S | I034S | 033   | 037   | 024   | J034S | 046   | 060   | 082S  | 068   | 087  | 088   | 098   | 098S  | 088  | 089   | 088   | 091   | 081   | I066S | 050   | 035   | I036S | S     |
| 3      | S     | S     | S     | I034S | J024S | 022   | 034   | U063S | 063S  | 068   | 070S | 078   | 085   | 092S  | 104  | 097S  | 081   | J087S | 085S  | S     | 047   | 032   | 032S  | I034S |
| 4      | I034S | 036S  | 036S  | I036S | I035S | 021   | 034S  | 054   | 066   | 066   | 069  | 074R  | 094S  | 104   | 107  | 104S  | 104   | 115   | 108   | I072A | 037   | 036S  | S     | S     |
| 5      | S     | S     | S     | S     | J036S | A     | 033S  | 049   | 060   | 064   | 078  | 083   | J097S | 105   | 117  | 118   | 110   | I07S  | I095S | J083S | 057   | 044   | I043S | 042S  |
| 6      | I042S | 043   | 043   | 044   | 044S  | I043S | 046   | 058   | 061   | J062S | 065  | 073S  | 082   | 091   | 091  | J095S | 103   | 098S  | 085   | I074S | 060   | 042   | I043S | 043   |
| 7      | I041S | 039S  | 040   | I042S | 044S  | 024   | 036   | 060   | I074S | 072H  | 065  | 073   | 089   | 102   | 101  | 095S  | 085   | 083   | S     | S     | 065S  | I049S | 046S  | 048S  |
| 8      | 047   | I047S | I045S | 046S  | 044   | I035S | 041   | 062S  | 066S  | 087   | 101S | J096S | 104   | 116   | 117  | 103   | 089   | 086   | 081S  | I067S | 060S  | 050S  | 043S  | J042S |
| 9      | I044S | 043   | I043S | I041S | 042S  | 036S  | 046   | 076S  | 069   | 077   | 073  | 079   | 085S  | 106   | 107  | 104   | 093S  | 089   | S     | S     | 063S  | 041   | I042S | I042S |
| 10     | U041S | S     | S     | S     | 031   | 026   | 045S  | 059   | 062S  | 068   | 072  | 080   | 104   | 119   | 105  | 099   | 095S  | 085   | 081   | 068   | 050S  | 049S  | 050   | 051   |
| 11     | I049S | 049S  | 049   | 040   | I037S | I034S | 045S  | 066S  | 062   | 062   | 072  | 083   | 098S  | 107   | 111  | 108   | 103   | I07S  | I02S  | J078S | 052   | 045   | I046S | I046S |
| 12     | I044S | I043S | I042S | 042S  | 039   | 037   | 048   | 069   | 064   | J076S | 065  | 075   | 083   | 091S  | 100  | 101S  | 091   | 087   | 093S  | 084   | 059   | 054S  | 054   | 054   |
| 13     | I056S | J055S | 056S  | 051   | 031   | 031   | 046S  | 070S  | 063S  | 066   | 069S | 079   | 091S  | 099S  | 090  | 081   | 078S  | 082S  | 080S  | I076S | 061S  | 052   | 056S  | 054   |
| 14     | 055   | 052   | 049S  | 037S  | 039S  | I037S | 047S  | 058   | 058   | 072S  | 088S | 110   | 113   | 112   | 115  | 106   | 087   | 072   | I072S | I072S | 057S  | 052   | J053S | I053S |
| 15     | 053   | 052S  | 053   | 043S  | 032   | 031   | 045   | 056   | J068S | 066S  | 068  | 088   | 098S  | 096S  | 089  | 082   | 079   | 079S  | I079S | J078S | 058S  | 052   | I090S | S     |
| 16     | S     | S     | S     | 050S  | 044S  | I037S | 049   | J064S | 065   | 065S  | 069  | 086   | 098S  | 114   | 117  | 111   | 104S  | 103S  | J095S | J080S | 058   | 047   | I043S | I043S |
| 17     | I043S | 041S  | 043S  | 040   | J036S | 036   | 046S  | 059   | 066S  | 065   | 067  | 078   | 097   | 086   | 084  | 092S  | 083   | 077   | I082S | I073S | 052   | 048S  | 042   | I049S |
| 18     | I048S | 046   | 047   | 051   | 034   | 030   | 045   | 055   | 059   | 065   | 066  | 081   | J090S | 098   | 092  | 086   | 085   | 088   | 092S  | 084S  | U064S | 042   | I040S | I041S |
| 19     | J042S | I042S | 044   | J050S | 035   | 029   | 043   | 054   | 054   | 061   | 071  | 080   | 085   | 090   | 082  | 081   | 084   | 081   | 077S  | 069S  | 061   | 051S  | 048   | 049   |
| 20     | I050S | 048   | 047   | 046   | 042   | 031   | 047   | 055   | 053   | 063S  | 068  | 080   | 084   | 094   | 102  | 098   | 084   | 082S  | J079S | I072S | J064S | 062S  | 058   | 058   |
| 21     | 056   | S     | S     | 063   | 036S  | 035   | 049   | 058   | 062   | 069   | 080  | 087   | 086   | 083   | 077  | 074S  | 073S  | I078S | I079S | S     | S     | 052S  | S     | S     |
| 22     | S     | 047   | J046S | 042   | 037   | 036   | 048   | 064   | 060   | 066   | 073S | 082   | 093S  | J096S | 100S | J094S | 086   | 080   | I075S | S     | S     | 090S  | I044S | I041S |
| 23     | I041S | 041S  | 040   | 038   | I040S | 042   | 055S  | 066   | 065   | 071   | 077S | 089   | 095S  | J096S | 099  | 085   | 082   | 084   | 085S  | 088S  | 082S  | 058S  | 050S  | 055   |
| 24     | J055S | I055S | 057   | 042   | 030   | 031   | 055   | 069   | 073S  | 077   | 077  | 081   | 098S  | 098   | 104  | 114   | 119   | I04S  | I092S | I080S | 063S  | J051S | 051S  | I054S |
| 25     | 052S  | 052   | I054S | 045S  | 039S  | 040   | 059   | 070   | 066   | 070   | 070  | 072   | 088   | 099   | 100S | 096   | 110   | I07   | 081   | I072S | 065S  | I061S | 060S  | 059   |
| 26     | S     | S     | S     | 065S  | 059   | 039   | I040S | 055   | 082   | 079   | 076  | 081S  | 108   | 119   | 123  | 107   | 089S  | 088   | 087S  | I079S | I071S | I063S | 058   | 059   |
| 27     | 060   | 062S  | I061S | 058   | 047S  | 045S  | 060   | J079S | 066   | 072   | 079  | 083   | 098   | 107   | 106  | 104   | 106   | 101S  | I093S | I078S | I070S | 062   | 097   | I056S |
| 28     | 055   | 056   | 058   | I059S | I044S | 037   | 056   | 064   | 062   | 062S  | 071  | 083   | 089   | 103   | 112  | 118   | J119S | 118   | I111S | I111S | I097S | I081S | I066S | 066S  |
| 29     | 065S  | I063S | 062S  | 055S  | I050S | I052S | 069S  | 073S  | 070S  | 071   | 073S | 085   | 098   | 105   | 118  | 120   | 118   | 117   | 128   | J114S | I086S | 062S  | I056S | I057S |
| 30     | 055   | 051   | 053   | 054S  | 052   | 053   | I068S | 073S  | 073S  | I074S | 073  | 080   | 096S  | 107   | 098  | 093S  | 104   | 090   | 075S  | S     | S     | S     | S     | I071S |
| 31     |       |       |       |       |       |       |       |       |       |       |      |       |       |       |      |       |       |       |       |       |       |       |       |       |
| Count  | 24    | 23    | 25    | 28    | 30    | 29    | 30    | 30    | 30    | 30    | 30   | 30    | 30    | 30    | 30   | 30    | 30    | 30    | 30    | 24    | 27    | 29    | 27    | 26    |
| Median | U048S | 047S  | 047S  | 044S  | 038S  | 035   | 046   | 062   | 064   | 068   | 072  | 081   | 094   | 099   | 102  | 098   | 089   | 088   | 084S  | U078S | 060S  | 051S  | 048S  | 050S  |
| U. Q.  | 055   | 052   | 055   | 051   | 042   | 038   | 055   | 069   | 068   | 073   | 076  | 085   | 098   | 107   | 111  | 106   | 104   | 103   | 093   | 083   | 065   | 060   | 056   | 056   |
| L. Q.  | 042   | 042   | 043   | 040   | 034   | 030   | 043   | 056   | 061   | 065   | 068  | 078   | 086   | 094   | 091  | 089   | 084   | 082   | 080   | 072   | 052   | 043   | 042   | 042   |
| Q. R.  | 013   | 010   | 012   | 011   | 008   | 008   | 012   | 013   | 007   | 008   | 008  | 007   | 012   | 013   | 020  | 017   | 020   | 021   | 013   | 011   | 013   | 017   | 014   | 014   |

Lat. 31° 12.1'N  
Long. 130° 37.1'E  
Yamagawa

IONOSPHERIC DATA

foF1 0.01 Mc 1 35° E Mean Time (G.M.T. ±9h)

Apr. 1966

| 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 430  | 450  | 470  | 460   | 480  | L    | 450   | L    | L    |      |    |    |    |    |    |    |  |
| 2      |    |    |    |    |    |    |    |    | L 460L | 480  | 470  | 460   | 470  | L    | 440   | L    | L    |      |    |    |    |    |    |    |  |
| 3      |    |    |    |    |    |    |    |    | L 410L | L    | 470  | 480L  | 470L | L    | 470H  | L    | L    |      |    |    |    |    |    |    |  |
| 4      |    |    |    |    |    |    |    |    | L      | L    | B    | 480   | 500L | 470  | 460   | 460  | 450L | A    |    |    |    |    |    |    |  |
| 5      |    |    |    |    |    |    |    |    | L 460  | 470  | 470  | 500   | 490  | 460  | 440L  | L    | L    |      |    |    |    |    |    |    |  |
| 6      |    |    |    |    |    |    |    |    | L      | L    | L    | 480   | 460L | 480A | 480   | 460  | 450L | L    |    |    |    |    |    |    |  |
| 7      |    |    |    |    |    |    |    |    | L      | L    | L    | L     | 480  | 480  | 480L  | 460  | L    | L    |    |    |    |    |    |    |  |
| 8      |    |    |    |    |    |    |    |    | L 460L | 480L | 490A | 490L  | 490  | 480  | 430   | L    | L    |      |    |    |    |    |    |    |  |
| 9      |    |    |    |    |    |    |    |    | L      | 500L | 470  | L     | 490  | 490  | 470L  | L    | L    |      |    |    |    |    |    |    |  |
| 10     |    |    |    |    |    |    |    |    | L      | 480L | L    | 490   | 480  | 490  | 470   | 440L | L    |      |    |    |    |    |    |    |  |
| 11     |    |    |    |    |    |    |    |    | L      | L    | 490L | 500   | 490  | 480  | 4470A | 460  | L    | L    |    |    |    |    |    |    |  |
| 12     |    |    |    |    |    |    |    |    | 460L   | 480L | 490  | 480   | 510  | 490  | 460H  | 440  | L    | L    |    |    |    |    |    |    |  |
| 13     |    |    |    |    |    |    |    |    | 450    | 490L | 490  | 480   | 470  | 490  | 460L  | L    | L    |      |    |    |    |    |    |    |  |
| 14     |    |    |    |    |    |    |    |    | 450L   | 460  | 470  | 490   | 480A | 470  | 460   | L    | L    |      |    |    |    |    |    |    |  |
| 15     |    |    |    |    |    |    |    |    | L 460L | L    | 480L | 500   | 480H | 470H | 460   | 430L | L    |      |    |    |    |    |    |    |  |
| 16     |    |    |    |    |    |    |    |    | L 450L | L    | 490  | A     | 490  | 480  | 480   | L    | L    | L    |    |    |    |    |    |    |  |
| 17     |    |    |    |    |    |    |    |    | L      | L    | 490L | 480   | 500  | 490  | 470   | 480  | 450L | L    |    |    |    |    |    |    |  |
| 18     |    |    |    |    |    |    |    |    | L 450  | 490  | 480  | 490   | 490  | 470  | 470   | 460  | L    | L    |    |    |    |    |    |    |  |
| 19     |    |    |    |    |    |    |    |    | L 470  | 470  | 470  | 480   | 480  | 480  | 480   | L    | L    | L    |    |    |    |    |    |    |  |
| 20     |    |    |    |    |    |    |    |    | L 470L | 480  | 470  | 490   | 480  | 470  | 460   | 470L | L    | L    |    |    |    |    |    |    |  |
| 21     |    |    |    |    |    |    |    |    | L 460  | 480  | 480  | 490   | 480  | 460  | 440   | L    | L    | L    |    |    |    |    |    |    |  |
| 22     |    |    |    |    |    |    |    |    | L 470L | 480  | 500  | 490   | 490  | 490  | 460   | 440  | L    | L    |    |    |    |    |    |    |  |
| 23     |    |    |    |    |    |    |    |    | L 460  | 500  | 490A | 490   | 500  | 480  | 480L  | 470L | L    |      |    |    |    |    |    |    |  |
| 24     |    |    |    |    |    |    |    |    | L 470L | 470  | 520L | 490   | 520  | 490  | 490   | 450  | L    |      |    |    |    |    |    |    |  |
| 25     |    |    |    |    |    |    |    |    | L      | L    | L    | L     | 510  | 490  | 490A  | 500  | 450  | L    |    |    |    |    |    |    |  |
| 26     |    |    |    |    |    |    |    |    | L 470L | 480  | 530L | 500   | 500  | 480A | 490L  | 440  | L    |      |    |    |    |    |    |    |  |
| 27     |    |    |    |    |    |    |    |    | L 410L | 450L | 510  | 490L  | 500  | 490  | 480   | 460  | L    |      |    |    |    |    |    |    |  |
| 28     |    |    |    |    |    |    |    |    | L 460L | L    | 480  | 510   | 500  | 480R | 470   | 460  | 410L | L    |    |    |    |    |    |    |  |
| 29     |    |    |    |    |    |    |    |    | L 480L | L    | 500  | 490   | A    | A    | A     | 450  | A    | A    |    |    |    |    |    |    |  |
| 30     |    |    |    |    |    |    |    |    | L      | L    | A    | I500A | 500  | 490  | 470   | L    | 450  | A    |    |    |    |    |    |    |  |
| 31     |    |    |    |    |    |    |    |    |        |      |      |       |      |      |       |      |      |      |    |    |    |    |    |    |  |
| Count  |    |    |    |    |    |    |    |    | 1      | 19   | 20   | 26    | 28   | 29   | 27    | 27   | 18   | 4    |    |    |    |    |    |    |  |
| Median |    |    |    |    |    |    |    |    | 410L   | 460L | 480  | 480   | 490  | 490  | 480   | 460  | 450  | 410L |    |    |    |    |    |    |  |
| U. Q.  |    |    |    |    |    |    |    |    |        |      |      |       |      |      |       |      |      |      |    |    |    |    |    |    |  |
| L. Q.  |    |    |    |    |    |    |    |    |        |      |      |       |      |      |       |      |      |      |    |    |    |    |    |    |  |
| Q. R.  |    |    |    |    |    |    |    |    |        |      |      |       |      |      |       |      |      |      |    |    |    |    |    |    |  |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

foF1

Y 2

Apr. 1966

foE

0.01 Mc 1.35° E Mean Time (G. M. T. +9h)

Yamagawa

Lat. 31° 12.1'N  
Long. 130° 37.1'E

IONOSPHERIC DATA

| 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   | 220  | 270  | 310R  | 320   | R     | A     | R     | R     | R     | I310R | 295   | 250   | A     |     |    |    |    |    |
| 2      |    |    |    |    |    | S   | 200H | 265  | 300   | R     | B     | R     | R     | R     | R     | I320R | 280   | 230   | A     |     |    |    |    |    |
| 3      |    |    |    |    |    | S   | 200H | 260  | 305   | R     | R     | B     | R     | R     | R     | A     | 290R  | 250   | 180   |     |    |    |    |    |
| 4      |    |    |    |    |    | S   | 215H | 270  | 300   | I320R | B     | B     | B     | B     | B     | R     | 295R  | 260   | B     |     |    |    |    |    |
| 5      |    |    |    |    |    | S   | 190  | 260  | I305R | R     | R     | A     | R     | R     | R     | I320R | I290R | 250   | 190   |     |    |    |    |    |
| 6      |    |    |    |    |    | S   | 220  | 270  | 310   | 330   | 350   | I350B | 350R  | R     | R     | R     | R     | 260   | 190   |     |    |    |    |    |
| 7      |    |    |    |    |    | S   | 220  | 280  | 320   | 335   | I345B | I350R | I350R | 340   | 315   | 290   | 250   | 185   |       |     |    |    |    |    |
| 8      |    |    |    |    |    | S   | 215  | 290  | 320R  | 330   | A     | A     | A     | A     | R     | R     | 290   | 250   | 180   |     |    |    |    |    |
| 9      |    |    |    |    |    | S   | 220  | 280  | 310   | 320   | 330   | 335R  | A     | A     | A     | A     | A     | A     | A     |     |    |    |    |    |
| 10     |    |    |    |    |    | S   | 220  | 280  | 315   | I335R | B     | A     | R     | A     | A     | A     | 305   | I265A | A     |     |    |    |    |    |
| 11     |    |    |    |    |    | S   | 210  | 290  | 320   | 330   | I340R | 345   | I350B | A     | A     | A     | A     | I265A | A     |     |    |    |    |    |
| 12     |    |    |    |    |    | S   | 230H | 280H | 320   | 330R  | I340B | I345A | 340   | R     | R     | I330R | I300R | 260   | 200   |     |    |    |    |    |
| 13     |    |    |    |    |    | S   | 230  | 290  | 320   | 320   | R     | A     | R     | B     | B     | I325R | 310   | 270   | 200   |     |    |    |    |    |
| 14     |    |    |    |    |    | S   | 220  | 280  | I310R | 325R  | 350R  | I350R | 350   | R     | R     | I320R | 300   | 260   | 200   |     |    |    |    |    |
| 15     |    |    |    |    |    | S   | 230  | 275  | I310R | I330R | I340R | I350R | I350R | 320   | 300   | 270   | 200   |       |       |     |    |    |    |    |
| 16     |    |    |    |    |    | S   | 220  | 280  | 310   | I325R | 350   | I350R | 350   | R     | R     | I345R | I325R | 300R  | 270   | 190 |    |    |    |    |
| 17     |    |    |    |    |    | S   | 230  | 280  | 310R  | R     | R     | R     | R     | R     | R     | I320R | 310R  | 260   | 200   |     |    |    |    |    |
| 18     |    |    |    |    |    | S   | 220  | 290  | 310   | 325   | I340R | 350   | A     | R     | A     | R     | R     | 260   | I200R |     |    |    |    |    |
| 19     |    |    |    |    |    | S   | 215  | 270  | 310   | 330R  | R     | R     | R     | R     | R     | R     | 305   | 260   | 190   |     |    |    |    |    |
| 20     |    |    |    |    |    | S   | 230  | 280  | 310   | 330   | I340R | 350   | R     | R     | R     | R     | R     | 260   | 200   |     |    |    |    |    |
| 21     |    |    |    |    |    | S   | 230  | 280  | 310R  | A     | R     | 350   | R     | R     | R     | R     | R     | 260   | 210   |     |    |    |    |    |
| 22     |    |    |    |    |    | S   | 230  | 285  | 315R  | I335R | 350R  | R     | R     | R     | I335R | I325R | 305   | 270   | 215   |     |    |    |    |    |
| 23     |    |    |    |    |    | 165 | 250  | 290  | 310   | R     | R     | R     | R     | R     | R     | R     | 305   | 280   | 215   |     |    |    |    |    |
| 24     |    |    |    |    |    | S   | 240H | 280  | 315R  | I340R | R     | R     | R     | B     | B     | I330B | 305   | 270   | 200   |     |    |    |    |    |
| 25     |    |    |    |    |    | 170 | 260  | 300  | 320   | R     | R     | R     | B     | R     | R     | 330R  | 310   | A     | A     |     |    |    |    |    |
| 26     |    |    |    |    |    | 160 | 250  | 290  | 300   | A     | R     | A     | A     | A     | A     | A     | A     | 270   | A     |     |    |    |    |    |
| 27     |    |    |    |    |    | S   | A    | A    | A     | A     | R     | B     | B     | R     | B     | 340   | 305R  | 270   | A     |     |    |    |    |    |
| 28     |    |    |    |    |    | S   | 240  | 290  | I320A | 340   | I350A | 355   | R     | R     | R     | R     | 300R  | 260   | 170   |     |    |    |    |    |
| 29     |    |    |    |    |    | 190 | 250  | 290  | 330   | 340   | I350R | A     | R     | R     | R     | R     | 300   | 270   | 200   |     |    |    |    |    |
| 30     |    |    |    |    |    | S   | 240  | 280  | R     | A     | A     | B     | 360   | I355R | I340R | 310   | 270   | B     |       |     |    |    |    |    |
| 31     |    |    |    |    |    |     |      |      |       |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |
| Count  |    |    |    |    |    | 4   | 29   | 29   | 28    | 20    | 13    | 12    | 9     | 10    | 15    | 24    | 28    | 20    |       |     |    |    |    |    |
| Median |    |    |    |    |    | 170 | 220  | 280  | 310   | 330   | U345R | 350   | 350   | U340R | U325R | 300   | 260   | 200   |       |     |    |    |    |    |
| U. Q.  |    |    |    |    |    |     |      |      |       |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |
| L. Q.  |    |    |    |    |    |     |      |      |       |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |
| G. R.  |    |    |    |    |    |     |      |      |       |       |       |       |       |       |       |       |       |       |       |     |    |    |    |    |

foE

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Lat. 31° 12.1' N  
Long. 130° 37.1' E

Yamagawa

IONOSPHERIC DATA

foEs 0.1 Mc 13.5° E Mean Time ((G.M.T. +9h)

Apr. 1966

| 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      | E015S | E015S | E015B | E015B | E013B | E015S | E015S | 025 | G    | 035  | 042   | 041   | 025G  | 029G  | 029G  | 026G  | 025G | 024G  | J021 | 018   | J020  | E015S | E015S | E015S |
| 2      | E015S | E015S | E014B | E015B | E015B | E015S | E015S | 024 | 028  | 033  | G     | E040B | 036   | 035   | 025G  | 025G  | 024G | 027   | J027 | J029  | E015S | 019M  | 023M  | E015S |
| 3      | E015S | E015B | E015B | 018M  | E014B | E015S | E015S | 028 | 034  | 036  | 032G  | 036   | E040B | 041   | 038   | J033  | 024G | 030   | J036 | J024  | E015S | E015S | E015S | E015S |
| 4      | E015S | E015B | E015B | E014B | E014B | E015S | E015S | 026 | 030  | G    | E054B | E040B | E037B | E040B | 035   | 033   | J046 | J058  | J093 | 037M  | 029   | J024  | E015S |       |
| 5      | E015S | E015S | E015B | E015B | E015B | E021M | E015S | G   | G    | G    | 044   | 043   | 042   | 040   | 037   | 025G  | 024G | 021G  | 024  | J023  | 022M  | E015S | E015S | E015S |
| 6      | E015S | E015S | E014B | E015B | E014B | E015S | E015S | G   | 030  | G    | 036   | 039   | 038   | 032   | G     | 035   | 022G | 030   | 029  | 028   | E015S | J021  | 039M  | J040  |
| 7      | E015S | J038  | E015B | 018M  | 020M  | 021M  | 027   | 027 | 033  | G    | 038   | E038B | G     | G     | G     | G     | G    | 030   | 023  | J048  | J028  | J022  | 021M  | J029  |
| 8      | 029M  | J040  | 030   | 019   | 028   | J037  | E015S | 028 | 032  | 035  | 038   | J058  | 037   | 037   | 034G  | 028G  | 025G | J0264 | 023  | J020  | J016  | 020M  | E015S | E015S |
| 9      | E015S | E015B | E015B | E015B | E017B | 017M  | E015S | G   | G    | G    | 037   | 040   | 042   | 046   | J049  | 034   | J032 | 028   | 020  | 020M  | E015S | E015S | E015S | E015S |
| 10     | E015S | E015S | E015B | E015B | E016B | E015S | E015S | G   | 032  | 034  | G     | E040B | 038   | 028G  | 039   | J034  | 025G | J029  | 029  | J043  | E015S | E015S | E015S | E015S |
| 11     | E015S | E015S | E015B | E015B | E014B | E015S | E015S | G   | 031  | 035  | 036   | G     | 040   | 043   | J065  | J046  | 034  | J034  | 031  | J023  | 021M  | 017   | E015S | J029  |
| 12     | J026  | J040  | J029  | J019  | E015B | E015B | E015S | 027 | 035  | 038  | 040   | 038   | J049  | 040   | 040   | G     | G    | G     | 023  | J029  | J036  | E015S | E015S | E015S |
| 13     | E015S | E015S | E020B | E     | E011B | E015B | E015S | 019 | 026  | G    | 034   | 035   | 029G  | 035   | 047   | E040B | 025G | G     | 037  | 024   | J035  | 018   | E015S | 022M  |
| 14     | E015S | E015S | E020B | E015B | E015B | E015S | E015S | 018 | 030  | 033  | 035   | 040   | 051   | 044   | 083   | 040   | G    | 025G  | G    | J030  | J025  | J022  | 039M  | E015S |
| 15     | E015S | E014S | E015S | E     | E014B | E014B | 020   | 026 | 037  | G    | 040   | G     | 051   | 046   | G     | 040   | 039  | 030   | 035  | J036  | J031  | J019  | J022  | J022  |
| 16     | E015S | E015S | E015S | E015B | E015B | E015S | E015S | 029 | 035  | 037  | 043   | 041   | 050   | 042   | 036   | G     | G    | G     | 022  | 017   | 022M  | 022M  | 022M  | J023  |
| 17     | J051  | J035  | J023  | J024  | J022  | 022   | J022  | 029 | 034  | 037  | 042   | 039   | 029G  | 032G  | 026G  | 026G  | G    | 017G  | 025  | J027  | J055  | J023  | J023  | 021M  |
| 18     | J021  | J033  | J024  | J023  | E015B | E015S | E015S | 024 | 033  | 037  | 039   | 040   | 039   | 037   | 034G  | 035   | 028G | G     | G    | E015S | E015S | E015S | E015S | E015S |
| 19     | E015S | E015S | E015B | E     | E013B | E015B | E015S | G   | G    | G    | 036   | 029G  | 026G  | 028G  | 029G  | 027G  | 021G | J027  | 020  | E015S | E015S | E015S | E015S | E015S |
| 20     | E015S | E015S | E015B | E015B | E014B | E015S | E015S | 029 | 031  | 035  | 035   | G     | 037   | 037   | 028G  | G     | 028G | G     | 022  | E015S | 022   | J019  | J020  | 020M  |
| 21     | E015S | E012S | E015B | E     | E     | E015S | 020   | 029 | 032  | 036  | 039   | 038   | 047   | G     | 044   | 035   | G    | 031   | 028  | 028   | J023  | 019M  | E015S | 019M  |
| 22     | E015S | E012S | E015B | E015B | E     | E014S | 020   | 029 | 034  | 038  | 044   | 040   | 042   | 043   | 044   | 035   | G    | G     | G    | 020   | 021   | 021   | J029  | 021   |
| 23     | J022  | 030M  | 028M  | J022  | E015B | E015S | 019   | G   | 032  | 037  | 040   | 051   | 041   | 037   | 038   | 038   | G    | 039   | J042 | J033  | J022  | E015S | 024M  | 021M  |
| 24     | E015S | E015S | E016B | E014B | E015B | E015S | 022   | 030 | 035  | 035  | 040   | 043   | 046   | 041   | E040B | 041   | 039  | J044  | 045  | E015S | E015S | E015S | 021M  | J023  |
| 25     | E015S | E015S | E015B | 020M  | J022  | E015S | 027   | 030 | 036  | 042  | J050  | J046  | 043   | 046   | 052   | 047   | 036  | J055  | 025  | 025   | E015S | 020M  | E015S | E015S |
| 26     | J028  | J038  | E015B | E014B | E015B | E015S | 021   | 034 | 032  | 036  | 042   | 042   | 026G  | J047  | J054  | 042   | 039  | J043  | J043 | J052  | 030M  | J035  | J031  | J023  |
| 27     | E015S | E015S | E015B | E015B | E015B | 021M  | 021   | 030 | J035 | 035  | G     | E040B | E040B | G     | E040B | 037   | G    | 047   | J047 | J053  | J040  | J038  | 025M  | J023  |
| 28     | J021  | 022   | 022   | E015B | J029  | 022   | 024   | 031 | G    | 037  | 036   | 044   | 045   | 046   | 045   | 029G  | 042  | 033   | 028  | 029   | J023  | 029M  | E015S | E015S |
| 29     | E015S | 019M  | E015S | E015B | E015B | E015S | G     | 029 | G    | 039  | 044   | 048   | 042   | J055  | J069  | J052  | J060 | J048  | J060 | J063  | J063  | E015S | 020M  | S     |
| 30     | 019M  | E015S | E014S | E015B | E015B | E015S | 020   | 029 | 032  | J046 | J054  | J085  | 039   | 044   | 041   | 045   | 047  | J061  | J045 | 039M  | J045  | J046  | J030  | J024  |
| 31     |       |       |       |       |       |       |       |     |      |      |       |       |       |       |       |       |      |       |      |       |       |       |       |       |
| Count  | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30  | 30   | 30   | 30    | 30    | 30    | 30    | 30    | 30    | 30   | 30    | 30   | 30    | 30    | 30    | 30    | 29    |
| Median | E015S | E015S | E015B | E015B | E015B | E015S | E015S | 028 | 032  | 035  | 038   | 040   | 040   | 040   | 038   | 034   | G    | 030   | 026  | 028   | 022   | 019   | 020   | 019   |
| U. Q.  | 019   | 022   | E016  | 018   | E015  | E015  | 020   | 029 | 034  | 037  | 042   | 044   | 043   | 046   | 044   | 038   | 034  | 039   | 036  | 036   | 030   | 022   | 024   | 023   |
| L. Q.  | E015  | E015  | E015  | E015  | E014  | E015  | E015  | 024 | 028  | G    | 035   | E038G | 036   | E035G | G     | G     | G    | G     | 023  | 020   | E015  | E015  | E015  | E015  |
| Q. R.  | D004  | D007  | D003  | D003  | D005  | D005  | 005   | 007 | 006  | 007  | 007   | 007   | 007   | 007   |       |       |      |       |      |       | D015  | D007  | D009  | D008  |

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

O.1 Mc **fbEs** 1 3.5° E Mean Time (G. M. T. +9h)

**fbEs**

**Apr. 1966**

| 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     | S     | B   | B   | B   | S     | S   | G     |     | 035 | 041   | 040   | E025R | E029R | E026G | 024G  | 022G  | E021R | E     | 017   | S     | S     | S     | S     |  |
| 2      | S     | S     | B   | B   | B   | S     | S   | G     | 033 |     | B     | 036   | E035R | 046   | 025G  | 024G  | 027   | 025   | 027   | S     | E     | 018   | S     | S     |  |
| 3      | S     | S     | B   | B   | B   | S     | S   | G     | 034 | 034 | E036R | B     | 040   | 038   | E033R | 023G  | 030   | 035   | 023   | S     | S     | S     | S     | S     |  |
| 4      | S     | S     | B   | B   | B   | S     | S   | G     |     |     | B     | B     | B     | B     | B     | 035   | 033   | 042   | 043   | A     | 028   | 028   | E024S | S     |  |
| 5      | S     | S     | B   | B   | B   | A     | S   |       |     | 042 | 042   | E042R | 040   | 037   | 025G  | 024G  | 020G  | 023   | 021   | E     | S     | S     | S     | S     |  |
| 6      | S     | S     | B   | B   | B   | S     | S   |       | 030 |     | 035   | 039   | E038R | 051   | 034   | 022G  | 030   | G     | 022   | S     | 017   | E039S | 018   |       |  |
| 7      | S     | 019   | B   | E   | 015 | E     | E   | G     | 032 |     | 038   | B     |       |       |       |       | 027   | 022   | 025   | 025   | 019   | E     | 028   |       |  |
| 8      | E029S | E040S | 022 | 018 | 022 | E037S | S   | 028   | 031 | 035 | 036   | 058   | 036   | E037R | E034R | E028R | 022G  | 022G  | 016   | 016   | E     | 020   | S     | S     |  |
| 9      | S     | B     | B   | B   | B   | E     | S   |       |     | 036 | 038   | 038   | 040   | 044   | 048   | 034   | 031   | 027   | 020   | E     | S     | S     | S     | S     |  |
| 10     | S     | S     | B   | B   | B   | S     | S   |       | G   | 034 | B     | E038R | E028R | 039   | 034   | 023G  | 029   | E029R | 040   | S     | S     | S     | S     | S     |  |
| 11     | S     | S     | B   | B   | B   | S     | S   |       | 030 | 034 | 035   |       | 040   | 040   | 050   | 040   | 033   | 031   | 026   | 020   | E     | E     | S     | E029S |  |
| 12     | 020   | 022   | 021 | 015 | B   | B     | S   | G     | 032 | 037 | 039   | 038   | 043   | 040   | E040R |       |       | 021   | 025   | 032   | S     | S     | S     | S     |  |
| 13     | S     | S     | B   | B   | B   | S     | 018 | G     |     | 034 | 035   | E029R | E035R | 040   | B     | E025R |       | 031   | G     | 032   | E     | S     | E     | E     |  |
| 14     | S     | S     | B   | B   | B   | S     | 016 | 030   | 033 | G   | 037   | 041   | 041   | 062   | 038   |       | 025G  |       | 026   | 030   | 019   | 018   | 016   | S     |  |
| 15     | S     | S     | S   | S   | B   | B     | 019 | 026   | 035 |     | 034   |       | 042   | 039   | 038   |       | 037   | 029   | 031   | 034   | 029   | 019   | 016   | 020   |  |
| 16     | S     | S     | S   | B   | B   | S     | S   | 028   | 034 | 036 | 037   | 040   | 048   | 041   | E036R |       |       | E022R | 016   | E     | E     | 016   | 020   |       |  |
| 17     | 019   | 020   | 017 | 015 | 016 | 015   | 017 | 028   | 033 | 036 | 040   | 039   | E029R | E032R | E026R |       | 017G  | 022   | 025   | 026   | 021   | E     | E     | E     |  |
| 18     | 016   | 022   | E   | 020 | B   | S     | S   | E024R | 033 | 035 | 037   | 040   | 039   | E037R | E034R | 034   | E028R |       | S     | S     | S     | S     | S     | S     |  |
| 19     | S     | S     | B   | B   | B   | S     | S   |       |     | 036 | E029R | E026R | E028R | E029R | 027G  | 021G  | 020   | 020   | S     | S     | S     | S     | S     | S     |  |
| 20     | S     | S     | S   | B   | B   | S     | S   | G     | G   |     | 035   | E037R | 037   | E028R |       | 028G  |       | G     | S     | 021   | E     | E     | E     | E     |  |
| 21     | S     | S     | S   | B   | B   | S     | G   | 028   | 032 | 035 | 038   | 038   | 046   |       |       |       | 031   | 027   | 028   | 021   | E     | S     | E     | E     |  |
| 22     | S     | S     | B   | B   | B   | S     | G   | 029   | G   | 037 | 039   | 038   | 040   | 042   | 044   | 034   |       | E     | 018   | E     | 022   | E     | E     | E     |  |
| 23     | 018   | 021   | 023 | 022 | B   | S     | G   |       | 031 | 036 | 039   | 050   | 041   | E037R | 038   | 038   |       | 038   | 041   | 031   | 022   | S     | 020   | E     |  |
| 24     | S     | S     | B   | B   | B   | S     | 022 | 029   | 035 | 035 | 039   | 042   | 043   | 041   | B     | 039   | 036   | 040   | 041   | S     | S     | S     | 021   | E     |  |
| 25     | S     | S     | B   | B   | E   | S     | 025 | 030   | 035 | 040 | 046   | 044   | 042   | 045   | 051   | 046   | 032   | 033   | 024   | E     | S     | E     | S     | S     |  |
| 26     | 021   | 032   | B   | B   | B   | S     | 020 | 031   | 032 | 033 | 040   | 041   | E026R | 044   | E054R | 042   | 036   | 035   | 040   | 042   | 021   | 022   | 024   | 023   |  |
| 27     | S     | S     | B   | B   | B   | E     | 021 | 028   | 033 | 034 | B     | B     | B     | B     | B     | 036   |       | 041   | 046   | 053   | 036   | 023   | E     | 017   |  |
| 28     | 021   | 021   | 019 | B   | 024 | 022   | 022 | 030   |     | 036 | 035   | 043   | 044   | 040   | 039   | E029R | 039   | 032   | 023   | 024   | E     | 018   | S     | S     |  |
| 29     | S     | E     | S   | B   | B   | S     |     | 029   |     | 037 | 043   | 046   | 041   | 055   | E069S | 050   | 040   | 045   | 055   | E087S | E065S | S     | E     | S     |  |
| 30     | E     | S     | S   | B   | B   | S     | 020 | 028   | 031 | 041 | 049   | 063   | 037   | 042   | 040   | 044   | 042   | 061   | E045R | 031   | 037   | 016   | 023   | 021   |  |
| 31     |       |       |     |     |     |       |     |       |     |     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
| Count  |       |       |     |     |     |       |     |       |     |     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
| Median |       |       |     |     |     |       |     |       |     |     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
| U. Q.  |       |       |     |     |     |       |     |       |     |     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
| L. Q.  |       |       |     |     |     |       |     |       |     |     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
| Q. R.  |       |       |     |     |     |       |     |       |     |     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

**fbEs**

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

f<sub>-</sub>min 0.1 Mc 1.35° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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      | E01.58 | E01.58 | 01.5   | 01.5 | 01.3 | E01.58 | E01.58 | E01.58 | 01.5 | 01.7 | 01.8 | 02.1 | 02.2 | 02.1 | 02.3 | 01.8 | 01.6 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |
| 2      | E01.58 | E01.58 | 01.4   | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.5 | 02.0 | 02.1 | 04.0 | 02.4 | 02.3 | 02.0 | 01.9 | 01.7 | 01.4   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |
| 3      | E01.58 | 01.5   | 01.5   | 01.4 | 01.4 | E01.58 | E01.58 | E01.58 | 01.5 | 01.7 | 02.1 | 02.0 | 04.0 | 02.6 | 02.3 | 01.6 | 01.5 | E01.48 | E01.38 | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |
| 4      | E01.58 | E01.58 | 01.5   | 01.4 | 01.4 | E01.58 | E01.58 | E01.58 | 01.5 | 01.8 | 02.1 | 05.4 | 04.0 | 03.7 | 04.0 | 02.2 | 01.8 | 01.6   | 01.7   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |
| 5      | E01.58 | E01.58 | 01.5   | 01.5 | 01.5 | E01.58 | E01.58 | E01.48 | 01.4 | 01.7 | 01.7 | 02.1 | 03.3 | 03.1 | 02.1 | 02.2 | 01.5 | 01.4   | E01.58 | E01.68 | E01.58 | E01.58 | E01.58 |        |
| 6      | E01.58 | E01.58 | 01.4   | 01.5 | 01.4 | E01.58 | E01.58 | E01.58 | 01.5 | 01.6 | 01.8 | 02.1 | 02.2 | 03.6 | 01.6 | 01.9 | 01.7 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 7      | E01.58 | E01.58 | 01.5   | 01.5 | E    | E01.58 | E01.58 | E01.58 | 01.5 | 01.7 | 01.9 | 03.8 | 02.4 | 02.1 | 01.9 | 01.6 | 01.6 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 8      | E01.58 | E01.58 | 01.5   | 01.2 | 01.5 | E01.58 | E01.58 | 01.5   | 01.5 | 01.5 | 02.0 | 02.2 | 02.2 | 02.0 | 02.0 | 01.9 | 01.5 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 9      | E01.58 | 01.5   | 01.5   | 01.5 | 01.7 | E01.58 | E01.58 | E01.58 | 01.5 | 02.0 | 02.1 | 01.9 | 02.3 | 03.2 | 01.9 | 01.9 | 01.5 | 01.4   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 10     | E01.58 | E01.58 | 01.5   | 01.5 | 01.6 | E01.58 | E01.58 | E01.58 | 01.4 | 01.5 | 02.1 | 04.0 | 03.0 | 02.2 | 02.2 | 01.9 | 01.5 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 11     | E01.58 | E01.58 | 01.5   | 01.5 | 01.4 | E01.58 | E01.58 | E01.58 | 01.6 | 02.2 | 01.8 | 02.4 | 02.2 | 03.5 | 02.4 | 02.0 | 01.9 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 12     | E01.58 | E01.58 | 01.4   | 01.4 | 01.5 | E01.58 | E01.58 | 01.5   | 01.8 | 01.7 | 03.4 | 03.4 | 03.4 | 02.2 | 02.1 | 02.0 | 01.8 | 01.5   | E01.48 | E01.48 | E01.58 | E01.58 | E01.58 |        |
| 13     | E01.58 | E01.58 | 01.5   | E    | 01.1 | E01.58 | E01.58 | E01.58 | 01.5 | 01.5 | 02.0 | 02.0 | 02.1 | 02.1 | 04.0 | 01.7 | 01.7 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 14     | E01.58 | E01.58 | 02.0   | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.5 | 01.5 | 01.6 | 01.9 | 02.0 | 02.2 | 01.8 | 01.9 | 01.5 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 15     | E01.58 | E01.48 | E01.58 | E    | 01.4 | 01.4   | E01.58 | E01.58 | 01.4 | 01.6 | 02.1 | 01.7 | 02.2 | 02.1 | 01.8 | 01.7 | 01.5 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 16     | E01.58 | E01.58 | E01.58 | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.5 | 01.5 | 02.1 | 02.3 | 02.4 | 02.2 | 01.7 | 01.9 | 01.6 | 01.7   | 01.4   | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 17     | E01.58 | E01.58 | 01.2   | E    | E    | E01.48 | E01.58 | 01.2   | 01.6 | 01.8 | 01.6 | 01.8 | 02.4 | 02.3 | 02.3 | 02.2 | 01.7 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 18     | E01.58 | E01.58 | 01.5   | E    | 01.3 | E01.58 | E01.58 | E01.58 | 01.7 | 01.7 | 02.2 | 02.3 | 02.4 | 03.1 | 02.5 | 02.1 | 01.6 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 19     | E01.58 | E01.58 | 01.5   | E    | 01.3 | E01.58 | E01.58 | E01.58 | 01.5 | 02.0 | 02.3 | 02.3 | 02.3 | 02.4 | 02.5 | 02.2 | 01.5 | 01.4   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 20     | E01.58 | E01.58 | E01.58 | 01.5 | 01.4 | E01.58 | E01.58 | E01.58 | 01.5 | 01.5 | 01.9 | 02.4 | 02.3 | 02.3 | 02.2 | 02.3 | 01.6 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 21     | E01.58 | E01.58 | E01.58 | E    | E    | E01.58 | E01.58 | E01.48 | 01.5 | 01.7 | 02.1 | 02.3 | 02.2 | 02.3 | 02.2 | 01.9 | 01.5 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 22     | E01.58 | E01.28 | 01.5   | 01.5 | E    | E01.48 | E01.58 | 01.5   | 01.7 | 01.7 | 02.2 | 02.3 | 02.3 | 02.3 | 02.2 | 02.2 | 02.2 | 01.6   | E01.68 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 23     | E01.58 | E01.58 | 01.5   | 01.5 | 01.5 | E01.58 | E01.58 | 01.5   | 01.5 | 01.8 | 02.3 | 02.3 | 02.4 | 02.2 | 02.3 | 02.2 | 02.3 | 01.6   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 24     | E01.58 | E01.58 | 01.6   | 01.4 | 01.5 | E01.58 | E01.58 | E01.58 | 01.5 | 01.6 | 02.3 | 02.3 | 02.3 | 03.7 | 04.0 | 03.3 | 02.1 | 01.5   | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 25     | E01.58 | E01.58 | 01.5   | 01.5 | 01.3 | E01.58 | E01.58 | E01.58 | 01.7 | 01.8 | 02.3 | 02.2 | 03.9 | 02.5 | 03.3 | 02.2 | 02.0 | 01.5   | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 26     | E01.58 | E01.58 | 01.5   | 01.4 | 01.5 | E01.58 | E01.58 | 01.4   | 01.5 | 01.7 | 02.4 | 02.3 | 02.4 | 02.3 | 02.4 | 02.4 | 01.7 | 01.5   | E01.48 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 27     | E01.58 | E01.58 | 01.5   | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.5 | 02.1 | 02.3 | 04.0 | 04.0 | 03.2 | 04.0 | 02.3 | 01.5 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 28     | E01.58 | E01.58 | 01.5   | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 02.3 | 02.3 | 02.1 | 02.2 | 02.3 | 02.3 | 02.5 | 02.3 | 02.0 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 29     | E01.58 | E01.58 | E01.58 | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.7 | 02.2 | 02.2 | 02.4 | 02.3 | 02.4 | 02.3 | 02.4 | 02.1 | 02.2   | E01.58 | E01.58 | E01.58 | E01.58 | s      |        |
| 30     | E01.58 | E01.58 | E01.48 | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.6 | 02.1 | 02.2 | 02.3 | 03.5 | 02.4 | 01.8 | 01.8 | 02.3 | 01.6   | 02.2   | E01.58 | E01.58 | E01.58 | E01.58 |        |
| 31     |        |        |        |      |      |        |        |        |      |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        |
| Count  | 30     | 30     | 30     | 30   | 30   | 30     | 30     | 30     | 30   | 30   | 30   | 30   | 30   | 30   | 30   | 30   | 30   | 30     | 30     | 30     | 30     | 30     | 30     | 29     |
| Median | E01.58 | E01.58 | 01.5   | 01.5 | 01.5 | E01.58 | E01.58 | E01.58 | 01.5 | 01.7 | 02.1 | 02.3 | 02.4 | 02.3 | 02.2 | 02.0 | 01.6 | 01.5   | E01.58 | E01.58 | E01.58 | E01.58 | E01.58 |        |
| U. Q.  |        |        |        |      |      |        |        |        |      |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        |
| L. Q.  |        |        |        |      |      |        |        |        |      |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        |
| Q. R.  |        |        |        |      |      |        |        |        |      |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        |

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 6

f<sub>-</sub>min



Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

M(3000)F2 0.01 1 35° E Mean Time (G.M.T. +9h)

Apr. 1966

| 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     | 340S   | 330    | 290   | 300S  | 350    | 350S  | 34.5   | 34.5S | 330   | 320   | 305   | 315  | 325   | 330   | I330S | 34.5  | 350   | 365   | 285   | 285S  | 285S  |
| 2      | J295S | I280S | 280   | 325    | 350    | 305   | J340S | 350    | 315   | 355S   | 310   | 290   | 305   | 315S  | 310  | 320   | 320   | 340   | 34.5  | I340S | 340   | 285   | I275S | S     |
| 3      | S     | S     | S     | I34.5S | J34.5S | 275   | 325   | U350S  | 350S  | 34.0   | 310S  | 320   | 310   | 305S  | 315  | 330S  | 315   | J335S | 355S  | S     | 360   | 280   | 285S  | U295S |
| 4      | I290S | 280S  | 31.5S | I310S  | I360S  | 285   | 325S  | 350    | 355   | 350    | 320   | 295R  | 310S  | 305   | 315  | 320S  | 315   | 350   | 370   | I325A | 285   | 275S  | S     | S     |
| 5      | S     | S     | S     | S      | J375S  | A     | 335S  | 355    | 350   | 330    | 320   | 300   | J305S | 300   | 300  | 320   | 315   | 325S  | I340S | J335S | 325   | 305   | I275S | 285S  |
| 6      | I290S | 290   | 290   | 300    | 320S   | I340S | 350   | 360    | 34.5  | J34.5S | 325   | 315S  | 310   | 320   | 315  | J310S | 320   | 330S  | 335   | I340S | 335   | 280   | I280S | 280   |
| 7      | I285S | 270S  | 285   | 310S   | 34.5S  | 315   | 335   | 335    | I340S | 325H   | 325   | 310   | 305   | 315   | 310  | 325S  | 320   | 325   | S     | S     | 325S  | I300S | 270S  | 285S  |
| 8      | 275   | I280S | I290S | 31.5S  | 340    | I305S | 315   | 335S   | 320S  | 330    | 315S  | J320S | 300   | 300   | 310  | 310   | 320   | 325   | 335S  | I320S | 325S  | 300S  | 265S  | J275S |
| 9      | I280S | 280   | I295S | I305S  | 310S   | 285S  | 325   | 360S   | 360   | 340    | 340   | 325   | 295S  | 305   | 310  | 315   | 310S  | 315   | S     | S     | 350S  | 285   | I275S | I290S |
| 10     | U295S | S     | S     | S      | 295    | 310   | 355S  | 355    | 340S  | 335    | 315   | 275   | 300   | 320   | 315  | 305   | 315S  | 330   | 340   | 330   | 285   | 285S  | 290   | 275   |
| 11     | I290S | 305S  | 330   | 325    | I285S  | I285S | 320S  | 350S   | 355   | 325    | 305   | 290   | 300S  | 305   | 315  | 310   | 310   | 320S  | 335S  | J335S | 325   | 290   | I280S | I285S |
| 12     | I280S | I290S | 300S  | 305    | 305    | 295   | 325   | 350    | 34.5  | J335S  | 325   | 310   | 300   | 300S  | 310  | 315S  | 320   | 315   | 335S  | 335   | 320   | 295S  | 295   | 295   |
| 13     | I300S | J300S | 31.5S | 340    | 295    | 290   | 325S  | 34.5S  | 350S  | 340    | 315S  | 310   | 310S  | 320S  | 310  | 325   | 315S  | 315S  | 325S  | I330S | 325S  | 285   | 265S  | 280   |
| 14     | 290   | 310   | 310S  | 285S   | 280S   | I285S | 345S  | 330    | 335   | 290S   | 285S  | 295   | 305   | 305   | 315  | 330   | 325   | 315   | I330S | I330S | 300S  | 280   | J265S | I275S |
| 15     | 280   | 290S  | 315   | 350S   | 315    | 290   | 335   | 325    | J340S | 320S   | 295   | 295   | 305S  | 315S  | 325  | 315   | 315   | 325S  | I320S | J325S | 310S  | 295   | I280S | S     |
| 16     | S     | S     | 310S  | 305S   | 300S   | I285S | 345   | J34.5S | 340   | 325S   | 285   | 290   | 290S  | 305   | 305  | 310   | 305S  | 310S  | J325S | J325S | 320   | 300   | 275   | I270S |
| 17     | I275S | 295S  | 300S  | 310    | J315S  | 285   | 335S  | 34.5   | 350S  | 355    | 315   | 285   | 310   | 315   | 300  | 315S  | 325   | 320   | I330S | I325S | 325   | 275S  | 275   | I275S |
| 18     | I275S | 285   | 320   | 340    | 305    | 300   | 335   | 345    | 34.5  | 340    | 305   | 300   | J300S | 305   | 310  | 305   | 305   | 315   | 325S  | 34.5S | U335S | 290   | I280S | I270S |
| 19     | J275S | I280S | 300   | J340S  | 34.5   | 325   | 345   | 350    | 310   | 310    | 310   | 305   | 305   | 310   | 305  | 300   | 310   | 325   | 340S  | 320S  | 320   | 290S  | 280   | 285   |
| 20     | I285S | 290   | 300   | 305    | 34.5   | 325   | 360   | 355    | 340   | 315S   | 310   | 315   | 290   | 295   | 305  | 320   | 310   | 315S  | J330S | I320S | J305S | 295S  | 280   | 280   |
| 21     | 285   | S     | S     | 350    | 335S   | 280   | 335   | 345    | 325   | 315    | 300   | 310   | 310   | 315   | 305  | 310S  | 310S  | I330S | S     | S     | S     | 325S  | S     | S     |
| 22     | S     | 300   | J275S | 310    | 295    | 285   | 340   | 345    | 350   | 320    | 315S  | 295   | 315S  | J300S | 310S | J320S | 315   | 310   | I310S | S     | S     | 34.5S | I315S | I280S |
| 23     | I285S | 270S  | 270   | 275    | I280S  | 320   | 330S  | 335    | 325   | 325    | 290S  | 305   | 305S  | J305S | 310  | 305   | 285   | 320   | 305S  | 330S  | 335S  | 335S  | 280S  | 275   |
| 24     | J275S | I300S | 325   | 335    | 300    | 290   | 330   | 350    | 330S  | 325    | 325   | 275   | 300S  | 300   | 290S | 300   | 320   | 330S  | I330S | I330S | 310S  | J280S | 265S  | I275S |
| 25     | 290S  | 290   | I300S | 335S   | 280S   | 295   | 340   | 345    | 350   | 335    | 320   | 290   | 300   | 315   | 305S | 290   | 315   | 330   | 320   | I305S | 300S  | I290S | 285S  | 295   |
| 26     | S     | S     | 310S  | 340    | 295    | I285S | 325   | 340    | 340   | 330    | 315   | 260S  | 295   | 305   | 315  | 315   | 300S  | 305   | 335S  | I325S | I310S | I295S | 275   | 290   |
| 27     | 285   | 290S  | I295S | 310    | 305S   | 290S  | 330   | J355S  | 355   | 320    | 305   | 275   | 280   | 300   | 295  | 300   | 310   | 320S  | I315S | I300S | I305S | 290   | 285   | I290S |
| 28     | 290   | 290   | 300   | I335S  | I320S  | 295   | 340   | 350    | 340   | 340S   | 285   | 290   | 280   | 290   | 300  | 295   | J305S | 315   | 310S  | I320S | I325S | I315S | I290S | 290S  |
| 29     | 275S  | I300S | 300S  | 300S   | I295S  | I300S | 335   | 355S   | 34.5S | 325    | 290S  | 285   | 290   | 285   | 290  | 295   | 295   | 300   | 330   | J325S | I325S | 305S  | I275S | I280S |
| 30     | 275   | 275   | 285   | 300S   | 290    | 300   | I335S | 360S   | 315S  | I330S  | 300   | 290   | 290S  | 320   | 315  | 300S  | 315   | 345   | 305S  | S     | S     | S     | S     | I290S |
| 31     |       |       |       |        |        |       |       |        |       |        |       |       |       |       |      |       |       |       |       |       |       |       |       |       |
| Count  | 24    | 23    | 25    | 28     | 30     | 29    | 30    | 30     | 30    | 30     | 30    | 30    | 30    | 30    | 30   | 30    | 30    | 30    | 24    | 27    | 29    | 27    | 27    | 26    |
| Median | U285S | 290S  | 300S  | 310S   | 310S   | 290   | 335   | 350    | 34.5  | 330    | 310   | 295   | 300   | 305   | 310  | 310   | 315   | 320   | 330S  | U330S | 325S  | 290S  | 280S  | 280S  |
| U. Q.  |       |       |       |        |        |       |       |        |       |        |       |       |       |       |      |       |       |       |       |       |       |       |       |       |
| L. Q.  |       |       |       |        |        |       |       |        |       |        |       |       |       |       |      |       |       |       |       |       |       |       |       |       |
| Q. R.  |       |       |       |        |        |       |       |        |       |        |       |       |       |       |      |       |       |       |       |       |       |       |       |       |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

M(3000)F2

Y 7

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

M(3000)F1 0.01 135° E Mean Time (G. M. T. +9h)

Apr. 1966

| 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 370 | 370  | 370  | 360   | 370   | 355  | L     | 355  | L    | L    |    |    |    |    |    |    |
| 2      |    |    |    |    |    |    |    |    | L     | L    | 355L | 355   | 360   | 350  | A     | 365  | L    | L    |    |    |    |    |    |    |
| 3      |    |    |    |    |    |    |    |    | L     | 380L | L    | 365   | 355L  | 350L | 360H  | L    | L    | L    |    |    |    |    |    |    |
| 4      |    |    |    |    |    |    |    |    | L     | L    | L    | B     | 370   | 340L | 360   | 350  | 320L | A    |    |    |    |    |    |    |
| 5      |    |    |    |    |    |    |    |    | L     | L    | A    | 360   | A     | 340  | 345   | 350  | 345L | L    |    |    |    |    |    |    |
| 6      |    |    |    |    |    |    |    |    | L     | L    | L    | 375   | 395L  | A    | 355   | 355  | 335L | L    |    |    |    |    |    |    |
| 7      |    |    |    |    |    |    |    |    | L     | L    | L    | L     | 375   | 360  | 355L  | 350  | L    | L    |    |    |    |    |    |    |
| 8      |    |    |    |    |    |    |    |    | L     | 350L | 370L | I360A | 370L  | 355  | 360   | 380  | L    | L    |    |    |    |    |    |    |
| 9      |    |    |    |    |    |    |    |    | L     | L    | 360L | 380   | L     | A    | A     | 345L | L    | L    |    |    |    |    |    |    |
| 10     |    |    |    |    |    |    |    |    | L     | L    | 370L | L     | 365   | 340  | 355   | 335  | 350L | L    |    |    |    |    |    |    |
| 11     |    |    |    |    |    |    |    |    | L     | L    | 355L | 360   | 370   | 365  | A     | 360  | L    | L    |    |    |    |    |    |    |
| 12     |    |    |    |    |    |    |    |    | 365L  | 375L | 365  | 355   | 355   | 340  | 345   | 355H | 365  | L    | L  |    |    |    |    |    |
| 13     |    |    |    |    |    |    |    |    | 375   | 365L | 370  | 375   | 385   | 355  | 370L  | L    | L    |      |    |    |    |    |    |    |
| 14     |    |    |    |    |    |    |    |    | 360L  | 360  | 360  | 335   | A     | 360  | 365   | L    | L    |      |    |    |    |    |    |    |
| 15     |    |    |    |    |    |    |    |    | L     | 350L | L    | 360L  | 345   | 385H | 370H  | 355  | 350L | L    |    |    |    |    |    |    |
| 16     |    |    |    |    |    |    |    |    | L     | 360L | L    | 360   | A     | 365  | 375   | 360  | L    | 355  | L  |    |    |    |    |    |
| 17     |    |    |    |    |    |    |    |    | L     | L    | 355L | 375   | 370   | 350  | 380   | 355  | 335L | L    |    |    |    |    |    |    |
| 18     |    |    |    |    |    |    |    |    | L     | 360  | 350  | 375   | 355   | 365  | 360   | 345  | 350  | L    | L  |    |    |    |    |    |
| 19     |    |    |    |    |    |    |    |    | L     | 365  | 345  | 385   | 375   | 370  | 355   | 350  | L    | 345L | L  |    |    |    |    |    |
| 20     |    |    |    |    |    |    |    |    | L     | 340L | 355  | 375   | 365   | 370  | 370   | 355  | 340L | L    | L  |    |    |    |    |    |
| 21     |    |    |    |    |    |    |    |    | L     | 350  | 355  | 355   | A     | 365  | 370   | 385  | L    | 340L | L  |    |    |    |    |    |
| 22     |    |    |    |    |    |    |    |    | L     | 345L | 360  | 360   | 365   | 360  | 345   | 370  | 340  | L    |    |    |    |    |    |    |
| 23     |    |    |    |    |    |    |    |    | L     | 360  | 340  | A     | 365   | 360  | 375   | 355L | L    |      |    |    |    |    |    |    |
| 24     |    |    |    |    |    |    |    |    | L     | 360L | 365  | 345L  | 350   | 350  | 365   | 340  | 355  | L    |    |    |    |    |    |    |
| 25     |    |    |    |    |    |    |    |    | L     | L    | L    | L     | 355   | 365  | A     | A    | 340  | L    |    |    |    |    |    |    |
| 26     |    |    |    |    |    |    |    |    | L     | 365L | 365  | 355L  | 360   | 360  | I355A | A    | 365  | L    |    |    |    |    |    |    |
| 27     |    |    |    |    |    |    |    |    | L     | 390L | 375L | 335   | 365L  | 360  | 350   | 360  | 335  | L    |    |    |    |    |    |    |
| 28     |    |    |    |    |    |    |    |    | L     | 370L | L    | 365   | 335   | 355  | 355R  | 360  | 350  | 340L | L  |    |    |    |    |    |
| 29     |    |    |    |    |    |    |    |    | L     | 355L | L    | A     | 365   | A    | A     | A    | 375  | A    | A  |    |    |    |    |    |
| 30     |    |    |    |    |    |    |    |    | L     | L    | L    | A     | I350A | 355  | 365   | L    | A    | A    |    |    |    |    |    |    |
| 31     |    |    |    |    |    |    |    |    |       |      |      |       |       |      |       |      |      |      |    |    |    |    |    |    |
| Count  |    |    |    |    |    |    |    |    | 1     | 19   | 19   | 24    | 26    | 26   | 24    | 25   | 17   | 4    |    |    |    |    |    |    |
| Median |    |    |    |    |    |    |    |    | 390L  | 360L | 360  | 360   | 365   | 360  | 360   | 355  | 345  | 340L |    |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |    |    |       |      |      |       |       |      |       |      |      |      |    |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |    |    |       |      |      |       |       |      |       |      |      |      |    |    |    |    |    |    |
| Q. R.  |    |    |    |    |    |    |    |    |       |      |      |       |       |      |       |      |      |      |    |    |    |    |    |    |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

M(3000)F1

Y 8

# IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

km

h'F2

Apr. 1966

135° E Mean Time (G.M.T. +9h)

| 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 | 255 | 275  | 280  | 275 | 305 | 300 | 285 | 280 | 270 |     |    |    |    |    |    |
| 2      |    |    |    |    |    |    |    |     | 290 | 240 | 300  | 340  | 290 | 280 | 290 | 280 | 280 | 255 |     |    |    |    |    |    |
| 3      |    |    |    |    |    |    |    |     | 245 | 255 | 280H | 295  | 280 | 290 | 285 | 260 | 260 | 265 |     |    |    |    |    |    |
| 4      |    |    |    |    |    |    |    |     | 240 | 255 | 280  | 310  | 300 | 300 | 280 | 280 | 280 | 250 |     |    |    |    |    |    |
| 5      |    |    |    |    |    |    |    |     | 275 | 290 | 300  | 295  | 300 | 295 | 290 | 275 | 280 | 250 |     |    |    |    |    |    |
| 6      |    |    |    |    |    |    |    |     | 240 | 255 | 280  | 295  | 305 | 285 | 280 | 290 | 280 | 250 |     |    |    |    |    |    |
| 7      |    |    |    |    |    |    |    |     | 240 | 240 | 270  | 305  | 325 | 295 | 280 | 270 | 275 | 250 |     |    |    |    |    |    |
| 8      |    |    |    |    |    |    |    |     | 250 | 275 | 280  | 275  | 320 | 300 | 280 | 275 | 260 | 270 |     |    |    |    |    |    |
| 9      |    |    |    |    |    |    |    |     | 260 | 290 | 280  | 340  | 300 | 300 | 300 | 280 | 275 | 260 |     |    |    |    |    |    |
| 10     |    |    |    |    |    |    |    |     | 265 | 300 | 310H | 325  | 280 | 280 | 280 | 285 | 265 | 250 |     |    |    |    |    |    |
| 11     |    |    |    |    |    |    |    |     | 235 | 260 | 310  | 305  | 305 | 300 | 270 | 280 | 280 | 265 |     |    |    |    |    |    |
| 12     |    |    |    |    |    |    |    |     | 255 | 280 | 310  | 300  | 300 | 300 | 300 | 280 | 275 | 275 | 250 |    |    |    |    |    |
| 13     |    |    |    |    |    |    |    |     | 275 | 295 | 310  | 300  | 280 | 280 | 295 | 280 | 295 | 270 |     |    |    |    |    |    |
| 14     |    |    |    |    |    |    |    |     | 250 | 300 | 325  | 290  | 295 | 285 | 285 | 260 | 250 |     |     |    |    |    |    |    |
| 15     |    |    |    |    |    |    |    |     | 250 | 280 | 340  | 305  | 300 | 285 | 270 | 270 | 285 | 275 |     |    |    |    |    |    |
| 16     |    |    |    |    |    |    |    |     | 250 | 275 | 280H | 310  | 300 | 290 | 285 | 270 | 270 | 265 | 245 |    |    |    |    |    |
| 17     |    |    |    |    |    |    |    |     | 250 | 260 | 300  | 340  | 295 | 290 | 300 | 300 | 275 | 280 |     |    |    |    |    |    |
| 18     |    |    |    |    |    |    |    |     | 260 | 275 | 325  | 305  | 305 | 300 | 290 | 295 | 305 | 275 | 250 |    |    |    |    |    |
| 19     |    |    |    |    |    |    |    |     | 250 | 335 | 320  | 300  | 300 | 295 | 290 | 310 | 285 | 270 | 245 |    |    |    |    |    |
| 20     |    |    |    |    |    |    |    |     | 260 | 300 | 325  | 300  | 325 | 305 | 290 | 280 | 290 | 270 | 250 |    |    |    |    |    |
| 21     |    |    |    |    |    |    |    |     | 280 | 300 | 310  | 290  | 295 | 290 | 295 | 305 | 290 | 290 | 255 |    |    |    |    |    |
| 22     |    |    |    |    |    |    |    |     | 250 | 290 | 300  | 315  | 290 | 290 | 295 | 280 | 270 | 285 |     |    |    |    |    |    |
| 23     |    |    |    |    |    |    |    |     | 250 | 285 | 320  | 300  | 300 | 300 | 300 | 300 | 320 | 280 |     |    |    |    |    |    |
| 24     |    |    |    |    |    |    |    |     | 260 | 285 | 280  | 350  | 300 | 310 | 310 | 295 | 275 | 260 |     |    |    |    |    |    |
| 25     |    |    |    |    |    |    |    |     | 245 | 275 | 290  | 330L | 325 | 300 | 295 | 320 | 280 | 250 |     |    |    |    |    |    |
| 26     |    |    |    |    |    |    |    |     | 240 | 275 | 270  | 280  | 375 | 320 | 300 | 275 | 280 | 275 | 275 |    |    |    |    |    |
| 27     |    |    |    |    |    |    |    |     | 235 | 240 | 290  | 315  | 310 | 350 | 300 | 300 | 280 | 260 |     |    |    |    |    |    |
| 28     |    |    |    |    |    |    |    |     | 250 | 270 | 345  | 325  | 350 | 325 | 305 | 295 | 285 | 275 | 260 |    |    |    |    |    |
| 29     |    |    |    |    |    |    |    |     | 245 | 280 | 300  | 330  | 300 | 325 | 325 | 290 | 295 | 290 | 270 |    |    |    |    |    |
| 30     |    |    |    |    |    |    |    |     | 275 | 260 | 300  | 330  | 320 | 295 | 280 | 300 | 280 | 250 |     |    |    |    |    |    |
| 31     |    |    |    |    |    |    |    |     |     |     |      |      |     |     |     |     |     |     |     |    |    |    |    |    |
| Count  |    |    |    |    |    |    |    | 3   | 24  | 30  | 30   | 30   | 30  | 30  | 30  | 30  | 30  | 29  | 8   |    |    |    |    |    |
| Median |    |    |    |    |    |    |    | 240 | 250 | 270 | 300  | 310  | 300 | 300 | 290 | 280 | 280 | 270 | 250 |    |    |    |    |    |
| U. Q.  |    |    |    |    |    |    |    |     |     |     |      |      |     |     |     |     |     |     |     |    |    |    |    |    |
| L. Q.  |    |    |    |    |    |    |    |     |     |     |      |      |     |     |     |     |     |     |     |    |    |    |    |    |
| G. R.  |    |    |    |    |    |    |    |     |     |     |      |      |     |     |     |     |     |     |     |    |    |    |    |    |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

h'F2

Y 9

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

135° E Mean Time (G.M.T. +9h)

h'F

Apr. 1966

| 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      | 325   | 290  | 24.5 | 24.0 | 210 | 300   | 270  | 24.0 | 24.0 | 225   | 225   | 24.5  | 230   | 200   | 200H  | 235   | 24.5  | 250   | 24.5  | 225   | 200   | 280   | 300   | 325   |
| 2      | 320   | 330  | 300  | 250  | 210 | E310S | 250  | 24.0 | 24.0 | 240H  | 230   | 225   | 205H  | 250   | I260A | 225   | 235   | 250   | 24.5  | 230   | 200   | 270   | 325   | 345   |
| 3      | 295   | 24.5 | 24.0 | 230  | 225 | E310S | 250  | 230  | 230  | 225   | 200   | 200H  | 265   | 270   | 225   | 250   | 240   | 250   | 230   | 225   | 200   | 290   | 325   | 310   |
| 4      | 320   | 300  | 255  | 250  | 210 | E260S | 245  | 230  | 240  | 225   | I210B | 200   | 205H  | 245   | 240   | 225   | I215A | 225   | A     | E315A | E350A | I310A | 335   |       |
| 5      | 350   | 285  | 280  | 235  | 205 | A     | 240  | 225  | 245  | 235   | I255A | 265   | I245A | 230   | 210   | 215   | 225H  | 245   | 235   | 230   | 205   | 230   | 290   | 300   |
| 6      | 295   | 300  | 280  | 270  | 250 | 220   | 235  | 220  | 230  | 225   | 210   | 200   | 205   | I260A | 225   | 205H  | 250   | 250   | 240   | 230   | 210   | 250   | I300A | 300   |
| 7      | 290   | 330  | 300  | 265  | 210 | E250S | 255  | 240  | 240  | 235   | 205   | 205   | 210   | 225   | 200H  | 210H  | 215   | 240   | 240   | 240   | 240   | 240   | 300   | 315   |
| 8      | E350S | A    | 300  | 275  | 240 | A     | 250  | 240  | 235  | 235   | 215   | I210A | 195   | 200H  | 215   | 210   | 215H  | 235   | 250   | 230   | 230   | 250   | 300   | 300   |
| 9      | 300   | 300  | 275  | 250  | 250 | 250   | 255  | 230  | 230H | 220   | 215   | 200   | 215   | I215A | I235A | 220H  | 225   | 225   | 245   | 230   | 200   | 230   | 300   | 295   |
| 10     | 285   | 290  | 310  | 240  | 250 | 270   | 240  | 225  | 220H | 230   | 200   | 215   | 175H  | 260   | 240   | 230   | 225   | 230   | 250   | 250   | 225   | 260   | 280   | 280   |
| 11     | 280   | 260  | 240  | 235  | 250 | 325F  | 250  | 235  | 230  | 225   | 210   | 210   | 205H  | 215   | I240A | 250   | 230   | 250   | 245   | 220   | 225   | 250   | 290   | I300A |
| 12     | 305   | 300  | 305  | 270  | 250 | 275   | 250  | 240  | 230  | 235   | 225   | 200H  | 250   | 220   | 250   | 220   | 225H  | 230   | 250   | 225   | 240   | 275   | 275   | 285   |
| 13     | 275   | 24.5 | 24.5 | 225  | 220 | 295   | 24.5 | 235  | 230H | 225H  | 205   | 215   | 205   | 205   | 230   | 200H  | 200   | 260   | 250   | 240   | 230   | 270   | 325   | 300   |
| 14     | 275   | 250  | 250  | 250  | 275 | 310   | 240  | 240  | 240H | 225   | 225   | 250   | 255   | I225A | 240   | 210H  | 230   | 220H  | 250   | 250   | 230   | 290   | 340   | 310   |
| 15     | 300   | 290  | 250  | 205  | 255 | 275   | 235  | 230  | 245  | 230   | 225H  | 215   | 270   | 195H  | 210H  | 230   | 250   | 240   | 250   | 250   | 250   | 250   | 290   | 300   |
| 16     | 330F  | 275  | 240  | 250  | 250 | 285F  | 235  | 240  | 240  | 230   | 225   | 215   | I250A | 220   | 205   | 225   | 210   | 225   | 250   | 230   | 230   | 230   | 295   | 325   |
| 17     | 345   | 300  | 295  | 250  | 250 | 255   | 240  | 240  | 235  | 225   | 225   | 205   | 200   | 250   | 210   | 210   | 220   | 230   | 250   | 225   | 245   | 290   | 325   | 295   |
| 18     | 300   | 320  | 265  | 225  | 240 | 280   | 240  | 235  | 240  | 230   | 220   | 200   | 200H  | 220   | 240   | 210   | 215   | 245   | 260   | 240   | 220   | 225   | 300   | 330   |
| 19     | 310   | 300  | 275  | 230  | 225 | 240   | 230  | 230  | 235  | 200   | 200   | 200   | 200   | 215   | 220H  | 200H  | 200H  | 240   | 250   | 230   | 235   | 240   | 300   | 300   |
| 20     | 295   | 290  | 280  | 250  | 230 | 230   | 225  | 230  | 225  | 220   | 225   | 220   | 205H  | 215   | 225   | 215   | 225   | 220   | 245   | 240   | 250   | 255   | 245   | 295   |
| 21     | 290   | 320  | 250  | 220  | 220 | 300   | 235  | 230  | 230  | 240   | 235   | 210H  | I220A | 225   | 215   | 200   | 205H  | 250   | 255   | 250   | 235   | 225   | 275   | 295   |
| 22     | 300   | 275  | 275  | 240  | 230 | 275   | 230  | 235  | 230  | 230   | 225   | 205H  | 250   | 250   | 260   | 200   | 225   | 230   | 255   | 260   | 255   | 215   | 235   | 305   |
| 23     | 350   | 305  | 335  | 350  | 300 | 250   | 240  | 240  | 235  | 225   | 225   | I240A | 240   | 225   | 220   | 225   | 210H  | 280   | 270   | 250   | 240   | 225   | 300   | 300   |
| 24     | 290   | 275  | 235  | 215  | 275 | 300   | 245  | 240  | 240  | 230   | 225   | 225   | 250   | 225   | 210   | 245   | 235   | I280A | 250   | 235   | 225   | 250   | 330   | 300   |
| 25     | 285   | 275  | 255  | 220  | 280 | 255   | 235  | 230  | 235  | 240   | I240A | E250A | 210   | 250   | I220A | A     | 215   | 240   | 235   | 235   | 225   | 250   | 280   | 280   |
| 26     | 320   | 320  | 250  | 205  | 250 | 290   | 245  | 240  | 225  | 225   | 215   | 200   | 210   | E250A | A     | I240A | 240   | 250   | 265   | 250   | 240   | 245   | 300   | 300   |
| 27     | 280   | 275  | 250  | 215  | 240 | 270   | 240  | 240  | 200  | 200   | 225   | 205   | 205   | 205   | 240   | 215   | 200H  | I250A | 250   | 230   | 260   | 250   | 275   | 280   |
| 28     | 300   | 300  | 280  | 220  | 230 | 300   | 240  | 230  | 225  | 230   | 200   | E250A | 255   | 200   | 230   | 205H  | 225   | 235   | 225   | 240   | 220   | 205   | 255   | 280   |
| 29     | 280   | 270  | 250  | 250  | 250 | 250   | 235  | 235  | 230  | 225   | 250   | A     | 215   | A     | A     | A     | 220   | I250A | I260A | I235A | 230   | 310   | I290S |       |
| 30     | 300   | 300  | 285  | 260  | 275 | 270   | 245  | 235  | 210  | I240A | I215A | I235A | 215   | 220   | 215   | I245A | A     | A     | 265   | 260   | 305   | 275   | 270   | 280   |
| 31     |       |      |      |      |     |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Count  | 30    | 29   | 30   | 30   | 30  | 28    | 30   | 30   | 30   | 30    | 30    | 29    | 30    | 29    | 28    | 28    | 29    | 29    | 30    | 29    | 30    | 30    | 30    | 30    |
| Median | 300   | 290  | 270  | 240  | 245 | 270   | 240  | 235  | 230  | 230   | 225   | 210   | 210   | 220   | 225   | 220   | 225   | 245   | 250   | 235   | 230   | 250   | 300   | 300   |
| U. Q.  |       |      |      |      |     |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| L. Q.  |       |      |      |      |     |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Q. R.  |       |      |      |      |     |       |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

h'F

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 10

# IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

135° E Mean Time (G.M.T. +9h)

km

f<sup>'</sup>Es

Apr. 1966

| Day    | 00  | 01  | 02  | 03  | 04  | 05  | 06  | 07  | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | 100 | S   | B   | B   | B   | S   | S   | 170 | G   | G   | 125 | 115 | 110 | 105 | 110 | 105 | 105 | 100 | 100 | 100 | S   | S   | S   | S   |
| 2      | S   | S   | B   | B   | B   | S   | S   | 150 | 150 | 140 | G   | B   | 130 | 125 | 115 | 105 | 100 | 155 | 100 | 100 | S   | 120 | 110 | S   |
| 3      | S   | B   | B   | 110 | B   | S   | S   | 150 | 140 | 125 | 105 | 120 | B   | 160 | 150 | 100 | 100 | 150 | 130 | 120 | S   | S   | S   | S   |
| 4      | S   | S   | B   | B   | B   | S   | S   | 155 | 150 | G   | G   | B   | B   | B   | B   | 130 | 130 | 130 | 120 | 110 | 110 | 110 | 110 | S   |
| 5      | S   | S   | B   | B   | B   | 105 | S   | G   | G   | G   | 140 | 135 | 110 | 140 | 140 | 105 | 105 | 100 | 145 | 120 | 120 | S   | S   | S   |
| 6      | S   | S   | B   | B   | B   | S   | S   | G   | 170 | G   | 150 | 140 | 150 | 145 | G   | 135 | 110 | 155 | 130 | 120 | S   | 110 | 110 | 115 |
| 7      | S   | 115 | B   | 115 | 110 | 110 | 115 | 155 | 140 | G   | 135 | B   | G   | G   | G   | G   | G   | 150 | 145 | 125 | 100 | 100 | 100 | 110 |
| 8      | 110 | 105 | 105 | 105 | 105 | 105 | S   | 150 | 150 | 140 | 125 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | 160 | 100 | 100 | 100 | S   | S   |
| 9      | S   | B   | B   | B   | B   | B   | 120 | S   | G   | G   | 120 | 120 | 110 | 110 | 100 | 105 | 100 | 100 | 100 | 100 | S   | S   | S   | S   |
| 10     | S   | S   | B   | B   | B   | S   | S   | G   | 155 | 150 | G   | B   | 105 | 100 | 150 | 100 | 100 | 100 | 125 | 115 | S   | S   | S   | S   |
| 11     | S   | S   | B   | B   | B   | S   | S   | G   | 150 | 135 | 130 | G   | 125 | 115 | 130 | 110 | 150 | 105 | 135 | 120 | 100 | 120 | S   | 115 |
| 12     | 120 | 105 | 100 | 100 | B   | B   | S   | 150 | 145 | 140 | 140 | 150 | 110 | 115 | 115 | G   | G   | G   | 150 | 120 | 120 | S   | S   | S   |
| 13     | S   | S   | B   | E   | B   | S   | 150 | 150 | G   | 150 | 125 | 105 | 100 | 135 | B   | 105 | G   | 150 | 140 | 115 | 115 | S   | 115 | 130 |
| 14     | S   | S   | B   | B   | B   | S   | 150 | 145 | 150 | 150 | 130 | 130 | 130 | 120 | 125 | G   | 105 | G   | 150 | 125 | 115 | 110 | 115 | S   |
| 15     | S   | S   | S   | E   | B   | B   | 150 | 150 | 130 | G   | 140 | G   | 135 | 140 | G   | 135 | 130 | 140 | 125 | 115 | 110 | 110 | 100 | 100 |
| 16     | S   | S   | S   | B   | B   | S   | S   | 145 | 135 | 145 | 130 | 135 | 125 | 140 | 140 | G   | G   | G   | 130 | 120 | 110 | 105 | 105 | 105 |
| 17     | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 150 | 140 | 135 | 125 | 125 | 105 | 105 | 100 | 100 | G   | 100 | 135 | 095 | 120 | 115 | 115 | 110 |
| 18     | 120 | 105 | 105 | 105 | B   | S   | S   | 125 | 150 | 145 | 130 | 125 | 120 | 115 | 110 | 105 | 105 | G   | G   | S   | S   | S   | S   | S   |
| 19     | S   | S   | B   | E   | B   | S   | S   | G   | G   | G   | 150 | 100 | 105 | 105 | 100 | 100 | 100 | 100 | 140 | S   | S   | S   | S   | S   |
| 20     | S   | S   | S   | B   | B   | S   | S   | 150 | 150 | 150 | 145 | G   | 130 | 130 | 105 | G   | 110 | G   | 150 | S   | 120 | 120 | 110 | 110 |
| 21     | S   | S   | S   | E   | E   | S   | 150 | 150 | 150 | 145 | 135 | 140 | 125 | G   | G   | G   | G   | 170 | 135 | 120 | 105 | 105 | S   | 100 |
| 22     | S   | S   | B   | B   | B   | S   | 150 | 145 | 135 | 140 | 130 | 135 | 130 | 125 | 120 | 140 | G   | G   | G   | 130 | 120 | 110 | 105 | 110 |
| 23     | 115 | 105 | 100 | 100 | B   | S   | 150 | G   | 140 | 130 | 130 | 120 | 120 | 125 | 125 | 140 | G   | 160 | 135 | 120 | 110 | S   | 110 | 105 |
| 24     | S   | S   | B   | B   | B   | S   | 140 | 140 | 135 | 145 | 130 | 130 | 125 | 130 | B   | 125 | 120 | 115 | 110 | S   | S   | S   | 110 | 110 |
| 25     | S   | S   | B   | 105 | 105 | S   | 145 | 145 | 140 | 130 | 125 | 125 | 130 | 130 | 125 | 120 | 130 | 115 | 115 | 115 | S   | 110 | S   | S   |
| 26     | 105 | 110 | B   | B   | B   | S   | 145 | 125 | 125 | 115 | 105 | 110 | 105 | 100 | 100 | 155 | 145 | 120 | 115 | 110 | 110 | 105 | 105 | 105 |
| 27     | S   | S   | B   | B   | B   | 110 | 145 | 105 | 105 | 145 | G   | B   | B   | G   | B   | 145 | G   | 120 | 110 | 110 | 105 | 105 | 105 | 105 |
| 28     | 100 | 100 | 110 | B   | B   | 105 | 105 | 145 | G   | 130 | 125 | 125 | 125 | 120 | 120 | 110 | 120 | 115 | 110 | 110 | 110 | 105 | S   | S   |
| 29     | S   | 095 | S   | B   | B   | S   | G   | 145 | G   | 125 | 120 | 110 | 110 | 110 | 110 | 115 | 115 | 125 | 120 | 115 | 115 | S   | 100 | S   |
| 30     | 105 | S   | S   | B   | B   | S   | 145 | 130 | 125 | 110 | 105 | 100 | 150 | 130 | 135 | 130 | 135 | 120 | 115 | 110 | 110 | 110 | 105 | 105 |
| 31     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Count  | 9   | 9   | 6   | 8   | 5   | 7   | 14  | 23  | 23  | 22  | 26  | 22  | 26  | 26  | 22  | 24  | 21  | 24  | 28  | 26  | 21  | 18  | 17  | 15  |
| Median | 105 | 105 | 100 | 105 | 105 | 105 | 150 | 150 | 140 | 140 | 130 | 125 | 120 | 120 | 120 | 110 | 110 | 120 | 130 | 115 | 110 | 110 | 110 | 110 |
| U. Q.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| L. Q.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Q. R.  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

f<sup>'</sup>Es

Y 11

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

1 3.5° E Mean Time (G.M.T. +9h)

Types of Es

Apr. 1966

| 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  |    |    |    |    |    |    | h 12 |     | c   | c   | e   | l   | l   | l    | l   | l2   | l2  | l    | f   | f   |     |    |    |  |
| 2      |    |    |    |    |    |    |    | b2   | h   | h   | l   | c l | h   | h l | c    | l   | l    | h l | l    | f2  |     | f   |    |    |  |
| 3      |    |    | f  |    |    |    |    | b2   | h   | h   | l   | c l | h   | h l | h l  | l   | l    | h l | h21  | f2f |     |     |    |    |  |
| 4      |    |    |    |    |    |    |    | h    | h   |     | h   | h c |     | h l | h    | h   | h    | h   | e3   | f3  | f2  | f3  | f  |    |  |
| 5      |    |    |    |    |    | f4 |    |      | h   | h   | h   | h c | c   | h l | h l  | l   | l    | l   | h    | f   | f   |     |    |    |  |
| 6      |    |    |    |    |    |    |    |      | h   | h   | h   | h   | h   | h   |      | h   | l    | h   | h    | f   | f3  | f5  | f2 |    |  |
| 7      |    | f3 |    | f  | f  | l  |    | h    | h   | h   | h   | h   | h   | h   | h    | h   | h    | h   | f3f  | f2  | f2  | f   | f2 |    |  |
| 8      | f3 | f3 | f2 | f2 | f2 | f5 |    | h2   | h   | h   | h   | e2l | l   | l   | l    | l   | l    | l2  | h l  | f   | f   |     |    |    |  |
| 9      |    |    |    |    |    | f  |    |      |     |     | c   | e   | c   | l   | l2   | l   | l2   | l2  | l    | f   |     |     |    |    |  |
| 10     |    |    |    |    |    |    |    |      | h   | h   |     |     | l   | l   | h l  | l   | l2   | l3  | h l3 | f2  |     |     |    |    |  |
| 11     |    |    |    |    |    |    |    |      | h   | h   | h   |     | h   | e   | h2l2 | 12h | h l  | l2  | h l2 | f2  | f   |     |    | f2 |  |
| 12     | f4 | f3 | f3 | f2 |    |    |    | h    | h   | h2  | h   | h   | l   | c   | e    |     |      | h   | f3   | f4  |     |     |    |    |  |
| 13     |    |    |    |    |    |    | b2 | h    | h   | h   | h   | l   | l   | h l | l    |     |      | h   | h    | f3f | f   |     | f  |    |  |
| 14     |    |    |    |    |    |    | h  | h2   | h l | h   | h   | h   | h   | e2  | h    |     | l    | h   | h    | f2  | f   | f2  | f2 |    |  |
| 15     |    |    |    |    |    |    | b2 | h    | h   | h   | h   | h   | h l | h   |      | h   | h l  | h l | e3l  | f2  | f3  | f2  | f2 | f2 |  |
| 16     |    |    |    |    |    |    |    | h2   | h   | h   | h   | h   | h   | h   | h l  |     |      | e   | f    | f   | f3  | f2  | f2 | f3 |  |
| 17     | f3 | f3 | f2 | f2 | f3 | f2 | l3 | h2l2 | h l | h l | h l | h l | l   | l   | l    | l   | l    | e l | f2f  | f2  | f2  | f2  | f  | f  |  |
| 18     | f  | f2 | f2 | f2 |    |    |    | c    | h   | h c | h c | h   | c   | l   | l    | l   | l    |     |      |     |     |     |    |    |  |
| 19     |    |    |    |    |    |    |    |      |     | h   | h   | l   | l   | l   | l    | l   | l    | l2  | h l  |     |     |     |    |    |  |
| 20     |    |    |    |    |    |    |    | h2l  | h   | h   | h   | h   | h   | c   | l    | l   | l    | h   | h    | f2  | f   | f   | f  | f  |  |
| 21     |    |    |    |    |    |    | b2 | h2   | h   | h   | h l | h l | h   |     | h    | h   | h    | h   | f2   | f2  | f   | f   | f  | f  |  |
| 22     |    |    |    |    |    |    | h  | h    | h   | h   | h   | h   | h   | h   | h    | h   |      |     | f    | f2  | f   | f2  | f  | f  |  |
| 23     | f2 | f3 | f4 | f2 |    |    | h  | h    | h   | h   | h   | c   | c   | c   | h e  |     |      | h2  | h    | f4  | f3  |     |    |    |  |
| 24     |    |    |    |    |    |    | h2 | h    | h   | h   | h   | h   | h   | h   | h    | h   | c    | e4  | c2   |     |     |     |    | f  |  |
| 25     |    |    |    | f  | f2 |    | b2 | h    | h   | h   | h   | h   | h   | h   | h2   | c   | h    | e2  | l    | f   |     |     |    | f2 |  |
| 26     | f2 | f4 |    |    |    |    | h2 | h2   | h   | c   | l   | c   | l   | l2  | l2   | h l | h l2 | h2  | e4   | f5  | f3  | f2  | f2 | f  |  |
| 27     |    |    |    |    |    | f  | h2 | l2   | l   | h l |     | h   | h   |     | h    |     | e2   | e2  | f2   | f4  | f2  | f   | f  | f3 |  |
| 28     | f  | f  | f  |    | f3 | f2 | h  | h    | h c | c   | h l | h   | h   | c   | c    | l   | e l  | c l | e    | f2  | f2f | f f |    |    |  |
| 29     |    |    |    |    |    |    |    | h    | h   | h   | c   | c   | c   | c   | e    | e   | e2   | h2  | e4   | f2  | f3  |     | f  |    |  |
| 30     | f  |    |    |    |    |    | h  | h    | h   | c3  | l   | l3  | h   | h   | h    | h l | h    | e3  | e2   | f2  | f4  | f2  | f2 | f2 |  |
| 31     |    |    |    |    |    |    |    |      |     |     |     |     |     |     |      |     |      |     |      |     |     |     |    |    |  |
| Count  |    |    |    |    |    |    |    |      |     |     |     |     |     |     |      |     |      |     |      |     |     |     |    |    |  |
| Median |    |    |    |    |    |    |    |      |     |     |     |     |     |     |      |     |      |     |      |     |     |     |    |    |  |
| U. Q.  |    |    |    |    |    |    |    |      |     |     |     |     |     |     |      |     |      |     |      |     |     |     |    |    |  |
| L. Q.  |    |    |    |    |    |    |    |      |     |     |     |     |     |     |      |     |      |     |      |     |     |     |    |    |  |
| Q. R.  |    |    |    |    |    |    |    |      |     |     |     |     |     |     |      |     |      |     |      |     |     |     |    |    |  |

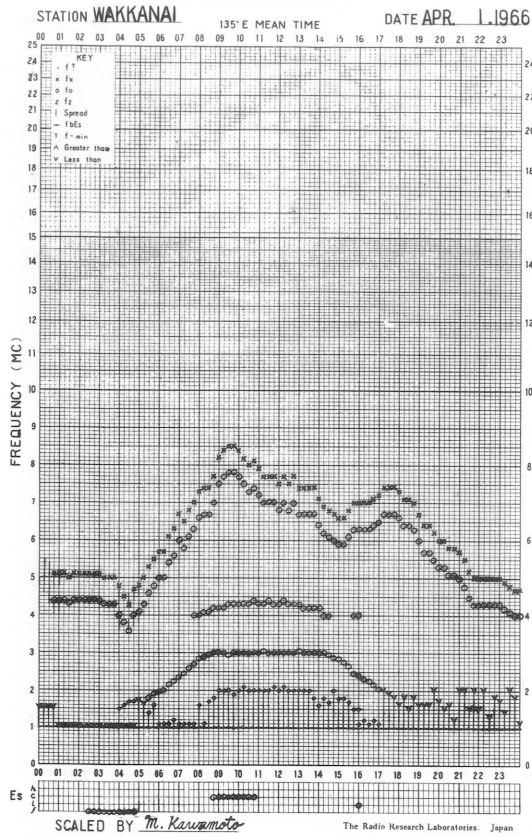
Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

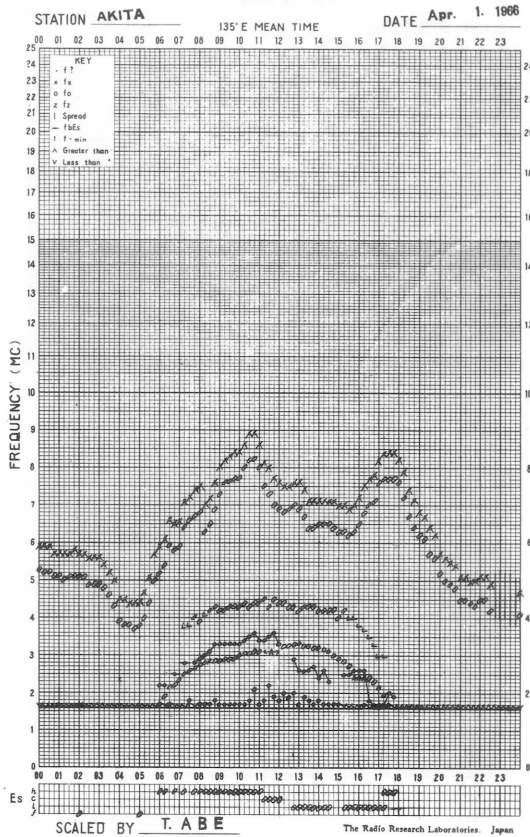
Types of Es

Y 12

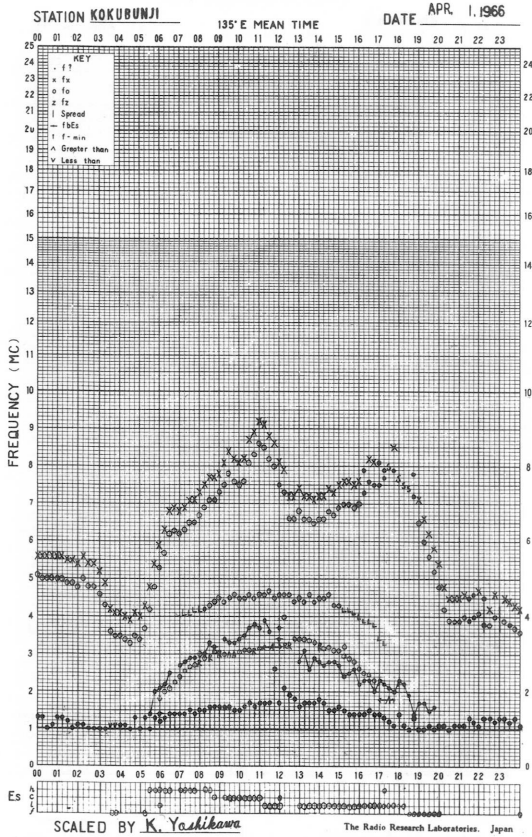
f-PLOT OF IONOSPHERIC DATA



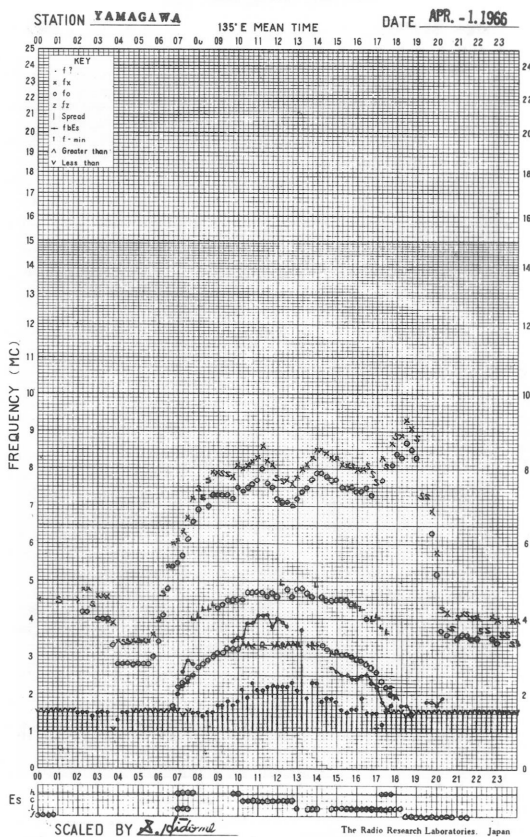
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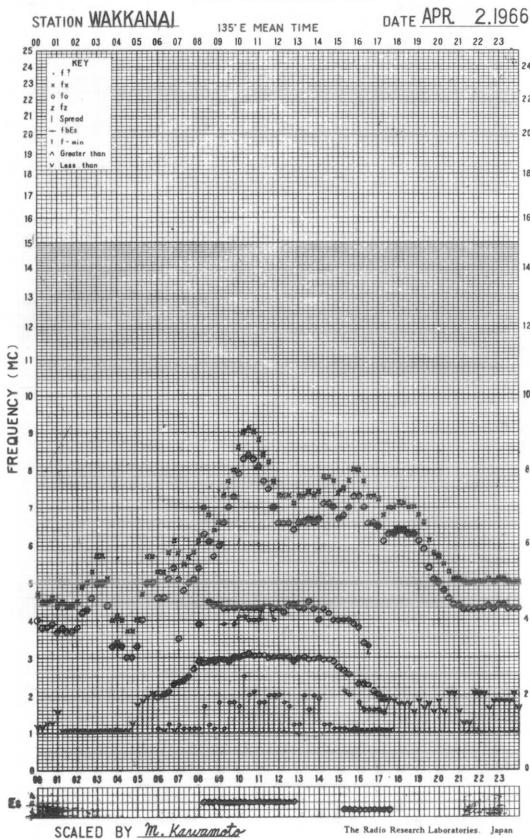
f-PLOT OF IONOSPHERIC DATA



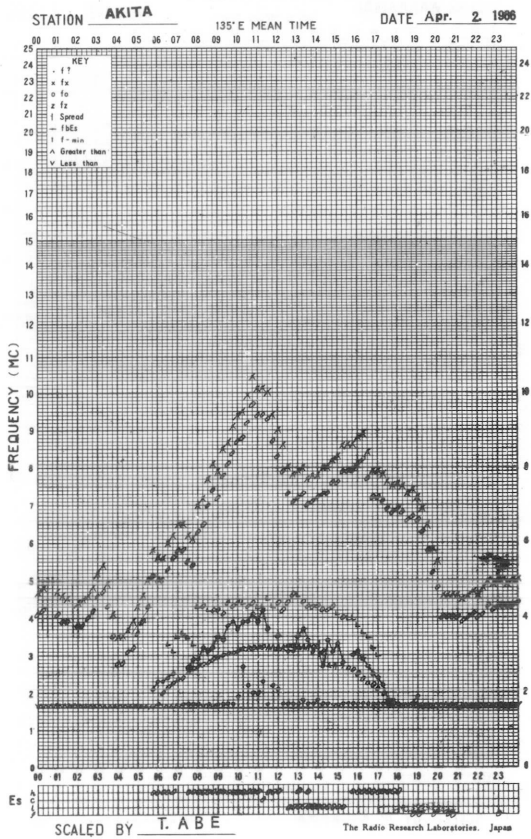
f-PLOT OF IONOSPHERIC DATA



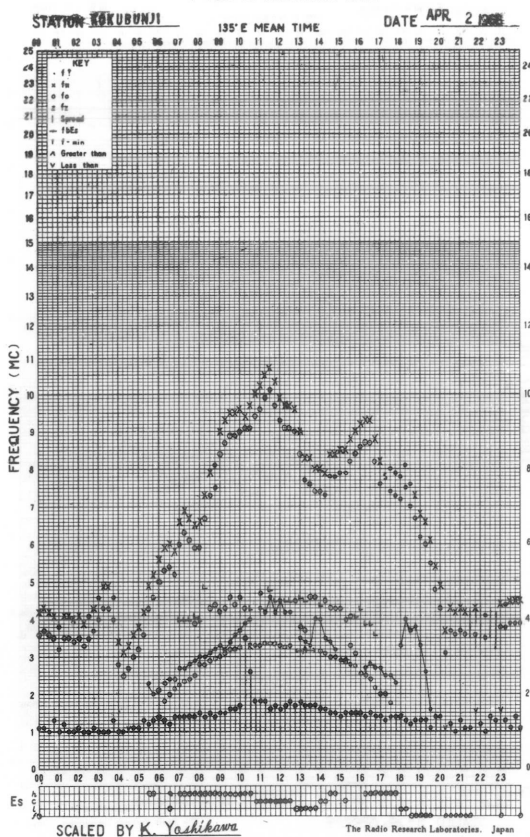
f-PLOT OF IONOSPHERIC DATA



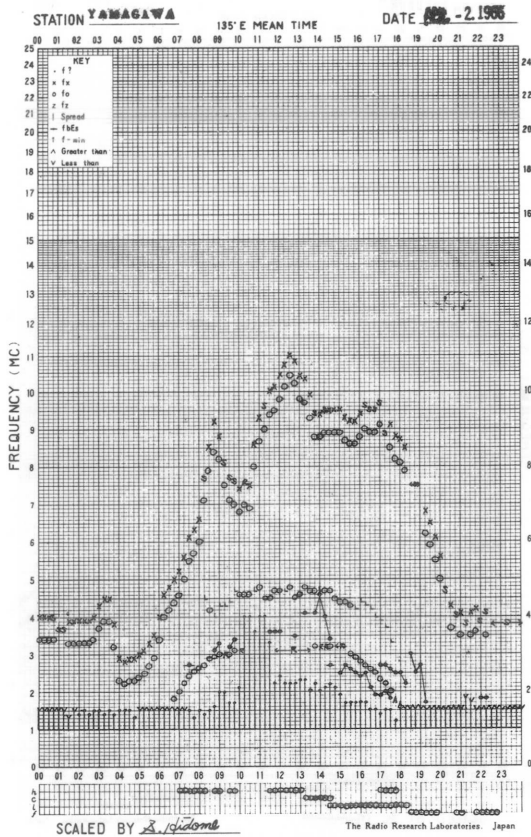
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

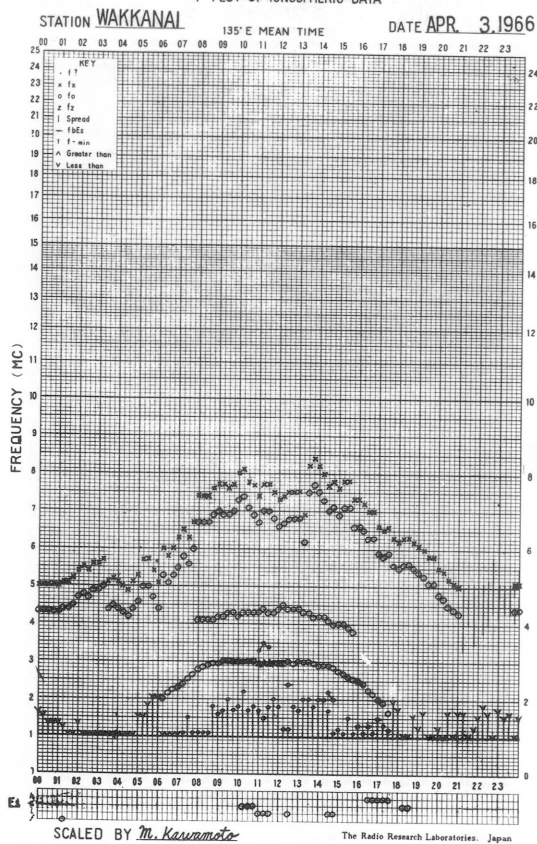


f-PLOT OF IONOSPHERIC DATA

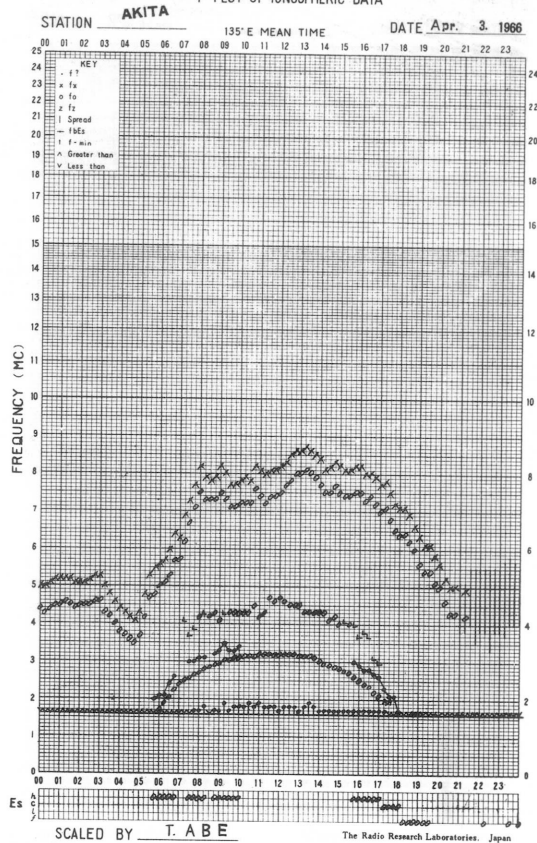




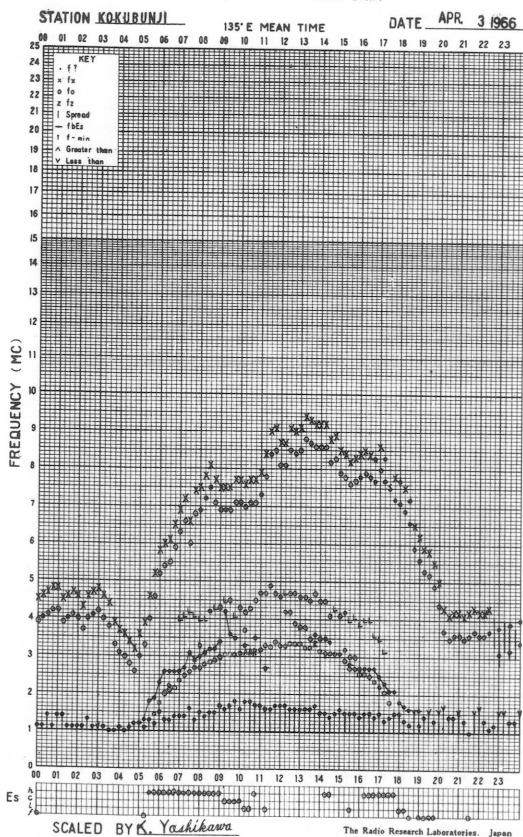
f-PLOT OF IONOSPHERIC DATA



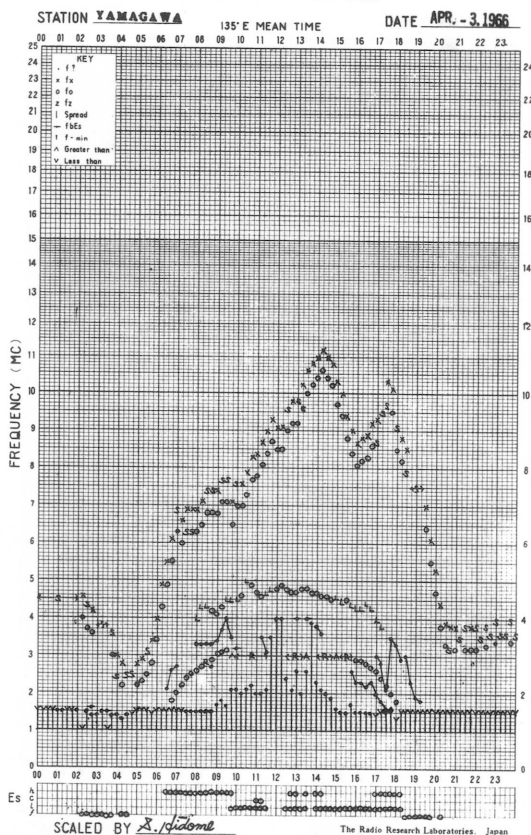
f-PLOT OF IONOSPHERIC DATA



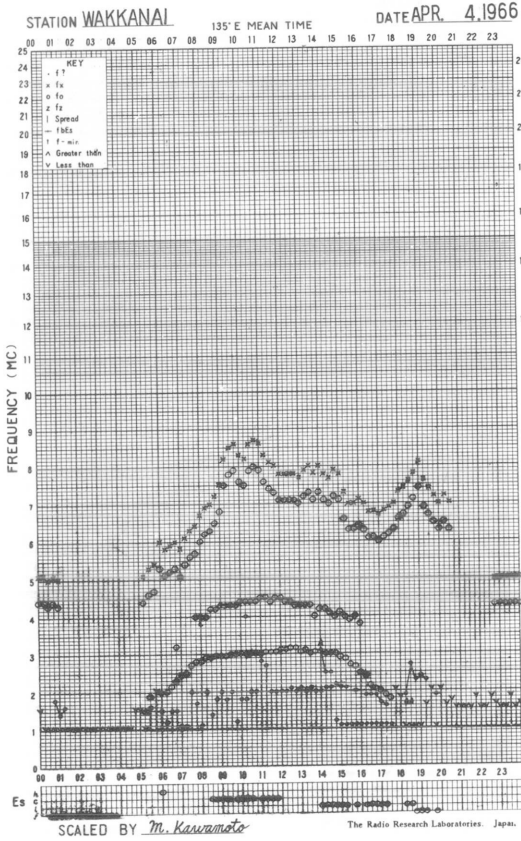
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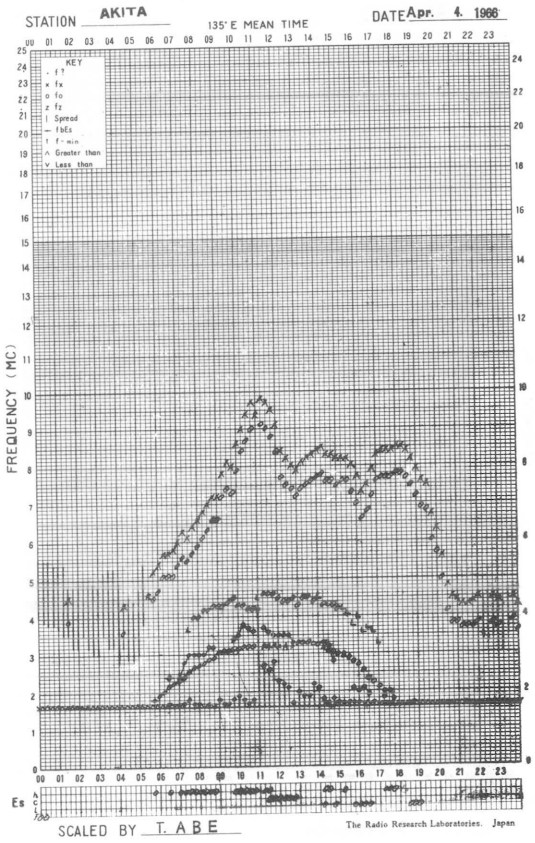
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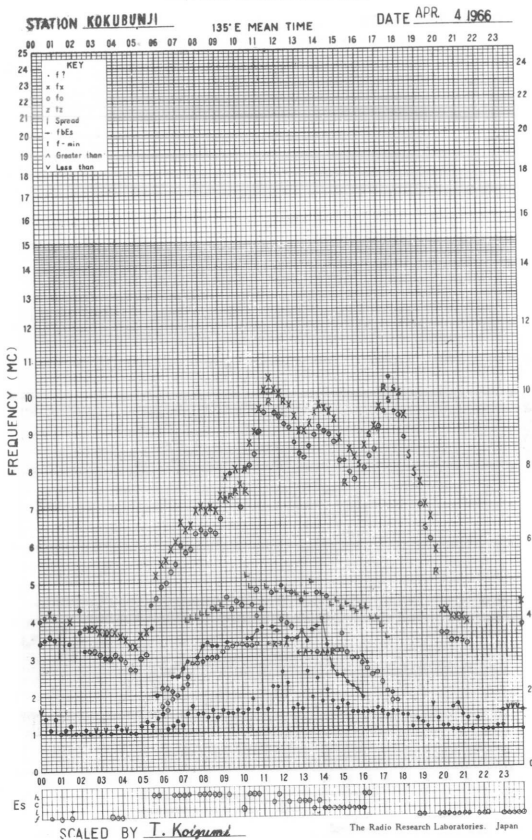
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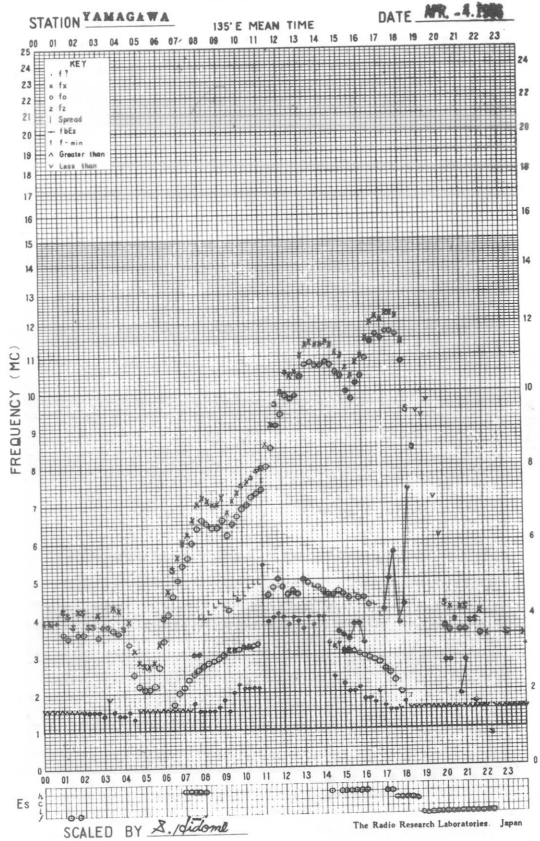
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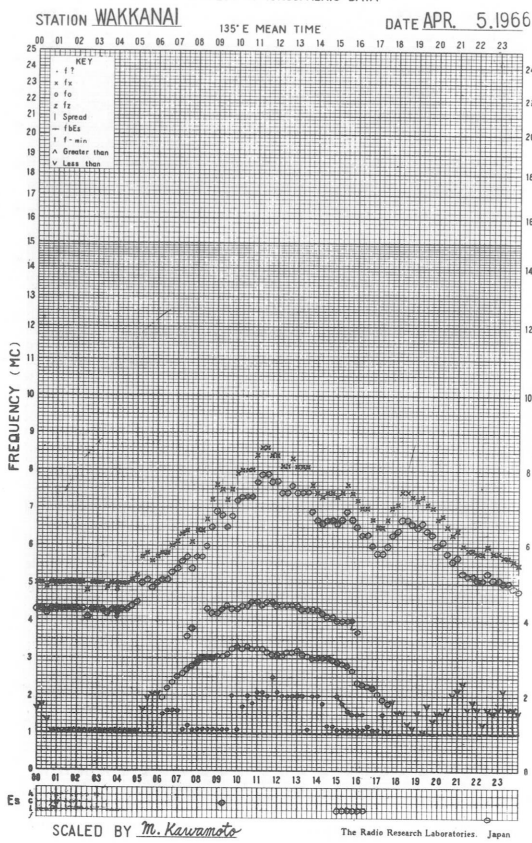
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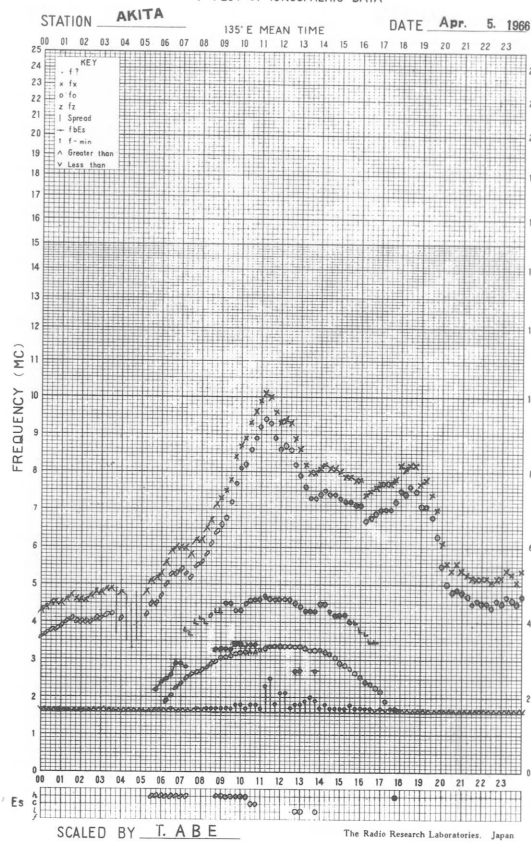
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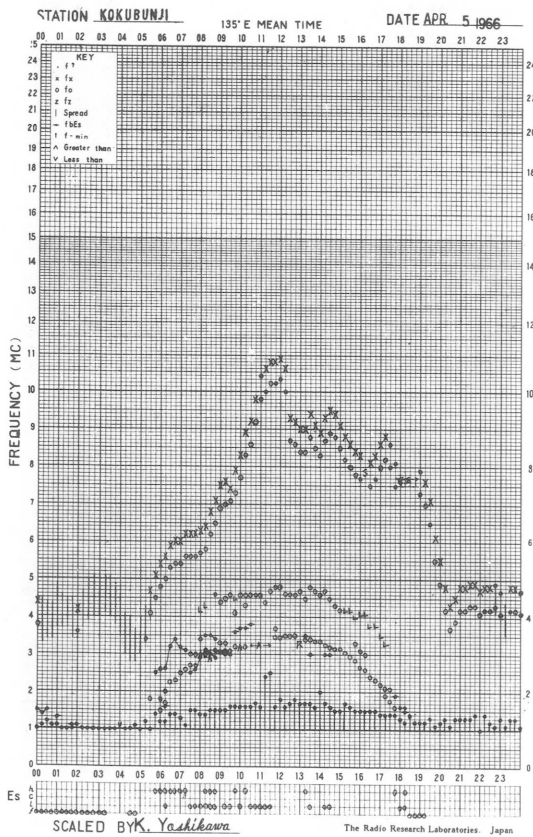
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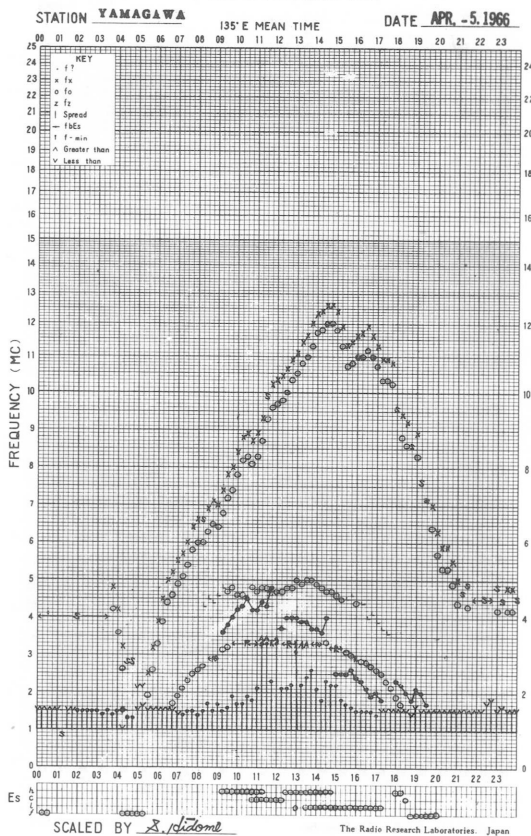
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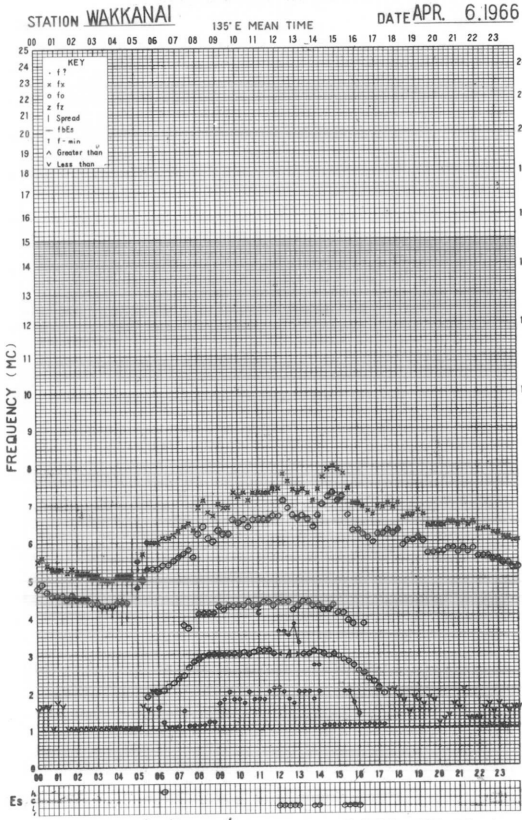
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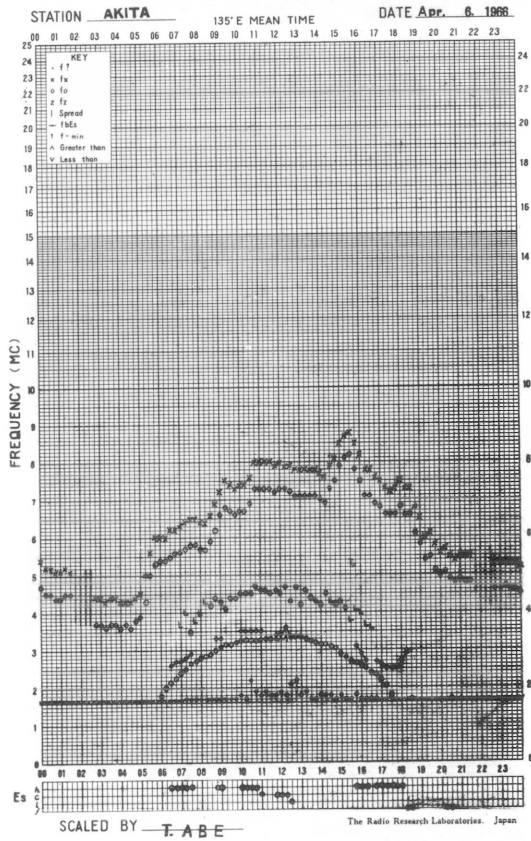
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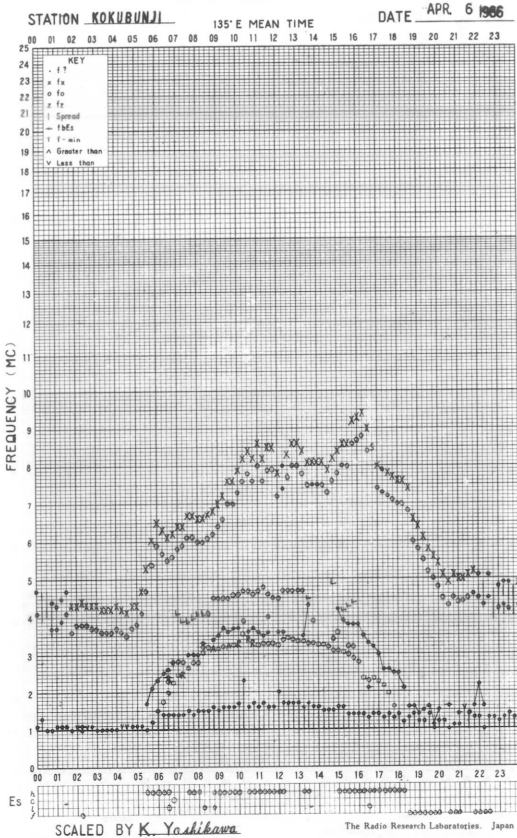
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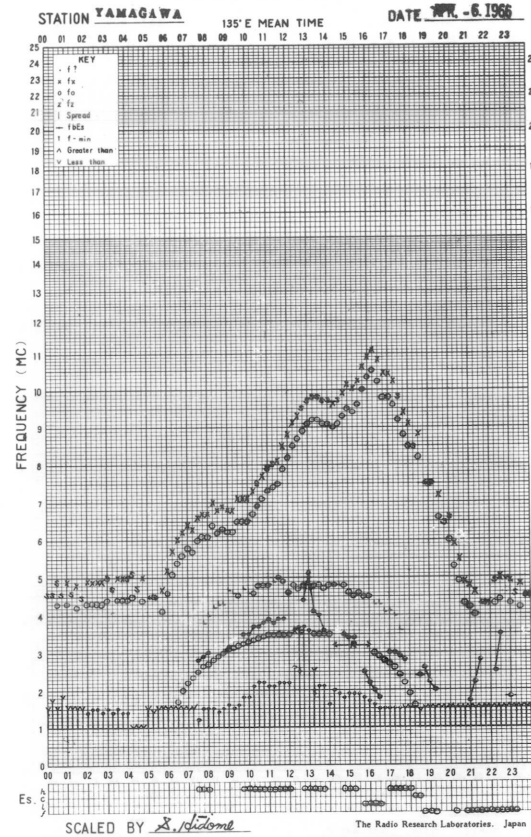
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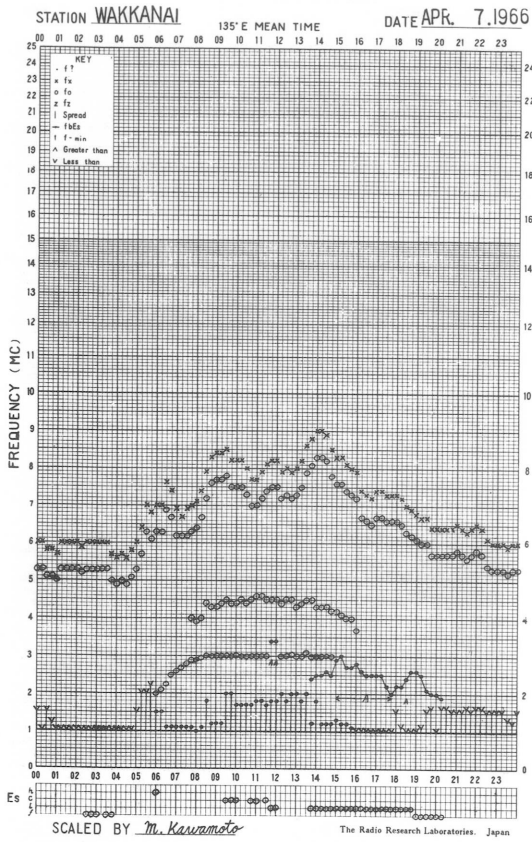
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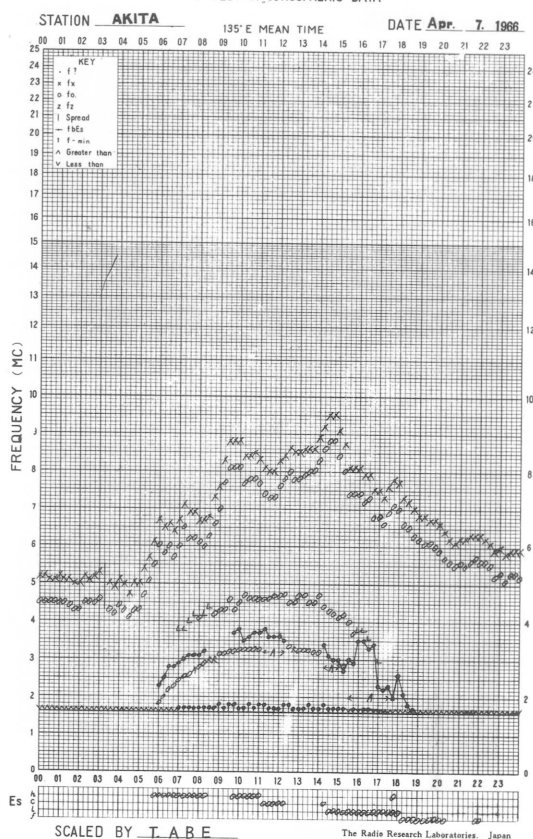
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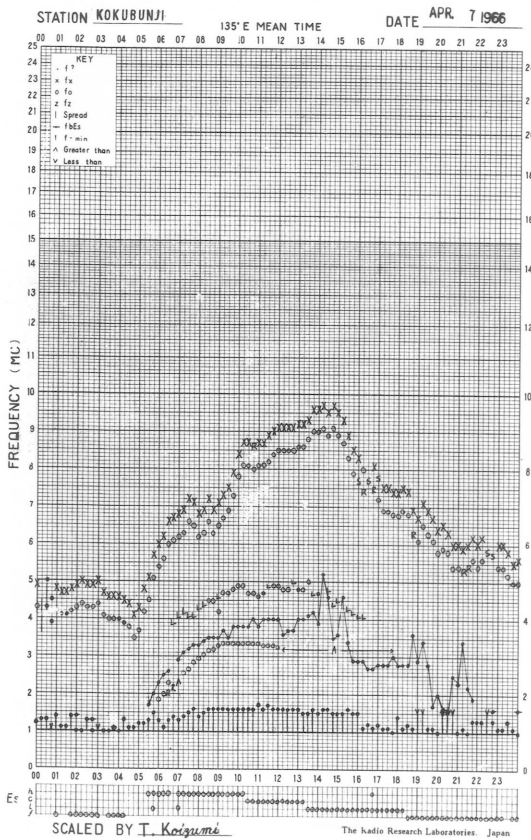
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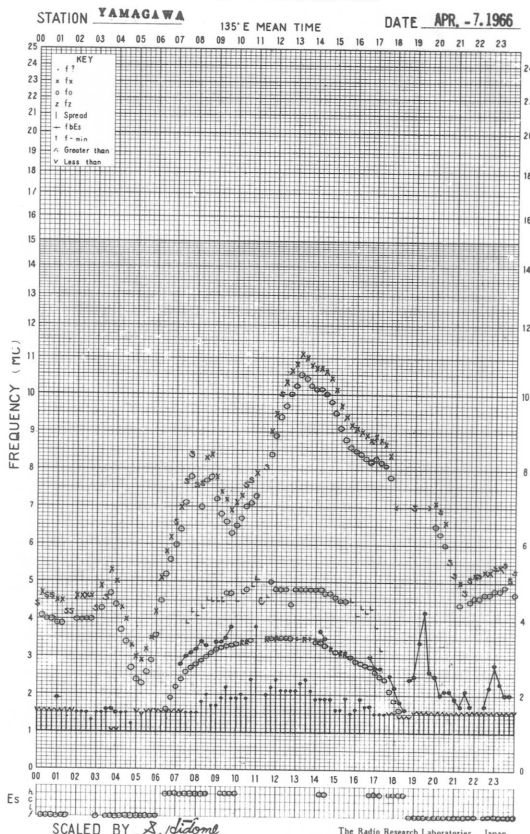
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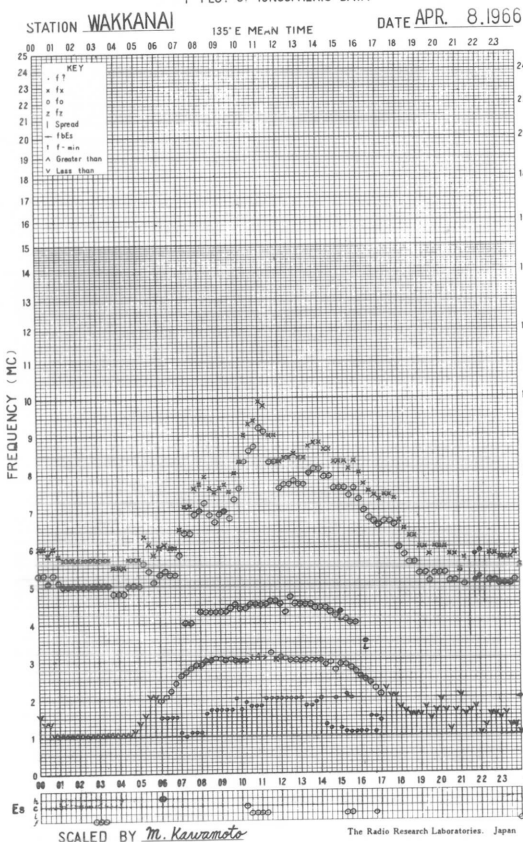
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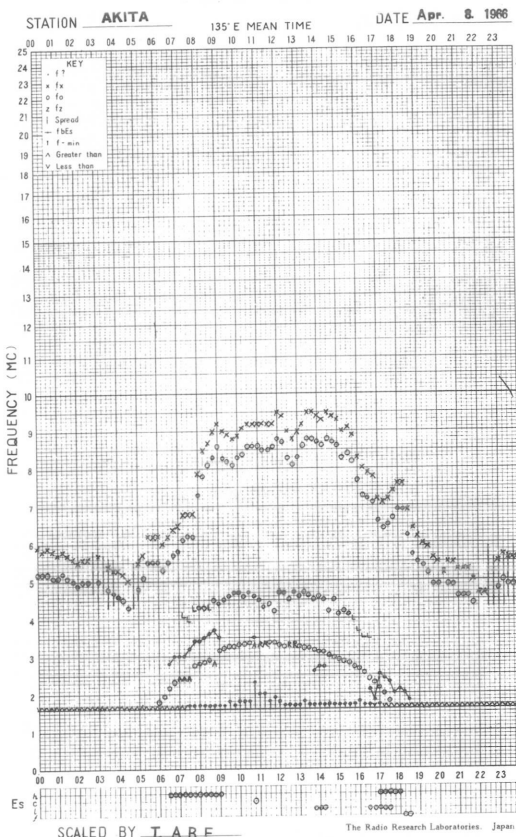
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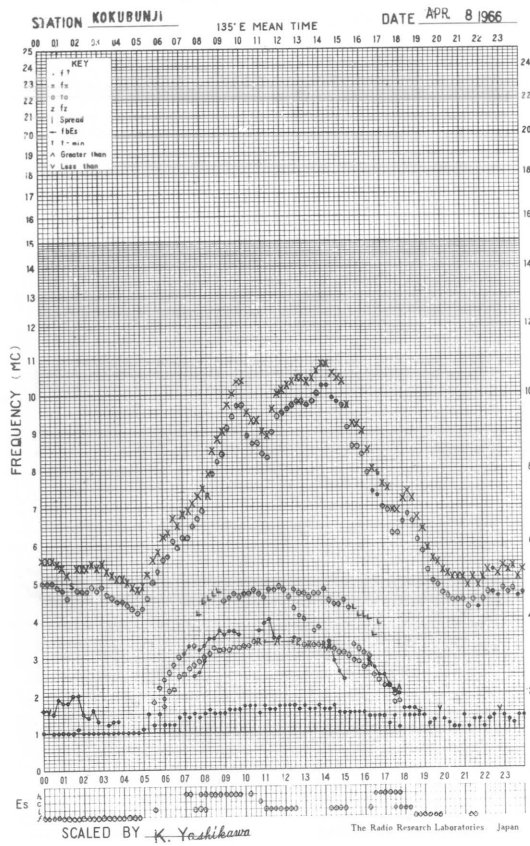
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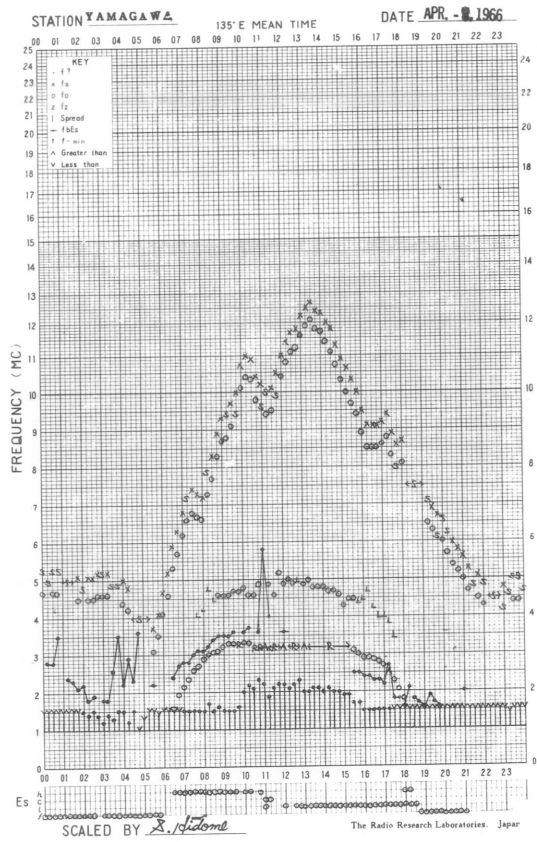
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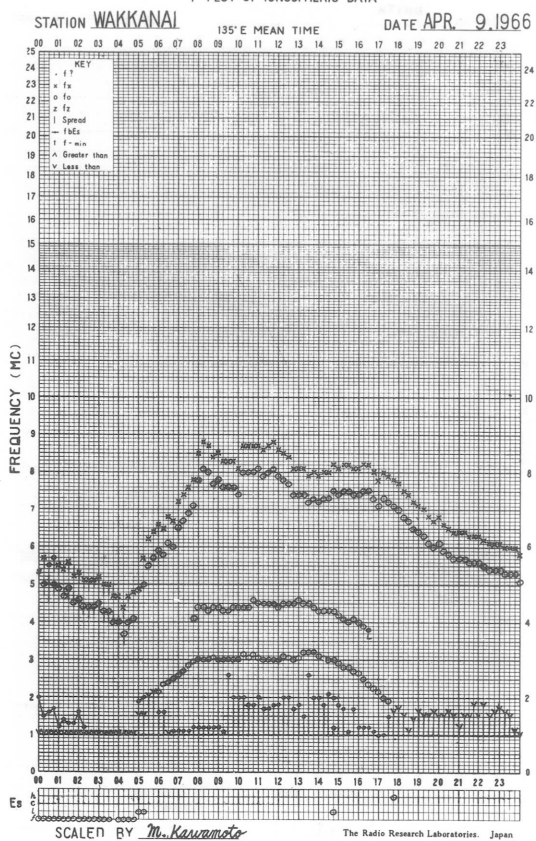
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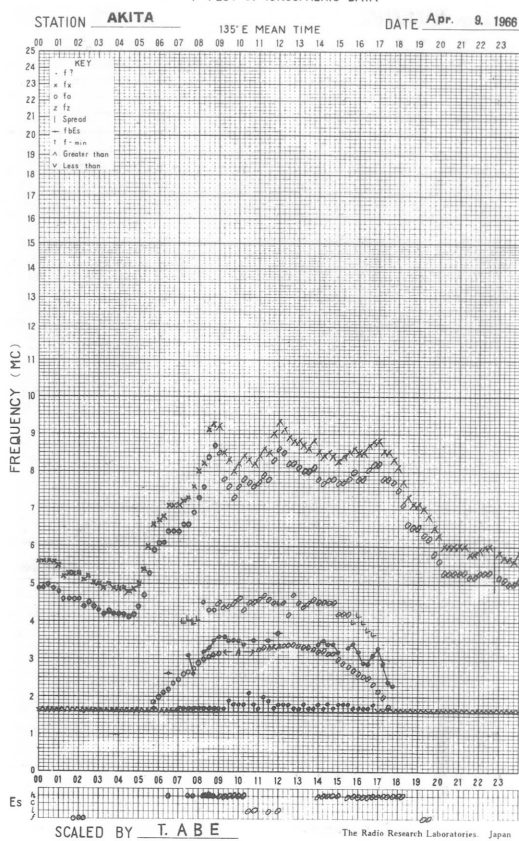
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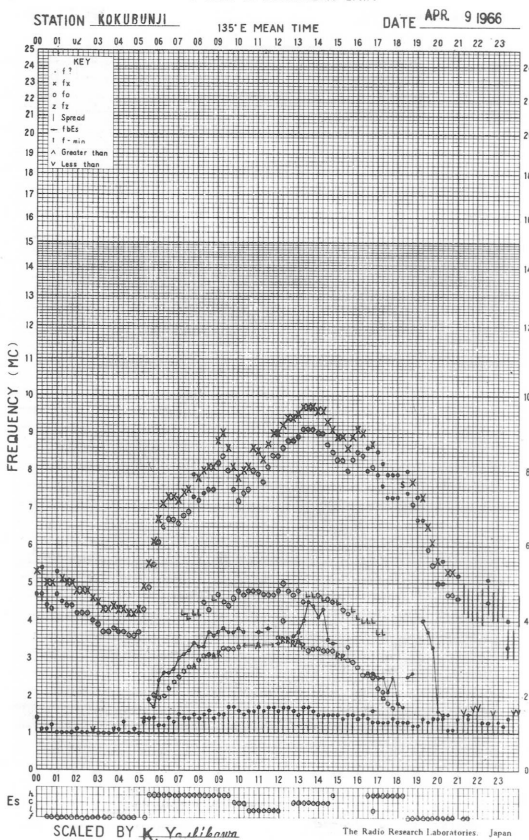
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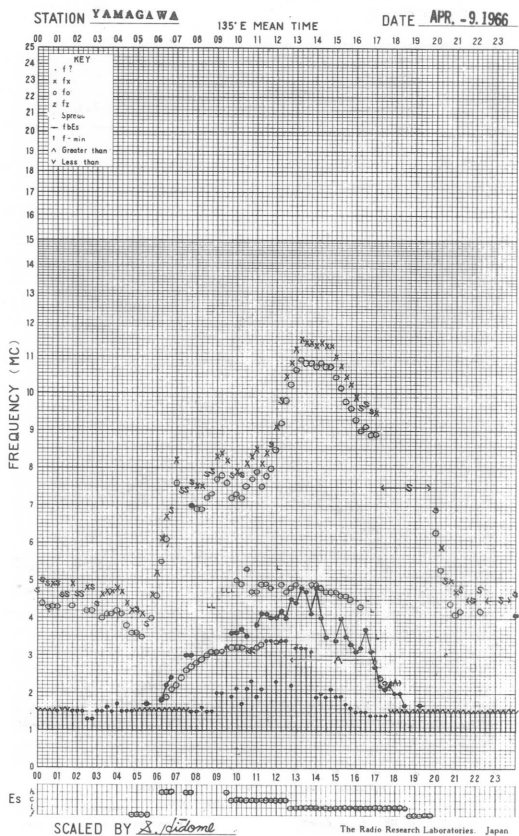
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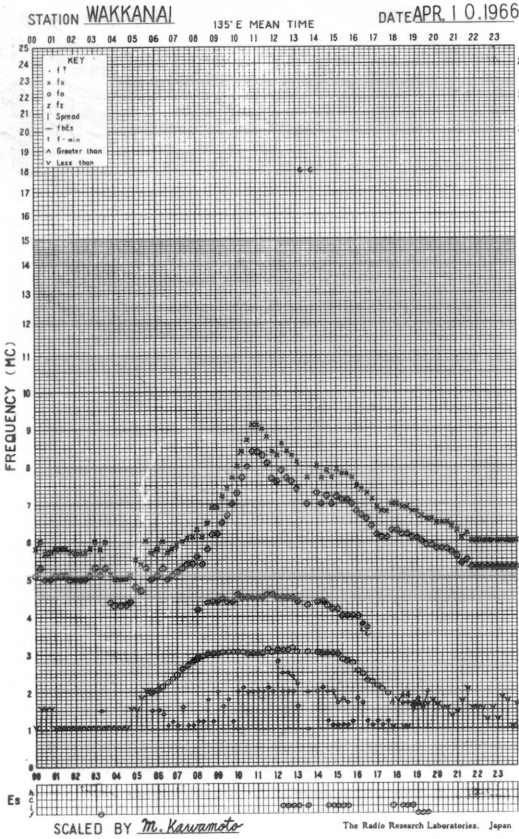
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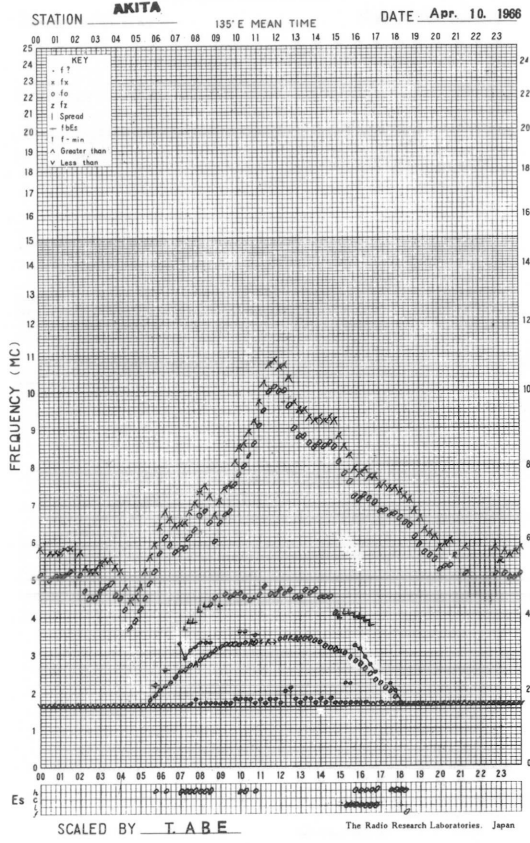
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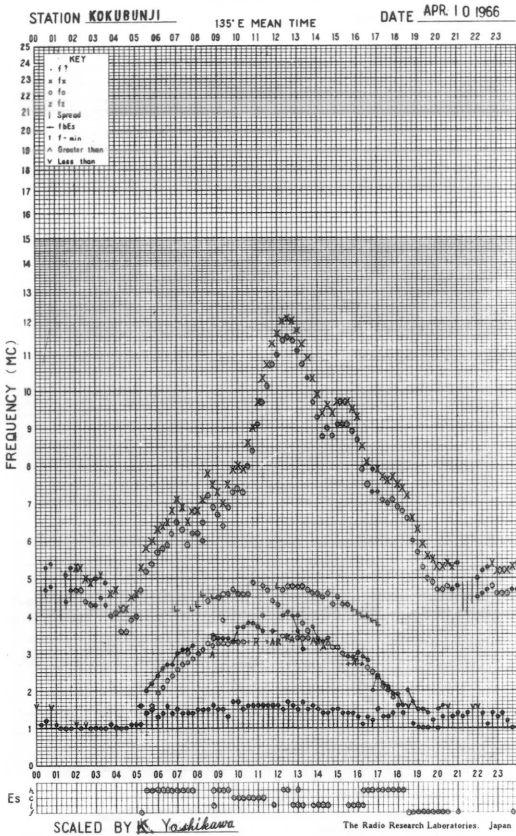
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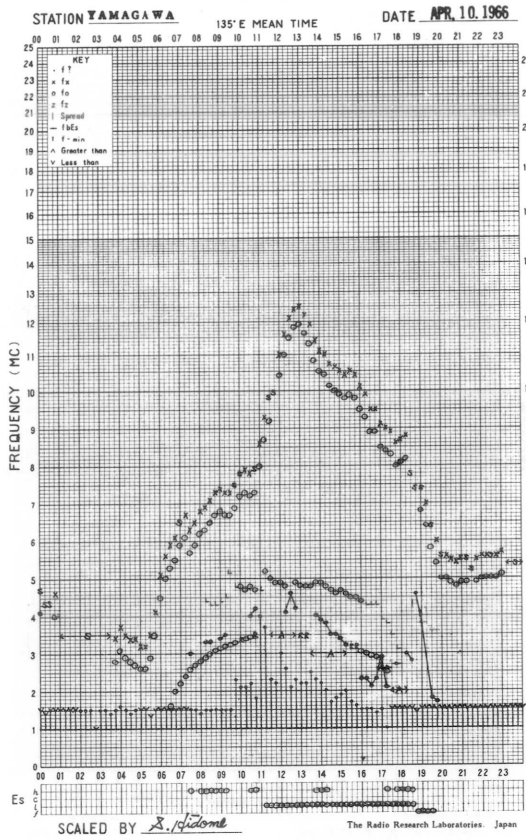
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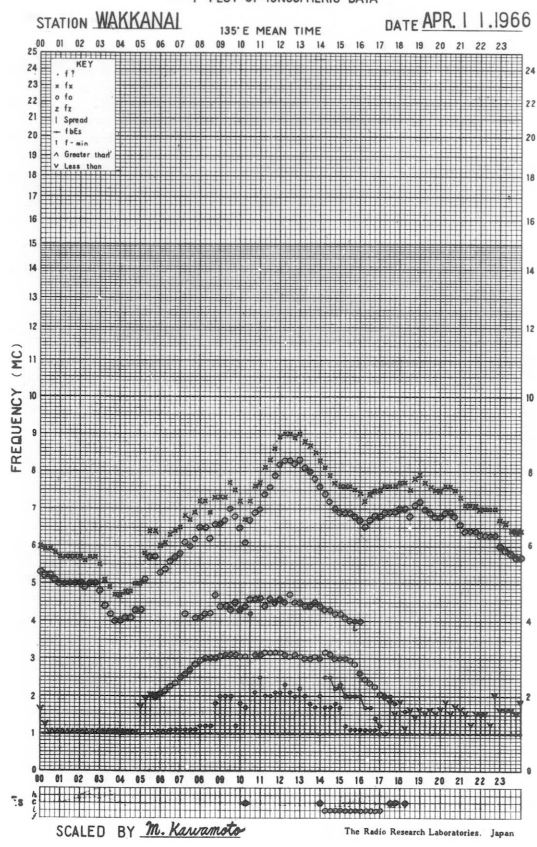


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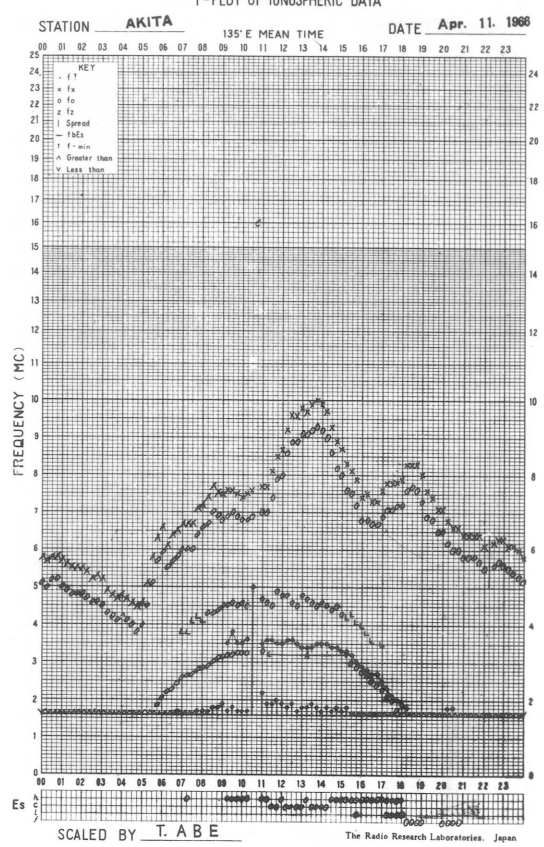




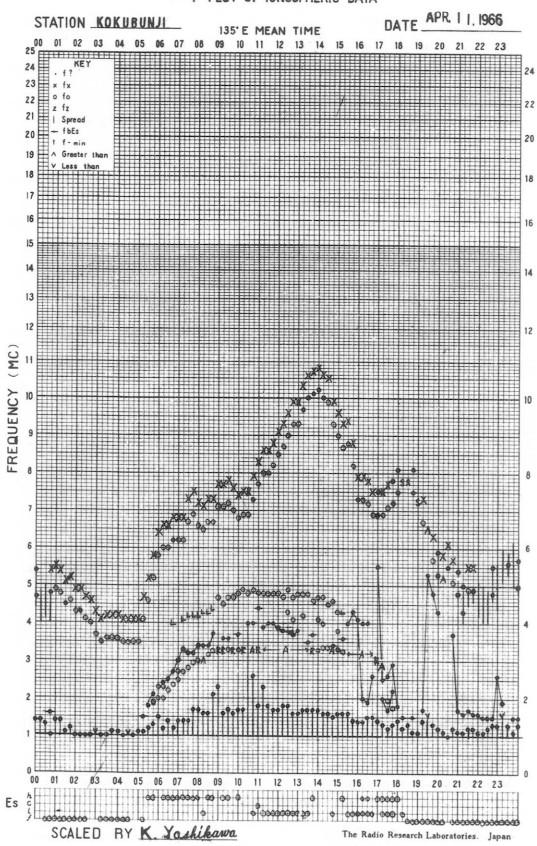
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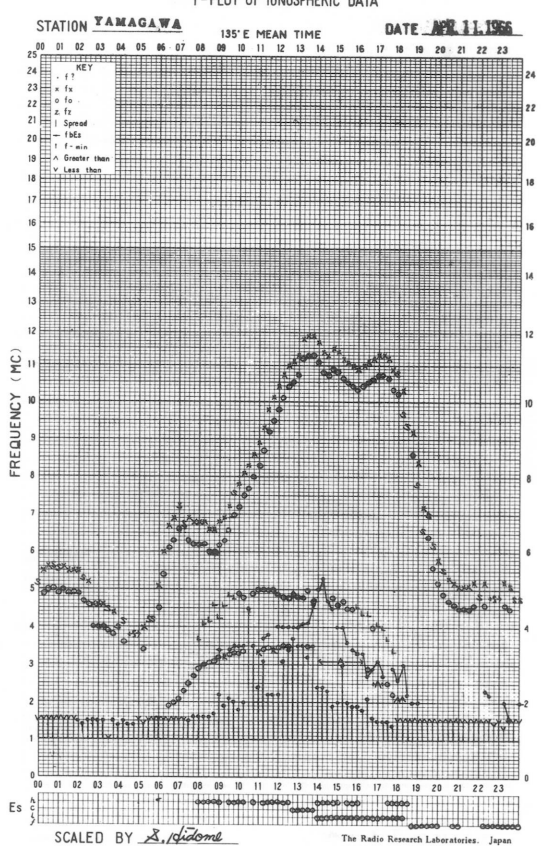
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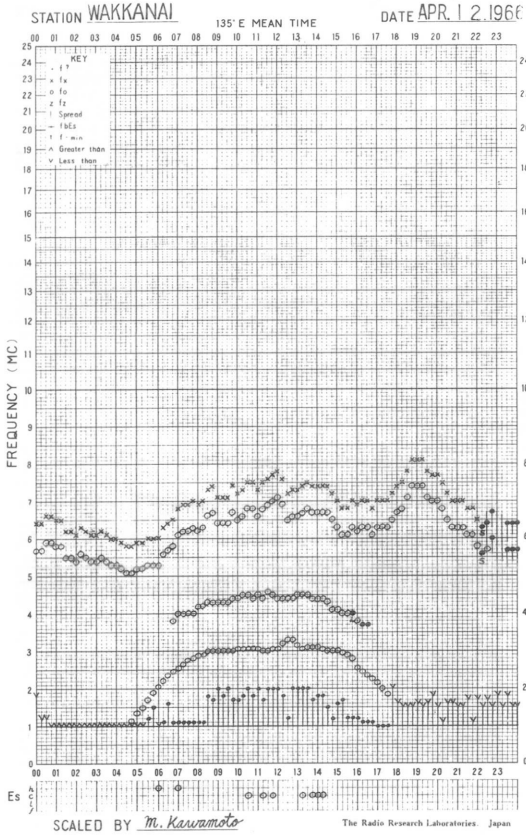
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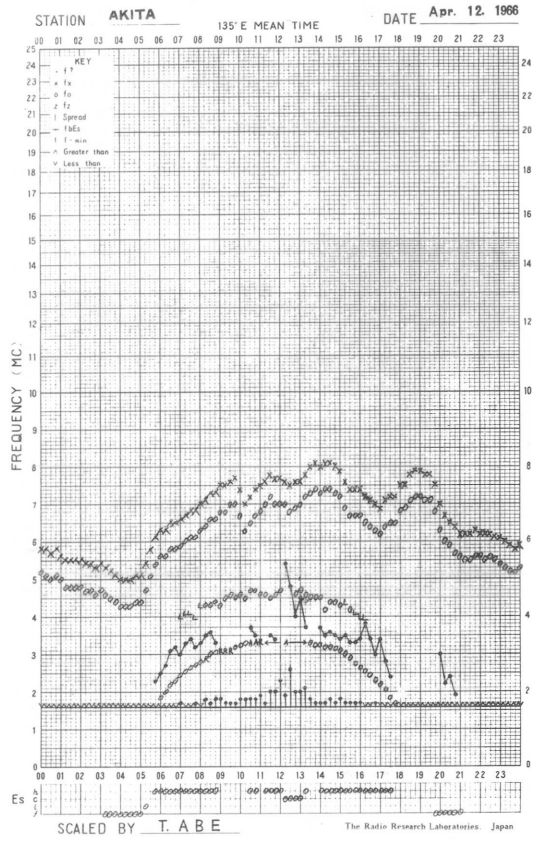
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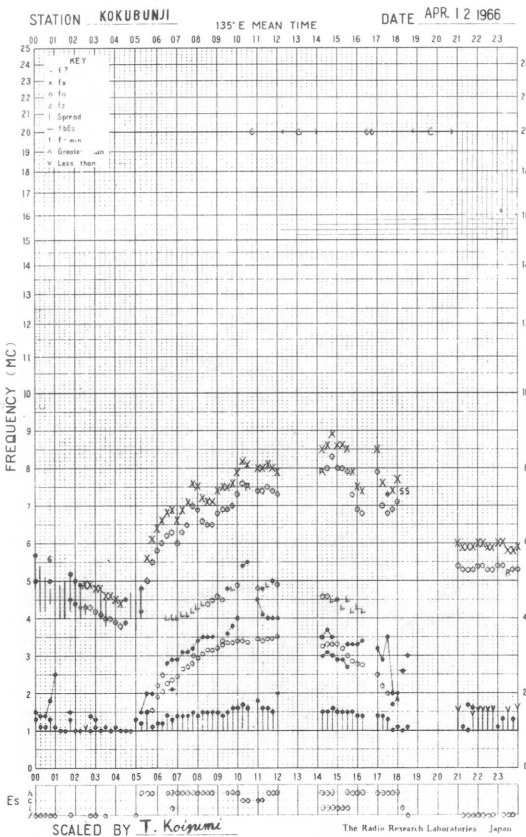
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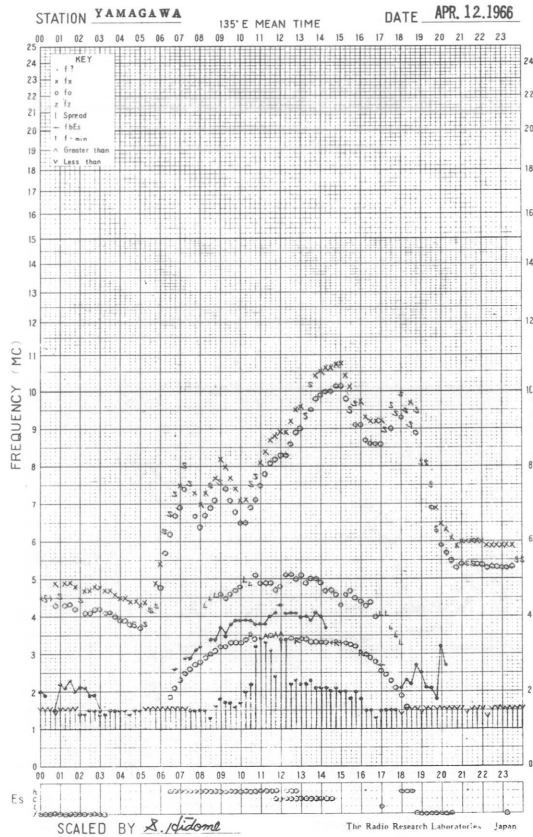
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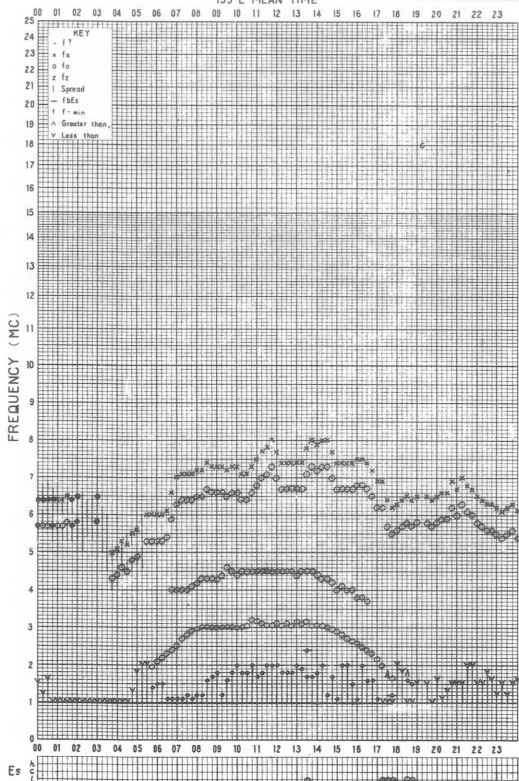


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f- PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE APR 13 1966

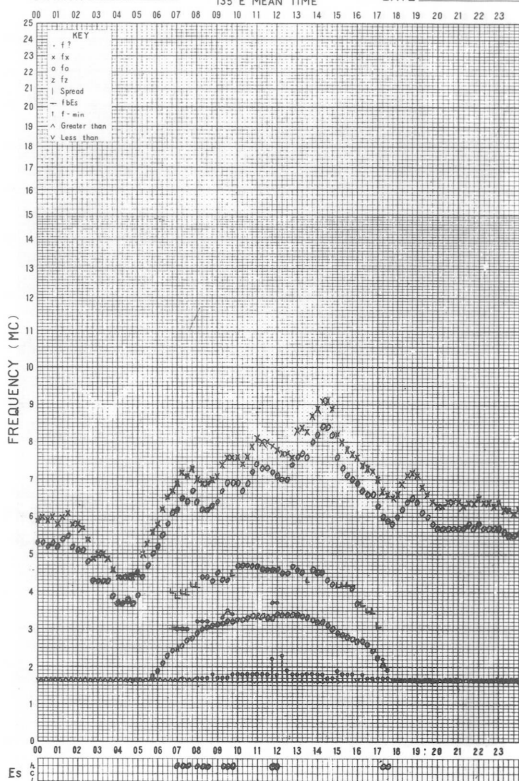


SCALED BY M. Kawamoto

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Apr. 13. 1966

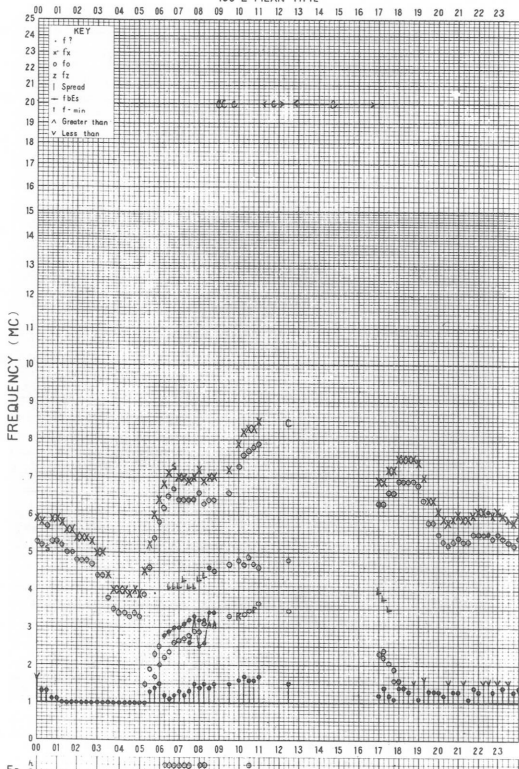


SCALED BY T. ABE

The Radio Research Laboratories, Japan

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STATION KOKUBUNJI 135° E MEAN TIME DATE APR 13 1966

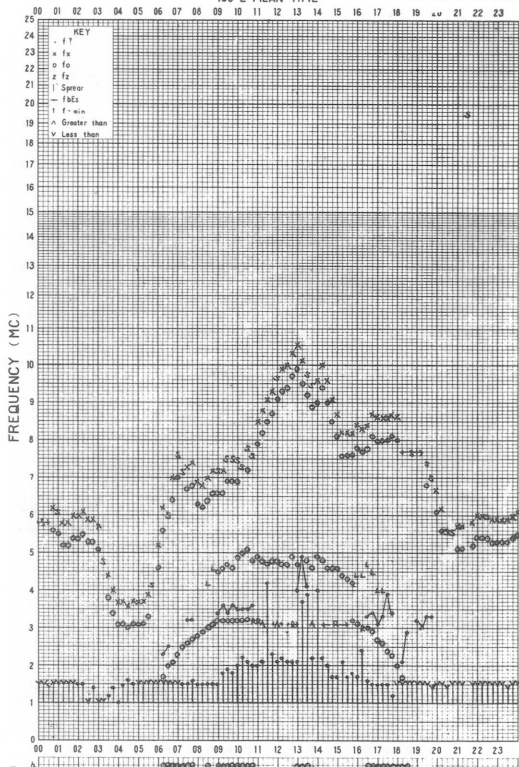


SCALED BY K. Yashikawa

The Radio Research Laboratories, Japan

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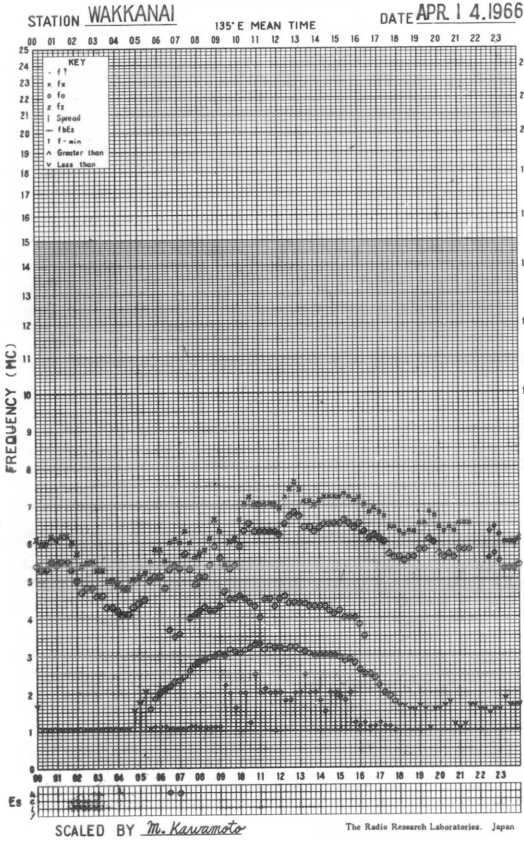
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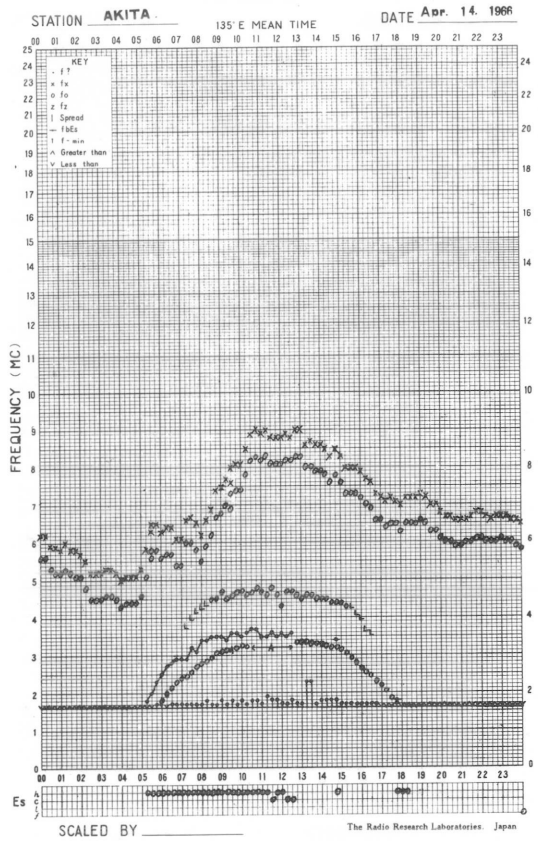
SCALED BY S. Yokota

The Radio Research Laboratories, Japan

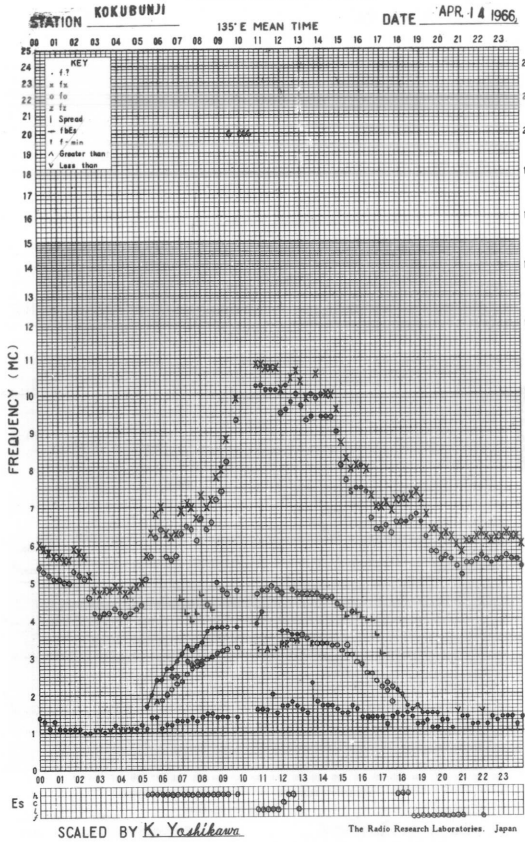
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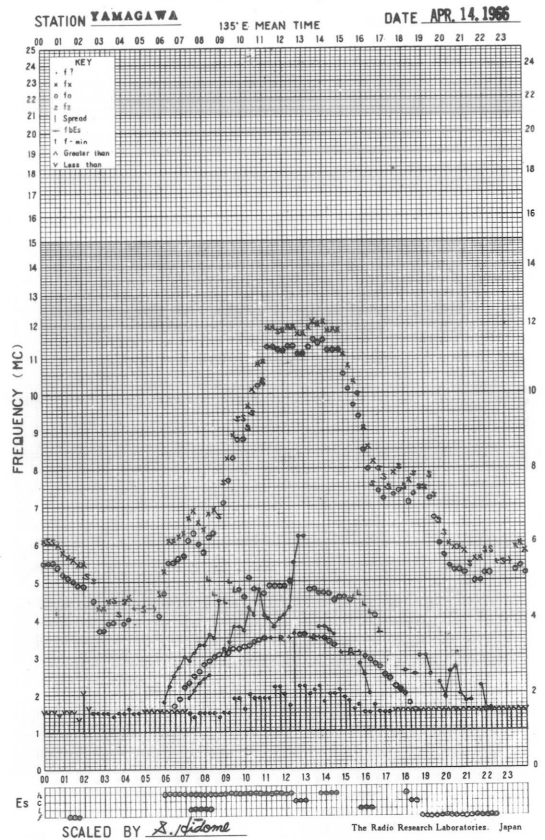
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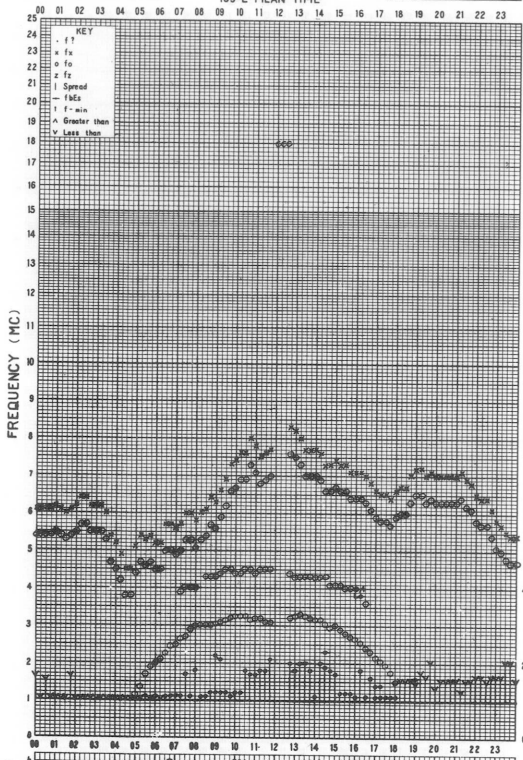


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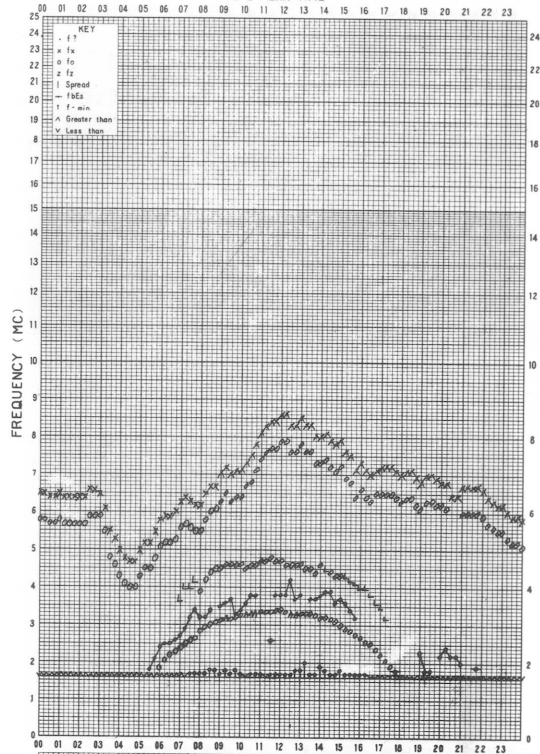


SCALED BY M. Kawamoto

The Radio Research Laboratories, Japan

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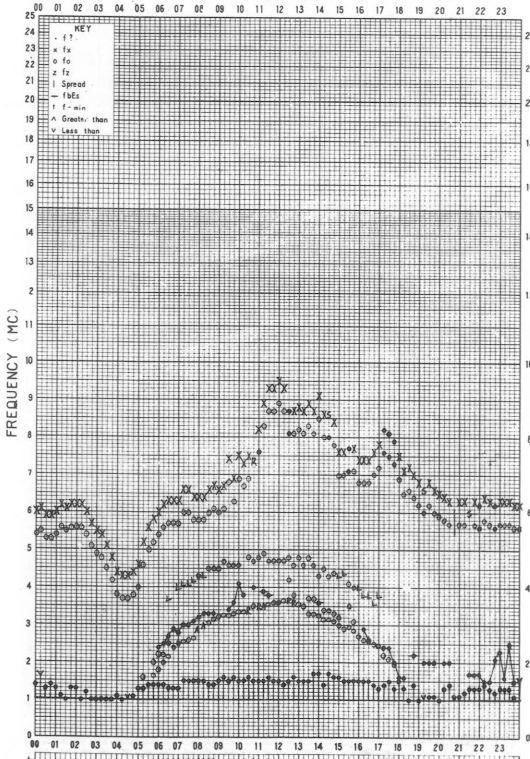


SCALED BY T. ABE

The Radio Research Laboratories, Japan

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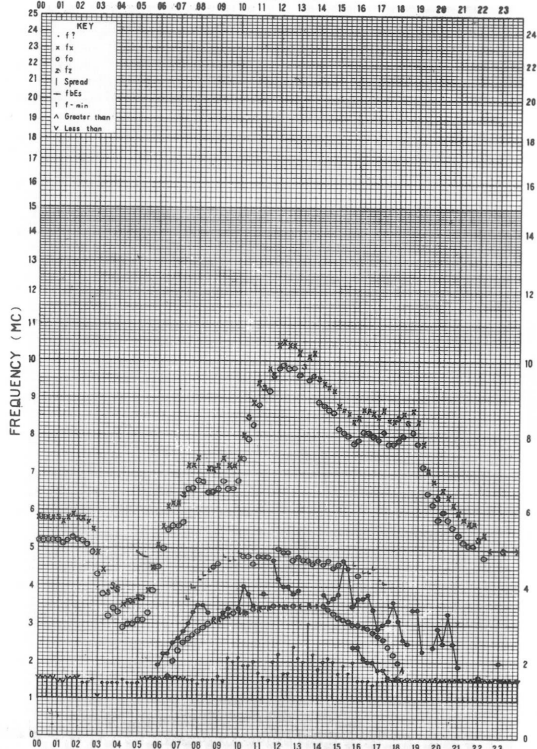


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

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STATION YAMAGAWA 135°E MEAN TIME DATE APR. 15, 1966

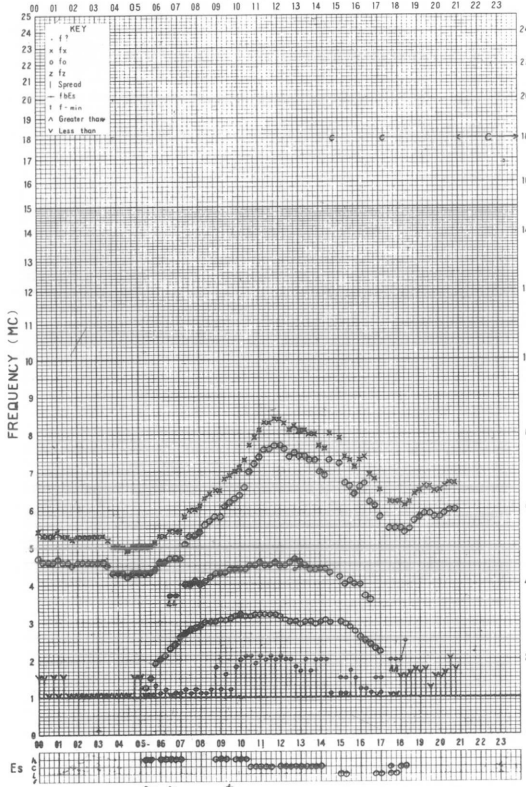


SCALED BY S. Nishimura

The Radio Research Laboratories, Japan

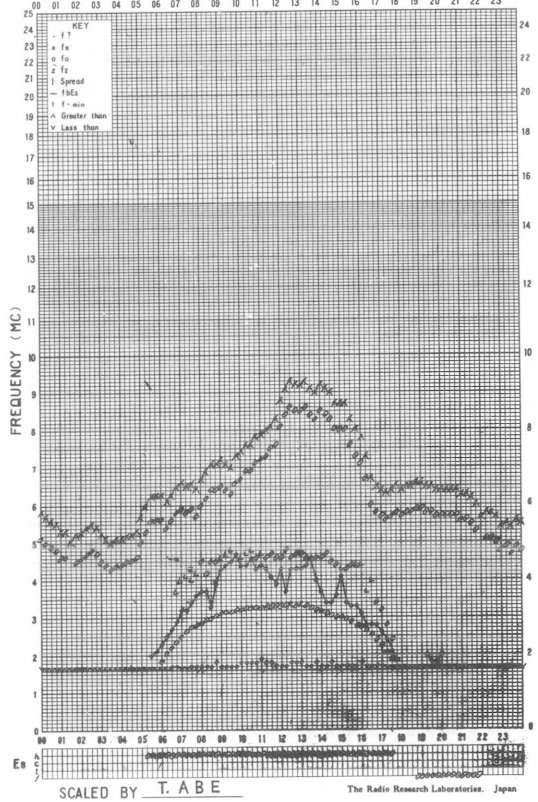
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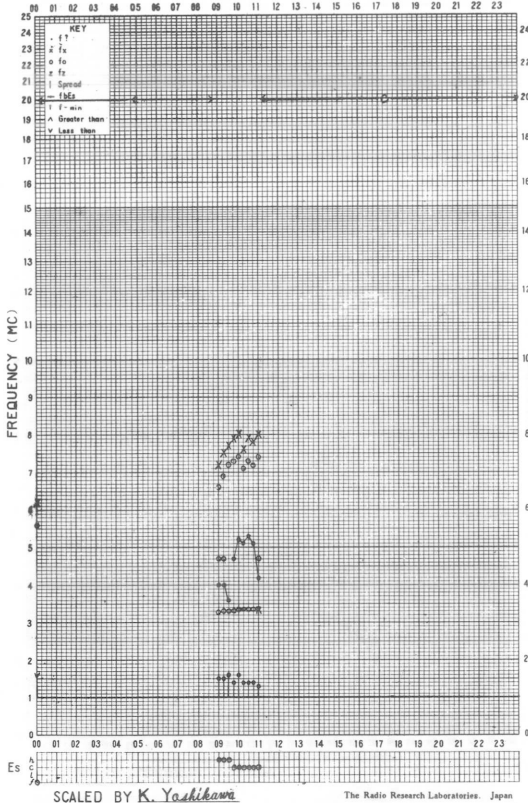
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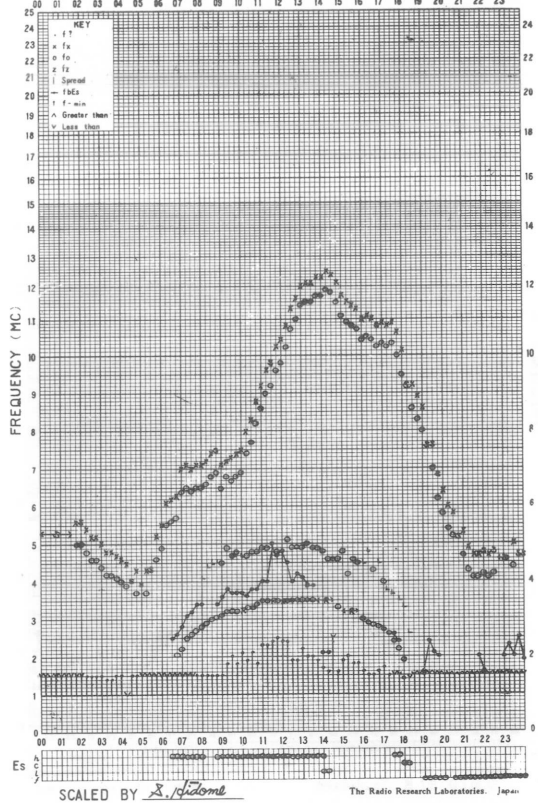
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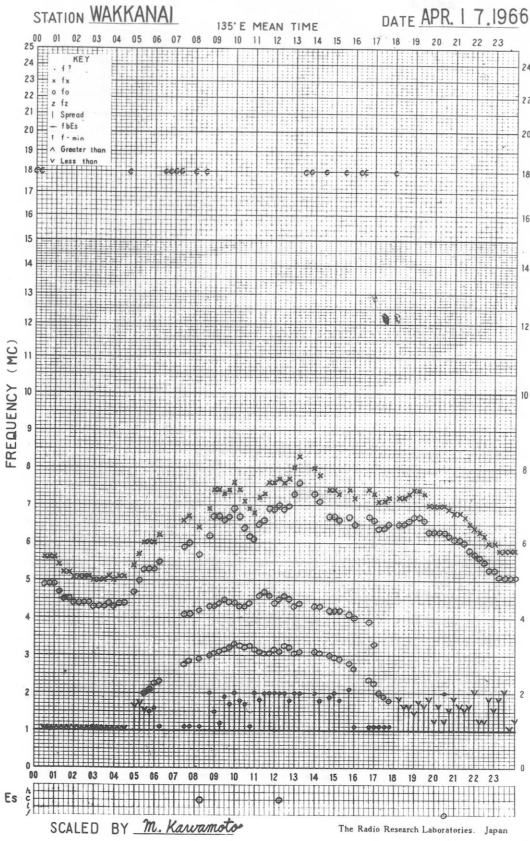


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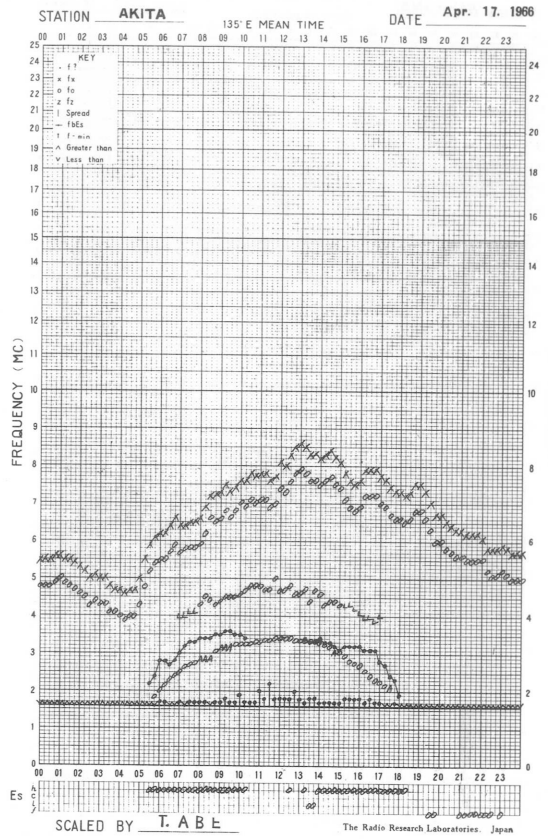
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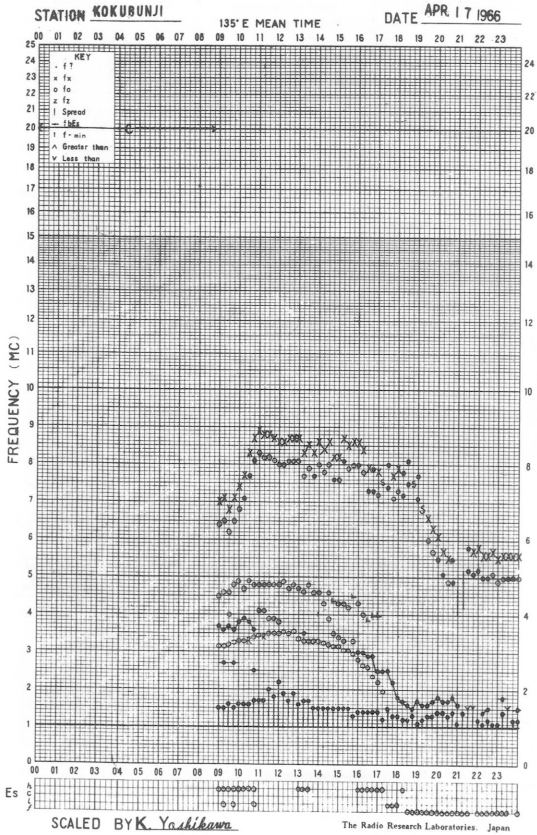
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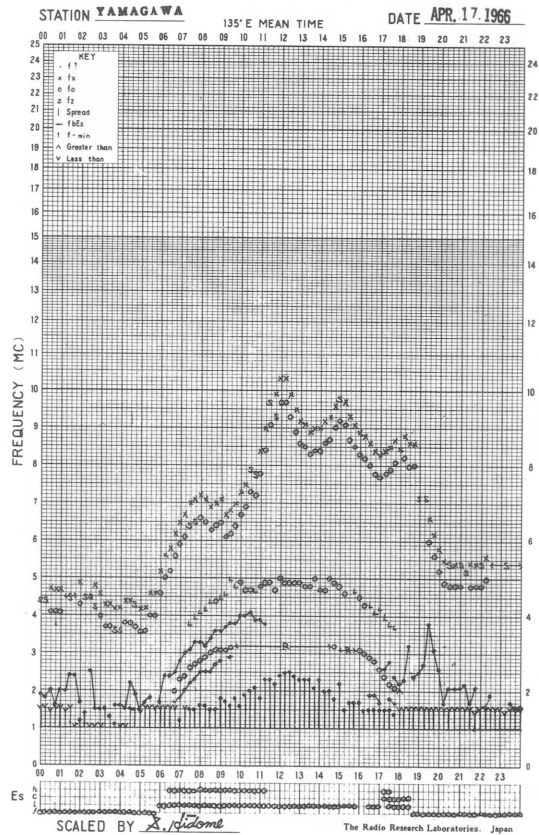
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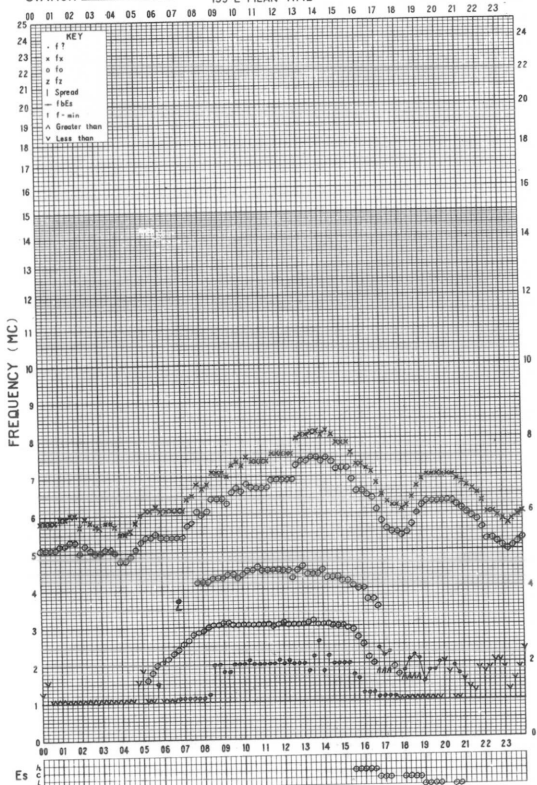


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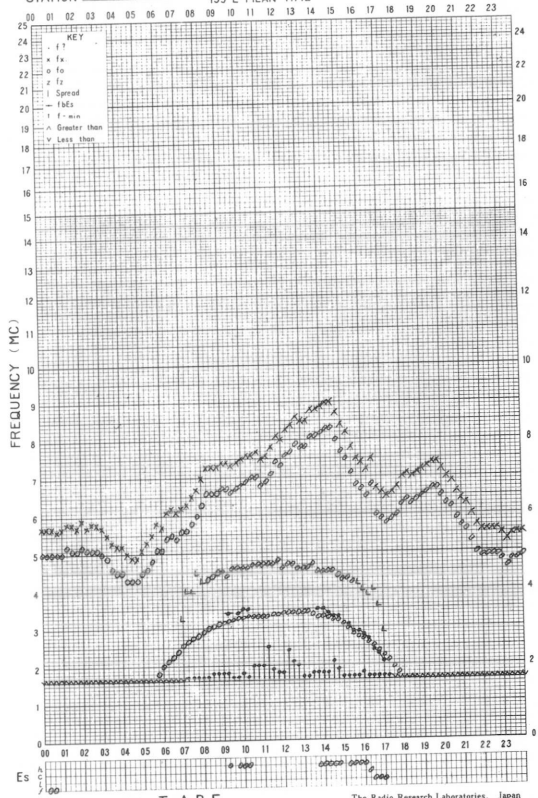


SCALED BY M. Kawamoto

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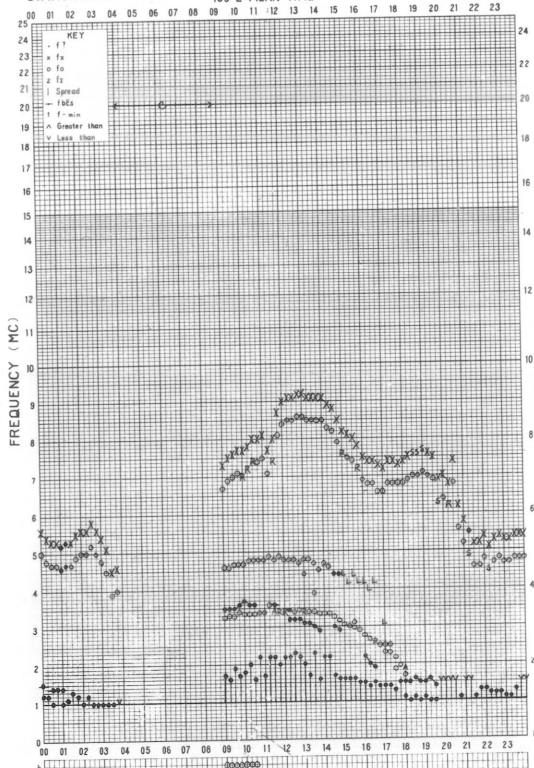


SCALED BY T. ABE

The Radio Research Laboratories, Japan

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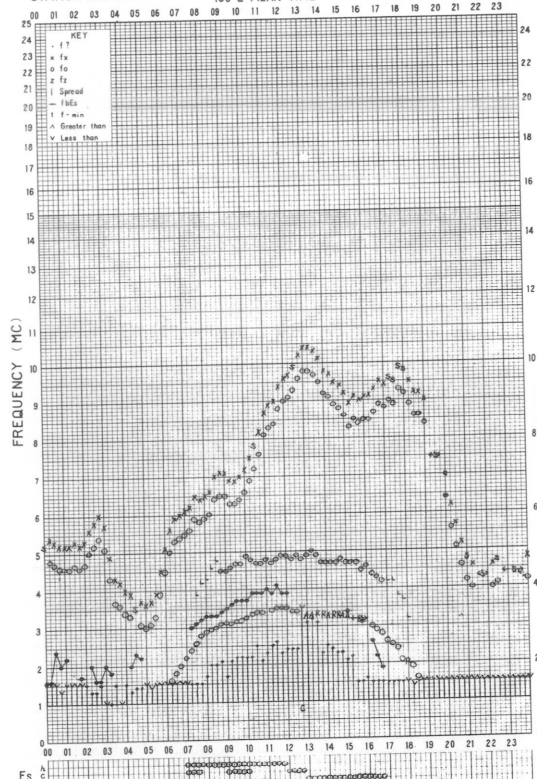


SCALED BY T. Koizumi

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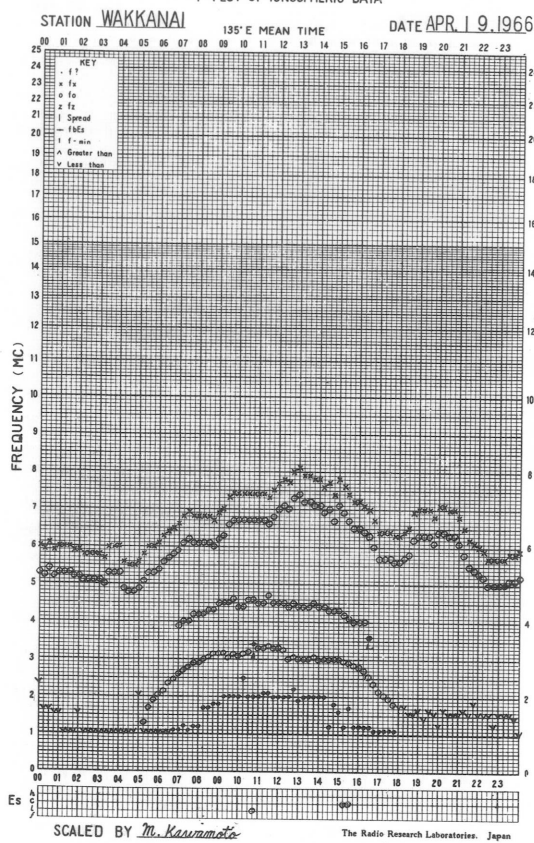


SCALED BY S. Hidome

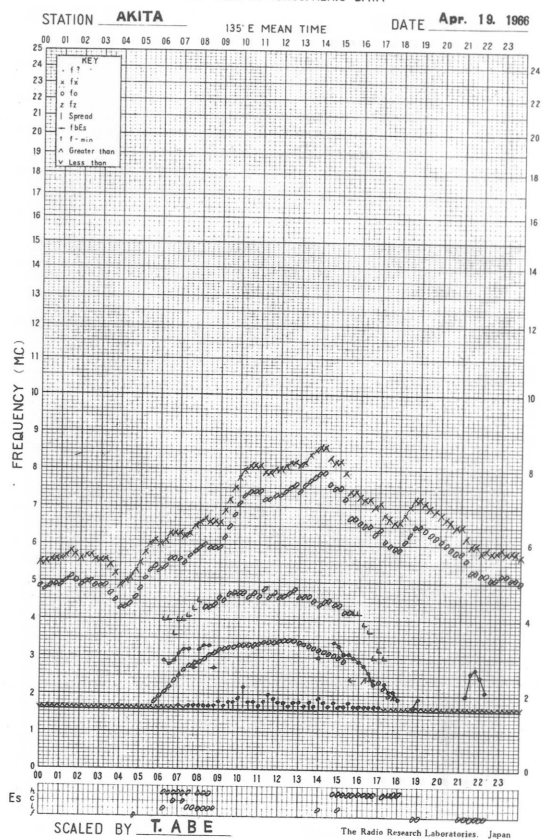
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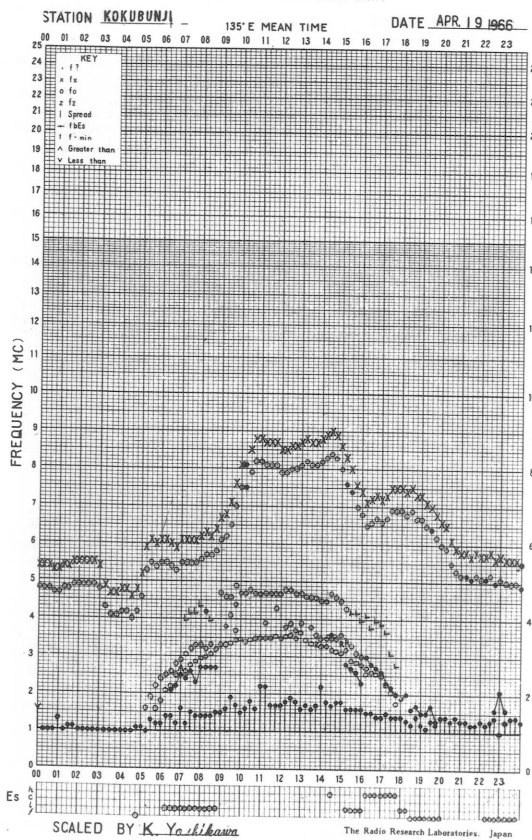
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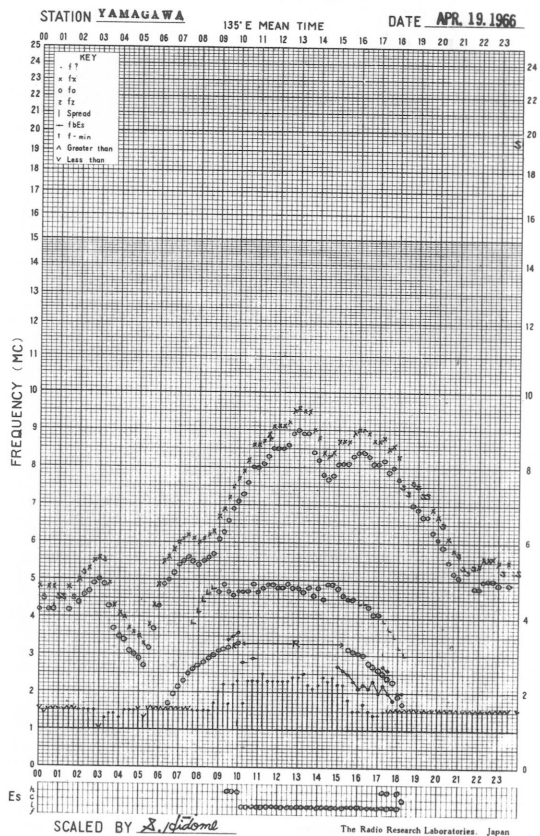
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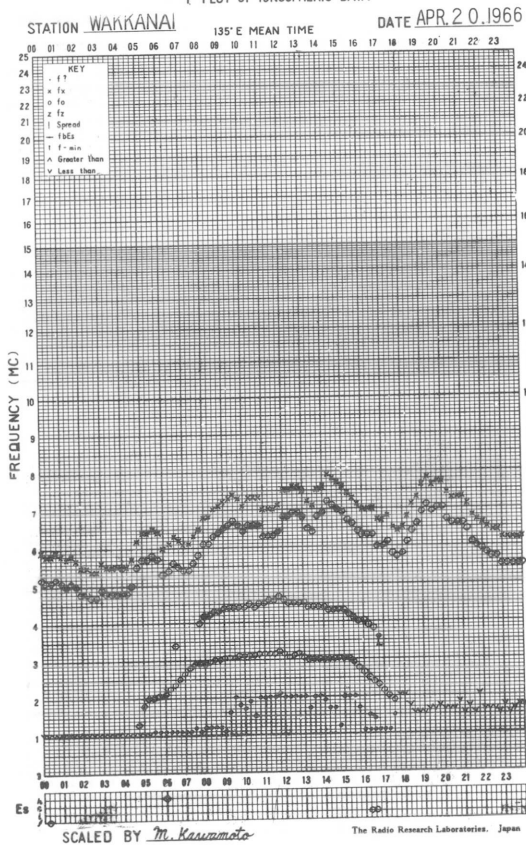
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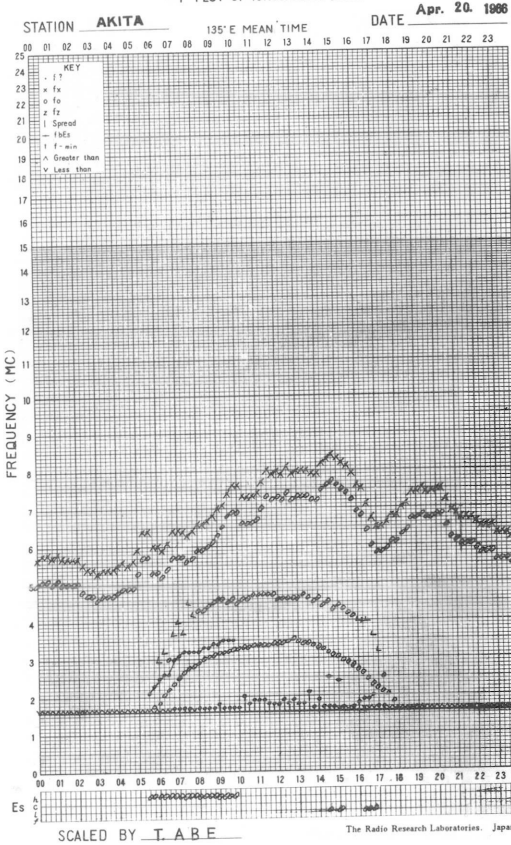
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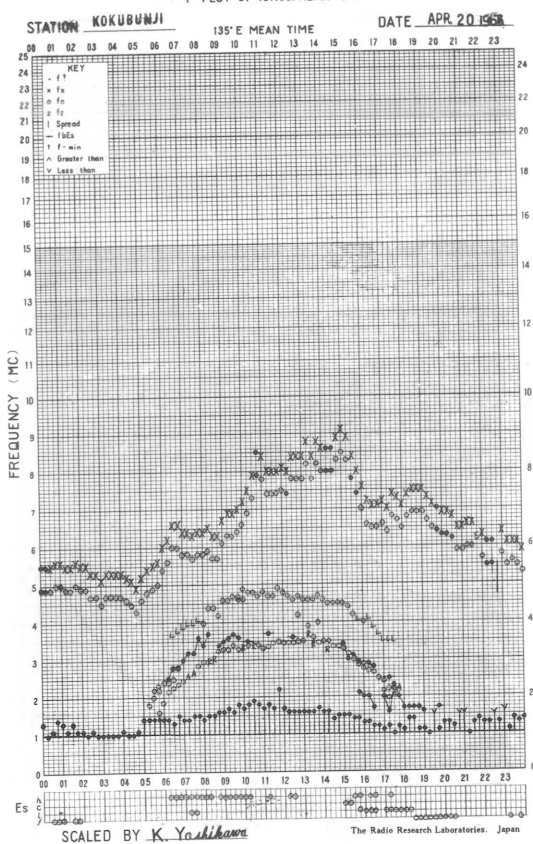
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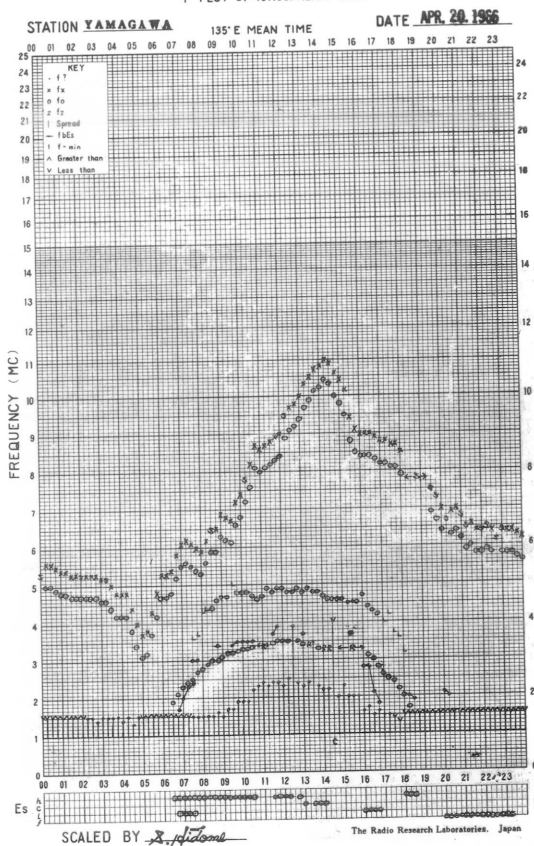
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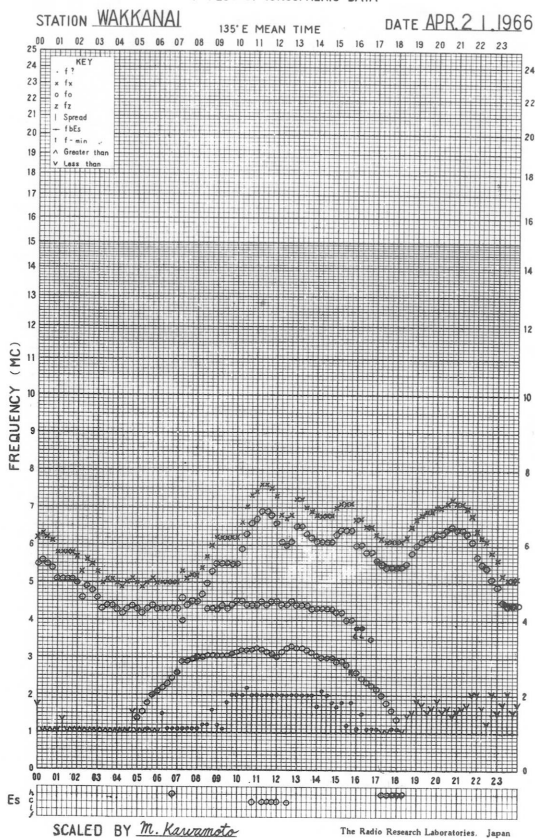
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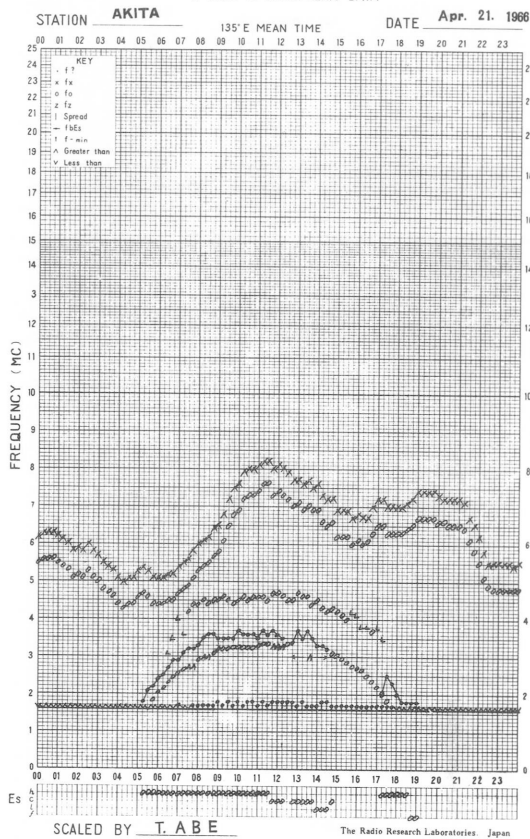
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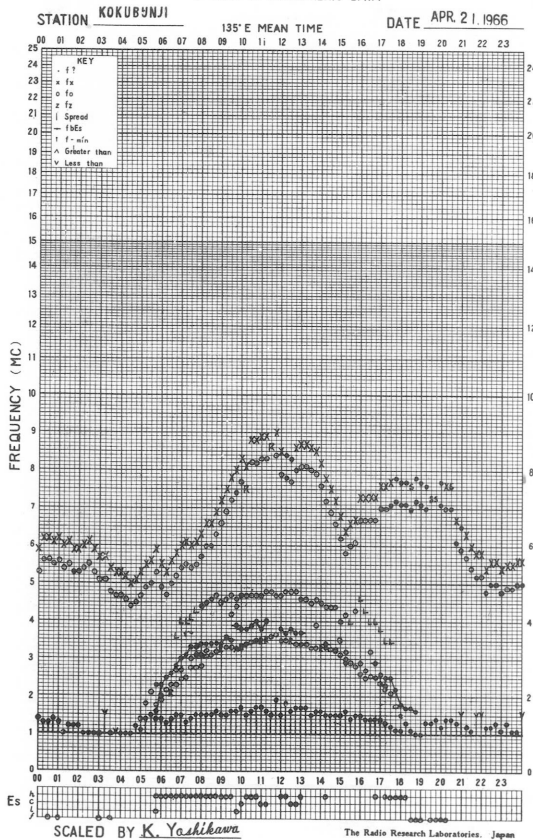
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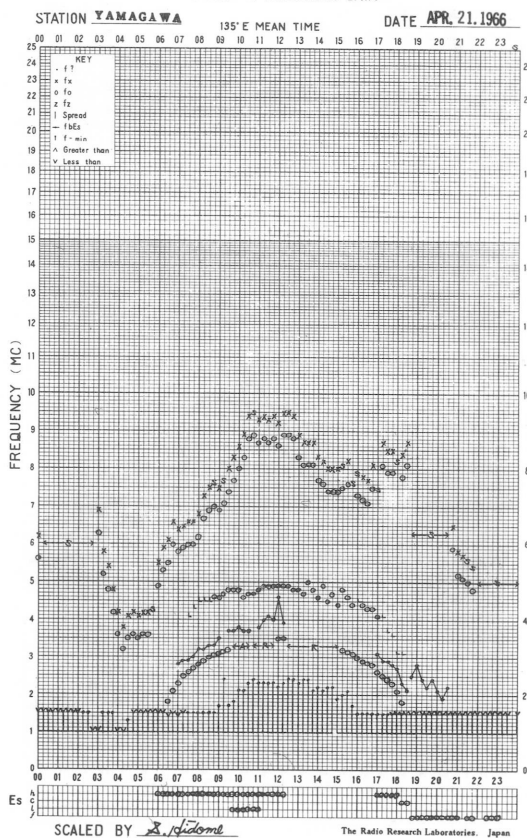
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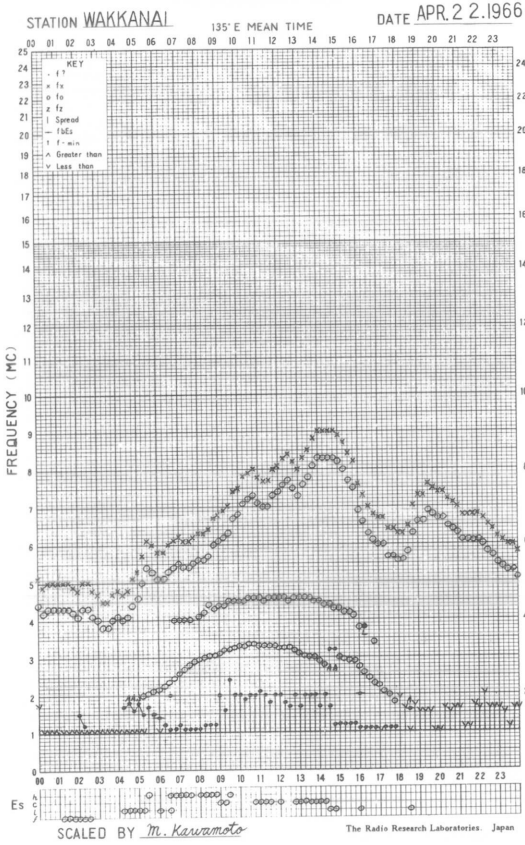
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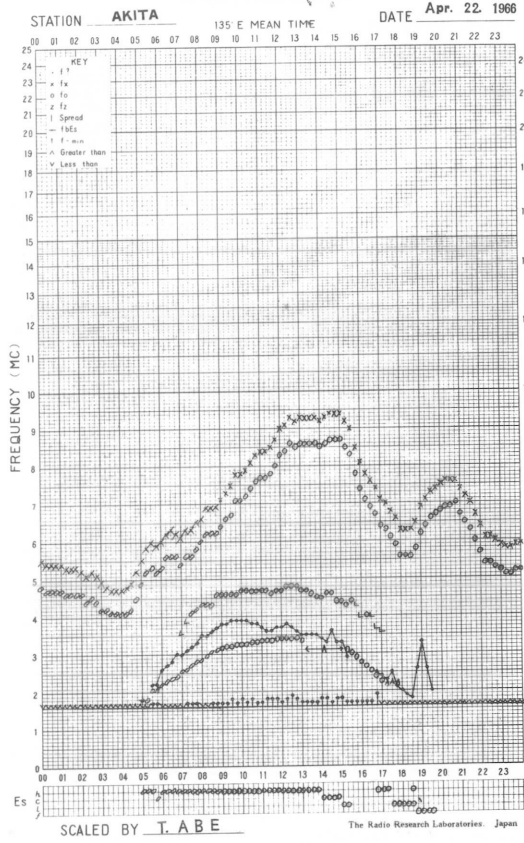
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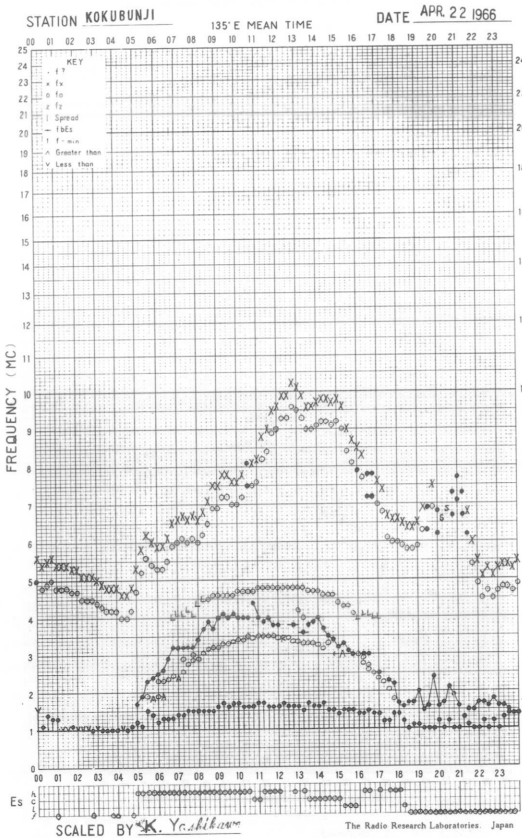
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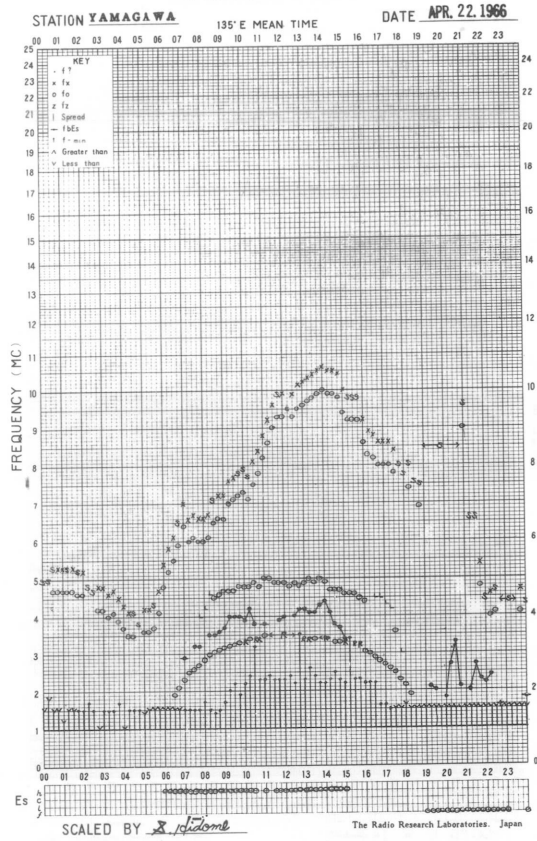
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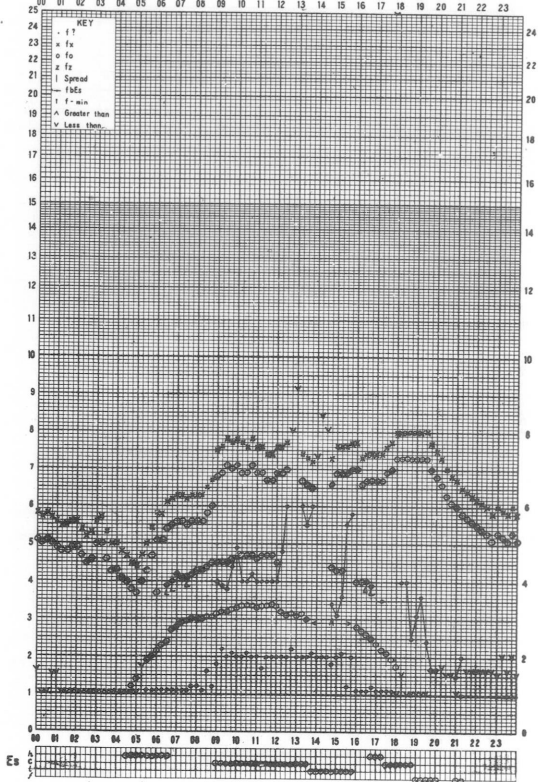


f-PLOT OF IONOSPHERIC DATA



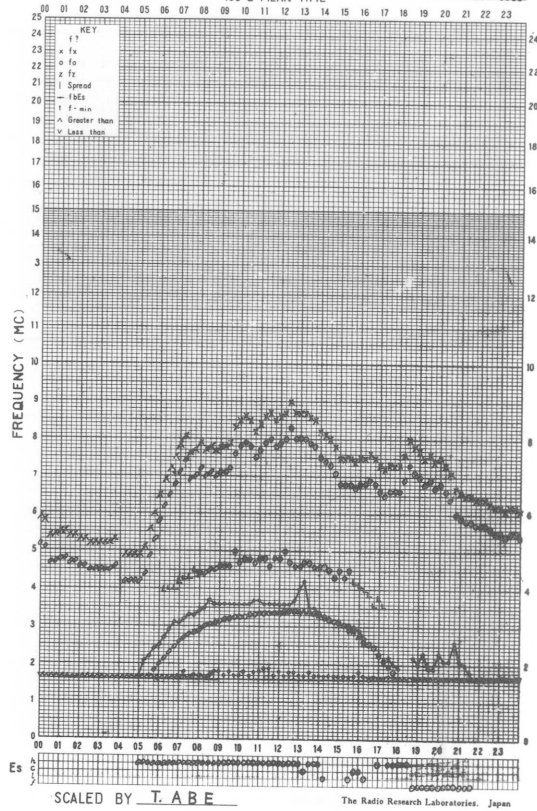
f- PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE APR 23 1966



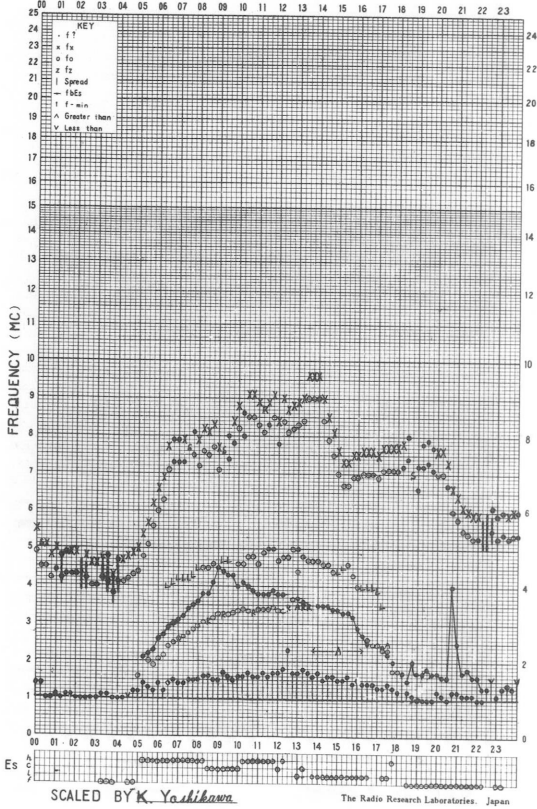
f- PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE APR 23 1966



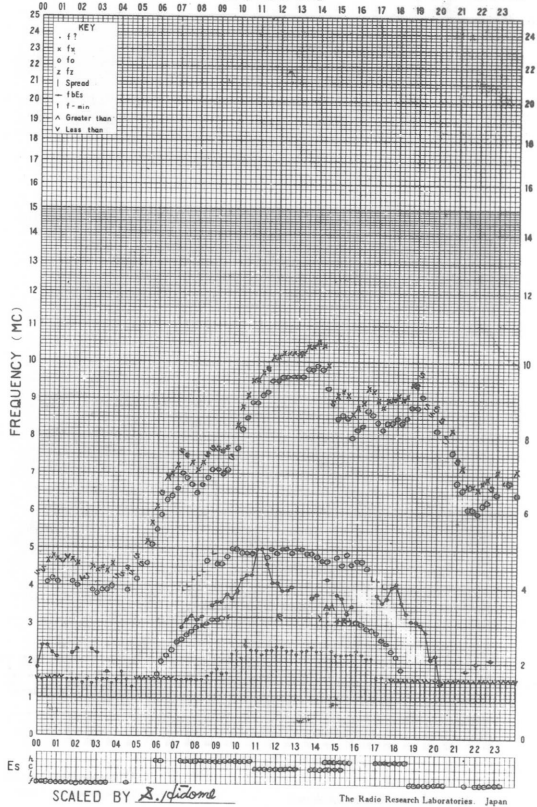
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STATION KOKUBUNJI 135° E MEAN TIME DATE APR 23 1966

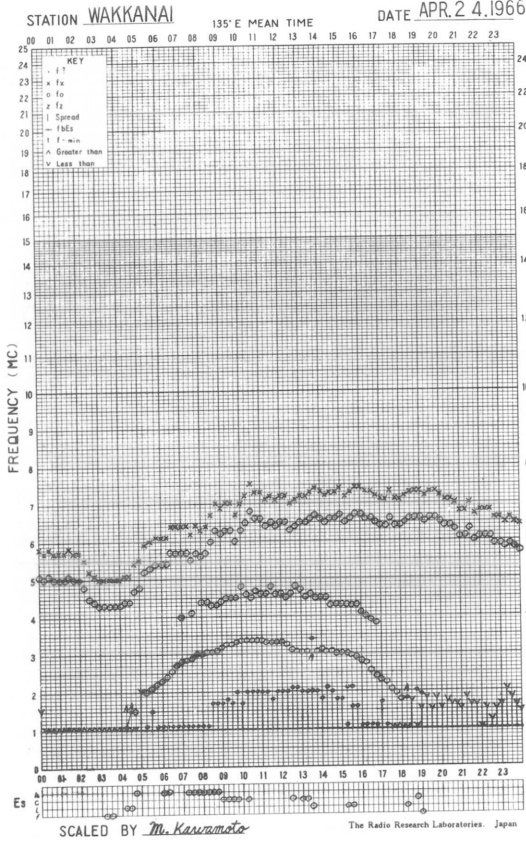


f- PLOT OF IONOSPHERIC DATA

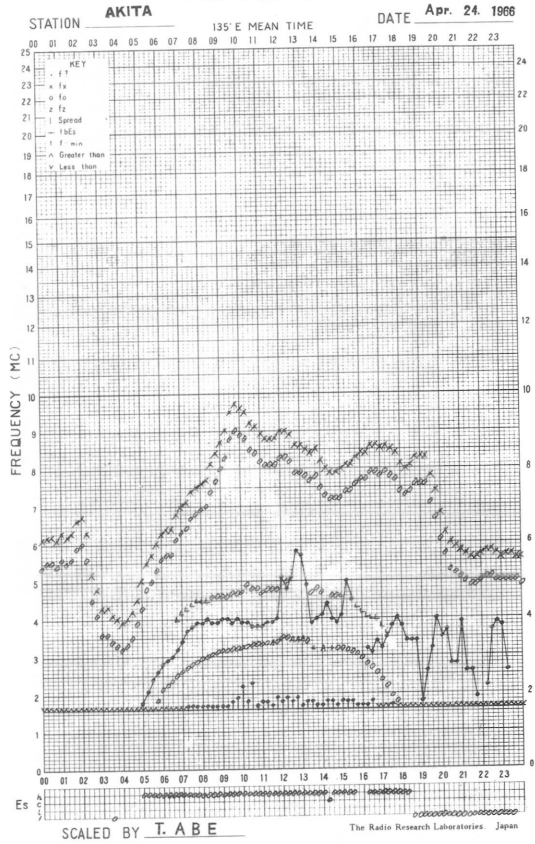
STATION YAMAGAWA 135° E MEAN TIME DATE APR 23 1966



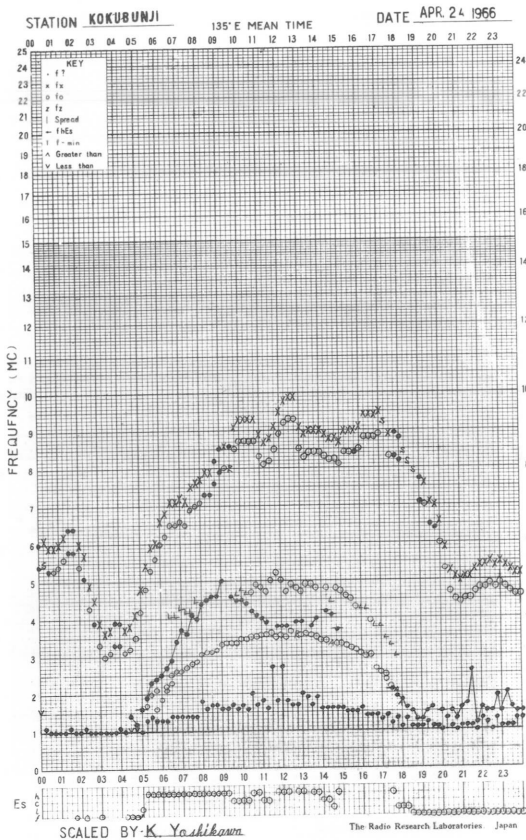
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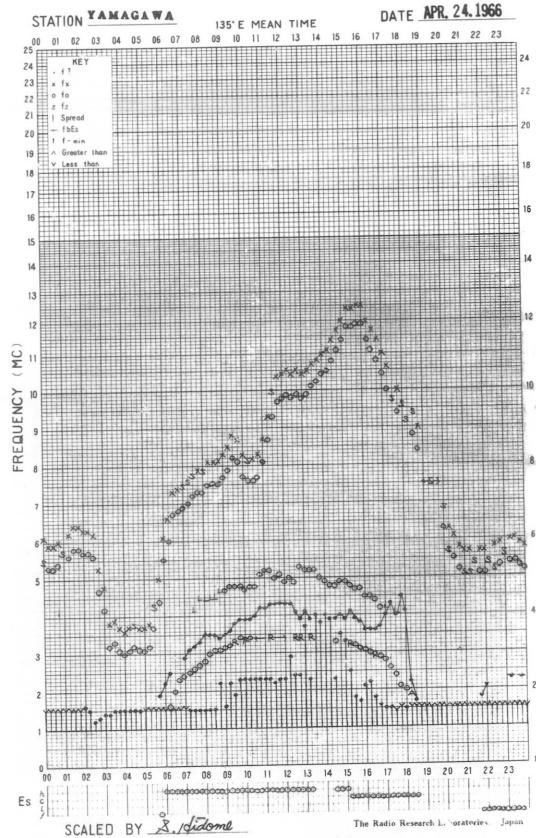
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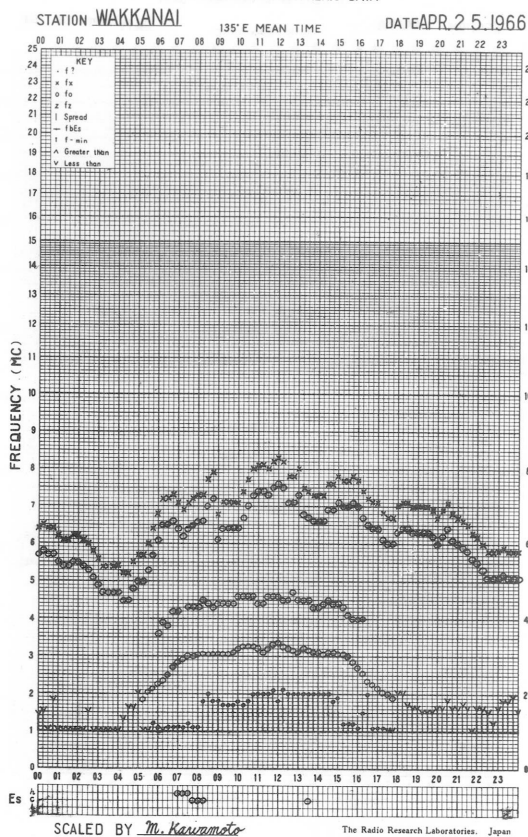
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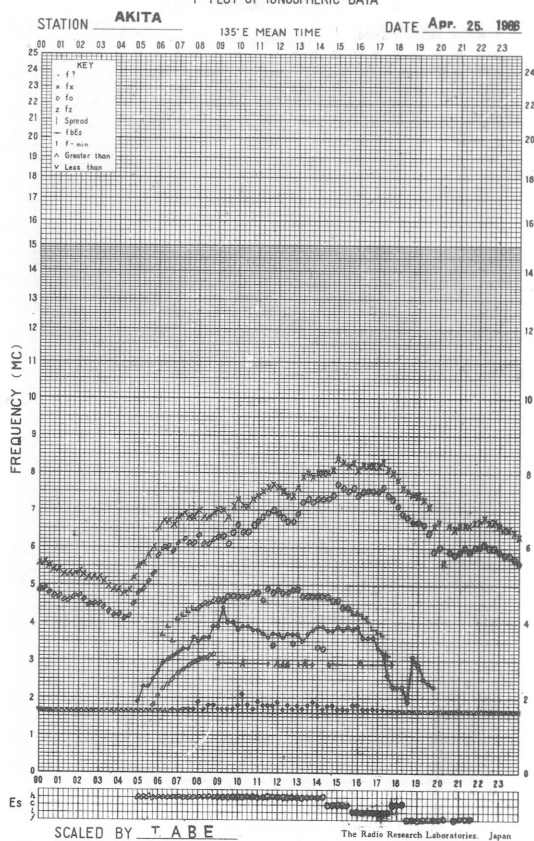
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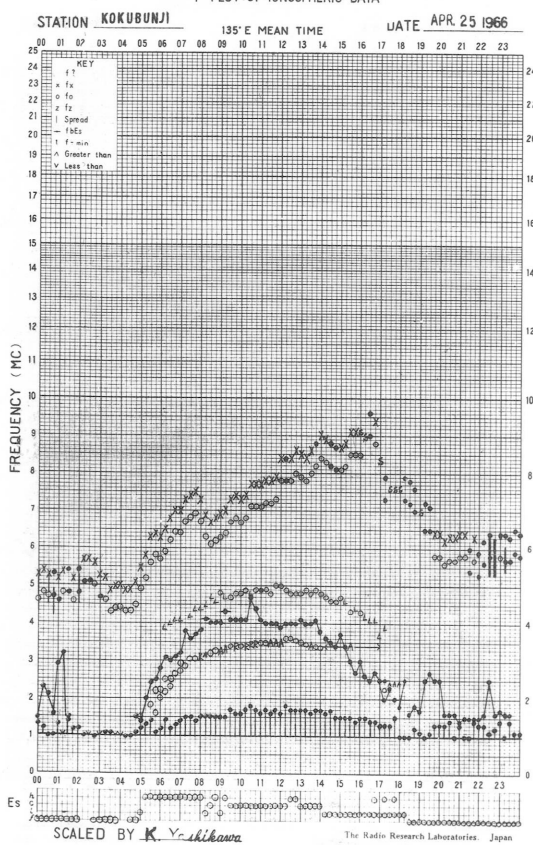
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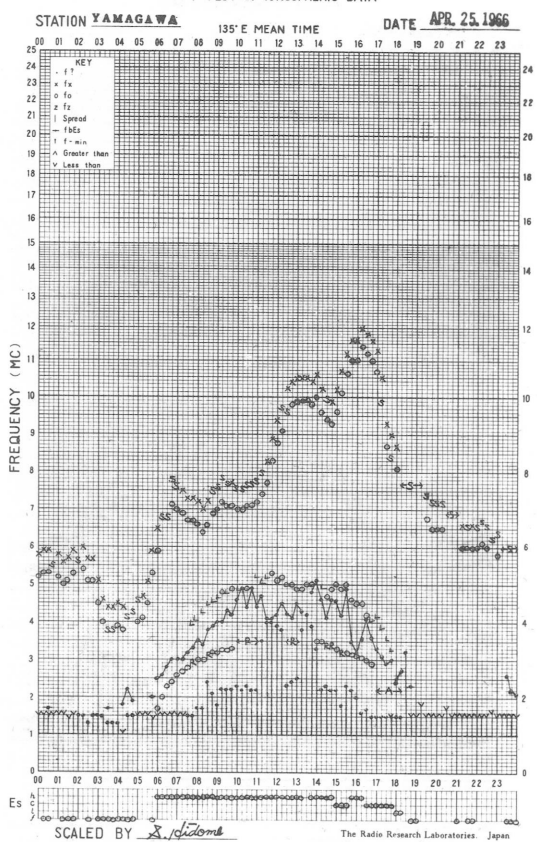
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f-PLOT OF IONOSPHERIC DATA

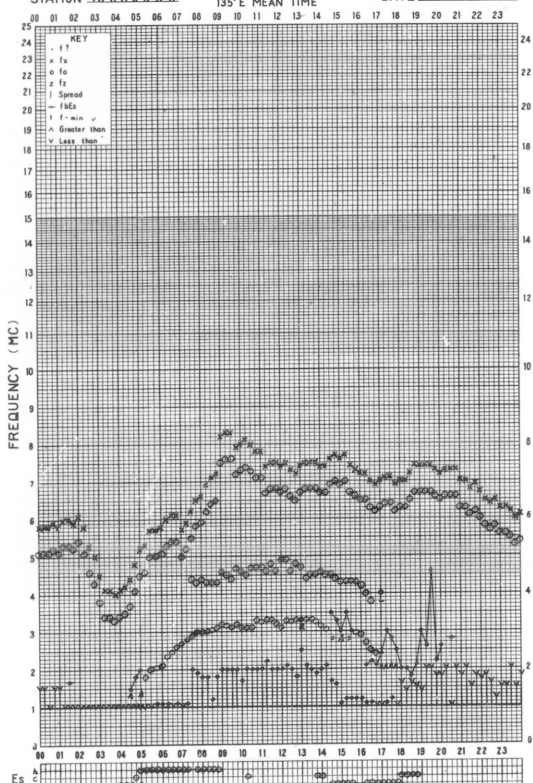


f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 26. 1966

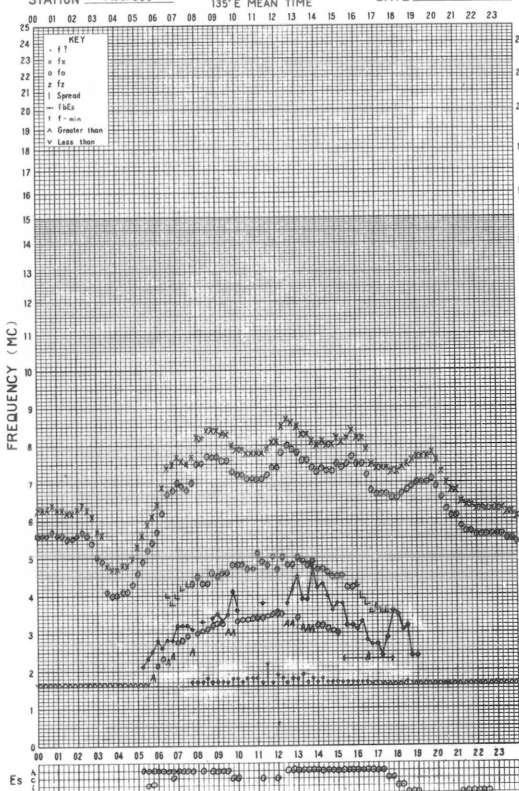


SCALED BY M. Kawamoto

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 26. 1966

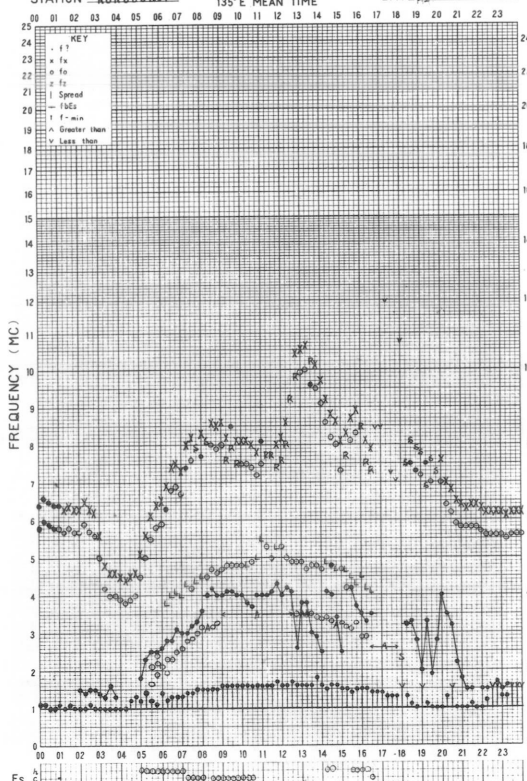


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR. 26 1966

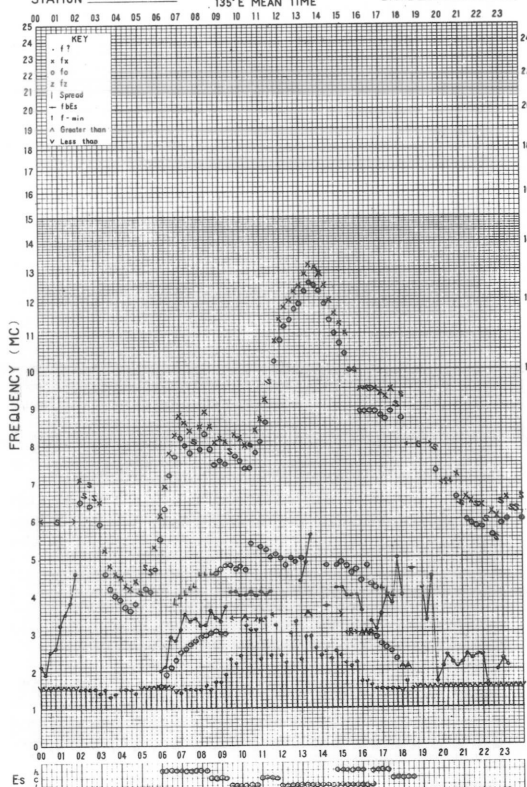


SCALED BY I. Kaigumi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE APR. 26. 1966

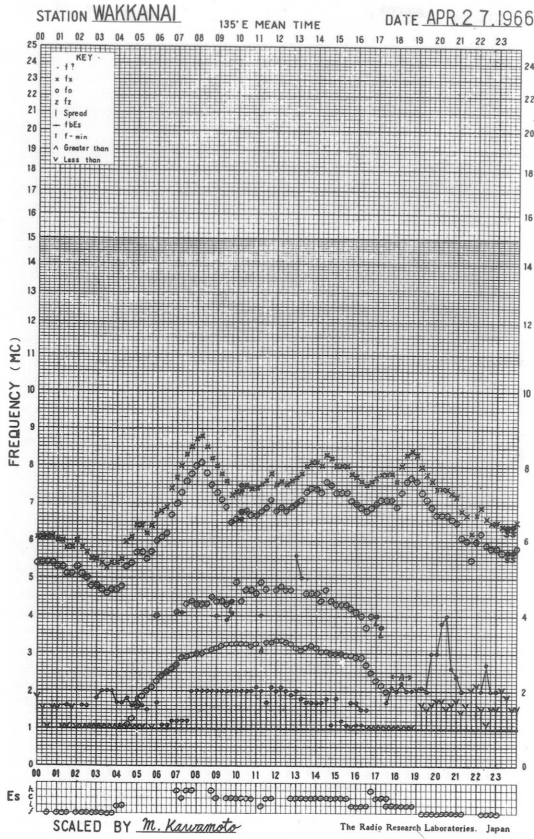


SCALED BY S. Idome

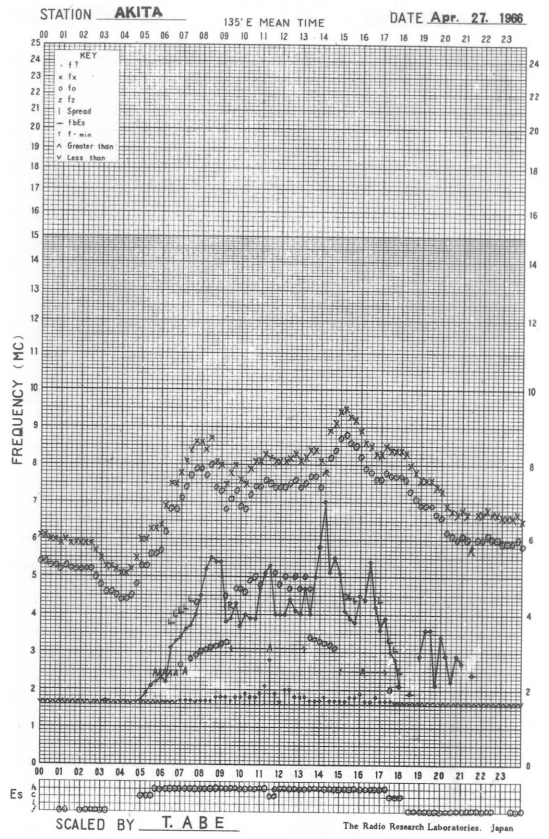
The Radio Research Laboratories, Japan



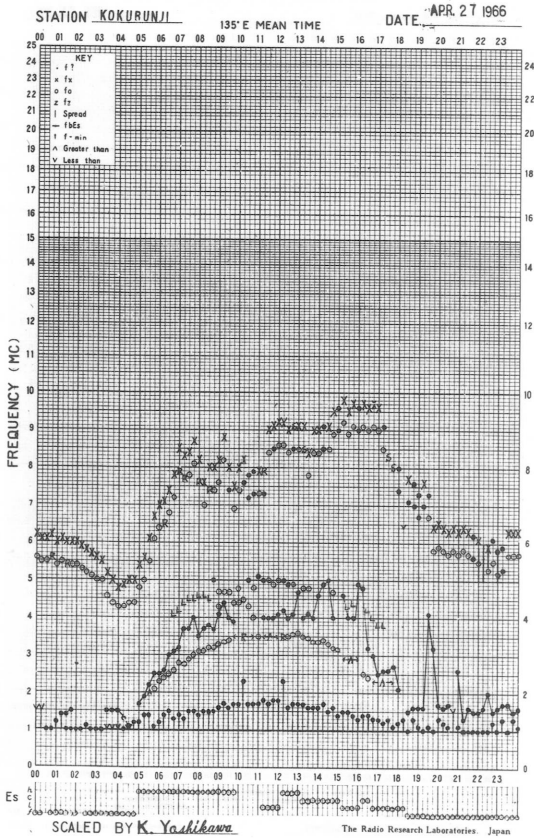
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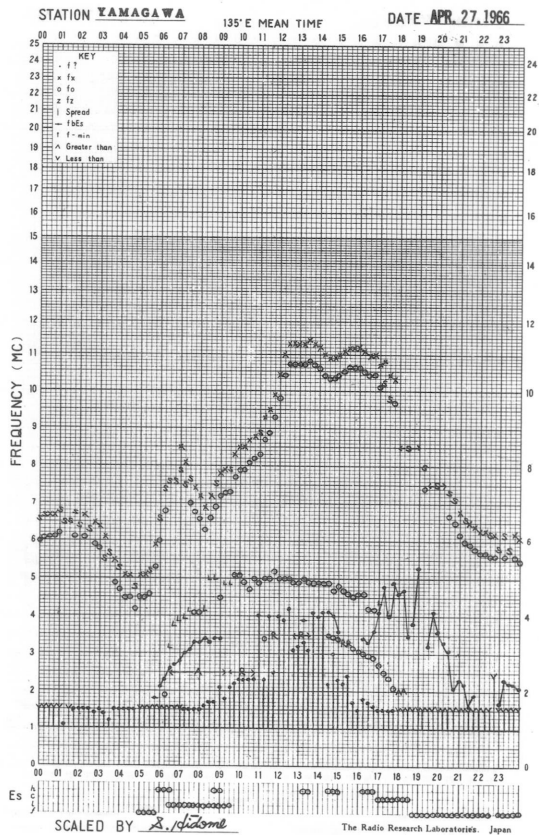
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f-PLOT OF IONOSPHERIC DATA

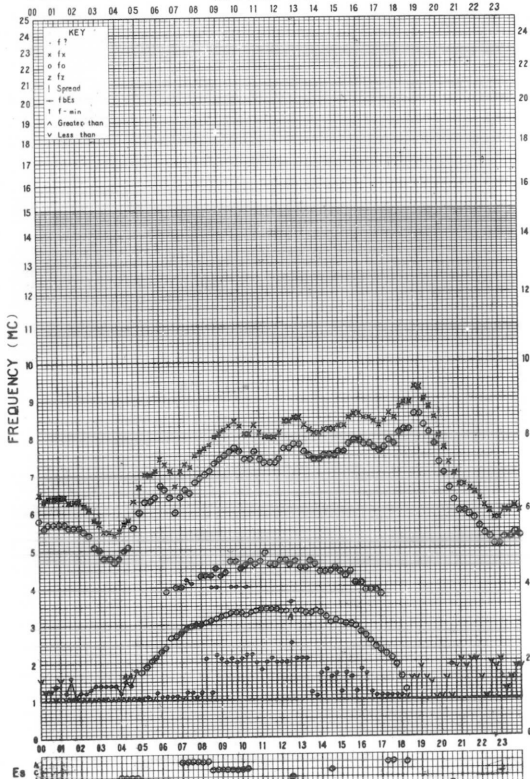


f-PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 28, 1966

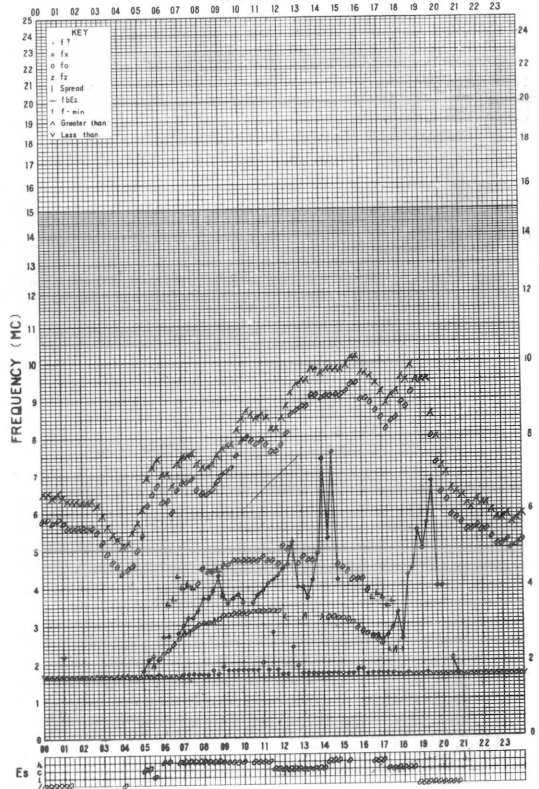


SCALED BY M. Kawamoto

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 28, 1966

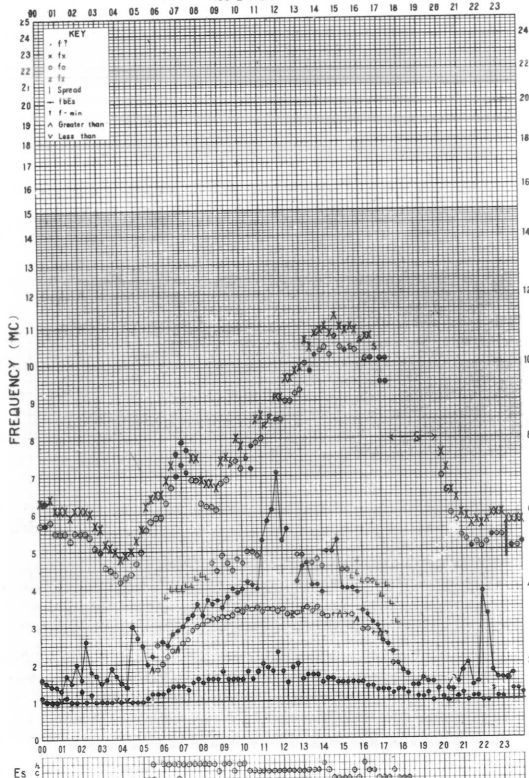


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR 28 1966

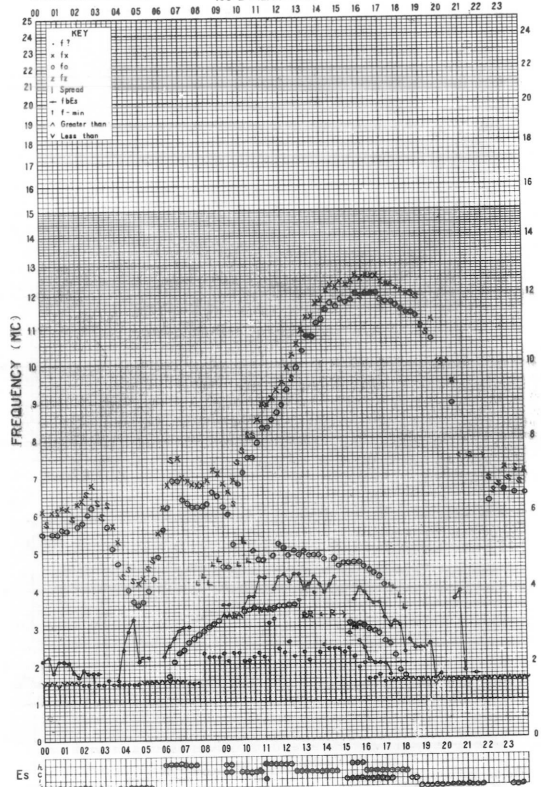


SCALED BY K. Yoshikawa

The Radio Research Laboratories, Japan

f- PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE APR 28, 1966

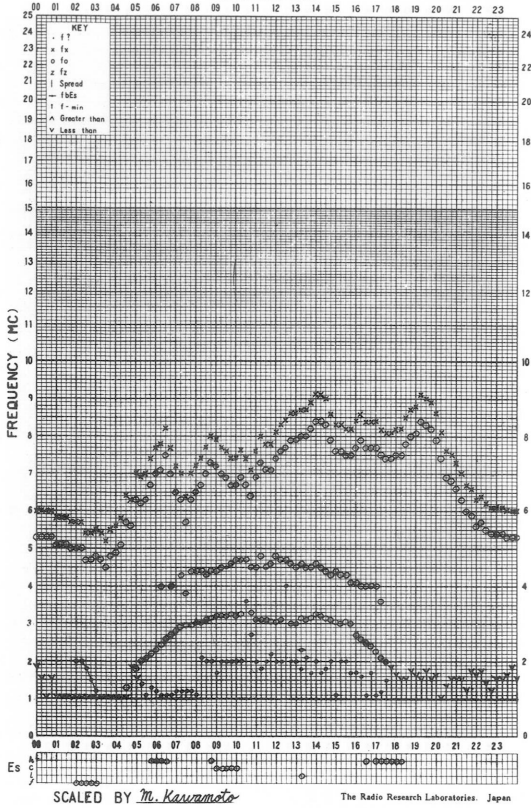


SCALED BY S. Nakano

The Radio Research Laboratories, Japan

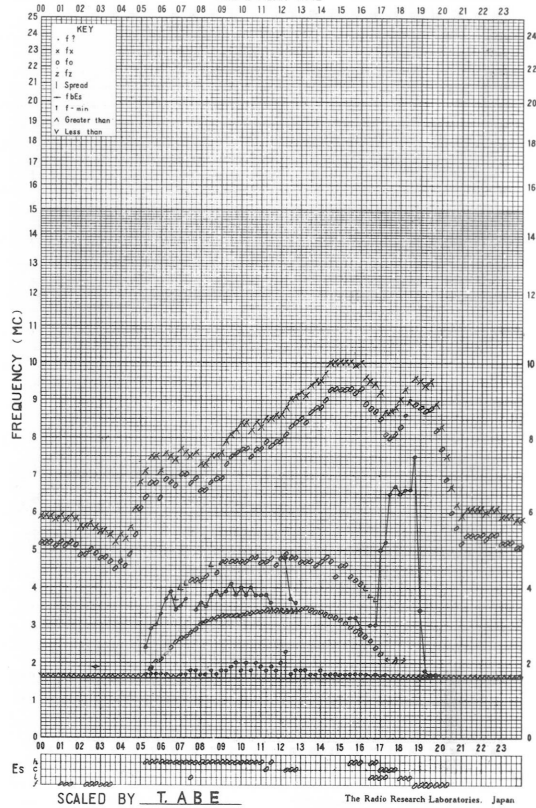
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STATION WAKKANAI 135° E MEAN TIME DATE APR. 29. 1966



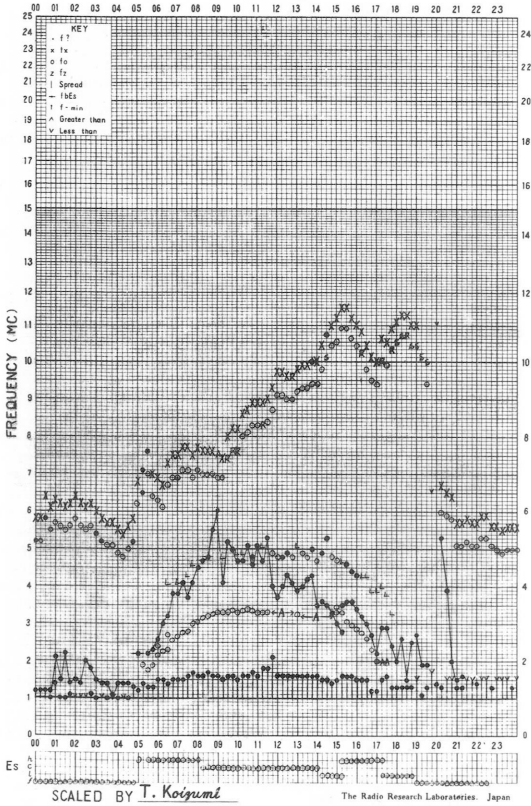
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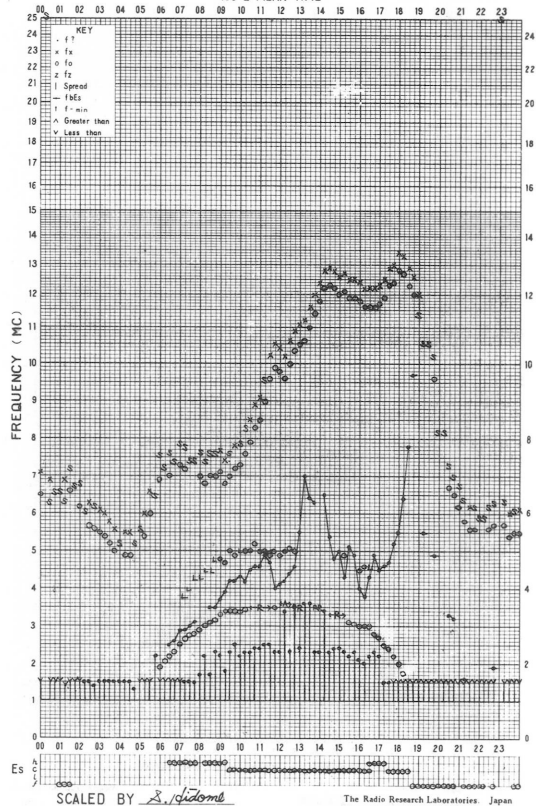
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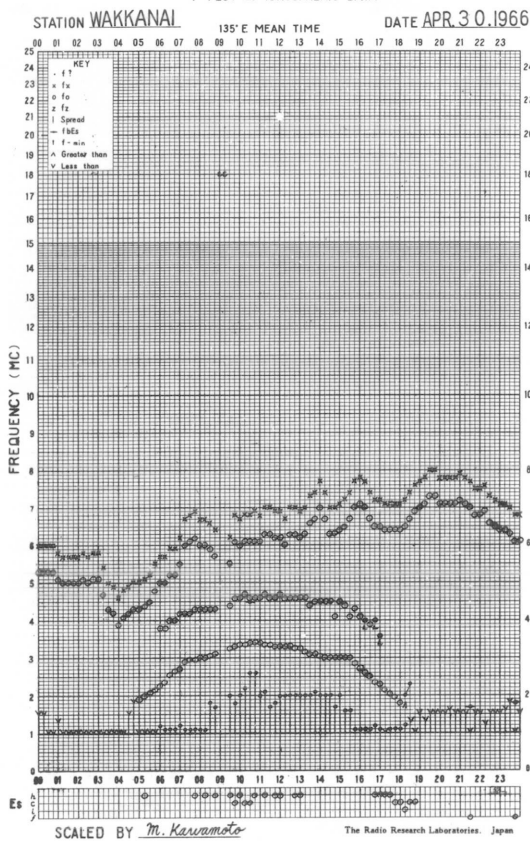


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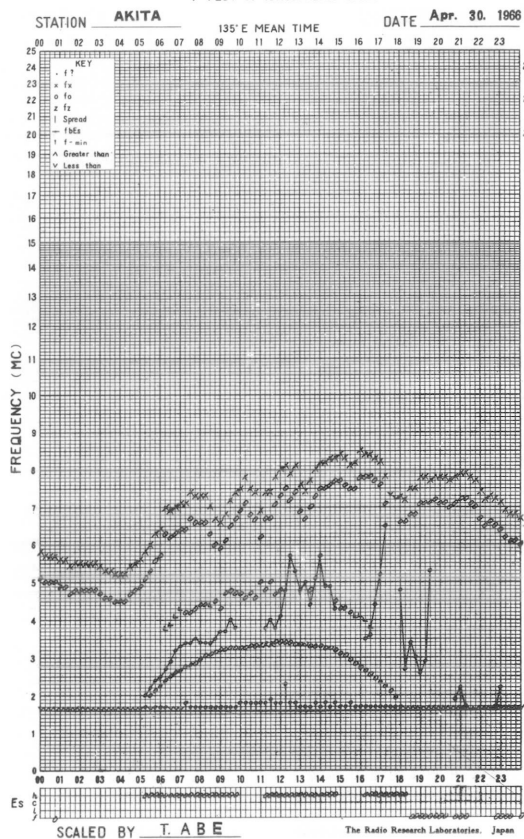
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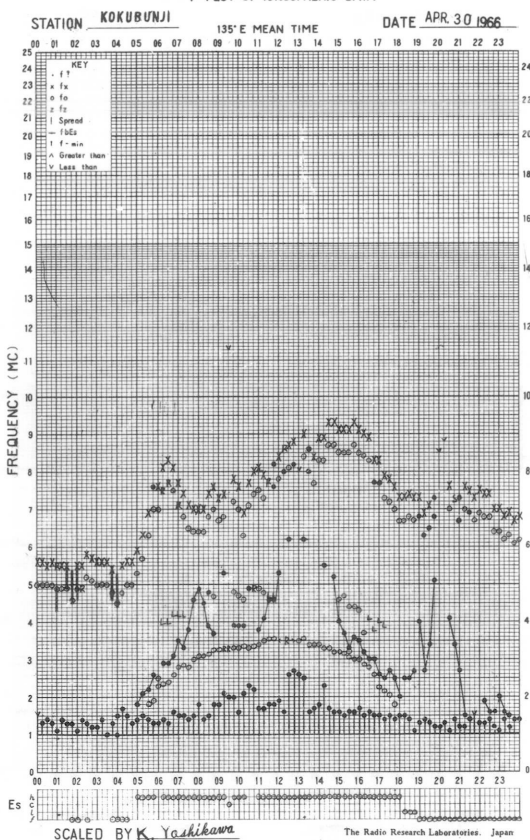
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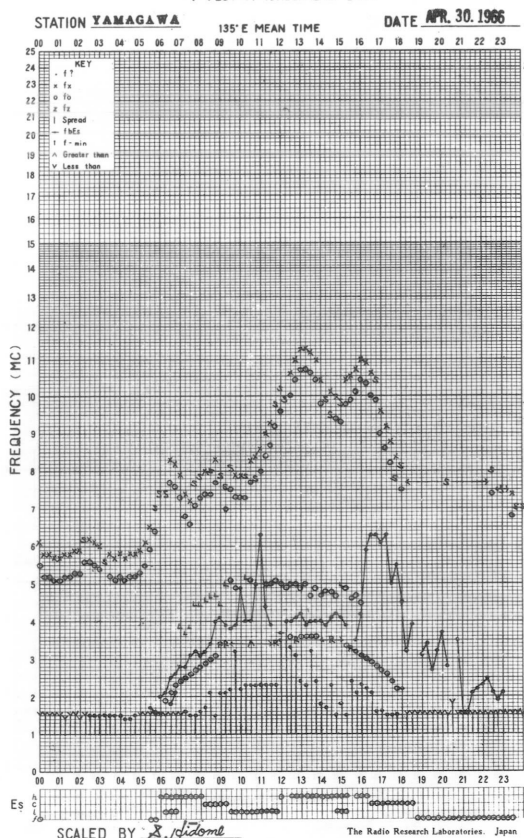
f- PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA



## SOLAR RADIO EMISSION

| Flux Density and Variability                   |        |       |       |        |     |                       |       |       |       |     |
|--|--------|-------|-------|--------|-----|-----------------------|-------|-------|-------|-----|
| Month: April 1966                              |        |       |       |        |     | Frequency: 200 Mc/s   |       |       |       |     |
| Observing station: Hiraiso                     |        |       |       |        |     |                       |       |       |       |     |
| Flux density<br>$10^{-22} W_m^{-2} (c/s)^{-1}$ |        |       |       |        |     | Variability<br>0 to 3 |       |       |       |     |
| UT   | 00-03  | 03-06 | 06-09 | 21-24  | Day | 00-03                 | 03-06 | 06-09 | 21-24 | Day |
| Date   |        |       |       |        |     |                       |       |       |       |     |
| 1  | 21     | 27    | 22    | 16     | 23  | 1                     | 1     | 1     | 1     | 1   |
| 2  | 16     | 24    | 24    | 30     | 21  | 1                     | 1     | 2     | 2     | 1   |
| 3  | 26     | 58    | 40    | 56     | 42  | 1                     | 3     | 2     | 3     | 2   |
| 4  | 40     | 28    | 16    | 19     | 40  | 2                     | 1     | 1     | 1     | 2   |
| 5  | 20     | 25    | 17    | 40     | 22  | 1                     | 2     | 1     | 2     | 1   |
| 6  | 27     | 18    | 18    | (~23)# | 27  | 2                     | 1     | 1     | (~1)# | 2   |
| 7  | (~21)# | 20    | 13    | 15     | 19  | (~1)#                 | 1     | 1     | 1     | 1   |
| 8  | 15     | 27    | 20    | 12     | 20  | 1                     | 1     | 1     | 1     | 1   |
| 9  | 11     | 19    | 12    | 10     | 14  | 0                     | 1     | 1     | 0     | 1   |
| 10   | 9      | 7     | 8     | 12     | 9   | 0                     | 0     | 0     | 0     | 0   |
| 11   | 10     | 10    | 10    | -      | 11  | 0                     | 0     | 0     | -     | 0   |
| 12   | 9      | 8     | 8     | 9      | 8   | 0                     | 1     | 0     | 0     | 0   |
| 13   | 7      | 8     | 9     | (~9)#  | 8   | 0                     | 0     | 0     | 0     | 0   |
| 14   | 7      | 8     | 7     | (~7)#  | 8   | 0                     | 0     | 0     | 0     | 0   |
| 15   | (~7)#  | 6     | 6     | 9      | 7   | 0                     | 0     | 0     | 0     | 0   |
| 16   | 8      | 6     | 7     | 9      | 8   | 0                     | 0     | 0     | 0     | 0   |
| 17   | 8      | 7     | 7     | 11     | 8   | 0                     | 1     | 0     | 0     | 0   |
| 18   | 9      | 9     | 9     | 8      | 9   | 0                     | 0     | 0     | 0     | 0   |
| 19   | 9      | 8     | 8     | 8      | 9   | 0                     | 0     | 0     | 0     | 0   |
| 20   | 8      | 8     | 7     | 8      | 8   | 0                     | 0     | 0     | 0     | 0   |
| 21   | 8      | 8     | 7     | 9      | 8   | 0                     | 0     | 0     | 0     | 0   |
| 22   | 8      | 8     | 8     | 8      | 8   | 0                     | 0     | 0     | 0     | 0   |
| 23   | 7      | 7     | 7     | 11     | 8   | 0                     | 0     | 0     | 1     | 0   |
| 24   | 11     | 13    | 9     | 11     | 11  | 1                     | 1     | 1     | 1     | 1   |
| 25   | 10     | 11    | 11    | (~8)#  | 11  | 1                     | 1     | 1     | 0     | 1   |
| 26   | 8      | 8     | 9     | (~8)#  | 8   | 0                     | 0     | 0     | 0     | 0   |
| 27   | 7      | 7     | 7     | (~8)#  | 7   | 0                     | 0     | 0     | 0     | 0   |
| 28   | 7      | 7     | 7     | -      | 7   | 0                     | 0     | 0     | -     | 0   |
| 29   | 12     | 7     | 6     | 8      | 10  | 1                     | 1     | 0     | 0     | 1   |
| 30   | 7      | 8     | 7     | 9      | 7   | 0                     | 0     | 0     | 0     | 0   |

Note No observations during the following periods:

|      |       |      |      |       |      |
|------|-------|------|------|-------|------|
| 1st  | 0000- | 0010 | 12th | 2300- | 2400 |
| 3rd  | 0345- | 0400 | 25th | 2225- | 2400 |
| 11th | 2000- | 2400 | 28th | 2000- | 2400 |

" # " inaccurate owing to no calibration

## SOLAR RADIO EMISSION

| Flux Density                                |       |       |                     |       |     |
|---|-------|-------|---------------------|-------|-----|
| Month: April 1966                           |       |       |                     |       |     |
| Observing station: Hiraiso                  |       |       | Frequency: 500 Mc/s |       |     |
| Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$ |       |       |                     |       |     |
| UT  | 00-03 | 03-06 | 06-09               | 21-24 | Day |
| Date  |       |       |                     |       |     |
| 1   | 31    | 31    | 30                  | 24    | 30  |
| 2   | 26    | 28    | 28                  | 29    | 26  |
| 3   | 36    | 46    | 85                  | 38    | 56  |
| 4   | 34    | 31    | 30                  | 27    | 37  |
| 5   | 29    | 29    | (29)                | 28    | 28  |
| 6   | 30    | 30    | 30                  | (28)  | 29  |
| 7   | (31)  | 32    | 32                  | 29    | 31  |
| 8   | 29    | 29    | 29                  | 28    | 29  |
| 9   | 30    | 31    | 29                  | 28    | 29  |
| 10  | 29    | 28    | 29                  | 26    | 28  |
| 11  | 29    | 27    | 28                  | 26    | 27  |
| 12  | 28    | 29    | 29                  | 27    | 28  |
| 13  | 28    | 28    | 27                  | 25    | 27  |
| 14  | 27    | 27    | 26                  | 25    | 26  |
| 15  | 26    | 26    | -                   | -     | 26  |
| 16  | 28    | 28    | 28                  | 26    | 28  |
| 17  | 28    | 28    | 27                  | -     | 27  |
| 18  | 27    | 28    | 27                  | 25    | 27  |
| 19  | 26    | 26    | 26                  | 24    | 26  |
| 20  | 25    | 25    | 26                  | 25    | 25  |
| 21  | 25    | 25    | 28                  | 25    | 26  |
| 22  | 26    | 26    | 26                  | 25    | 26  |
| 23  | 28    | 27    | 25                  | 24    | 26  |
| 24  | 26    | 27    | -                   | -     | 26  |
| 25  | 27    | 29    | 30                  | 25    | 29  |
| 26  | 28    | 28    | 29                  | 27    | 27  |
| 27  | 28    | 29    | 28                  | 26    | 28  |
| 28  | 29    | 30    | 29                  | 29    | 29  |
| 29  | 29    | 27    | 27                  | 27    | 28  |
| 30  | 28    | 28    | 28                  | 25    | 28  |

Note No observations during the following periods:

|      |       |           |      |       |           |
|------|-------|-----------|------|-------|-----------|
| 5th  | 0300- | 0400      | 15th | 0600- | 2400      |
| 5th  | 0600- | 0700      | 16th | 0600- | 0700      |
| 6th  | 0100- | 0200      | 17th | 2000- | 2400      |
| 6th  | 2200- | 7th 0200  | 24th | 0600- | 25th 0100 |
| 14th | 2300- | 15th 0100 |      |       |           |

Distinctive Events

(single-frequency observations)

Month: April 1966

Observing station: Hiraiso

Normal observing period: 2000 - 0910 (sunrise to sunset)

| Date | Frequency | Starting time | Time of maximum | Duration | Type | Flux density                                 |      | Remarks |
|------|-----------|---------------|-----------------|----------|------|--|------|---------|
|      |           |               |                 |          |      | $10^{-22} \text{ Wm}^{-2} (\text{c/s})^{-1}$ |      |         |
|      | Mc/s      | UT            | UT              | minutes  |      | peak   | mean |         |
| 3    | 200       | 0531          | 0531.5          | 1.5      | C    | >1300  | >340 |         |
|      | 500       | 2355          | 2355.2          | 0.5      | C    | 59   | 6    |         |
|      | 200       | 2355          | 2355.4          | 0.5      | C    | 1530   | 350  |         |
| 4    | 500       | 0158          | 0158.5          | ~ 2      | C    | 48   | ~ 15 |         |
|      |           | 0450          | 0450.2          | 0.5      | C    | 420  | 44   |         |
| 5    | 500       | 0110.4        | 0110.4          | 0.6      | C    | 174  | 98   |         |
|      |           | p.i.          | -               | 11       | C    | 6  | 3    |         |
|      |           | 0207.5        | 0209.2          | 3        | C    | 70   | 30   |         |
| 8    | 200       | 0749          | 0749            | 0.7      | C    | 760  | 150  |         |
| 12   | 500       | 0449.5        | 0449.9          | 0.5      | C    | 82   | 38   |         |
|      | 200       | 0449          | 0449.8          | 1        | C    | 290  | 110  |         |
| 17   | 500       | 0351.5        | 0351.6          | 0.5      | C    | 32   | 18   |         |
|      | 200       | 0351          | 0351.4          | 1        | C    | 230  | 40   |         |
| 29   | 500       | 0513          | 0513.2          | 0.5      | C    | 21   | 9    |         |
|      | 200       | 0512.5        | 0512.7          | 0.5      | C    | 440  | 90   |         |
|      | 500       | 0545          | 0545.3          | 0.4      | C    | 18   | 7    |         |
|      | 200       | 0545.3        | 0545.8          | 0.7      | C    | 280  | 80   |         |

Apr. 1966  
 Measurement of H.F. Field Strength (Upper Side-band of WWV)  
 Receiving Antenna: Rod (4.5 m) Measured at Hiraio

Frequency: 15 Mc/s, Bandwidth: ±40 c/s,

| UT Date      | 0015 | 0115 | 0215 | 0315 | 0415 | 0515 | 0615 | 0715 | 0815 | 0915 | 1015 | 1115 | 1215 | 1315 | 1415 | 1515 | 1615 | 1715 | 1815 | 1915 | 2015 | 2115 | 2215 | 2315 |      |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1            | <10s | <15s | <14s | <24s | <15s | <13s | S    | <27s | C    | <19s | <12s | <33s | -14  | <34s | <34s | <24s | <34s | <34s | -16  | -35  | -27  | -11  | -7   | -14  |      |
| 2            | -10  | -15  | <16s | <24s | <20s | <16s | <22s | <19s | <20s | <19s | <17s | <32s | -34  | -34  | -34  | -22s | <33s | -1   | 5    | -34  | -31  | -15  | -9   | 5    |      |
| 3            | <7s  | -17  | <15s | <26s | <11s | <12s | S    | <17s | <17s | <14s | <19s | <23s | <27s | <25s | <33s | -28  | -18  | -13  | 8    | <24s | 8    | -3   | -4   | -10  |      |
| 4            | -16  | -13  | <26s | <28s | <15s | S    | <16s | <19s | <19s | <16s | 6s   | <30s | <30s | <30s | <32s | <32s | <32s | <32s | -31  | 3    | 3    | -6   | -6   | -17  |      |
| 5            | <7s  | <6s  | <20s | <20s | <14s | <8s  | -25  | -30  | -25  | <12s | <12s | <18s | <37s | -22  | -17  | -13  | -15  | -18  | -17  | <37s | -8   | -13  | -13  | -17  |      |
| 6            | <9s  | <6s  | -12  | <32s | <12s | <16s | <26s | <32s | <30s | <27s | S    | <26s | -25  | -24  | -25  | -8   | -14  | -18  | -9   | -16  | -12  | -2   | -8   | -1   |      |
| 7            | <16s | C    | <13s | <29s | <8s  | <23s | <28s | <31s | <22s | <24s | <11s | 5s   | <19s | <14s | 8    | -22  | -16  | -25  | -16  | -33  | -8   | -9   | -8   | <1s  |      |
| 8            | <2s  | -12  | <19s | <30s | <14s | <10s | <24s | <24s | <16s | <17s | 6s   | <29s | -25  | -25  | -14  | -20  | -11  | -13  | <25s | <29s | 5    | -3   | -6   | -15  |      |
| 9            | -15  | -17  | <19s | <17s | <11s | <11s | S    | -26  | -22  | S    | <16s | <16s | -7   | -21  | -13  | -12  | -2   | -15  | -1   | -16  | -9   | -3   | -5   | <10s |      |
| 10           | -6   | 2    | -9   | <27s | <10s | <10s | S    | <24s | -20  | <19s | S    | <25s | -7   | -21  | -25  | -16  | -20  | -14  | 2    | -33  | -25  | -13  | -15  | -13  |      |
| 11           | <10s | -11  | <17s | -11  | -10  | <12s | <16s | <23s | <21s | <17s | <11s | 5    | -18  | -14  | -15  | -13  | -21  | -7   | -9   | -24  | -12  | -7   | -5   | -8   |      |
| 12           | -5   | -4   | -5   | -8   | -13  | <12s | S    | <27s | <18s | <15s | 0s   | <6s  | -16  | -6   | -7   | -9   | -7   | -5   | -3   | -28  | -7   | -4   | -1   | -1   |      |
| 13           | -7   | C    | C    | C    | C    | C    | C    | <32s | -24  | <20s | 1s   | <27s | <17s | -6   | -17  | -22  | <11s | -23  | -31  | -30  | -27  | -8   | -9   | -14  |      |
| 14           | -10  | C    | C    | C    | C    | C    | C    | C    | <17s | <18s | -14  | <30s | <21s | <20s | <12s | <13s | <18s | <27s | <6s  | <32  | -26  | -14  | -17  | -10  |      |
| 15           | -17  | C    | C    | <25s | -16  | <20s | S    | <22s | <20s | <16s | <18s | -26  | <10s | -18  | -10  | <14s | <14s | -19  | <5s  | <30  | -5   | -5   | -7   | -7   |      |
| 16           | -9   | -8   | -4   | -18  | <12s | <7s  | <5s  | <10s | <14s | -14  | <15s | -16  | <3s  | -11  | -14  | -18  | -7   | -19  | -25  | -31  | -22  | -10  | -5   | -6   |      |
| 17           | -9   | -7   | -7   | -10  | -10  | <9s  | S    | <21s | <16s | -15  | <1s  | 9    | <3s  | -13  | -9   | -28  | -17  | -8   | -10  | -22  | -13  | 8    | 8    | 8    |      |
| 18           | C    | C    | 1    | -11  | -5   | <18s | S    | <18s | <24s | <20s | -13  | 6    | <16s | -25  | -13  | -12  | -8   | 6    | 4    | -16  | -8   | -9   | -7   | -9   |      |
| 19           | -13  | -6   | -3   | -8   | <13s | <12s | S    | 3    | <21s | <19s | S    | 4    | 1s   | -16  | -16  | -5   | -15  | <34s | <33s | -13  | -6   | -4   | -1   | 5    |      |
| 20           | -7   | 2    | -2   | -9   | <20s | <13s | <29s | <28s | <27s | <27s | <25s | -22  | <1s  | -14  | <6s  | <9s  | <19s | <25s | <3s  | <30  | -4   | -12  | -9   | -9   |      |
| 21           | 0    | -11  | -23  | <32s | -14  | -15  | -25  | -21  | -19  | <23s | -13  | <12s | S    | -18  | -16  | <33s | <34s | <34s | <33s | -10  | -8   | -2   | -2   | 6    |      |
| 22           | -5   | -13  | -12  | -25  | <15s | <7s  | S    | <18s | -20  | <24s | <22s | 4s   | <5s  | <20s | S    | -32  | -33  | <33s | <33s | <34s | -31  | -20  | <17s | <20s |      |
| 23           | <17s | <30s | <28s | <28s | <11s | <17s | S    | <24s | <24s | -18  | <7s  | <11s | <5s  | <19s | <16s | <11s | -18  | -12  | <30s | <34s | -9   | -12  | -12  | -15  |      |
| 24           | -4   | -13  | -12  | -21  | <12s | <16s | S    | <27s | <24s | <18s | 6s   | <18s | -3   | 0    | -19  | <17s | -25  | -10  | -22  | -17  | -15  | -20  | -17s | -15  |      |
| 25           | -15  | -19  | -18  | -16  | -15  | <13s | <30s | <18s | <18s | -17  | <13s | -1   | <8s  | <15s | -9   | -6   | -1   | 4    | -8   | -10  | -16  | -19  | -16  | <15s |      |
| 26           | -12  | -13  | -16  | -9   | <14s | <15s | S    | <19s | <23s | <16s | -13  | 8    | (    | 3    | 1    | -4   | -1   | -6   | -8   | -12  | -11  | -10  | -11  | -11  |      |
| 27           | -17  | -17  | -10  | -12  | <20s | <17s | S    | <19s | <14s | <14s | 0s   | 7    | S    | -3   | -9   | -13  | -9   | 2    | -17  | -20  | -6   | -9   | -8   | -8   |      |
| 28           | -6   | -7   | -12  | -12  | <24s | -14  | <23s | -20  | -14  | -11  | -6   | -3   | S    | -11  | -20  | S    | -14  | -13  | <33s | -13  | -7   | 3    | -8   | -13  |      |
| 29           | <15s | -9   | -5   | -10  | <24s | <10s | S    | -16  | -14  | <11s | -3   | <1s  | S    | <19s | <20s | <25s | -27  | -19  | -4   | -9   | -5   | 5    | -7   | -6   |      |
| 30           | <12s | -16  | <14s | <28s | <28s | <27s | S    | -7   | -7   | <11s | -9   | 5    | S    | <10s | <2s  | <10s | <18s | <30s | <12s | <29s | -23  | <15s | -20  | -18  |      |
| Median       | <11s | <13s | -12  | <22s | <14s | <13s | <23s | <22s | <20s | <17s | <11s | <14s | <16s | -18s | -16s | -17s | -17s | -17s | -17s | -14s | -29  | -9   | -9   | 8    | <10s |
| Med. Count   | 28   | 25   | 27   | 28   | 28   | 27   | 12   | 29   | 29   | 29   | 27   | 30   | 23   | 30   | 29   | 29   | 30   | 30   | 30   | 30   | 30   | 30   | 29   | 29   | 29   |
| Upper decile | <5s  | -4   | -3   | -9   | <10s | <8s  | <5s  | <10s | -14  | <12s | <1s  | <3s  | <1s  | -3   | <16s | -6   | -2   | 2    | -3   | -10  | -5   | -2   | -2   | 2    | <1s  |
| Lower decile | <17s | <17s | <23s | <32s | <24s | <20s | <30s | <31s | <25s | <24s | <19s | <30s | <51s | <33s | <34s | <32s | <33s | <34s | <33s | <34s | <29s | <27  | <19s | -17  | <17s |



Apr. 1966  
 Measurement of H.F. Field Strength (Upper Side-band of WWVH)  
 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, Receiving Antenna: Rod (4.5 m) Measured at Hiraizo

| UT Date      | 0045  | 0145 | 0245 | 0345 | 0445 | 0545 | 0645 | 0745   | 0845  | 0945  | 1045 | 1145   | 1245  | 1345   | 1445    | 1545    | 1645   | 1745 | 1845  | 1945 | 2045 | 2145 | 2245 | 2345  |
|--------------|-------|------|------|------|------|------|------|--------|-------|-------|------|--------|-------|--------|---------|---------|--------|------|-------|------|------|------|------|-------|
| 1            | -1    | -4   | -3   | 3    | 17   | 13   | -1   | -9     | <1s   | <7s   | 3    | -5     | <34s  | <34s   | <34s    | <34s    | <34s   | <34s | <34s  | 1    | -1   | -7   | <20s | 5     |
| 2            | -6    | -3   | 4    | 5    | 12   | 18   | 15   | 10     | -14   | <14s  | <10s | <33s   | -34   | <34s   | <34s    | <34s    | -33    | -27  | <34s  | 2    | -2   | -2   | <3   | 5     |
| 3            | -7    | -3   | 3    | 9    | 0    | 15   | 9    | (-11)s | -14   | <15s  | <17s | <22s   | <28s  | <34s   | <34s    | <34s    | -31    | -28  | <34s  | 6    | 4    | 1    | -5   | 0     |
| 4            | -1    | -3   | 0    | 9    | 14   | 18   | 12   | 5      | 0     | 3     | 2    | <31s   | <30s  | <33s   | <32s    | <31s    | <32s   | -26  | -12   | 0    | 6    | -6   | 0    | 5     |
| 5            | 2     | -8   | 4    | 14   | 15   | 15   | 18   | 2      | -10   | <18s  | <24s | <23s   | <32s  | <32s   | <31s    | <30s    | -32    | -20  | -31   | 3    | 5    | 1    | -8   | -1    |
| 6            | <4s   | 1    | 1    | 15   | 19   | 19   | 15   | -7     | -7    | <19s  | <8s  | <24s   | <33s  | <33s   | <33s    | <33s    | -27    | 7    | <13s  | 2    | 3    | 0    | 7    | 2     |
| 7            | -4    | 5    | 5    | 8    | 16   | 18   | 19   | -11    | -17   | <17s  | <15s | <25s   | <23s  | <22s   | <32s    | <32s    | -33    | 8    | <7s   | 1    | 1    | 0    | 1    | <2s   |
| 8            | -1    | -2   | 6    | 11   | 16   | 21   | 20   | 6      | -11   | -5    | <11s | <27s   | <27s  | <22s   | <29s    | <15s    | -15    | -25  | -18   | 10   | 1    | -7   | -4   | 3     |
| 9            | -1    | -1   | 3    | 8    | 18   | 13   | 7    | -8     | -10   | -12   | -9   | -26    | <22s  | <21s   | <23s    | <32s    | 3      | <15s | <14s  | 3    | -1   | -7   | -4   | 3     |
| 10           | -4    | -2   | 0    | 8    | -2   | 0    | -1   | 24     | -7    | -12   | <18s | <19s   | <18s  | <21s   | <15s    | -21     | -15    | -30  | <26s  | 1    | 4    | -2   | -6   | (-9)s |
| 11           | -3    | -12  | 5    | 8    | 17   | 21   | 19   | 17     | 12    | 22    | 15   | 19     | 4     | 8      | <26s    | <27s    | <21s   | -3   | -8    | -1   | 1    | 4    | 1    | -6    |
| 12           | -4    | -4   | 2    | 10   | 14   | 17   | 20   | 8      | 6     | 7     | 23   | 22     | 7     | 4s     | <8s     | <15s    | <21s   | -20  | <18s  | 9    | 0    | 2    | -4   | -9    |
| 13           | C     | C    | C    | C    | C    | C    | C    | -13    | -11   | -12   | <9s  | <26s   | <6s   | -16    | <23s    | <19s    | -17    | -1   | -21   | 2    | 5    | -3   | -2   | -2    |
| 14           | C     | C    | C    | C    | C    | C    | C    | 4      | -5    | 20    | 15   | <19s   | <19s  | <10s   | <8s     | <4s     | -21    | 15   | <15s  | 6    | -1   | -6   | -4   | -6    |
| 15           | C     | C    | C    | -1   | 10   | 13   | 11   | 12     | -5    | 4     | 6    | -14    | <7s   | <16s   | <13s    | <8s     | -25    | 6    | <12s  | -1   | -3   | 1    | -8   | -5    |
| 16           | -8    | -3   | 1    | 5    | 12   | 13   | 19   | 12     | -10   | 8     | -7   | <4s    | <3s   | <8s    | <15s    | -31     | -5     | -18  | -20   | 6    | 5    | -2   | -5   | -5    |
| 17           | -6    | -2   | 0    | 10   | 18   | 17   | 20   | 19     | 25    | 20    | 18   | 9      | 15    | 10     | <16s    | -27     | 22     | 7    | -13   | -3   | 2    | 3    | -8   | 8     |
| 18           | -5    | -3   | -3   | 2    | 9    | 7    | 21   | 10     | -10   | 14    | 9    | -20    | <23s  | <19s   | <36s    | <32s    | -29    | 8    | <19s  | 3    | -3   | -5   | -8   | -10   |
| 19           | -5    | 0    | -2   | 7    | 13   | 11   | 7    | 5      | 0     | -15   | -10  | <15s   | 19s   | <22s   | <35s    | -35     | <34s   | -24  | <13s  | 4    | 3    | -7   | -5   | -11   |
| 20           | -8    | -7   | 4    | 9    | 9    | 18   | 11   | -7     | -16   | -20   | -17  | -14    | -19   | 2      | <5s     | <20s    | <18s   | 12   | <13s  | 4    | 5    | -4   | -5   | -11   |
| 21           | -6    | -1   | -2   | 3    | 15   | 14   | 7    | 19     | 15    | 0     | 12   | 3      | 26    | <11s   | <33s    | <33s    | -30    | -26  | -10   | 2    | 1    | 2    | -7   | 7     |
| 22           | -3    | -6   | 2    | 9    | 16   | 20   | 12   | -5     | -12   | 10    | 15   | 23     | 23    | -3     | -17     | <33s    | -26    | -33  | -24   | 1    | -1   | -4   | -2   | -4    |
| 23           | -7    | 0    | 2    | 10   | 13   | 16   | 19   | 11     | 1     | 9     | 18   | 2      | <12s  | <11s   | (-3)s   | <19s    | 10     | -4   | <30s  | 3    | 3    | -5   | -3   | -7    |
| 24           | -3    | -4   | -3   | 7    | 10   | 13   | 21   | 7      | -13   | <11s  | <6s  | -16    | <13s  | <8s    | <20s    | <22s    | -17    | -16  | -23   | 3    | -3   | -5   | -11  | -7    |
| 25           | -9    | -6   | -1   | 5    | 14   | 17   | 20   | 21     | 20    | 7     | 3    | 2      | -2    | -5     | 1       | -18     | 13     | 14   | 2     | -3   | -7   | -2   | -3   | 7     |
| 26           | -11   | -2   | 2    | 8    | 12   | 20   | 18   | 23     | 23    | 22    | 7    | 11     | 12    | -12    | -10     | <18s    | 8      | 13   | -13   | -1   | 4    | 2    | -6   | -7    |
| 27           | -8    | -3   | -3   | 4    | 9    | 11   | 17   | 19     | 2     | 12    | 4    | 13     | 5     | 3      | -4      | 2       | 7      | -5   | -15   | 2    | -2   | -1   | 0    | -6    |
| 28           | -4    | 0    | 5    | 7    | 13   | 15   | 19   | 21     | 21    | 16    | 23   | 11     | 5     | 6      | 15      | 11      | 10     | 4    | 4     | 1    | -4   | -2   | -3   | -2    |
| 29           | -7    | -5   | -1   | 2    | 15   | 15   | 18   | 20     | 22    | 22    | 21   | 12     | 6     | 7      | -19     | <18s    | 18     | 3    | -4    | 0    | -3   | -6   | -2   | -4    |
| 30           | -3    | -3   | -2   | 4    | 9    | 14   | 17   | 21     | 24    | 22    | 15   | 15     | 27    | 19     | 22      | 7       | 5      | 10   | -2    | 6    | 1    | 2    | -5   | -8    |
| Median       | (-5)s | -3   | 1    | 8    | 14   | 15   | 18   | 9      | (-5)s | (-6)s | 3    | (-14)s | <-10s | (-15)s | <(-20)s | <(-23)s | (-20)s | -5   | <-18s | 0    | -1   | -2   | -5   | (-6)s |
| Med. Count   | 26    | 26   | 28   | 28   | 27   | 28   | 28   | 30     | 30    | 30    | 30   | 30     | 30    | 30     | 30      | 30      | 30     | 30   | 30    | 30   | 29   | 30   | 28   | 29    |
| Upper decile | -1    | 1    | 5    | 11   | 18   | 20   | 21   | 23     | 22    | 21    | 19   | 23     | 23    | 8      | 1       | 13      | 15     | -2   | 6     | 6    | 5    | 2    | 0    | -2    |
| Lower decile | <9s   | -6   | -3   | 3    | 9    | 11   | 7    | -11    | <14s  | <18s  | <17s | <29s   | <33s  | <34s   | <33s    | <33s    | <33s   | <33s | <31s  | -6   | -4   | -7   | -8   | <9s   |

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

| Apr.<br>1966 | Whole<br>Day<br>Index | H B                  |                            |                            | W W V                      |                            |                            |                            | S F                        |                            |                            |                            | W W V H                    |                            |       |     | Warning |  |  |  | Principal<br>magnetic storms |  |  |
|--------------|-----------------------|----------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-------|-----|---------|--|--|--|------------------------------|--|--|
|              |                       | 06 12 18<br>12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | 00 06 12 18<br>06 12 18 24 | Start | End | ΔH      |  |  |  |                              |  |  |
| 1            | 3+                    | C C C                | (3) - - 4                  | 3 (4) 3 4                  | 4 4 3 4                    | N N N N                    | 1238                       | ---                        | 56 <sup>y</sup>            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 2*           | 4-                    | (3 4) 3              | 3 - - 4                    | 4 4 4 4                    | 4 4 4 4                    | N N N N                    | ---                        | 09xx                       |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 3            | 4-                    | (3) 3 4              | 3 - - 4                    | 4 5 4 3                    | 4 3 3 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 4            | 4o                    | C C C                | 4 - - 4                    | 4 5 4 4                    | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 5            | 4+                    | (4) 4 4              | (4) - (4) 4                | 5 5 4 4                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 6            | 4+                    | 4 4 4                | (4) - (5) 5                | 4 4 4 (4)                  | 4 4 4 5                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 7            | 4o                    | 4 (4 4)              | (4) - (4) 4                | 4 4 4 4                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 8            | 4o                    | 5 4 4                | 3 - (4) 4                  | 4 4 4 4                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 9            | 4+                    | 4 5 4                | (3) - (5) 5                | 4 4 4 (5)                  | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 10           | 4o                    | C (4 4)              | 5 - (4) 3                  | 4 4 4 C                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 11           | 4+                    | (4) 5 (4)            | (3) - (4) 5                | 4 5 4 4                    | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| (12)         | 5o                    | 5 5 5                | 5 - (5) 5                  | 4 5 (5) 5                  | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| (13)         | 4-                    | 4 3 3                | C - (3) 4                  | C (4) 4 5                  | C (4) 4 4                  | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| (14)         | 3+                    | (4) 3 3              | C - - 3                    | C (3 4) 4                  | C 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 15           | 4-                    | 3 3 4                | (3) - (4) 4                | 4 4 (4) 4                  | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 16           | 4+                    | C C 5                | 4 - (4) 5                  | 4 4 4 4                    | 4 4 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 17           | 5-                    | 5 5 4                | 5 - (5 5)                  | 4 (4) 4 5                  | 4 5 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 18           | 5-                    | 4 5 5                | 5 - (5) 5                  | 5 4 5 4                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 19           | 4+                    | 4 4 5                | 5 - (4) 5                  | (4 5) 4 (4)                | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 20           | 4+                    | C (3) C              | 5 - - 4                    | 5 5 4 (4)                  | 4 4 5 (4)                  | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 21           | 4+                    | 4 C C                | 4 - - 4                    | 5 5 4 (4)                  | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 22           | 4+                    | 4 (4) 4              | 5 - - (2)                  | 5 5 5 4                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 23           | 4-                    | 4 4 (4)              | (1) - (4) 4                | 4 4 4 (4)                  | 4 5 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 24           | 4+                    | 4 4 5                | 4 - (4 4)                  | 4 5 5 4                    | 4 4 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 25           | 5-                    | 4 (5) 5              | 4 (5 5) 4                  | 4 5 5 4                    | 4 5 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 26           | 4+                    | 4 4 (5)              | 4 (5 5) 4                  | 4 - 5 4                    | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 27           | 4+                    | 4 (5) C              | 4 - (5) 4                  | 4 4 4 4                    | 4 4 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 28           | 4+                    | 4 4 5                | 4 (5 4) 4                  | 4 5 4 4                    | 4 5 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 29           | 4o                    | 4 3 4                | 5 - (3) 4                  | 4 5 4 5                    | 4 5 4 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |
| 30           | 4+                    | 5 4 3                | 4 (4) - 3                  | 5 5 (5) 4                  | 4 5 5 4                    | N N N N                    |                            |                            |                            |                            |                            |                            |                            |                            |       |     |         |  |  |  |                              |  |  |

IQSY GEOALERT and ADALERT (Western Pacific Region)

- = MAGSTORM
- o = MAGCALME
- Δ = COSMIC EVENT

- ( ) = Regular World Day
- = impossible to evaluate
- ( ) = inaccurate
- C = artificial accident
- = continuing magnetic storm

## SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

| Apr.<br>1966 | S W F                     |           |           |    |    |       | Correspondence |          |      |      |       |             |
|--------------|---------------------------|-----------|-----------|----|----|-------|----------------|----------|------|------|-------|-------------|
|              | Drop-out Intensities (db) |           |           |    |    |       | Start-time     | Duration | Type | Imp. | Flare | Solar Noise |
| WS           | SF                        | HA        | TO        | HB | SH |       |                |          |      |      |       |             |
| 2            | -                         | <u>40</u> | 17        |    | 11 | 00.59 | 51             | Slow     | 3-   | x    |       | x           |
| "            |                           | <u>20</u> |           | 9  | 12 | 22.14 | 22             | Slow     | 1+   | x    |       |             |
| 3            |                           | <u>23</u> | 11        |    |    | 22.25 | 42             | S        | 2-   | x    |       | x           |
| 4            |                           | 10        | <u>14</u> |    |    | 01.45 | 50             | Slow     | 2-   | x    |       |             |
|              |                           | <u>19</u> | <u>9</u>  |    |    | 21.12 | 37             | Slow     | 1+   | x    |       |             |
|              |                           |           | 10'       |    |    |       |                |          |      |      |       |             |
| 9            |                           | 14        | <u>8</u>  |    | 5' | 00.25 | 9              | Slow     | 1+   |      |       |             |
| 11           |                           |           | 21        |    |    | 10.04 | 26             | S        | 2-   | x    |       | x           |
| 21           |                           |           |           | 13 |    | 09.14 | 21             | Slow     | 1    | x    |       |             |

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