ION. ANT.—19

IONOSPHERIC DATA AT SYOWA STATION

(ANTARCTICA)

July 1972—December 1972

CONTENTS

RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

PREFACE

Vertical soundings of ionosphere at Syowa Station, Antarctica, have been carried out through the sponsorship of the Polar Research Center, National Science Museum, Ministry of Education and the data have been prepared at the Radio Research Laboratories.

LOCATION OF SYOWA STATION

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
69°00.4′S	39°35.4′E	69.6°S	77.1°E

MAIN CHARACTERISTICS OF THE IONOSONDE USED AT SYOWA STATION

Item	Specification
Frequency Range	500 kHz ~ 15 MHz
Transmitting Power	10 kW (peak value)
Duration of Sweep	30 sec
Transmitted Pulse Width	100 μsec
Recurrence Frequency of Transmitted Pulse	50 Hz (by power frequency)
Frequency Scale	every 1 MHz
Height Range	900 km
Height Scale	every 50 km
Total Receiver Gain	120 dB
Recording Method	35 mm film running
Power Supply	100 Volt AC, 2.5 KVA
Transmitting Antenna	25 m height vertical delta terminated by 600Ω
Receiving Antenna	25 m height vertical delta terminated by 600Ω

SYMBOLS AND TERMINOLOGY

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_0F2
f_0F1
f_0E — The ordinary wave critical frequency for the *F2*, *F1* and *E* layers respectively.

f_0Es — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

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

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

h'F2 — The minimum virtual height of the ordinary wave trace for the highest stable stratification in the *F* region.

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'Es — The lowest virtual height of the trace used to give the f_0Es.

a. Descriptive Symbols

Used following the numerical value on monthly tabulation sheets.

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

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

C — Measurement influenced by, or impossible because of, any nonionospheric 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 is too small compared with that of a lower thick layer.

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

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

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

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

O Measurement refers to the ordinary component.

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Symbols

Used as a preceeding symbol on monthly tabulation sheets.

D *greater than .....*

E *less than .....*

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

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

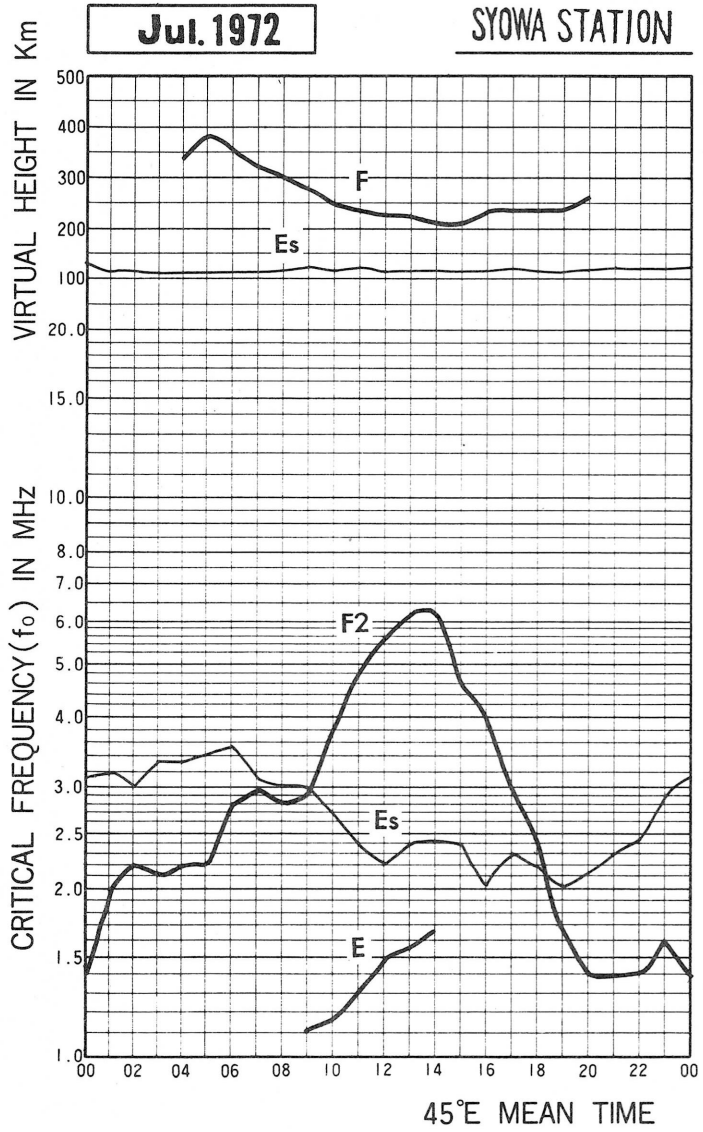
U Uncertain or doubtful numerical value.

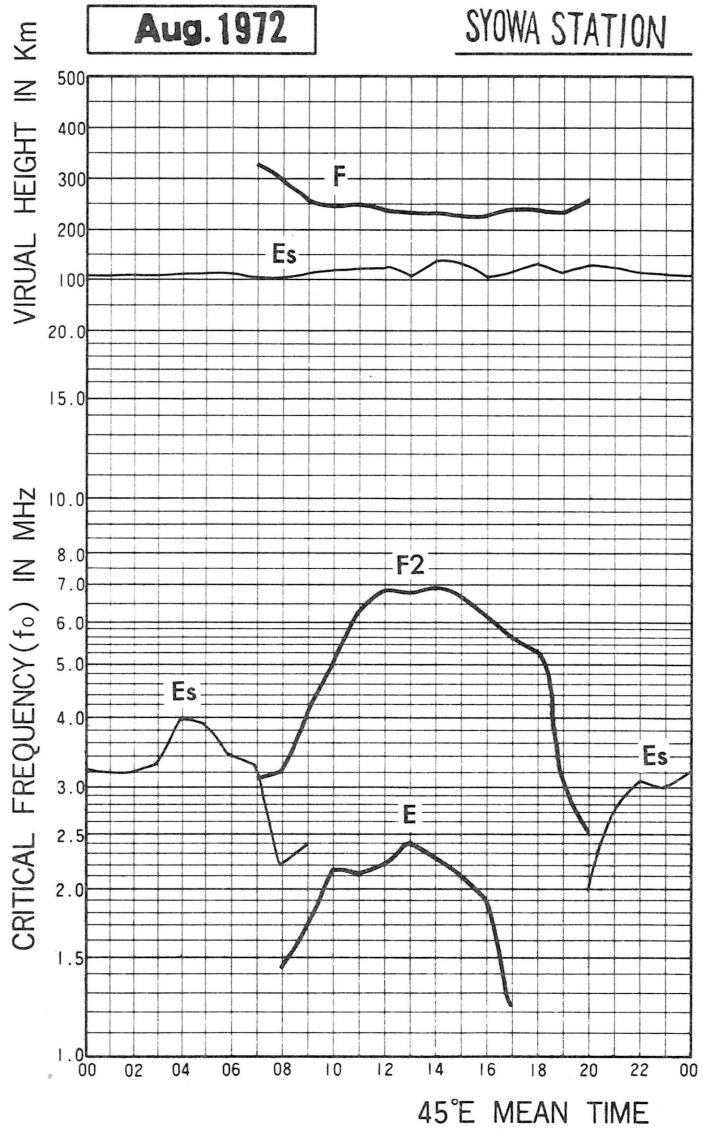
Z Measurement deduced from the third magnetoionic component.

c. f-plot

f-plots of ionospheric data are illustrated only the periods of the Regular World Days of every month.

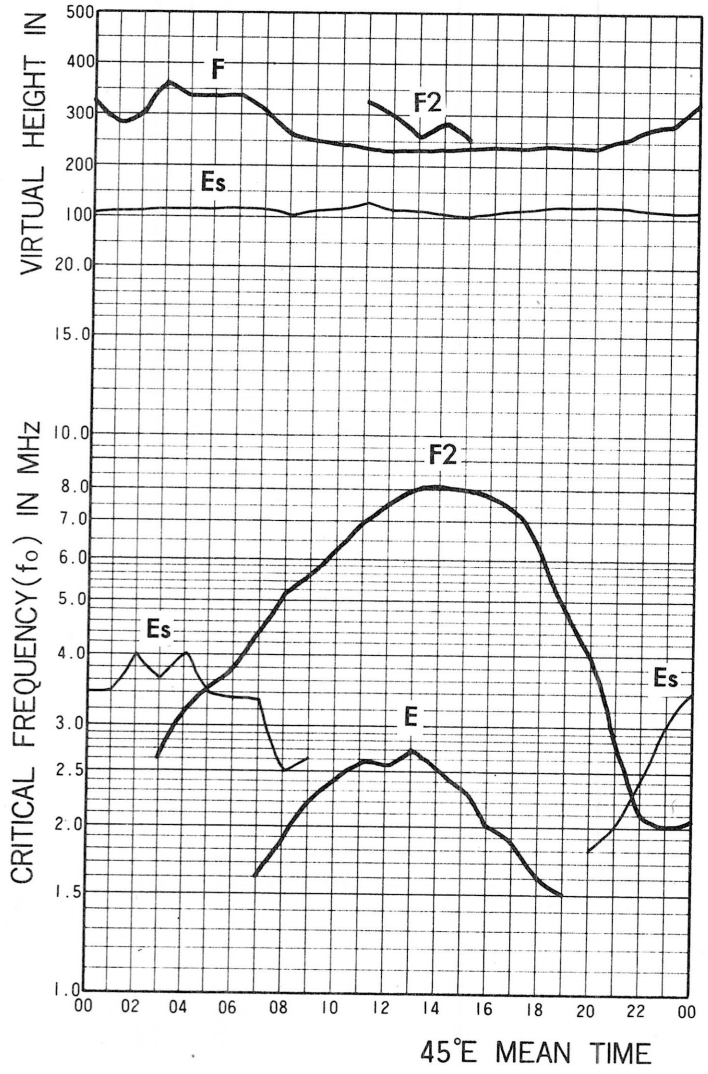
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



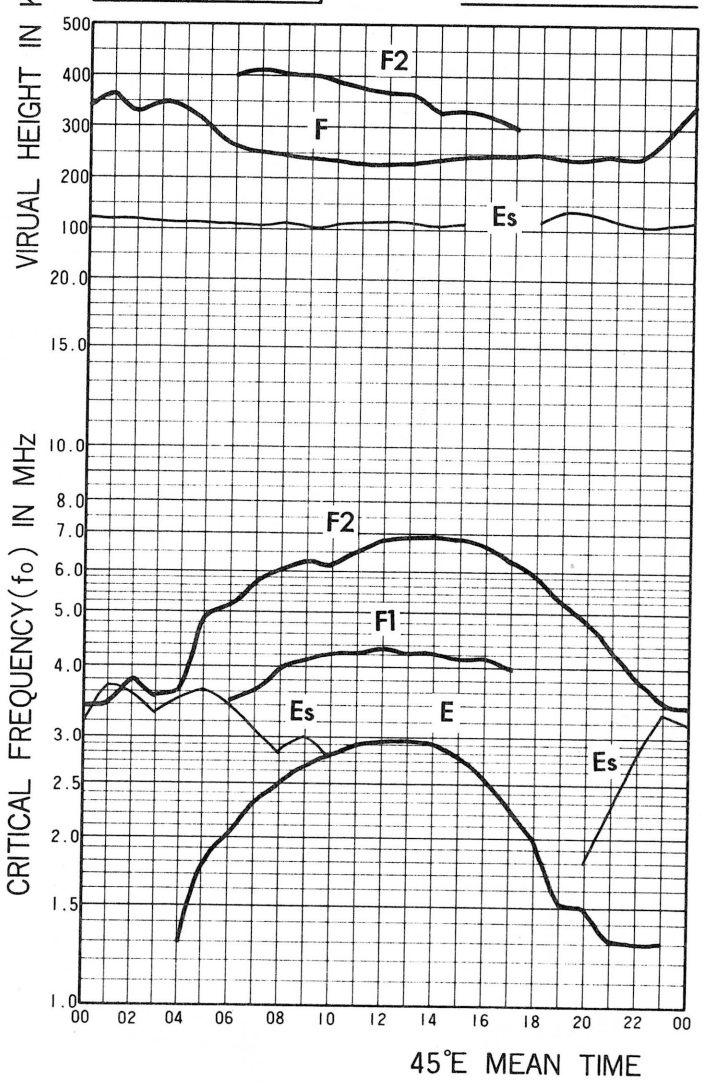


IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS

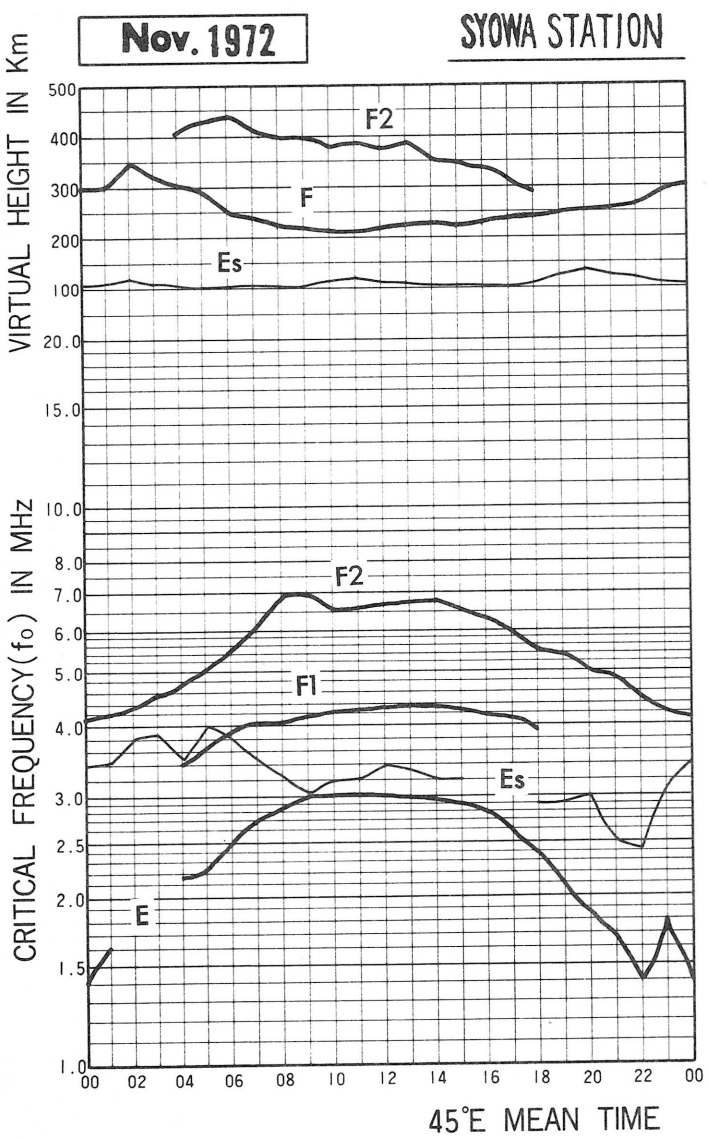
Sep. 1972 SYOWA STATION

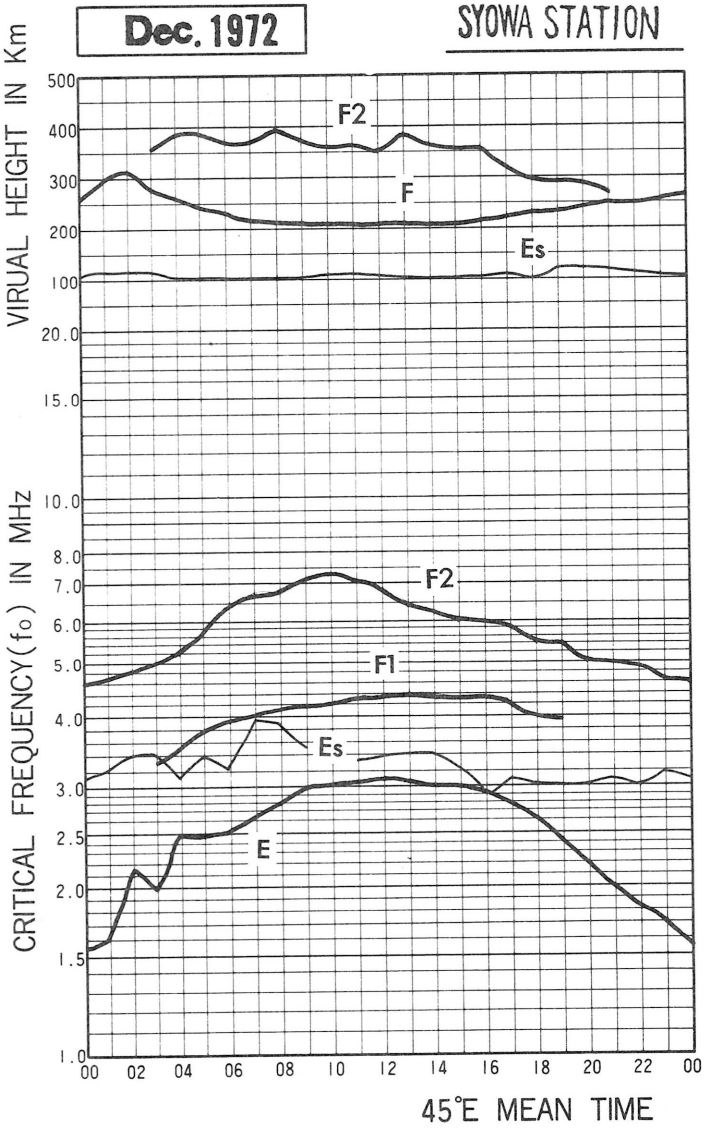


Oct. 1972 SYOWA STATION



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

JUL. 1972 | FOF2 (0.1 MHZ) | 45 E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	15	I A 16	17	18	F 20	F 25	F 34	F 43	51	F 60	J R 63	F 48	F 36	B	B	A	F	A	A	U A 14
2	A	A	A	F 28	F 27	F 27	F	F	F	F	F	F 53	F 51	61	61	F	F 29	U F 28	C	A	A	A	U F 15	U F 16
3	A	A	A	A	A	F	F 27	F	F 26	F 28	F 35	F 45	J F 65	F	F 53	F	F 29	J F 29	F 25	R	15	F 12	F 12	F 13
4	F 14	A	A	A	23	37	F 40	39	F	F	J F 39	J R 43	J R 55	J F 62	F 53	U F 41	F 32	U F 26	F 20	14	U A 12	A	A	A
5	A	F	A	U F 19	F 19	F 20	F 22	F 23	A	F 25	U F 32	F 49	F 56	U F 60	F 49	F	F	F 29	F	12	12	A	A	F 17
6	A	A	R	A	A	F 20	A	F 38	J F 35	F 35	U F 39	U F 54	F 61	J F 59	J R 58	J F 44	F 32	F	U F 21	F 15	F 16	A	A	F 16
7	A	A	A	A	A	A	A	A	A	F 41	B	B	B	F 61	U F 76	F	U R 71	R	R	B	A	A	A	A
8	A	A	F	A	A	A	A	A	A	A	B	B	B	B	B	B	34	F 31	F 29	U R 19	B	J A 16	I A 17	F 20
9	A	A	A	A	A	F 37	F 40	F 40	F 31	F 38	F	60	F 52	F 66	F 80	F	B	U F 45	R	25	B	R	A	A
10	A	A	A	A	F	B	A	A	F 26	I A 30	F 35	F 50	F	U F 66	R	F	U F 40	F	R	A	R	A	A	A
11	A	F 26	F 30	F 23	U F 26	F 23	F 21	F 22	F 23	F 23	33	B	R	F	U F 64	F 46	F	F 30	23	B	A	A	A	A
12	A	22	A	B	F	A	A	F 34	U F 26	F 25	F 34	49	F 57	F 62	F 66	F 55	F 45	B	B	B	B	B	F 14	B
13	A	F	A	A	R	F 30	F 33	F 35	F 30	F 30	42	53	59	61	F 57	F 44	F 36	F 29	F 17	B	B	U A 14	13	16
14	F 16	F 17	F 16	F 17	F 17	U F 19	F 18	F 20	21	F 24	F 39	45	60	J F 72	67	45	R 45	C	19	17	B	12	B	F
15	A	A	A	A	A	A	A	A	F 33	U F 30	U F 35	R	U F 51	F	U F 62	F	F	F 50	F 29	F 23	12	F 14	F 13	F
16	F 16	A	A	A	A	A	A	A	A	A	F	U F 49	U F 55	F 62	F 53	F 52	F	R	F 23	U F 15	A	A	A	A
17	A	A	A	B	B	B	A	B	B	F 29	F 37	F 50	F 53	U F 55	F 50	50	F 42	F	F 27	15	12	F 13	A	A
18	A	B	B	B	A	A	A	A	F	A	B	R	F 56	F 52	F 53	J F 46	R	B	R	17	13	12	B	B
19	B	A	A	A	F	F	J F 33	F 35	F	F	F 40	J F 47	F 52	B	B	F	R	B	25	18	F 16	A	A	A
20	A	A	A	A	A	32	F 31	F 30	F 30	F 26	B	43	J F 60	U F 62	F 65	F	52	F	F 17	14	B	A	A	F 15
21	F 14	A	A	A	A	A	F 28	F 30	F 29	F 29	F 39	F 46	U F 58	U F 65	F 60	F 47	F 34	F 30	A	A	B	A	F 14	F 17
22	F 14	F 15	12	R	F 23	U F 22	F	U F 25	F	F	F 41	U F 50	F	F 66	J F 62	F 39	45	F 32	F 25	F 17	13	A	A	A
23	A	A	A	A	A	F 32	A	B	F	F	F	F 47	F 58	50	U R 50	52	F	R	32	R	A	A	A	A
24	A	A	C	A	A	A	31	F 31	F 30	F 32	42	53	50	55	J R 71	F	F	U F 52	R	R	B	B	A	A
25	A	B	B	A	A	A	A	F	A	B	A	B	B	B	B	B	B	F	B	R	R	A	A	A
26	A	A	A	A	A	A	A	F 30	A	B	B	B	B	B	B	B	B	B	F 27	A	A	A	A	A
27	B	B	B	B	A	A	A	B	B	B	B	B	F	62	70	72	B	B	B	B	F 17	B	B	A
28	A	A	A	A	A	A	A	A	B	F 31	B	R	U R 60	B	R	R	U R 60	R 52	R	23	B	B	A	B
29	A	A	A	A	F 22	F 21	F 20	F 27	25	F 30	F 41	63	R	F 66	J F 62	F	F	F 46	F 30	F 21	A	R	A	A
30	A	A	A	F 21	F 22	F 21	F	U F 19	F	U F 29	J F 45	U F 52	R	H 66	F	R	U F 44	F	U F 25	U F 14	U F 17	F 15	U F 11	11
31	A	A	29	R	A	A	F	F 32	F	F	R	R	U F 57	R	F 57	F	R	U F 43	F 28	F 19	F 14	16	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	4	4	5	9	14	13	18	14	19	18	21	21	22	24	14	17	15	18	17	12	9	8	10
MED	F 14	F 20	22	F 21	F 22	F 22	F 28	F 30	F 28	F 29	F 39	F 49	F 56	F 62	F 62	F 46	F 40	F 31	F 25	17	14	14	F 14	F 16
UQ	F 16	24	30	F 23	F 23	F 32	F 33	F 35	F 30	F 30	F 41	F 53	F 59	F 66	F 66	F 52	45	F 46	F 28	19	F 16	15	F 14	F 17
LQ	F 14	F 16	14	F 19	F 19	F 20	F 21	F 23	F 25	F 26	F 35	F 46	F 52	F 60	F 53	F 44	F 34	F 29	F 21	15	12	F 12	F 12	14

The Radio Research Laboratories, Japan

JUL. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JUL. 1972 | FOF1 (0.01 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JUL. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUL. 1972 | FOE (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	A	A	A	B	B	A	A	B	B	B						
2								A	A	A	A	A	B	B	A	A	125	A						
3							A	A	A	A	A	A	A	A	B	B	A	A						
4								A	A	A	A	130	A	A	A	A	A	A						
5							A 110	C	A	A	100	125	A 140	140	A	A	A	A						
6								A	A 130	A	A	A	A	A	A	A	A	A	A					
7								B	A	A	B	B	B	B	B	B	B	B						
8								B	B	B	B	B	B	B	B	B	B	B	B					
9						A	A	A 110	A	A	A	145	A	A	A	110	B	B						
10								A	A	A	B	B	B	B	U R 140	A	A	A	A					
11		A	A	A 140	A	A 115	A	A	A	100	B	B	B	A	A	A	B	A						
12		A 140						A	U A 130	A 140	110	B	B	A	230	A	A	B						
13						A 180	A	A 130	A 130	110	A	110	130	140	A	A	A	B						
14	B	90	A	A	A	A	A	B	B	B	140	B	140	A 130	A	A	A	C						
15								A	A	105	B	B	B	A	A	A	B	B						
16								B	A	B	A	A	190	A 160	180	A 130	U A 130	B	B					
17								B	B	A	C	U A 140	U A 155	A	200	A	A	A	B					
18								B	A	B	B	B	B	200	150	A	A	B						
19								A	A	A	A	A	A 145	B	B	B	B	B						
20							200	150	A	170	B	B	B	R 200	B	A	B	B						
21								A	130	A	A	A	130	A 170	A	A	A	A						
22					A	A	A	A	A	A	A	B	A 150	R	A	B	A	B						
23								B	A	A	A	A 130	A	B	B	B	B	B						
24								A	A	A	A	A 130	150	A 150	130	A	A	A						
25								A	B	B	B	B	B	B	B	B	B	A						
26								A	A	B	B	B	B	B	B	B	B	B						
27								B	B	B	B	B	B	B	B	B	B	B						
28								C	B	B	B	B	B	B	B	B	B	B						
29								A	A	A	140	R 170	B	B	A	A	B	B						
30										A	115	A	A	A	A	A	A	A	A					
31								A	A	A	A	A	210	A	A	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		2		1		2	2	3	4	5	5	8	10	8	6	2	2							
MED		115		140 A		148 A	155	130 A	130 A	110	115	130	148	155	165	120	128							
UQ								140	130 A	140	140	142	155	185	200									
LQ								120 A	130	105	110	128	140	140	140									

The Radio Research Laboratories, Japan

JUL. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JUL. 1972 | FOES (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Day \ Hour	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	J X 27	J X 24	J X 27	J X 33	J X 18	J X 26	15	13	21	J X 30	16	E B 15	J X 35	20	J X 20	E B 14	17	B	B	J X 23	13	17	17	J X 28
2	J X 41	J X 36	J X 59	J X 50	20	22	21	18	J X 23	J X 30	17	16	E B 14	E B 15	16	16	G	17	C	13	J X 40	J X 29	16	J X 30
3	J X 23	J X 35	J X 63	J X 33	40	29	J X 22	J X 20	17	17	25	22	J X 21	J X 22	J X 25	J X 18	18	34	J X 23	17	17	16	15	17
4	J X 25	J X 29	J X 24	J X 25	37	23	J X 31	J X 35	J X 38	J X 33	J X 23	J X 23	J X 21	23	28	20	J X 19	J X 15	J X 20	20	21	J X 24	J X 23	J X 25
5	J X 33	J X 24	J X 23	13	13	13	17	29	J X 36	15	J X 28	J X 22	J X 21	G	35	J X 22	J X 25	19	J X 22	15	15	J X 22	J X 24	J X 22
6	J X 28	J X 23	14	J X 35	J X 33	J X 26	J X 35	26	20	17	J X 18	J X 28	J X 30	30	J X 31	J X 22	J X 25	J X 24	J X 23	J X 23	15	15	J X 22	22
7	J X 32	J X 25	J X 29	J X 40	J X 38	J X 43	29	59	45	J X 34	B	B	B	E B 25	22	E B 31	E B 49	E B 43	E B 24	B	J X 51	J X 36	J X 32	J X 38
8	J X 70	70	J X 30	J X 79	J X 21	J X 34	40	J X 53	50	J X 54	B	B	B	B	B	B	E B 25	E B 15	J X 21	E B 16	B	J X 52	35	19
9	J X 24	J X 30	J X 40	37	39	J X 35	J X 33	J X 24	16	J X 30	30	30	J X 128	J X 43	25	J X 21	B	J X 21	E B 20	E B 15	B	28	28	34
10	J X 35	J X 52	J X 52	J X 36	48	E B 25	45	43	42	40	30	E B 22	J X 22	J X 24	22	24	J X 33	24	20	23	E B 10	J X 23	32	38
11	J X 37	J X 39	32	J X 25	27	16	J X 24	J X 23	18	J X 23	26	B	E B 45	J X 26	33	J X 22	E B 15	18	18	32	J X 22	19	25	J X 30
12	J X 25	30	J X 29	27	20	40	35	25	20	20	J X 25	E B 33	E B 25	27	29	J X 23	J X 20	B	B	B	B	32	12	B
13	J X 41	J X 26	25	28	J X 24	25	27	J X 50	18	26	17	18	J X 31	16	19	J X 36	14	E B 12	21	B	B	J X 25	E B 11	E B 10
14	16	16	J X 25	J X 24	J X 26	J X 25	11	E B 10	E B 10	E B 13	G	E B 14	16	J X 23	20	J X 28	28	C	38	32	B	E B 10	12	J X 25
15	J X 31	32	40	32	J X 43	48	45	35	33	G	24	E B 30	E B 25	25	J X 24	25	21	33	30	14	J X 21	11	17	J X 21
16	J X 30	29	J X 30	J X 41	J X 53	62	37	30	59	J X 64	J X 43	32	20	32	26	25	19	J X 57	17	12	J X 33	J X 40	J X 45	J X 87
17	47	45	41	23	38	50	42	B	B	38	J X 33	20	18	30	23	22	J X 21	J X 18	30	E B 12	14	J X 31	J X 34	30
18	31	38	50	37	52	J X 30	52	51	37	J X 36	B	E B 31	E B 24	G	50	J X 51	18	B	20	20	E B 12	E B 10	B	B
19	J X 25	33	J X 30	J X 26	J X 25	J X 24	J X 71	J X 32	60	J X 43	33	J X 33	17	B	B	33	E B 27	B	19	23	17	20	30	33
20	41	60	J X 39	J X 51	41	38	32	J X 22	21	G	B	E B 37	E B 24	G	E B 25	23	E B 15	32	22	22	B	30	17	14
21	J X 24	J X 24	27	J X 33	43	34	38	28	J X 25	32	32	22	23	J X 45	J X 44	37	J X 32	J X 32	J X 28	20	B	15	15	13
22	J X 22	17	E B 10	18	J X 30	21	21	J X 27	J X 25	22	17	E B 19	23	G	17	15	17	17	E B 14	E B 11	E B 11	18	22	J X 33
23	J X 96	40	42	40	33	31	38	B	32	31	33	22	52	E B 24	E B 25	29	E B 26	83	30	27	J X 25	J X 33	32	39
24	34	32	J X 38	43	37	42	J X 40	20	J X 28	J X 33	J X 96	36	18	24	19	35	34	11	E B 31	32	B	38	J X 24	J X 44
25	J X 68	J X 108	B	J X 38	115	40	J X 40	85	45	J X 66	81	B	B	B	B	B	B	22	B	29	J X 23	J X 28	40	33
26	J X 33	J X 51	48	52	23	51	43	J X 34	40	B	B	B	B	B	B	B	B	B	22	36	27	30	35	J X 44
27	42	48	45	39	J X 43	35	J X 43	B	B	B	B	B	E B 32	E B 25	E B 25	E B 19	B	B	B	B	13	B	B	29
28	25	28	J X 40	51	53	45	J X 40	34	B	E B 21	B	E B 47	E B 52	B	E B 43	E B 48	E B 35	E B 35	E B 23	E B 20	B	B	75	70
29	100	69	J X 29	30	31	22	32	J X 61	27	J X 33	28	30	40	33	J X 70	J X 60	28	27	E B 20	20	32	14	21	21
30	J X 24	J X 25	J X 25	21	33	J X 43	90	J X 100	J X 53	J X 61	72	48	29	27	21	J X 25	30	33	30	J X 27	29	E B 10	15	E B 10
31	18	30	J X 24	23	32	J X 41	J X 33	32	31	J X 24	19	27	23	27	32	32	18	J X 40	J X 40	J X 32	38	18	32	J X 28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	28	28	29	24	25	27	26	27	28	27	24	26	27	22	29	29	29
MED	J X 31	32	J X 30	33	33	34	35	31	30	J X 30	27	U 24	22	24	24	24	20	23	22	20	21	23	24	29
UQ	J X 41	42	J X 41	J X 40	42	42	41	46	41	J X 36	33	U 30	30	27	31	31	26	33	29	27	J X 29	J X 30	32	34
LQ	J X 25	J X 26	J X 25	26	26	25	28	24	20	21	18	22	20	U 18	21	22	18	18	20	15	14	16	17	21

The Radio Research Laboratories, Japan

JUL. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JUL. 1972 | F-MIN (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	11	E C 14	10	10	10	10	10	10	10	10	11	15	27	15	11	14	13	B	B	E C 16	9	E C 13	10	9
2	8	9	9	9	9	9	9	9	10	9	9	10	14	15	12	11	12	10	C	9	9	9	9	8
3	9	10	18	14	11	12	10	9	10	10	13	15	12	12	14	13	11	10	10	12	11	8	8	8
4	8	8	10	15	10	9	10	10	10	10	8	9	9	11	11	10	9	10	10	10	11	9	9	8
5	8	9	9	9	9	9	9	E C 13	9	9	8	9	9	8	8	8	9	9	10	10	10	9	8	9
6	9	9	10	10	10	9	10	10	10	9	9	9	9	9	9	9	8	8	9	9	10	10	10	9
7	9	E C 13	10	13	15	19	12	21	10	10	B	B	B	25	20	31	49	43	24	B	10	9	10	10
8	10	10	14	10	15	12	11	16	16	17	B	B	B	B	B	B	25	15	16	16	B	13	10	9
9	9	10	10	14	10	10	9	9	9	9	10	10	9	10	11	10	B	13	20	15	B	13	9	9
10	10	13	10	12	8	25	14	10	11	10	17	22	17	9	13	12	10	11	10	15	10	8	8	8
11	10	10	10	10	9	10	9	9	10	9	20	B	45	11	9	10	15	11	15	27	14	10	9	8
12	8	9	16	20	15	E C 15	10	17	9	9	8	33	25	29	13	10	9	B	B	B	B	21	10	B
13	9	10	10	19	12	10	18	9	9	9	9	9	10	12	11	10	11	12	9	B	B	12	11	10
14	9	8	8	8	8	8	8	10	10	13	13	14	12	10	10	10	12	C	12	12	B	10	10	10
15	9	9	10	10	10	13	10	10	10	10	14	30	25	15	14	13	15	13	12	12	10	10	10	9
16	9	10	9	9	11	11	13	21	12	21	12	13	10	10	9	11	10	14	11	9	9	10	10	10
17	11	13	14	20	26	45	15	B	B	13	E C 15	10	13	13	13	10	11	9	13	12	9	9	8	10
18	11	26	20	20	20	13	15	17	10	20	B	31	24	16	14	10	11	B	14	12	12	10	B	B
19	20	10	9	10	9	9	14	12	10	9	9	11	11	B	B	15	27	B	15	11	11	9	10	10
20	11	15	13	20	15	12	11	11	9	11	B	37	24	18	25	11	15	12	12	11	B	10	9	9
21	9	9	9	10	14	9	9	9	10	12	14	11	10	11	10	10	10	11	11	10	B	10	10	9
22	10	9	10	10	9	9	9	9	10	10	14	19	14	13	12	12	12	10	14	11	11	9	9	10
23	10	10	13	12	10	10	10	B	12	10	10	10	10	24	25	20	26	20	15	17	9	12	10	9
24	10	10	E C 23	12	10	10	9	10	9	10	9	10	10	10	10	10	10	9	31	26	B	21	9	10
25	10	35	B	10	19	10	10	10	22	55	28	B	B	B	B	B	B	11	B	12	10	9	9	10
26	9	11	15	15	18	13	25	11	11	B	B	B	B	B	B	B	B	B	10	15	10	9	10	10
27	26	20	20	28	15	11	13	B	B	B	B	B	32	25	25	19	B	B	B	B	10	B	B	10
28	10	10	10	E C 15	25	13	11	E C 16	B	21	B	47	52	B	43	48	35	35	23	20	B	B	15	20
29	15	10	10	12	10	10	10	10	11	11	11	15	18	20	15	15	20	15	20	10	11	10	10	9
30	10	9	10	9	9	9	10	9	8	9	10	12	14	15	13	10	9	10	9	9	9	10	9	10
31	10	10	10	9	10	10	10	10	9	10	17	15	16	15	10	10	10	10	10	10	10	10	10	10
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31
MED	10	10	10	11	10	10	10	10	10	10	13	15	14	15	13	11	12	12	14	12	11	10	10	10
UQ	10	11	14	15	15	12	12	16	11	13	24	35	26	24	22	15	26	35	20	16	B	12	10	10
LQ	9	9	10	10	10	9	10	10	10	9	10	10	10	11	10	10	10	10	10	10	10	9	9	9

JUL. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUL. 1972 | M(3000)F2 (0.01) | 45 E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	265	I A 265	265	280	F 300	F 320	F 295	F 330	325	F 335	J R 335	F 345	F 330	B	B	A	F	A	A	U A 300
2	A	A	A	F 295	F 260	F 270	F	F	F	F	F	F 340	F 335	345	335	F	F 345	U F 320	C	A	A	A	U F 300	U F 315
3	A	A	A	A	A	F	F 270	F	F 270	F 280	F 300	F 300	J F 310	F	F 300	F	F 385	J F 340	F 350	R	365	F 290	F 315	F 310
4	F 285	A	A	A	240	270	F 270	245	F	F	J F 305	J R 325	J R 325	J F 355	F 320	U F 315	F 345	U F 325	F 350	320	U A 335	A	A	A
5	A	F	A	U F 265	F 265	F 265	F 275	F 285	A	F 280	U F 315	F 325	F 330	U F 360	F 305	F	F	F 345	F	315	360	A	A	F 325
6	A	A	R	A	A	F 250	A	F 265	J F 280	F 290	U F 310	U F 310	F 330	J F 340	J R 330	J F 345	F 360	F	U F 355	F 280	F 325	A	A	F 280
7	A	A	A	A	A	A	A	A	A	F 270	B	B	B	F 310	U F 290	F	U R 295	R	R	B	A	A	A	A
8	A	A	F	A	A	A	A	A	A	B	B	B	B	B	B	B	340	F 325	F 345	U R 290	B	A	A	F 300
9	A	A	A	A	A	F 260	F 275	F 275	F 275	F 290	F	335	F 300	F 305	F 320	F	B	U F 310	R	340	B	R	A	A
10	A	A	A	A	F	B	A	A	F 260	I A 265	F 270	F 305	F	U F 320	R	F	U F 325	F	R	A	R	A	A	A
11	A	F 290	F 290	F 295	U F 250	F 275	F 260	F 275	F 295	F 305	305	B	R	F	U F 330	F 325	F	F 335	350	B	A	A	A	A
12	A	275	A	B	F	A	A	F 290	U F 310	F 290	F 295	325	F 330	F 345	F 355	F 335	F 290	B	B	B	B	B	F 285	B
13	A	F	A	A	R	F 265	F 305	F 285	F 295	F 265	310	340	345	345	F 335	F 340	F 335	F 345	F 325	B	B	U A 365	290	315
14	F 305	F 295	F 315	F 265	F 265	U F 290	F 280	F 285	285	F 270	F 320	325	335	J F 345	345	375	R 320	C	305	325	B	310	B	F
15	A	A	A	A	A	A	A	A	F 305	U F 275	U F 290	R	U F 315	F	U F 330	F	F	F 270	F 295	F 325	360	F 285	F 300	F
16	F 300	A	A	A	A	A	A	A	A	A	F	U F 305	U F 310	F 330	F 320	F 340	F	R	F 325	U F 305	A	A	A	A
17	A	A	A	B	B	B	A	B	B	F 275	F 295	F 310	F 320	U F 335	F 320	335	F 310	F	F 335	335	310	F 290	A	A
18	A	B	B	B	A	A	A	A	F	A	B	R	F 340	F 335	F 325	J F 335	R	B	R	330	345	360	B	B
19	B	A	A	A	F	F	J F 265	F 265	F	F	F 300	U F 320	F 290	B	B	F	R	B	320	300	F 315	A	A	A
20	A	A	A	A	A	275	F 280	F 275	F 265	F 295	B	315	J F 325	U F 325	F 325	F	325	F	F 325	280	B	A	A	F 320
21	F 285	A	A	A	A	A	F 220	F 225	F 275	F 270	F 310	F 335	U F 345	U F 340	F 350	F 360	F 310	F 360	A	A	B	A	F 355	F 275
22	F 285	F 285	290	R	F 285	U F 250	F	U F 290	F	F	F 315	U F 340	F	F 335	J F 355	F 335	325	F 375	F 350	F 335	325	A	A	A
23	A	A	A	A	A	F 280	A	B	F	F	F	F 320	F 330	320	U R 280	325	F	R	345	R	A	A	A	A
24	A	A	C	A	A	A	260	F 275	F 285	F 305	320	345	345	310	J R 315	F	F	U F 315	R	R	B	B	A	A
25	A	B	B	A	A	A	A	F	A	B	A	B	B	B	B	B	B	F	B	R	R	A	A	A
26	A	A	A	A	A	A	A	F 285	A	B	B	B	B	B	B	B	B	B	F 295	A	A	A	A	A
27	B	B	B	B	A	A	A	B	B	B	B	B	F	350	330	335	B	B	B	B	F 295	B	B	A
28	A	A	A	A	A	A	A	A	B	F 325	B	R	U R 350	B	R	R	U R 335	R 340	R	315	B	B	A	A
29	A	A	A	A	F 275	F 275	F 265	F 295	310	F 315	F 315	350	R	F 335	J F 345	F	F	F 350	F 335	F 380	A	R	A	A
30	A	A	A	F 310	F 280	F 250	F	U F 290	F	F	J F 345	F	R	H 335	F	R	U F 340	F	U F 360	F	U F 325	F 320	F	345
31	A	A	310	R	A	A	F	F 280	F	F	R	R	U F 340	R	F 335	F	R	U F 335	F 340	F 370	F 320	325	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	4	4	5	9	14	13	18	14	18	18	20	21	22	24	14	17	15	18	16	12	8	6	10
MED	F 285	F 288	300	F 295	F 265	F 268	F 270	F 280	F 285	F 285	F 308	F 325	F 330	F 335	F 330	F 335	F 330	F 335	F 338	322	325	315	F 300	F 312
UQ	F 300	F 292	312	F 295	F 275	F 275	F 275	F 285	F 300	F 305	F 315	338	F 340	F 345	F 335	F 345	F 340	F 345	F 350	335	352	342	F 315	F 320
LQ	F 285	280	290	F 265	F 260	F 260	F 265	F 275	F 275	F 270	F 295	F 312	F 320	F 325	F 320	F 335	F 320	U F 322	F 325	302	F 318	F 290	F 290	F 300

The Radio Research Laboratories, Japan

JUL. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JUL. 1972 | H'F2 (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JUL. 1972 | H'F2 (KM)

IONOSPHERIC DATA

JUL. 1972 | H'F (KM) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	A	325	A 325	280	245	230	240	230	200	215	230	B	B	A	A	A	A	A
2	A	A	A	A	350	A 360	330	295	300	295	260	220	210	220	205	220	210	245	C	A	A	A	A	F 275
3	A	A	B	A	A	A	355	345	A 320	300	280	260	240	215	260	205	200	250	240	A	B	A	A	A 300
4	A	A	A	A	A	380	350	390	350	260	270	225	200	200	210	200	220	250	230	B	B	B	A	A
5	A	290	A	A	350	350	375	340	A	310	240	225	205	200	200	200	200	210	A	B	E B 240	A	A	280
6	A	A	A	A	A	A 400	A	350	300	250	240	225	220	200	210	220	200	240	210	E A 310	230	A	A	275
7	A	A	A	A	A	B	A	B	A	330	B	B	B	240	250	255	B 240	B	B 275	B	A	A	A	A
8	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B 250	290	250	B	B	A	A	A 280
9	A	A	A	A	A	400	315	290	280	240	205	230	A 250	250	215	210	B	250	250	230	B	A	A	A
10	A	A	A	A	280	B	A	A	410	A	320	250	225	225	215	210	225	205	230	A	B	A	A	A
11	A	430	290	320	A	375	A 350	300	260	290	300	B	B	230	205	200	220	230	250	B	B	A	A	A
12	A	400	A	B	A	A	A	310	280	280	270	B 260	240	225	230	205	240	B	B	B	B	B	A	B
13	A	A	A	B	A	400	325	290	300	230	225	210	215	210	210	220	240	225	A 240	B	B	B	B	280
14	305	300	300	A	A	330	320	280	280	300	250	200	230	215	215	200	245	C	280	B 250	B	B	B	A
15	A	A	A	A	A	A	A	A	270	280	245	250	250	230	220	205	265	220	250	240	A 200	E A 290	A 260	A
16	A	A	A	A	A	A	A	B	A	B	A	265	245	240	210	210	240	215	230	225	A	A	A	A
17	A	A	A	B	B	B	A	B	B	E A 350	A 330	255	225	225	225	220	250	225	225	E B 250	A	B	A	A
18	A	B	B	B	B	A	A	A	350	A	B	260	225	215	210	210	220	B	A	A 275	B	B 250	B	B
19	B	A	A	A	330	325	A	A	350	310	250	230	240	B	B	260	225	B	280	A	340	A	A	A
20	A	B	A	B	A	E A 400	350	320	280	295	B	E B 300	230	230	240	230	230	215	B 270	B	B	A	A	300
21	A 370	A	A	A	A	A	580	A	300	325	280	220	210	220	200	200	230	230	A	A	B	A	240	320
22	E B 310	310	E B 350	250	325	400	370	310	295	270	250	215	225	240	210	240	230	210	240	B 250	B	A	A	A
23	A	A	A	A	A	A	A	B	310	270	260	210	220	240	B 270	240	B 250	280	250	A	A	A	A	A
24	A	A	C	A	A	A	A	330	300	260	250	230	215	250	245	205	225	230	E B 260	B	B	B	A	A
25	A	B	B	A	B	A	A	A	B	B	B	B	B	B	B	B	B	320	B	A	A	A	A	A
26	B	B	B	B	B	B	300	A	A	A	A	A	B	B	B	B	B	320	B	A	A	A	A	A
27	B	B	B	B	A	A	A	B	B	B	B	B	B 240	225	245	210	B	B	B	B	280	B	B	A
28	A	A	A	A	A	A	A	A	B	E B 300	B	B	B	B	B	B 250	B 225	B 250	B 250	B	B	B	B	B
29	A	A	A	A	370	A 400	A 390	310	320	280	250	240	220	210	210	230	A 240	225	220	215	A	A	A	A
30	A	A	A	330	300	A	A	A	250	210	225	215	210	200	210	205	190	200	210	A	290	310	B	B
31	A	A	A	A	A	A	A	325	290	250	210	225	210	220	200	200	230	225	225	220	A	A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	5	3	3	7	12	13	16	22	24	22	24	25	26	26	28	27	24	22	10	6	3	2	8
MED	310	310	295	320	330	384	350	315	300	280	250	229	225	225	210	210	230	230	242	236	260	290	250	280
UQ	340	400	312	325	350	400	370	335	320	299	270	251	240	230	230	225	240	250	250	B 250	290	300		300
LQ	306	300	295	285	312	355	325	298	280	260	240	220	215	215	210	205	220	218	230	225	U 215	260		278

JUL. 1972 | H'F (KM)

IONOSPHERIC DATA

JUL. 1972 | H'ES (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	130	125	115	110	110	100	100	110	100	125	120	B	110	140	110	B	110	B	B	110	175	150	110	145
2	130	110	110	120	110	110	125	130	110	110	110	130	B	B	125	120	G	115	C	110	105	100	130	130
3	130	120	110	100	105	120	130	130	130	110	110	110	105	110	130	120	135	110	115	115	110	105	150	130
4	125	110	120	120	110	125	120	110	100	120	100	120	110	110	130	130	125	125	115	110	110	105	110	100
5	100	150	125	115	120	120	110	105	100	100	100	110	100	G	100	100	100	100	100	100	110	100	100	100
6	190	140	130	110	100	130	100	105	110	125	105	100	100	100	90	100	100	100	100	100	110	115	100	130
7	140	115	110	110	110	115	100	125	90	140	B	B	B	B	130	B	B	B	B	B	110	100	100	100
8	140	110	125	100	90	110	110	110	100	140	B	B	B	B	B	B	B	B	110	B	B	140	130	140
9	130	115	120	120	100	110	125	140	130	130	160	170	115	100	125	110	B	125	B	B	B	120	110	110
10	125	110	100	100	115	B	95	100	110	100	120	B	125	120	150	110	120	130	110	110	B	150	115	110
11	110	100	110	110	105	130	100	100	120	120	110	B	B	100	100	100	B	100	130	120	115	110	125	110
12	110	110	110	115	120	100	100	110	150	130	100	B	B	110	110	100	100	B	B	B	B	140	150	B
13	110	125	125	115	115	130	110	150	190	150	170	140	100	100	115	100	100	B	110	B	B	140	B	B
14	160	120	100	110	110	110	120	B	B	B	G	B	110	100	110	120	115	C	120	110	B	B	110	90
15	110	115	115	120	110	100	100	100	115	G	110	B	B	110	120	120	125	110	110	110	100	110	140	140
16	150	115	110	100	100	100	110	110	110	100	100	110	140	100	150	120	125	120	130	120	125	110	110	160
17	110	105	110	125	120	110	105	B	B	105	110	110	110	110	110	120	110	115	100	B	105	90	110	110
18	115	120	100	100	110	120	110	110	110	110	B	B	B	G	140	130	100	B	120	115	B	B	B	B
19	130	130	110	110	120	110	150	100	160	110	110	100	120	B	B	115	B	B	120	140	100	120	110	110
20	110	100	100	100	100	110	110	110	110	G	B	B	B	G	B	100	B	140	150	125	B	120	140	140
21	100	100	150	105	100	100	105	100	125	100	110	130	110	110	100	100	100	100	100	100	B	130	140	140
22	130	100	B	130	125	125	160	100	180	120	140	B	120	G	100	105	140	120	B	B	B	170	150	125
23	180	110	100	110	110	110	100	B	100	110	120	125	150	B	B	140	B	125	125	165	100	140	110	115
24	115	125	125	100	105	110	110	125	130	140	140	120	120	125	115	130	130	125	B	130	B	180	130	110
25	130	130	B	120	110	100	100	150	110	155	105	B	B	B	B	B	B	110	B	110	110	120	100	100
26	100	115	100	100	100	100	120	105	100	B	B	B	B	B	B	B	B	B	150	110	110	110	110	110
27	125	105	110	110	120	110	105	B	B	B	B	B	B	B	B	B	B	B	B	B	175	B	B	120
28	115	110	115	110	100	100	100	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	140	130
29	125	120	110	115	170	110	110	145	100	110	120	120	115	120	110	105	110	130	B	110	115	165	150	145
30	130	110	110	160	150	130	125	125	120	130	115	120	100	130	140	100	140	110	100	100	110	B	150	B
31	140	120	125	165	115	100	100	110	100	110	115	155	150	150	140	130	145	125	125	120	120	150	150	150
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	29	31	31	30	31	27	27	25	23	16	19	18	23	24	19	20	20	22	19	26	28	27
MED	125	115	110	110	110	110	110	110	110	120	110	120	110	110	115	112	115	118	115	110	110	120	120	120
UQ	130	120	120	120	118	120	120	125	128	130	120	130	120	120	130	120	128	125	125	120	115	140	140	140
LQ	110	110	110	102	102	100	100	102	100	110	108	110	108	100	110	100	100	110	105	110	108	110	110	110

The Radio Research Laboratories, Japan

JUL. 1972 | H'ES (KM)

IONOSPHERIC DATA

JUL. 1972 | TYPES OF ES | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Day \ Hour	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 2	F 2	F 6	F 2	F 1	F 2	F 1	L 1	L 2	C 2	L 1		L 1	L 1	L 1		L 1			F 1	R 1	R 1	FF 11	F 2
2	F 2	F 2	F 2	F 2	R 1	R 1	R 1	R 1	L 2	L 2	L 1	R 1			L 1	L 1		L 1		F 1	F 2	F 3	R 2	F 1
3	R 2	R 3	F 1	R 1	R 2	R 2	R1 L	L 2	R 1	L 1	R 1	R 1	LR 11	R 1	L 1	L 1	RR 11	R 1	F 1	F 1	F 1	F 1	R 1	R 1
4	R 1	R 3	R 2	R 1	R 2	R 3	R 1	R 2	R 2	R 1	LL 11	C 1	L 1	L 1	R 1	R 1	R 1	L 1	F 2	F 2	F 1	F 2	F 1	F 2
5	A 1	R 1	R 2	R 1	F 1	F 1	R 1	R 2	L 2	L 1	L 1	L 1	L 2		L 2	L 1	L 1	R 1	F 2	F 1	F 1	F 1	F 3	F 1
6	RF 11	R 1	F 1	F 2	F 1	RF 11	R 2	R 2	R 1	HL 11	LL 11	L 2	L 2	R 2	L 1	LL 11	L 1	L 2	L 1	F 1	F 1	F 1	FR 11	R 1
7	A 1	R 1	R 2	R 1	R 1	R 1	R 1	A 1	A 1	LL 11					L 1						R 2	R 2	R 1	R 2
8	RR 11	A 1	R 1	R 3	F 1	R 3	R 3	RS 11	R 1	RL 11									LL 11			F 1	RF 41	R 3
9	R 4	R 4	F 2	R 2	R 3	R 3	LL 11	H 1	R 1	LL 21	LR 11	LH 11	L 2	L 2	C 1	H 1		L 1				F 1	R 3	R 6
10	R 3	R 2	R 2	R 2	R 2		R 1	R 2	R 1	RL 11	L 1		L 1	L 1	H 1	LL 11	LL 11	R 1	R 1	F 1		N 1	R 5	R 4
11	R 3	R 1	L 1	HR 21	R 2	H 2	L 2	LR 11	L 1	LL 11	L 1			L 1	L 1	L 1		L 1	F 1	F 1	F 1	F 1	R 1	R 4
12	R 2	R 2	R 4	RR 11	R 3	R 2	R 3	R 2	HR 11	CL 11	R 1			C 1	C 1	L 2	L 2					F 1	F 1	
13	R 2	R 1	R 1	R 1	R 2	R 2	L 2	LR 11	HL 11	RL 11	RLL 11	H 1	L 1	L 1	L 1	L 3	L 1		R 1			F 1		
14	R 1	L 1	L 2	L 3	L 3	L 1	C 1						R 1	C 1	C 1	L 1	L 1		F 1	F 1			F 1	FR 11
15	R 3	R 4	R 3	R 2	R 3	R 1	R 3	R 4	L 3		L 1			L 1	L 1	L 1	L 1	L 1	F 1	F 1	F 1	F 1	F 1	F 1
16	RRF 11	R 3	R 3	R 2	R 2	R 1	R 1	L 1	RL 11	R 1	R 1	R 1	H 1	LH 11	LH 11	C 1	H 1	L 1	R 1	F 1	R 2	R 1	R 2	NR 13
17	R 3	R 2	RR 11	R 1	R 1	R 1	R 1			R 1	R 2	R 1	L 1	R 1	RH 11	R 1	L 1	L 1	L 1		F 1	F 1	R 5	R 4
18	R 3	F 1	F 1	R 1	R 1	R 1	R 2	R 1	R 3	R 1					LC 11	LL 11	L 1		R 1	FR 11				
19	F 1	F 1	R 4	R 2	F 2	R 5	RR 12	LR 11	NL 11	R 2	R 1	LR 11	L 1			L 1			F 1	R 1	R 4	A 1	R 3	R 3
20	R 4	R 1	R 1	R 1	R 1	R 2	R 1	L 1	R 2							L 1		LL 11	F 1	F 1		R 3	R 1	RF 11
21	FR 12	FR 13	RR 12	R 2	R 2	R 3	R 3	R 3	R 1	L 1	L 1	R 1	HR 11	L 1	L 1	L 1	L 1	L 1	F 1	F 1		F 1	F 1	RF 11
22	F 2	F 1		RF 11	RL 21	RL 11	RR 11	L 1	LLL 11	R 1	L 1		LH 11		L 1	L 1	RL 11	L 1				R 1	R 2	R 2
23	FR 13	R 2	R 1	R 2	R 4	R 3	R 4		R 1	A 1	R 1	H 1	LRL 11			L 1		L 1	F 1	F 1	FR 11	R 1	R 5	R 7
24	R 6	R 6	R 1	R 2	R 3	R 3	R 3	R 2	L 2	L 2	LL 13	L 1	H 1	H 1	H 1	LL 11	LL 11	L 1		R 1		FF 11	R 3	R 2
25	F 2	A 1		FF 11	N 1	R 4	R 2	NR 11	R 1	L 1	N 1							R 1		R 1	R 2	R 4	R 3	R 2
26	R 2	R 3	R 1	R 1	R 1	RR 11	R 1	R 2	R 2										R 1	R 1	R 2	R 3	R 4	R 4
27	R 1	R 1	R 1	R 1	R 2	R 2	R 2														R 1			R 1
28	R 3	R 3	R 3	R 2	R 1	R 2	R 2	R 2															F 1	F 1
29	F 1	F 2	F 3	R 1	RR 11	RR 11	R 1	LR 11	L 1	L 1	H 1	H 1	L 1	L 1	C 1	L 1	L 1	L 1		F 1	F 1	R 1	R 1	A 1
30	R 1	R 2	R 1	NF 11	FF 11	FF 12	F 3	F 3	F 2	LL 11	C 1	R 1	LR 11	R 1	RRL 11	LR 11	LL 11	L 1	L 2	F 3	R 1		F 1	
31	R 1	A 1	R 1	RR 11	R 2	R 2	R 2	L 1	R 2	R 1	R 1	RL 11	R 1	R 1	RL 11	L 1	RL 11	L 1	L 1	F 1	FR 11	RF 11	FR 11	F 2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JUL. 1972 | TYPES OF ES

IONOSPHERIC DATA

AUG. 1972 | FOF2 (0.1 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	A	B	A	A	A	B	B	U F 59	F 68	J F 64	F 61	F	F 29	F 19	A	A	A	A
2	A	A	A	A	A	A	A	A	33	F 39	45	B	58	63	60	F 58	F 44	40	R	F 21	F 16	A	A	A
3	15	A	B	A	F 25	R	A	A	F 20	36	R	J R 61	63	72	R	F 52	R	R	F	22	B	14	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	53	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	A	A	A	J R 22	F	B	B	B	B	B	60	B	B	F	B	B	B	R	B	B
11	A	B	B	B	B	B	B	B	B	34	U R 40	50	52	B	B	F 72	F 60	F	B	F 30	R	A	A	A
12	A	B	B	B	B	B	B	A	B	B	44	53	F 63	67	68	63	41	42	U F 36	F 28	F 17	R	B	B
13	A	A	A	B	B	A	A	A	B	B	B	F	F 61	F 64	R	F	R	R	R	F 22	F 15	A	B	B
14	B	A	A	A	A	A	A	F 33	F 32	F 39	F 50	J R 63	F	F	F 66	F	F	F	F	U F 25	F	R	A	A
15	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	F 48	B	R	A	B	A	A
16	A	A	A	A	A	A	A	A	F	F 40	44	51	B	61	58	58	I R 48	53	J R 42	B	B	B	A	A
17	A	A	A	B	B	B	B	A	F 30	45	53	R	73	J F 78	73	U F 60	F 52	F 46	F 49	R	B	B	B	A
18	A	22	A	B	A	A	A	F 31	B	41	F 51	63	R 68	J R 77	R	F	F	R	55	24	A	A	A	A
19	A	A	A	A	A	A	B	B	B	A	43	B	59	F 62	60	60	F 51	55	44	R	A	A	A	A
20	A	A	A	A	A	A	A	A	A	R	F 45	51	54	53	V 50	B	B	F 51	47	F	A	A	A	A
21	A	A	B	B	B	A	B	B	B	B	B	B	U F 60	61	65	B	B	F 56	52	36	B	B	A	29
22	A	A	A	A	B	A	F 33	U F 34	U F 40	B	B	R 58	B	R 66	J R 68	67	B	B	F	F	J R 28	B	15	F 16
23	R	24	A	R	F 25	F 27	J F 28	U F 28	F 31	R	R	F 65	F 71	J F 70	J F 70	J R 80	F	F	F 41	F 32	F 25	R	B	F 14
24	U F 14	A	R	B	B	B	B	B	33	53	R	70	79	B	R	73	F 63	61	F 53	U F 44	F	15	13	F 13
25	A	A	A	A	29	F 44	J F 45	J F 49	F	F	U F 66	F 78	J R 80	F 76	F 83	F 88	F	J R 81	71	54	F 31	C	C	C
26	A	A	A	A	A	A	A	A	R	R	B	F	F 67	F 59	F 61	F	U F 74	F 60	F	U F 48	F	A	A	A
27	A	A	A	A	32	A	A	A	A	B	B	R	B	B	F	R	J F 91	F	F	F	F	A	A	A
28	A	A	A	A	A	A	A	F 30	R	60	73	80	J R 95	97	103	J R 86	J R 77	83	R	40	B	A	A	A
29	A	A	A	A	A	A	R	B	R	F 55	F 60	F 72	F 75	78	80	80	F 81	80	U R 80	R	B	20	A	A
30	A	B	A	B	B	A	F	F	F 53	65	75	84	92	94	B	C	91	82	82	J R 62	B	B	B	A
31	A	A	A	A	F 34	A	A	A	R	B	R	F 73	F 79	F 78	J F 92	F 74	71	Z 77	U F 62	F 48	F 44	F	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	2			5	2	3	7	8	11	13	15	18	19	17	15	14	15	15	16	7	3	2	4
MED	14	23			F 29	F 36	J F 33	F 31	F 32	41	50	63	68	67	68	67	F 62	56	52	F 31	F 25	15	14	F 15
UQ					32		F 39	F 34	36	54	F 60	72	79	78	73	77	F 77	78	58	46	F 30	18		22
LQ					F 25		F 30	F 29	F 30	39	44	56	60	62	60	60	F 51	50	43	F 23	F 16	14		F 14

The Radio Research Laboratories, Japan

AUG. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1972 | FOF1 (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
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23													L											
24																								
25																								
26																								
27															L									
28										L		L	L		L									
29												L												
30												L		L										
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1972 | FOE (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	A	A	A	B	B	B	B	B	B	B	B	B				
2							B	A	A	160	J R 160	B	B	B	165	C	A	B	B					
3									B	C	A	B	B	B	B	B	B	B	C					
4							B	B	B	B	B	B	B	B	B	B	B	B	B					
5							B	B	B	B	B	B	B	B	B	B	B	B	B					
6							B	B	B	B	B	B	B	B	B	B	B	B	B					
7							B	B	B	B	B	B	B	B	B	B	B	B	B					
8						B	B	B	B	B	B	B	B	B	B	B	B	B	B					
9							B	B	B	B	B	B	B	B	B	B	B	B	B					
10							B	B	A	B	B	B	B	B	B	B	B	B	B					
11							B	B	B	B	B	B	B	B	B	B	B	B	B					
12							B	B	B	B	B	B	B	B	B	B	R	B	B					
13							A	A	B	B	B	B	B	B	U R 200	B	B	B	B					
14							A	A	U A 140	A	B	B	B	B	B	A	B	B	B					
15							B	B	B	B	B	B	B	B	B	B	B	B	B					
16							B	B	A	A	A	B	B	B	B	B	B	R 100	A					
17							B	B	A	175	B	200	A	B	B	B	A	B	B					
18							A	A	B	B	B	200	220	215	B	B	B	B	B					
19							B	B	B	B	A	B	B	240	R 210	U R 170	B	280	B	B				
20							A	A	A	A	A	200	U A 205	210	B	B	B	B	B					
21						B	B	B	B	B	B	B	B	B	B	B	B	B	B					A
22							A	U A 130	A	B	B	B	B	B	B	B	B	B	B					
23	B	140	A	A	A 140	A 120	A	A	B	B	B	B	B	H 220	205	200	A 145	A	B	B				
24						B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
25					140	A	A	A	130	145	210	210	B	B	B	B	B	B	B	B	140			
26						B	B	A	B	B	B	B	B	B	250	210	190	U R 130	B	B				
27						A	A	A	B	B	B	B	B	B	B	B	B	B	U A 220	A				
28						A	A	180	F 150	170	A	U A 240	210	H 245	240	210	170	B	B	B				
29						A	B	B	B	220	255	260	280	275	245	230	210	A	A	B				
30						A	A	A	160	170	H 225	245	240	255	B	C	R 190	115	130	B				
31						A	A	B	A	B	B	B	B	250	245	215	200	C	B	B	B	B		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1			2	1		2	4	6	4	7	5	8	8	6	6	4	2		1			
MED		140			140	A 120		155	145	170	218	210	220	242	225	210	190	122	175		140			
UQ									155	175	240	242	240	252	245	215	200	205						
LQ									135	160	185	200	210	218	202	200	170	108						

AUG. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

AUG. 1972 | FOES (0.1 MHZ) | 45 E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	J X 28	J X 29	45	J X 53	52	J X 53	32	B	41	J X 54	43	B	B	E B 43	E B 37	23	E B 23	E B 21	17	J X 25	J X 26	45	J X 38	J X 38
2	J X 29	31	J X 46	53	J X 46	J X 43	53	40	34	J X 30	G	B	E B 24	E B 30	G	E C 20	17	E B 20	E B 16	19	E B 11	J X 30	J X 33	J X 26
3	26	26	25	J X 25	24	23	40	J X 45	24	27	J X 27	34	E B 27	33	E B 37	E B 27	E B 21	E B 20	E C 25	E C 15	B	E B 12	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	81	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J X 68	B	31
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E B 19	B	B	B	B	B
8	B	30	34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	30	27	38	J X 65
10	40	42	43	B	26	40	34	20	20	B	B	B	B	B	E B 45	B	B	E B 26	B	B	B	16	B	B
11	34	J X 63	B	B	B	B	B	B	B	E B 24	24	E B 25	E B 22	B	B	E B 30	E B 28	E B 31	B	E B 17	25	32	21	33
12	31	42	B	B	B	35	B	34	B	B	E B 20	E B 22	E B 22	E B 23	E B 21	E B 19	G	E B 12	E B 20	E B 13	E B 10	11	B	B
13	66	32	33	32	32	34	J X 27	35	B	B	B	E B 30	E B 27	E B 25	G	E B 20	E B 20	E B 17	E B 15	E B 12	E B 10	15	B	B
14	38	30	30	33	42	55	52	32	J X 29	19	E B 20	E B 20	20	22	23	30	E B 26	E B 47	E B 12	E B 19	14	13	25	J X 23
15	29	30	32	33	43	48	35	43	38	B	B	B	B	B	B	B	B	E B 20	B	E B 20	26	B	J X 23	J X 30
16	33	36	39	J X 39	35	33	33	33	20	29	26	E B 22	B	E B 36	E B 24	E B 22	E B 20	13	J X 24	B	B	B	22	31
17	30	30	31	34	B	B	B	29	17	22	E B 20	G	39	E B 30	E B 45	E B 27	27	E B 18	E B 17	E B 26	B	B	B	30
18	J X 25	32	J X 25	B	40	J X 42	J X 35	J X 32	B	30	E B 24	G	G	23	E B 70	E B 21	E B 27	E B 38	E B 23	E B 16	32	35	J X 130	J X 40
19	J X 30	J X 60	31	J X 50	33	J X 55	B	B	B	40	34	B	E B 31	G	G	G	E B 20	G	E B 10	E B 30	30	36	J X 31	30
20	33	J X 60	32	J X 30	45	32	40	J X 37	J X 40	20	32	G	21	J X 45	E B 20	B	B	E B 21	16	E B 12	J X 31	J X 32	J X 42	J X 95
21	J X 70	J X 75	B	J X 35	B	32	B	B	B	B	B	B	E B 30	E B 46	E B 55	B	B	E B 28	E B 21	E B 29	B	B	32	19
22	34	J X 51	46	J X 40	J X 52	45	32	16	17	B	B	E B 30	B	E B 58	E B 55	E B 48	B	B	E B 25	J X 21	E B 23	B	21	16
23	E B 18	17	J X 24	17	18	J X 19	J X 23	17	E B 21	E B 30	E B 36	E B 34	E B 20	G	30	24	22	20	J X 23	E B 19	E B 15	16	B	13
24	15	16	20	B	B	B	B	B	E B 24	E B 28	E B 26	E B 55	E B 54	B	E B 55	E B 50	E B 21	E B 20	E B 19	E B 13	E B 10	E B 11	15	15
25	J X 33	J X 30	J X 25	J X 31	J X 38	J X 38	23	J X 24	G	G	25	25	E B 41	E B 37	E B 40	E B 24	E B 21	E B 20	E B 19	E B 15	G	C	C	C
26	J X 23	J X 25	J X 27	31	33	J X 61	J X 53	J X 56	35	35	B	E B 39	E B 32	E B 31	28	25	G	G	E B 12	E B 12	J X 26	36	33	33
27	J X 41	J X 31	43	40	J X 61	33	52	52	63	B	B	35	B	B	E B 25	E B 60	E B 21	25	28	27	21	22	26	30
28	J X 38	J X 45	J X 63	42	J X 38	J X 32	J X 27	33	G	G 15	22	30	29	30	G	G	G 16	E B 15	E B 46	E B 20	B	29	31	30
29	29	32	34	J X 31	40	33	28	B	E B 26	27	G	G	G	G	G	G	G	28	23	E B 23	B	E B 15	J X 30	J X 62
30	45	33	42	B	B	J X 43	23	17	G	G	G	28	G	G	B	C	G	G	23	E B 22	B	B	B	30
31	J X 32	J X 39	28	29	42	40	J X 41	J X 50	36	B	E B 48	E B 54	31	G	G	G	G 15	E C 24	E B 19	E B 13	E B 10	J X 24	J X 33	25
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	23	19	19	22	19	19	19	17	18	19	19	20	22	20	20	24	23	23	18	21	18	22
MED	32	32	32	33	40	39	34	33	U 22	U 24	E G 24	E B 28	E B 27		E B 26	E B 24	E B 20	E B 20	E B 19	E B 19	U 20	27	31	30
UQ	38	J X 42	42	40	44	J X 45	40	42	36	30	U 29	E B 34	E B 31	E B 36	E B 45	E B 28	E B 22	E B 26	E E 23	E B 22	26	35	J X 33	J X 33
LQ	29	30	28	31	33	33	28	26	18	20	E G 20	E G 21		E G 22	G		E G 16	E B 16	E B 16	E B 14	E B 10	15	23	25

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AUG. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1972 | F-MIN (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	9	9	12	13	14	14	14	B	10	13	15	B	B	43	37	20	23	21	13	12	10	10	12	12
2	9	9	14	25	11	10	14	12	10	10	10	B	24	30	14	E C 20	12	20	16	12	11	11	10	12
3	11	10	19	10	10	15	13	14	12	E C 15	15	22	27	22	37	27	21	20	E C 25	15	B	12	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	55	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	52	B	24
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	19	B	B	B	B	B
8	B	25	25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	23	20	20	21
10	20	20	26	B	17	19	15	13	14	B	B	B	B	B	45	B	B	26	B	B	B	14	B	B
11	14	22	B	B	B	B	B	B	B	24	21	25	22	B	B	30	28	31	B	17	15	10	11	10
12	13	24	B	B	B	39	B	19	B	B	20	22	22	23	21	19	13	12	20	13	10	9	B	B
13	10	10	14	20	14	12	10	10	B	B	B	30	27	25	18	20	20	17	15	12	10	9	B	B
14	20	10	10	11	20	24	13	10	10	10	20	20	18	18	19	10	26	47	12	19	12	10	10	10
15	9	10	14	13	14	13	21	20	21	B	B	B	B	B	B	B	B	20	B	20	16	B	13	9
16	13	12	11	14	20	12	25	19	13	18	18	22	B	36	24	22	20	9	10	B	B	B	11	9
17	10	9	11	23	B	B	B	15	12	14	20	18	19	30	45	27	14	18	17	26	B	B	B	9
18	9	9	9	B	15	11	10	10	B	20	24	18	17	18	70	21	27	38	23	16	19	9	9	13
19	9	10	10	17	14	20	B	B	B	24	20	B	31	21	18	15	20	10	10	30	10	10	9	9
20	11	10	12	10	17	23	10	12	13	11	18	13	12	13	20	B	B	21	14	12	9	11	15	11
21	10	14	B	20	B	13	B	B	B	B	B	B	30	46	55	B	B	28	21	29	B	B	10	10
22	10	18	20	21	30	25	13	10	11	B	B	30	B	58	55	48	B	B	25	13	23	B	11	13
23	18	10	9	10	10	9	10	9	21	30	36	34	20	15	15	17	12	11	14	19	15	13	B	10
24	9	10	10	B	B	B	B	B	24	28	26	55	55	B	55	50	21	20	19	13	10	11	10	9
25	9	9	10	12	11	11	11	10	10	11	15	18	41	37	40	24	21	20	19	15	11	C	C	C
26	9	9	10	10	11	22	20	12	25	20	B	39	32	31	17	15	15	11	12	12	9	9	10	9
27	9	10	12	10	10	10	10	15	21	B	B	26	B	B	25	60	21	18	15	10	10	10	9	9
28	12	9	15	13	11	13	10	9	10	11	14	14	11	11	17	16	12	15	46	20	B	E C 14	9	10
29	10	10	11	14	12	12	12	B	26	12	17	20	19	20	21	16	19	10	10	23	B	15	9	12
30	E C 15	20	17	B	B	13	12	10	12	15	16	16	15	16	B	C	18	10	10	22	B	B	B	E C 15
31	10	10	10	10	10	12	15	23	20	B	48	54	25	19	15	15	12	E C 24	19	13	10	9	7	8
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	30	30	30
MED	10	10	14	20	17	19	15	19	21	28	26	34	31	36	40	27	21	20	19	19	19	14	12	12
UQ	19	21	D B 26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	42	D B 46	D B 30	B	B	B	B
LQ	9	10	10	12	12	12	12	11	12	14	18	21	21	20	20	18	18	16	14	13	10	10	10	9

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AUG. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

AUG. 1972 | M(3000)F2 (0.01) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	A	B	A	A	A	B	B	U F 265	F 310	J F 315	F 310	F	F 330	F 315	A	A	A	A
2	A	A	A	A	A	A	A	A	275	F 305	325	B	325	335	320	F 345	F 330	300	R	F 335	F 315	A	A	A
3	265	A	B	A	F 260	R	A	A	F 250	305	R	J R 330	335	345	R	F 340	R	R	F	365	B	320	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	330	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	A	A	A	J R 255	F	B	B	B	B	B	345	B	B	F	B	B	B	R	B	B
11	A	B	B	B	B	B	B	B	B	325	U R 310	310	310	B	B	F 345	F 325	F	B	F 335	R	A	A	A
12	A	B	B	B	B	B	B	A	B	B	330	320	F 315	340	340	350	340	355	U F 320	F 320	F 295	R	B	B
13	A	A	A	B	A	A	A	A	B	B	B	F	F 330	F 335	R	F	R	R	R	F 355	F 320	A	B	B
14	B	A	A	A	A	A	A	F 260	F 280	F 280	F 305	J R 315	F	F	F 325	F	F	F	F	U F 330	F	R	A	A
15	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	F 335	B	R	A	B	A	A
16	A	A	A	A	A	A	A	A	F	F 315	310	335	B	320	345	335	I R 350	340	J R 335	B	B	B	A	A
17	A	A	A	B	B	B	B	A	F 290	315	315	R	320	J F 335	330	U F 335	F 345	F 305	F 300	R	B	B	B	A
18	A	310	A	B	A	A	A	F 265	B	315	F 335	330	R 325	J R 310	R	F	F	R	325	290	A	A	A	A
19	A	A	A	A	A	A	B	B	B	A	300	B	320	F 340	335	325	F 325	305	295	R	A	A	A	A
20	A	A	A	A	A	A	A	A	A	R	F 310	305	295	325	V 310	B	B	F 320	300	F	A	A	A	A
21	A	A	B	B	B	A	B	B	B	B	B	B	U F 315	310	325	B	B	F 325	315	340	B	B	A	315
22	A	A	A	A	B	A	F 275	U F 280	U F 300	B	B	R 295	B	R 320	J R 335	315	B	B	F	F	J R 305	B	305	F 315
23	R	315	A	R	F 270	F 265	J F 270	U F 270	F 290	R	R	F 325	F 325	J F 330	J F 330	J R 350	F	F	F 340	F 345	F 320	R	B	F 320
24	U F 320	A	R	B	B	B	B	B	310	345	R	320	325	B	R	330	F 325	345	F 340	U F 340	F	325	300	F 310
25	A	A	A	A	260	F 275	J F 275	J F 285	F	F	U F 325	F 320	J R 340	F 305	F 290	F 300	F	J R 315	340	335	F 355	C	C	C
26	A	A	A	A	A	A	A	A	R	R	B	F	F 315	F 290	F 380	F	U F 310	F 300	F	U F 325	F	A	A	A
27	A	A	A	A	250	A	A	A	A	B	B	R	B	B	F	R	J F 245	F	F	F	F	A	A	A
28	A	A	A	A	A	A	A	F 265	R	305	315	305	J R 305	300	330	J R 350	J R 330	310	R	340	B	A	A	A
29	A	A	A	A	A	A	R	B	R	F 285	F 290	F 290	F 275	310	315	315	F 300	330	U R 320	R	B	310	A	A
30	A	B	A	B	B	A	F	F	F 290	290	295	295	290	305	B	C	300	305	310	J R 340	B	B	B	A
31	A	A	A	A	F 280	A	A	A	R	B	R	F 280	F 315	F 300	J F 325	F 325	340	Z 340	U F 305	F 345	F 340	F	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	2			5	2	3	7	8	11	13	15	18	19	17	15	14	15	15	16	7	3	2	4
MED	292	312			F 260	F 270	J F 275	F 265	F 290	305	310	315	318	320	330	335	F 325	320	320	F 338	F 320	320	302	F 315
UQ					F 270		F 275	F 275	F 295	315	325	322	325	335	335	345	340	338	332	342	F 330	322		318
LQ					260		J F 272	F 262	F 278	298	305	300	F 310	305	320	320	F 310	305	308	F 328	F 310	315		F 312

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AUG. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

AUG. 1972 | H'F2 (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2																								
3																								
4																								
5																								
6																								
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22																								
23													L											
24																								
25																								
26																								
27															L									
28										L		255	L		250									
29												L												
30												L		L										
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT												1			1									
MED												255			250									
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1972 | H'F2 (KM)

IONOSPHERIC DATA

AUG. 1972 | H'F (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	A	B	A	A	A	B	B	E B 325	280	265	250	240	230	290	A	A	A	A
2	A	A	A	A	A	A	A	A	365	260	250	B	240	240	225	210	220	275	230	260	B 260	A	A	A
3	A	A	B	A	370	A	A	A	B 340	250	230	230	210	225	225	220	B 260	220	240	230	B	B	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	230	B	B	B	B	B
8	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10	B	B	B	B	B	B	A	A	A	B	B	B	B	B	B 250	B	B	280	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	295	280	250	250	B	B	230	265	B	240	A	A	A	A	A
12	A	B	B	B	B	B	B	B	B	B	240	245	240	230	220	210	200	225	B 230	240	B	B	B	B
13	A	A	A	B	A	A	A	A	B	B	B	225	225	230	220	220	220	240	210	210	250	A	B	B
14	B	A	A	A	B	B	A	425	310	250	230	250	225	240	220	230	225	B 250	200	B	280	R	A	A
15	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	240	B	B	B	B	A	A
16	A	A	A	A	A	A	B	B	295	280	275	250	B	B 250	230	220	200	225	245	B	B	B	A	A
17	A	A	A	B	B	B	B	A	300	250	220	210	240	225	B 230	220	210	250	240	230	B	B	B	A
18	A	A 340	A	B	A	A	A	A	B	270	250	240	230	240	B	225	B 225	I B 250	225	B 310	B	A	A	A
19	A	A	A	B	A	B	B	B	B	B	300	B	250	240	230	240	225	280	255	B	A	A	A	A
20	A	A	A	A	A	B	A	A	A	R	275	250	250	240	230	B	B	250	250	245	A	A	A	A
21	A	A	B	B	B	A	B	B	B	B	B	B	250	B	B	B	B	230	230	B 250	B	B	A	315
22	A	A	B	B	B	B	365	320	255	B	B	250	B	B	B 255	B 250	B	B	230	230	B 280	B	B	B
23	R	305	A	R	350	355	350	330	B 295	250	250	250	225	240	220	210	210	200	210	230	260	R	B	A
24	A	A	A	B	B	B	B	B	B 290	230	230	B	B 250	B	B 230	230	210	220	220	230	220	255	A	A 280
25	A	A	A	A	400	375	310	270	240	230	230	240	B 230	B 240	250	220	230	220	225	230	230	C	C	C
26	A	A	A	A	A	A	A	A	A	A	B	325	260	B 260	250	255	240	230	240	230	A	A	A	A
27	A	A	A	A	A	A	A	A	A	A	B	325	B	B	260	B	300	270	290	295	A	A	A	A
28	A	A	A	A	A	A	A	360	270	230	240	220	230	230	225	220	225	230	B	225	B	A	A	A
29	A	A	A	A	A	A	A	B	B	230	250	250	250	230	240	225	240	240	225	230	B	B	A	A
30	A	B	B	B	B	A	355	280	245	240	240	220	245	230	B	C	225	230	215	230	B	B	B	A
31	A	A	A	A	350	A	A	A	A	B	B	E B 320	250	230	240	240	220	230	230	220	230	230	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		2			4	2	4	6	11	13	16	18	19	18	20	19	20	23	23	19	8	2		2
MED		322			360	365	352	325	295	250	245	249	240	238	230	225	225	240	230	230	255	242		298
UQ					385		360	360	305	260	262	250	250	240	250	235	240	250	240	248	270			
LQ					350		330	280	262	230	230	230	230	230	225	220	215	228	225	230	230			

The Radio Research Laboratories, Japan

AUG. 1972 | H'F (KM)

IONOSPHERIC DATA

AUG. 1972 | H'ES (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	140	110	110	105	100	100	120	B	90	90	100	B	B	B	B	130	B	B	130	110	140	125	120	120
2	110	110	110	100	100	100	100	110	100	120	G	B	B	B	G	C	100	B	B	115	B	116	100	175
3	140	110	125	130	100	100	100	105	105	110	110	105	B	100	B	B	B	B	C	C	B	B	B	B
4	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	150	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	125	B	125
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8	B	125	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
9	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	120	115	115
10	110	110	105	B	125	120	110	115	120	B	B	B	B	B	B	B	B	B	B	B	B	160	B	B
11	110	100	B	B	B	B	B	B	B	B	120	B	B	B	B	B	B	B	B	B	125	115	120	115
12	110	120	B	B	B	130	B	110	B	B	B	B	B	B	B	B	G	B	B	B	B	180	B	B
13	125	110	120	100	110	110	110	110	B	B	B	B	B	B	G	B	B	B	B	B	B	120	B	B
14	125	100	100	100	115	120	110	110	105	110	B	B	120	160	110	100	B	B	B	B	125	170	110	130
15	110	115	120	120	120	105	110	105	100	B	B	B	B	B	B	B	B	B	B	B	130	B	170	110
16	125	120	110	110	110	110	105	100	120	120	120	B	B	B	B	B	B	165	160	B	B	B	140	110
17	110	110	110	120	B	B	B	110	130	130	B	G	110	B	B	B	110	B	B	B	B	B	B	125
18	110	130	110	B	100	105	100	105	B	125	B	G	G	130	B	B	B	B	B	B	140	110	140	100
19	105	170	115	110	110	175	B	B	B	105	115	B	B	G	G	G	B	G	B	B	125	110	105	110
20	120	100	115	105	120	120	120	100	100	120	120	G	120	100	B	B	B	B	155	B	125	120	115	110
21	150	105	B	100	B	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	115
22	110	110	110	110	105	110	120	100	110	B	B	B	B	B	B	B	B	B	B	120	B	B	150	150
23	B	125	110	110	140	100	110	100	B	B	B	B	B	G	140	145	125	105	105	B	B	100	B	130
24	110	110	150	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	165	130
25	125	110	110	125	140	110	120	110	G	B	150	150	B	B	B	B	B	B	B	B	G	C	C	C
26	120	115	110	120	125	120	100	100	125	100	B	B	B	B	140	140	G	G	B	B	140	110	110	110
27	110	110	110	110	105	100	100	100	100	B	B	125	B	B	B	B	B	130	125	130	130	130	110	115
28	130	115	120	120	110	125	115	175	G	100	130	120	110	100	G	G	105	B	B	B	B	110	110	125
29	100	100	105	125	110	100	100	B	B	130	G	G	G	G	G	G	G	100	100	B	B	B	105	150
30	155	130	125	B	B	100	110	130	G	G	G	150	G	G	B	C	G	G	130	B	B	B	B	110
31	115	110	110	120	100	100	100	105	100	B	B	B	120	G	G	G	100	C	B	B	B	100	120	120
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	26	23	19	19	22	19	19	13	12	8	5	5	5	3	4	5	4	7	4	10	18	18	22
MED	112	110	110	110	110	110	110	105	105	115	120	125	120	100	140	135	105	118	130	118	128	120	118	118
UQ	125	120	120	120	120	120	112	110	120	122	125	150	120	130	140	142	110	148	142	125	140	130	140	130
LQ	110	110	110	105	102	100	100	100	100	102	112	120	110	100	125	115	100	102	115	112	125	110	110	110

AUG. 1972 | H'ES (KM)

IONOSPHERIC DATA

AUG. 1972 | TYPES OF ES | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R 3	R 1	R 2	R 2	R 1	R 1	R 2		RS 11	R 1	R 1					L 1			L 1	R 1	FF 11	F 2	F 2	F 1
2	R 4	R 5	R 1	R 1	R 1	R 2	R 2	R 2	R 2	LL 11							L 1			R 1		R 2	FR 11	FR 11
3	R 1	R 3	R 1	FF 11	RR 11	F 1	F 1	F 2	L 1	R 1	L 1	R 1		L 1										
4																								
5																						R 1		
6																						F 1		R 1
7																								
8		R 1	R 1																					
9																					R 1	R 1	R 1	RR 11
10	R 1	R 1	R 1		R 1	R 1	R 2	R 1	R 1													R 1		
11	R 1	F 1									R 1										R 1	R 2	R 1	R 3
12	R 1	R 1				R 1		R 1														R 1		
13	F 1	R 1	R 1	F 1	R 1	R 2	R 2	R 3														R 1		
14	F 1	R 1	R 1	F 1	R 1	R 2	R 2	R 3					L 1	RL 11	L 1	L 1					F 1	R 1	RR 11	R 1
15	R 3	R 3	R 2	R 2	R 2	R 1	R 1	R 1	R 1												R 1		F 1	R 3
16	R 2	R 2	R 3	R 2	R 1	R 2	R 1	L 1	R 1	R 1	R 1							H 1	R 1				RF 11	R 3
17	R 1	R 3	R 2	R 1				R 1	L 1	H 1			L 1				L 1							A 1
18	R 1	RF 21	R 2		R 1	R 2	R 3	R 3		L 1				H 1							R 1	R 3	NR 11	R 1
19	R 1	RR 13	NF 11	F 1	R 1	HR 11				R 1	R 1										R 2	R 2	R 2	R 4
20	R 2	R 2	R 2	R 2	R 2	R 1	R 2	R 2	R 1	R 1	R 1		C 1	L 1					R 1		R 2	R 2	R 2	R 1
21	RR 12	F 1		F 1		RF 11																	R 5	R 1
22	R 3	R 1	R 1	F 1	R 1	R 1	RL 11	L 1	C 1											F 1			NF 11	R 1
23		H 1	L 1	L 1	HL 11	L 1	L 1	LH 11							H 1	H 1	HL 11	R 1	L 1			F 1		F 1
24	F 1	F 1	R 1																				R 1	R 1
25	F 2	F 1	R 1	R 2	R 2	R 2	R 1	LR 11			H 1	H 1												
26	R 3	R 2	R 3	RF 31	R 2	R 1	R 1	R 1	R 1	R 1					HL 11	H 1					R 1	R 4	R 3	R 5
27	R 6	R 2	R 3	R 3	FR 22	R 2	R 1	RS 11	RS 11			R 1						R 1	R 1	R 1	RF 11	R 2	R 2	RF 31
28	R 5	R 4	R 1	R 1	R 3	R 2	R 2	R 1		L 1	L 1	L 1	L 1	L 1			L 1					R 6	R 5	R 2
29	R 1	R 2	R 1	R 1	R 2	R 1	L 1			RL 11								L 1	L 2				R 3	FF 11
30	RR 12	R 1	R 1			R 2	R 1	R 1				H 1							H 1					R 4
31	R 3	RF 51	R 2	R 1	R 1	R 1	R 1	R 1	R 1				R 1				L 1					L 1	R 3	R 3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

AUG. 1972 | TYPES OF ES

IONOSPHERIC DATA

SEP. 1972 | FOF2 (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	F	F	51	57	75	F 77	F 74	F 81	86	F 80	F 80	81	67	S 54	40	U S 25	F 20	F 20
2	F 19	A	A	F 25	U F 29	F	J S 32	F	44	56	71	80	83	F	F	F	R	85	R	F	38	A	A	A
3	A	A	A	A	B	A	F 39	R	R	54	63	70	75	80	80	80	U S 74	73	61	49	F	F 24	U F 18	A
4	A	A	A	F	A	F	U F 31	F 31	F 42	51	57	F 67	79	77	79	75	78	74	62	48	33	U A 19	F 16	F 17
5	F 18	A	53	F	A	A	F	J F 45	F 45	51	F 59	F 66	F	F 70	72	74	71	62	J F 56	F 39	F 30	U F 26	F 18	A
6	A	F	F	A	A	A	A	A	A	55	J F 61	F	J F 72	F	J F 72	U F 72	70	J R 70	52	44	F 39	F 32	F 23	F 20
7	A	A	F	J F 29	U F 34	F	F	F	F 31	F 44	F 56	F 69	U F 73	U F 81	84	79	C	C	C	C	C	F 18	B	B
8	B	C	R	B	B	R	F 20	30	F 44	F	72	91	83	J R 87	86	U R 95	94	Z 96	S 97	R	R	F 18	A	A
9	A	A	F	A	A	A	A	41	45	R	F 58	F 72	75	80	95	I C 89	F 87	U F 72	F	F 55	R	F 29	F 22	A
10	A	A	A	A	A	R	A	A	43	F 49	I C 61	F 70	F 78	84	81	82	79	71	68	R	45	F 26	A	A
11	A	A	A	A	A	40	F 39	I C 40	R	C	F 56	F 66	F 73	U R 92	97	R	R	F	F 66	R	R	R	R	A
12	A	A	A	A	R	R	A	B	B	B	F	R	R	R	J F 73	U F 72	R	U R 62	F 57	F 53	U R 39	B	F	F 15
13	A	A	A	A	A	A	A	F 45	F 51	F 53	F 62	F 69	R	76	F 70	70	F 65	F 50	C	C	C	C	B	A
14	A	F	A	A	A	F	F	B	B	B	R	R	R	B	R	R	40	41	F 39	U F 28	A	A	A	A
15	B	A	B	R	F	A	B	B	B	B	B	B	B	60	B	B	B	B	B	B	A	A	A	A
16	A	B	B	B	B	A	R	B	B	47	F 46	B	B	B	U R 75	R	B	B	B	42	F	A	A	A
17	A	A	B	A	A	A	R	F 31	B	B	B	B	B	B	F 66	B	B	F 76	B	45	A	A	A	A
18	A	B	A	B	B	R	R	R	B	B	B	B	B	B	F	F	F	B	53	40	37	F 24	F 20	A
19	A	A	A	B	A	35	F 36	R	B	B	B	R	B	R	U R 76	F 74	64	F 66	F 57	F 61	F 43	F 31	F 27	A
20	A	A	A	F 24	F 36	U F 30	A	R	F 51	60	67	75	J F 82	80	81	U S 82	J S 80	J R 72	R	F	F	U F 32	F	R
21	A	A	A	A	A	A	R	45	F 53	65	U R 76	85	96	92	83	88	79	U R 66	64	R	F	F 45	F	F 28
22	F 23	F 24	F 24	F 27	F 30	F 33	F 40	50	70	F 76	92	99	105	F 107	J F 103	J R 96	J R 88	J R 73	F 64	58	55	U F 30	J A 22	A
23	A	F	A	A	F	A	A	F	F 57	F	F	F	U F 80	83	J R 87	82	92	J R 100	J R 96	F	R	28	A	A
24	A	A	A	A	R	A	A	44	F 54	58	F 68	F 78	R	88	F 91	81	F 75	F 70	F 58	R	R	A	A	A
25	A	A	A	B	B	R	R	50	B	58	61	F 65	68	73	85	F 84	77	R	60	F	F 48	U F 45	F 34	F 33
26	F 30	F 28	A	A	R	46	A	B	F	F	F	F 77	83	100	93	93	95	90	91	U R 88	F	R	A	A
27	A	A	A	A	A	B	B	R	R	B	B	65	F 74	75	81	B	F 81	F	F	F	F	A	F 17	B
28	A	A	A	R	F	A	F 44	51	F 57	61	62	U F 63	F 68	F 72	F 83	F 80	75	73	R	J R 64	J R 55	F 38	F	A
29	A	A	R	B	R	R	B	B	R	B	R	B	B	U F 72	U F 69	U F 65	U F 64	F 61	57	F 40	A	A	A	B
30	B	A	A	B	A	A	B	R	A	A	R	R	45	47	50	50	50	50	49	43	40	35	F 27	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	2	2	4	4	5	8	12	15	16	19	19	19	22	26	22	22	23	20	17	13	18	12	6
MED	F 21	F 26	38	F 26	F 32	35	F 38	44	F 51	56	62	F 70	75	80	81	80	78	72	60	48	40	F 28	F 21	F 20
UQ	F 26			F 28	F 35	40	F 40	48	F 54	59	70	78	82	87	86	84	81	75	66	55	45	F 32	F 25	F 28
LQ	F 18			F 24	F 30	F 33	F 32	36	F 44	51	F 58	F 66	F 73	73	73	74	70	64	56	42	38	F 24	F 18	F 17

SEP. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1972 | FOF1 (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1													L						L					
2													L											
3										L		L		L										
4													L											
5									320		L													
6										L	L	L	L	L	L									
7										L			L	L	L									
8											L	L	L	L	L									
9																								
10														L										
11													L	L										
12															L									
13												L				L	L	L						
14											F	R 360	390	B	360	370								
15																								
16											L													
17															L									
18																								
19																								
20										L		L	L	L		L								
21											L	L	L	L										
22												L	L	L										
23									F 350	L 400	L	L	L	L	L	L	L							
24									L	B	L	R	B	B										
25											L	L 400	420	L	L	L	L							
26										L 410	L 420	L	L	L	L	L								
27												B	B	B	B	B								
28								L	L 400	400	420	420	440	L	L	L								
29										B	A	B	B	430	L	L 410	L	B						
30										A	A	R 400	L	L	A		L							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	3	2	4	3	1	1	2								
MED									350	L 400	420	400	420	430	360	390								
UQ									375	L 405		410	430											
LQ									335	400		R 380	405											

The Radio Research Laboratories, Japan

SEP. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1972 | FOE (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	A	C	A	180	B	B	280	280	H 240	240	H 230	180	130	B	B	B	C	A	A
2				A	A	S 120	S	110	A 150	180	215	240	250	B	B	215	190	130	A	B	100			
3					B	B	A	A	175	205	220	245	250	250	A 230	210	195	130	110	A	B	B	A	
4					A	A	A	140	A 160	185	200	250	250	245	230	210	190	110	A	A	A	A	A	A
5			A	A	A	A	A	140	150	A 170	230	240	250	I A 250	250	220	190	150	A	B	B		95	
6					B	B	A	A	A	A	240	240	255	250	230	210	200	170	A	A	B	B	95	A
7					A	A	A	A	B	220	220	265	280	255	230	220	B	B	B	B	B			
8					B	A	B	B	185	200	220	230	250	250	250	R	B	B	B	A 140	A	A		
9					B	B	A	A	A	A	240	240	245	B	B	C	B	B	B	B	B	B		
10				B	A	A	B	B	A	220	C	240	A	A 265	230	I A 225	200	185	120	A	A	A		
11				B	A	A	A 230	C	A	C	A	A	A 250	B	B	B	B	B	A	A	A	A		
12				A	A	S	A	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B		
13				B	A	B	B	B	B	A	150	B	B	B	B	B	200	A 180	C	C	C	C		
14				A	A	A	A	B	B	B	A	B	R 255	B	R 250	220	I B 215	200	165	110	A			
15				B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A		
16				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A		
17				B	B	B	A	225	B	B	B	B	B	B	B	B	B	190	B	B	A	A		
18				B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
19				B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
20				A	A	A	A	A	A	230	250	260	265	275	270	240	220	200	B	B	B	B		
21				B	B	B	A	A	220	230	250	270	275	A 270	A	250	200	H 210	B	B	B	A	A	
22			A	A	A	100	R	R 180	200	250	270	280	250	270	I A 270	270	250	210	160	A	A	U A 100	A	
23			A	A	A	A	A	A	210	230	270	265	A	295	A 250	250	A	A	160	150	A	A	A	
24			A	A	B	A	A	A	280	B	A	B	B	B	B	B	B	B	F 170	B	A	A	A	
25			B	B	B	B	A	B	B	R	255	255	250	H 280	270	265	230	R	B	B	B	B	A	B
26			B	A	A	A	A	B	A	A	290	280	280	280	280	255	225	195	180	150	B	A	A	
27		A	A	B	A	B	B	A	B	B	B	B	B	B	B	B	A	210	B	F 170	A	A	C	B
28		A	A	A	A	A	270	230	215	250	270	285	280	270	280	260	240	A	B	B	B	B	A	A
29		A	B	B	A	A	B	B	B	B	B	B	B	285	I B 270	250	B	B	B	165	A	A	A	B
30		B	B	B	B	B	B	A	A	B	A	270	300	270	I A 270	270	235	210	A	205	195	140	100	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	2	6	11	12	16	18	18	17	17	18	16	16	7	7	2	2	3	
MED						110	250	160	185	220	240	258	252	270	250	235	200	188	160	150	148	120	95	
UQ								225	212	230	262	270	280	275	270	255	228	205	168	168			98	
LQ								140	168	192	220	240	250	250	230	220	192	140	140	145			95	

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SEP. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

SEP. 1972 | FOES (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	J X 27	28	26	40	41	41	44	25	G	E B 25	E B 50	G	G	G	G	G	22	G	E B 11	E B 10	E B 10	E C 19	16	18
2	23	J X 26	39	23	20	G	G	G	17	G	G	30	G	E B 38	E B 31	25	22	19	J X 22	E B 9	G	34	32	30
3	J X 40	J X 33	J X 57	40	B	32	J X 35	23	G	G	G	G	J X 30	J X 33	40	31	J X 28	21	15	J X 23	E B 10	12	15	30
4	33	J X 99	31	J X 31	36	24	18	18	J X 23	30	30	G	G 25	J X 28	28	J X 25	J X 26	J X 25	J X 29	J X 24	J X 39	J X 40	J X 23	J X 23
5	J X 22	25	J X 128	50	45	39	25	25	G	J X 33	J X 30	G	G	32	G	G	G	16	20	E B 10	E B 10	E B 10	J X 23	30
6	J X 40	32	28	J X 31	53	53	30	J X 45	52	40	34	G	G	29	27	28	G 18	18	23	23	15	E B 10	G	J X 25
7	27	J X 30	J X 24	18	19	18	16	17	E B 20	28	30	G	G	G	G	J X 24	E B 30	E B 21	E B 20	E B 20	E B 22	E B 15	B	B
8	B	C	14	B	B	15	E B 10	19	21	G	G	G	G	G	G	G	E B 27	E B 23	28	19	20	16	J X 31	31
9	40	40	70	J X 64	55	J X 42	39	37	39	45	G	57	29	E B 56	E B 45	C	E B 25	E B 45	E B 30	E B 21	E B 20	E B 13	16	J X 30
10	35	J X 75	J X 49	39	52	31	52	35	33	26	C	33	33	33	G	31	23	J X 20	G	12	J X 26	15	J X 36	J X 55
11	J X 70	J X 82	J X 36	J X 51	40	30	32	C	38	C	29	31	29	E B 29	E B 55	E B 56	E B 59	E B 22	22	30	27	J X 23	J X 24	J X 36
12	J X 37	J X 35	31	J X 28	26	30	42	B	B	B	E B 25	E B 50	E B 52	E B 32	28	E B 28	E B 49	E B 25	E B 28	E B 20	E B 23	B	E B 13	30
13	26	J X 33	J X 39	J X 42	J X 65	40	49	J X 36	33	27	G	E B 28	E B 57	E B 40	E B 36	E B 23	G	20	C	C	C	C	B	J X 59
14	J X 50	J X 34	J X 63	33	J X 75	J X 28	32	B	B	B	38	E B 32	G	B	G	G	E B 23	G	G	G	25	32	J X 97	J X 45
15	40	29	B	J X 33	J X 42	J X 43	B	B	B	B	B	B	B	E B 49	B	B	B	B	B	B	36	J X 33	27	29
16	J X 31	70	59	43	J X 68	45	33	B	B	E B 27	E B 27	B	B	B	E B 52	E B 50	B	B	B	E B 30	J X 16	80	73	J X 57
17	85	49	B	30	J X 59	40	28	G	54	B	B	B	B	B	E B 26	B	B	G	B	E B 25	34	31	J X 98	J X 63
18	J X 50	52	69	B	B	27	34	33	B	B	B	B	B	B	E B 48	E B 27	E B 45	B	E B 23	E B 16	E B 18	E B 18	17	28
19	29	30	53	B	31	J X 33	26	27	B	B	B	E B 50	B	E B 55	E B 65	E B 53	E B 30	E B 22	E B 20	E B 22	E B 28	E B 20	E B 15	J X 20
20	25	24	33	J X 35	24	J X 35	41	40	32	G	G	G	G	G	G	G	G	G	E B 48	E B 29	E B 15	E B 10	12	E B 17
21	29	J X 65	30	38	40	34	J X 28	35	G	G	G	G	30	35	28	G	G	23	E B 20	E B 26	17	18	22	23
22	J X 21	J X 16	18	14	14	G	G	G	G	G	G	G	G	31	31	G	G	G	G	13	15	J X 20	25	30
23	J X 62	J X 32	J X 40	J X 37	J X 35	J X 41	J X 40	J X 33	J X 25	29	G	G	34	G	31	J X 26	J X 25	30	G	31	33	J X 25	J X 60	J X 41
24	J X 26	J X 65	J X 58	J X 72	36	46	41	39	G	E B 44	31	E B 31	E B 48	E B 55	E B 44	E B 34	E B 38	E B 25	20	28	20	37	32	J X 40
25	J X 70	J X 35	43	B	B	J X 33	33	41	B	G	35	29	32	G	32	G	J X 28	G	E B 26	E B 27	E B 18	15	J X 19	E B 10
26	E C 22	28	J X 42	32	36	40	J X 43	B	32	J X 38	G	29	G	G	G	G	G	G 18	G	G	E B 18	J X 23	33	33
27	J X 38	J X 60	J X 41	J X 62	J X 51	B	B	36	40	B	B	E B 46	E B 52	E B 45	E B 56	B	29	22	E B 26	20	J X 33	33	17	B
28	17	J X 24	28	30	J X 25	J X 40	J X 38	G	G	45	G	G	32	G	G	G	G	23	E B 43	E B 20	17	E B 15	J X 24	J X 31
29	J X 59	J X 40	31	B	29	32	B	B	40	B	37	B	B	G	E B 32	G	E B 32	E B 38	24	G	36	J X 52	J X 54	J X 74
30	B	41	40	B	40	J X 51	B	35	J X 90	52	41	G	G	G	J X 76	G	G	G	22	G	G	G	G	31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	28	24	26	29	26	23	23	21	24	25	24	26	29	26	27	27	26	28	29	28	28	28
MED	J X 34	J X 34	40	36	40	34	33	33	25	26	E G 26	G	E G 27	E G 30	E G 31	E G 24	E G 25	E G 21	E G 22		U 18	20	24	30
UQ	J X 45	J X 52	J X 55	42	52	41	41	36	38	U 36	31	E G 31	31	E B 38	E B 44	U 26	E B 30	E B 23	E B 26	U 23	26	32	J X 32	J X 40
LQ	26	J X 29	30	30	29	30	26	18	G	G	G	G	G	G	G	G	G	E G 16	E G 15		E B 15	E E 15	16	26

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SEP. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1972 | F-MIN (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	9	8	8	20	13	12	E C 21	10	9	25	50	26	25	13	16	15	13	12	11	10	10	E C 19	9	9
2	9	8	10	10	9	10	9	9	10	11	13	14	13	38	31	13	13	10	10	9	9	8	9	8
3	8	9	9	15	B	23	10	10	10	E C 20	12	13	11	10	10	10	10	9	8	8	10	9	9	7
4	19	19	10	10	9	9	9	9	9	9	10	10	10	9	9	10	10	9	8	9	8	8	7	9
5	9	9	14	10	10	9	7	8	10	10	11	10	11	11	10	11	11	11	10	10	10	10	9	7
6	10	9	9	10	10	10	10	10	11	11	15	20	13	12	11	13	11	10	9	10	9	10	9	8
7	8	9	9	9	8	8	9	8	20	12	10	15	14	12	10	10	30	21	20	20	22	15	B	B
8	B	C	10	B	B	10	10	10	11	10	10	12	11	10	10	20	27	23	21	9	10	9	8	9
9	12	10	9	E C 20	15	30	11	13	15	20	12	10	12	56	45	C	25	45	30	21	20	13	10	10
10	9	11	13	15	15	14	20	24	18	12	C	15	12	12	10	12	10	10	10	9	9	9	8	9
11	10	10	10	16	10	9	9	C	19	C	22	20	14	29	55	56	59	22	13	15	10	9	8	8
12	10	10	10	10	10	E S 19	16	B	B	B	25	50	52	32	19	28	49	25	28	20	23	B	13	9
13	10	9	13	16	13	20	18	18	20	19	20	28	57	40	36	23	15	11	C	C	C	C	B	19
14	9	9	10	9	9	10	9	B	B	B	20	32	21	B	20	19	23	18	14	9	8	7	10	17
15	29	E C 20	B	17	10	22	B	B	B	B	B	B	B	49	B	B	B	B	B	B	25	9	8	9
16	10	28	31	32	36	19	29	B	B	27	27	B	B	B	52	50	B	B	B	30	11	9	10	9
17	9	15	B	21	20	20	12	20	38	B	B	B	B	B	26	B	B	18	B	25	8	7	10	9
18	9	35	10	B	B	20	25	25	B	B	B	B	B	B	48	27	45	B	23	16	18	18	9	9
19	8	9	11	B	20	10	10	22	B	B	B	50	B	55	65	53	30	22	20	22	28	20	15	15
20	11	10	10	11	12	10	10	17	10	11	10	10	10	10	9	11	15	15	48	29	15	10	10	17
21	9	10	14	15	20	20	13	10	10	9	10	10	11	10	10	13	13	13	20	26	10	10	9	9
22	9	8	8	8	8	8	10	15	13	19	15	11	15	20	20	20	11	10	13	11	10	8	10	10
23	20	7	9	10	9	10	9	10	9	10	10	10	8	10	10	9	10	21	11	9	9	7	10	10
24	14	7	8	10	30	15	10	14	25	44	20	31	48	55	44	34	38	25	12	20	9	9	9	19
25	9	8	15	B	B	20	12	19	B	21	10	20	20	15	11	17	11	20	26	27	18	10	9	10
26	E C 22	8	17	12	15	11	11	B	15	16	13	10	10	10	10	13	E S 18	10	14	14	18	9	7	9
27	9	10	10	20	14	B	B	15	32	B	B	46	52	45	56	B	20	17	26	10	10	12	E C 13	B
28	9	9	9	10	10	15	10	E C 15	10	12	17	10	19	13	11	10	9	16	43	20	12	15	9	9
29	10	9	20	B	15	15	B	B	31	B	27	B	B	25	32	17	32	38	20	13	10	12	12	25
30	B	18	25	B	22	28	B	20	20	33	20	15	19	15	20	15	13	16	18	14	11	10	9	9
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	30	30	29	30	29	29	30	30	30	30	29	30	30	29	29	29	29	30	30
MED	10	9	10	15	14	14	10	15	18	20	17	18	17	18	20	17	16	18	20	14	10	10	9	9
UQ	12	10	14	21	20	20	19	24	38	B	27	46	52	49	44	28	32	23	26	21	18	12	10	15
LQ	9	9	9	10	10	10	10	10	10	11	11	10	11	11	10	12	11	11	11	10	9	9	9	9

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SEP. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

SEP. 1972 | M(3000)F2 (0.01) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	F	F	255	285	310	F 300	F 290	F 300	300	F 315	F 315	335	315	S 305	340	U S 320	F 300	F 300
2	F 280	A	A	F 250	U F 250	F	J S 275	F	325	315	330	315	300	F	F	F	R	320	R	F	305	A	A	A
3	A	A	A	A	B	A	F 240	R	R	300	290	300	295	315	325	315	U S 325	340	345	325	F	F 325	U F 280	A
4	A	A	A	F	A	F	U F 240	F 290	F 265	315	305	F 325	295	310	310	310	335	330	355	350	350	U A 315	F 300	F 295
5	F 280	A	300	F	A	A	F	J F 265	F 245	280	F 280	F 290	F	F 315	320	310	335	340	J F 350	F 330	F 315	U F 325	F 310	A
6	A	F	F	A	A	A	A	A	A	240	J F 260	F	J F 280	F	J F 315	U F 305	330	J R 335	310	320	F 305	F 345	F 325	F 300
7	A	A	F	J F 240	U F 240	F	F	F	F 290	F 295	F 305	F 295	U F 320	U F 295	305	290	C	C	C	C	C	F 320	B	B
8	B	C	R	B	B	R	F 275	285	F 295	F	310	320	315	J R 310	290	U R 285	285	Z 315	S 310	R	R	F 250	A	A
9	A	A	F	A	A	A	A	295	315	R	F 295	F 305	290	295	275	I C 305	F 300	U F 335	F	F 325	R	F 275	F 295	A
10	A	A	A	A	A	R	A	A	315	F 295	I C 310	F 315	F 310	320	305	315	335	335	340	R	F 335	F 320	A	A
11	A	A	A	A	A	270	F 270	C	R	C	F 295	F 320	F 285	U R 260	245	R	R	F	F 320	R	R	R	R	A
12	A	A	A	A	R	R	A	B	B	B	F	R	R	R	J F 305	U F 310	R	U R 305	F 315	F 340	U F 310	B	F	F 295
13	A	A	A	A	A	A	A	F 300	F 300	F 300	F 305	F 260	R	290	F 305	330	F 290	F 235	C	C	C	C	B	A
14	A	F	A	A	A	F	F	B	B	B	R	R	R	B	R	R	300	320	F 305	U F 295	A	A	A	A
15	B	A	B	R	F	A	B	B	B	B	B	B	B	265	B	B	B	B	B	B	A	A	A	A
16	A	B	B	B	B	A	R	B	B	300	F 285	B	B	B	U R 310	R	B	B	B	335	F	A	A	A
17	A	A	B	A	A	A	R	F 280	B	B	B	B	B	B	F 300	B	B	F 310	B	315	A	A	A	A
18	A	B	A	B	B	R	R	R	B	B	B	B	B	B	F	F	F	B	325	290	325	F 315	F 310	A
19	A	A	A	B	A	265	F 285	R	B	B	B	R	B	R	U R 305	F 330	325	F 340	F 315	F 340	F 335	F 330	F 315	A
20	A	A	A	F 265	F 265	U F 265	A	R	F 305	300	300	320	J F 305	300	310	S	J S 320	J R 335	R	F	F	U F 330	F	R
21	A	A	A	A	A	A	R	265	F 285	290	U R 285	280	325	300	310	325	335	U R 340	R	R	F	F 335	F	F 305
22	F 305	F 280	F 285	F 270	F 265	F 280	F 275	265	305	F 315	275	285	300	F 280	J F 300	J R 300	J R 315	J R 330	F 330	310	335	U F 340	J A 265	A
23	A	F	A	A	F	A	A	F	F 250	F	F	F	U F 290	300	J R 300	275	270	J R 300	U R 305	F	R	285	A	A
24	A	A	A	A	R	A	A	250	F 285	275	F 280	F 280	R	255	F 280	290	F 315	F 320	F 295	R	R	A	A	A
25	A	A	A	B	B	R	R	270	B	270	280	F 290	295	280	290	F 315	325	R	300	F	F 325	U F 335	F 300	F 305
26	F 300	F 270	A	A	R	245	A	B	F	F	F	F 265	270	290	285	290	305	290	315	U R 305	F	R	A	A
27	A	A	A	A	A	B	B	R	R	B	B	285	F 275	285	295	B	F 320	F	F	F	F	A	F 275	B
28	A	A	A	R	F	A	F 270	275	F 255	260	255	F	F 260	F 275	F 300	F 315	315	320	R	J R 320	J R 310	F 290	F	A
29	A	A	R	B	R	R	B	B	R	B	R	B	B	U F 280	U F 275	U F 265	F	F 310	315	F 270	A	A	A	B
30	B	A	A	B	A	A	B	R	A	A	R	R	255	255	280	280	310	320	320	315	315	300	F 295	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	4	2	2	4	4	5	8	11	15	16	19	18	19	22	26	21	21	23	19	17	13	18	12	6
MED	F 290	F 275	292	F 258	F 258	265	F 272	275	F 290	295	295	F 298	295	292	300	310	315	320	315	320	325	F 320	F 300	F 300
UQ	F 302			F 268	F 265	270	F 275	288	305	300	305	F 315	302	300	310	315	325	335	328	330	335	U F 330	F 310	F 305
LQ	F 280			F 245	U F 245	265	F 255	265	F 260	278	280	F 285	F 282	280	290	290	305	312	310	305	F 310	F 300	F 288	F 295

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SEP. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

SEP. 1972 | H'F2 (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1													L					L						
2													L											
3										L		L		250										
4													L											
5									380		L													
6										L	L	325	305	L	L									
7										L			240	L	240									
8											L	250	230	L	L									
9																								
10														240										
11													315	L										
12															L									
13												330				245	L	L						
14											R	R	R	B	R	R								
15																								
16											L													
17															300									
18																								
19																								
20										L		290	250	250		250								
21											300	L	L	250										
22												L	275	250										
23									400	340	L	L	280	255	270	310	L							
24									L	B	L	320	330	320										
25											L	310	300	L	280	245	L							
26										350	300	L	L	L	L	240								
27												330	330	300	290	B								
28								L	390	390	400	375	365	L	L	275								
29										B	R	B	B	350	320	360	L	260						
30										A	R	R	L	L	A		L							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	3	3	8	11	9	6	7		1						
MED									390	350	300	322	300	250	285	250		260						
UQ									395	370	350	330	322	300	300	292								
LQ									385	345	300	300	262	250	270	245								

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SEP. 1972 | H'F2 (KM)

IONOSPHERIC DATA

SEP. 1972 | H'F (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	B	A	A	420	360	290	260	B 280	250	230	240	225	230	210	230	200	240	210	C	290	275
2	A 350	A	A	A 450	400	380	340	260	250	240	240	245	220	250	230	230	220	215	205	230	250	A	A	A
3	A	A	A	A	B	B	A	310	250	250	240	225	220	225	235	230	220	205	210	210	220	250	290	A
4	B	B	A	E A 450	A	430	410	300	275	240	230	240	240	240	240	230	225	210	200	215	A 230	A	295	300
5	325	A	300	A	A	A	395	300	250	260	250	225	220	225	230	225	210	210	200	210	240	240	250	A
6	A	A	A 380	A	A	A	A	A	A	380	260	240	240	220	220	230	225	215	210	200	230	230	250	290
7	A	A	390	350	350	340	310	290	280	260	225	230	220	210	220	240	230	230	220	230	B	B	B	B
8	B	C	A	B	B	R	350	290	250	240	230	230	220	220	220	240	220	230	240	210	340	300	A	A
9	A	A	A 300	A	A	B	A	350	280	A	230	230	220	B	B 300	I C 245	225	B 240	B 240	220	230	280	290	A
10	A	A	A	A	A	A	A	A	290	250	I C 250	240	225	240	H 230	235	215	215	230	225	230	260	A	A
11	A	A	A	A	A	345	340	C	A	C	255	250	210	B 240	B	B 300	B 230	230	240	300	A	A	A	A
12	A	A	A	A	A	A	A	B	B	B	230	B	B	250	230	250	E B 290	260	240	230	B 270	B	B	E A 310
13	A	A	A	A	A	A	A	315	A	250	240	230	B	B 250	B 250	225	230	290	C	C	C	C	B	B
14	A	270	A	A	A	A	A	B	B	B	A	355	240	B	260	275	290	300	260	280	A	A	A	A
15	B	A	B	A	310	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
16	A	B	B	B	B	A	B	B	B	B 260	250	B	B	B	B 280	E B 270	B	B	B	250	A 300	A	A	A
17	A	A	B	A	A	A	A	410	B	B	B	B	B	B	240	B	B	240	B	240	A	A	A	A
18	A	B	A	B	B	A	A	R	B	B	B	B	B	B	B	240	B 260	B	240	250	250	E B 300	280	A
19	A	A	A	B	B	A	315	R	B	B	B	B	B	B	B	B 250	230	220	230	230	250	260	270	A
20	A	A	A	A	350	340	A	A	275	240	240	220	230	220	240	225	225	220	B	B 240	H 220	235	230	B
21	A	A	A	A	A	A	290	280	220	250	240	220	H 210	230	215	250	225	210	225	240	215	210	230	250
22	290	290	300	300	300	285	275	240	250	240	230	225	225	230	230	R 250	230	225	220	215	225	235	A	A
23	B	275	A	A	A	A	A	380	250	215	240	240	230	210	210	210	250	230	240	265	A	A	A	A
24	A	A	A	A	B	A	A	A	320	B	260	270	B	B	250	250	245	250	250	A	R	A	A	A
25	A	A	A	B	B	A	A	A	B	260	240	230	225	230	240	240	225	R 250	245	B 245	230	220	230	250
26	C	330	B	A	A	A	A	B	350	280	240	220	240	230	210	225	240	245	230	230	B	A	A	A
27	A	A	A	A	A	B	B	A	A	B	B	B	B	B	B	B	250	245	240	260	330	A	370	B
28	A	A	A	A	270	A	390	275	245	240	250	215	240	220	225	230	230	230	B 250	240	240	255	E A 315	A
29	A	A	A	B	A	A	B	B	A	B	A	B	B	225	240	240	250	B	250	320	A	A	A	B
30	B	A	B	B	A	A	B	A	A	A	A	270	260	240	A	250	250	270	250	250	260	270	265	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	4	5	4	6	6	11	14	16	18	22	22	20	21	24	27	27	26	25	27	20	14	14	6
MED	325	282	300	U 362	330	342	340	300	262	250	240	230	225	230	230	240	230	230	240	240	235	248	272	272
UQ	338	310	380	A 450	350	380	392	350	285	260	250	245	240	240	240	250	245	245	240	250	255	265	290	295
LQ	308	272	300	325	300	340	312	280	250	240	230	225	220	220	222	230	225	215	220	222	228	235	250	250

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SEP. 1972 | H'F (KM)

IONOSPHERIC DATA

SEP. 1972 | H'ES (KM) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	110	110	120	105	100	100	100	G	B	B	G	G	G	G	G	140	G	B	B	B	C	110	140
2	130	100	110	110	100	G	G	G	100	G	G	130	G	B	B	100	120	100	130	B	G	110	120	105
3	110	140	105	100	B	130	105	110	G	G	G	G	100	100	100	100	100	100	100	100	B	110	150	110
4	120	110	125	130	110	120	120	160	100	100	105	G	100	100	100	100	100	100	100	110	110	105	100	100
5	100	110	110	100	105	105	120	160	G	180	105	G	G	100	G	G	G	105	100	B	B	B	100	110
6	110	110	110	105	100	100	100	100	110	100	120	G	G	150	150	175	100	100	100	100	150	B	G	120
7	110	110	130	115	115	120	125	105	B	160	110	G	G	G	G	100	B	B	B	B	B	B	B	B
8	B	C	125	B	B	130	B	140	190	G	G	G	G	G	G	G	B	B	130	100	125	120	110	110
9	100	100	110	100	105	110	100	105	100	100	G	105	115	B	B	C	B	B	B	B	B	B	100	110
10	110	100	100	110	110	105	105	100	110	110	C	120	110	110	G	110	105	110	G	100	100	160	110	100
11	130	105	105	110	110	110	100	C	100	C	120	120	140	B	B	B	B	B	130	130	125	120	110	110
12	100	110	115	110	115	115	100	B	B	B	B	B	B	B	130	B	B	B	B	B	B	B	B	130
13	140	110	125	120	110	115	110	110	100	110	G	B	B	B	B	B	G	150	C	C	C	C	B	120
14	125	100	100	100	115	120	110	B	B	B	110	B	G	B	G	G	B	G	G	G	160	110	100	100
15	130	140	B	110	110	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	130	105	105	110
16	110	110	100	100	110	110	150	B	B	B	B	B	B	B	B	B	B	B	B	B	150	105	100	155
17	110	100	B	130	120	120	120	G	100	B	B	B	B	B	B	B	B	B	B	B	105	100	130	110
18	105	175	115	B	B	110	110	140	B	B	B	B	B	B	B	B	B	B	B	B	B	B	105	110
19	110	120	110	B	100	100	110	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110
20	170	170	140	150	160	175	105	110	100	G	G	G	G	G	G	G	G	G	B	B	B	B	160	B
21	110	130	130	115	100	100	110	110	G	G	G	G	120	120	100	G	G	150	B	B	130	125	120	120
22	180	130	120	125	110	G	G	G	G	G	G	G	G	120	120	G	G	G	G	130	100	100	110	110
23	145	105	100	110	100	105	110	110	110	105	G	G	100	G	120	105	110	130	G	130	110	120	105	100
24	130	110	105	100	125	110	110	100	G	B	120	B	B	B	B	B	B	B	105	115	110	110	110	120
25	150	100	110	B	B	120	125	110	B	G	130	150	120	G	105	G	100	G	B	B	B	120	110	B
26	C	105	130	115	110	110	110	B	100	130	G	130	G	G	G	G	G	100	G	G	B	125	110	110
27	100	110	130	130	100	B	B	110	110	B	B	B	B	B	B	B	130	120	B	150	120	120	130	B
28	110	105	105	125	110	100	110	G	G	120	G	G	110	G	G	G	G	120	B	B	110	B	125	125
29	110	100	125	B	115	110	B	B	115	B	100	B	B	G	B	G	B	B	140	G	110	150	140	150
30	B	105	110	B	100	100	B	110	175	120	105	G	G	G	100	G	G	G	120	G	G	G	G	120
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	29	28	24	26	27	23	19	15	11	10	6	9	7	9	7	9	12	10	10	16	18	24	26
MED	110	110	110	110	110	110	110	110	100	110	110	125	110	110	105	100	105	108	112	112	115	115	110	110
UQ	130	110	125	122	115	120	115	115	110	125	120	130	120	120	120	108	120	125	130	130	130	120	122	120
LQ	110	105	105	102	100	102	105	105	100	102	105	120	100	100	100	100	100	100	100	100	110	105	105	110

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SEP. 1972 | H'ES (KM)

IONOSPHERIC DATA

SEP. 1972 | TYPES OF ES | 45 E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R 2	R 5	R 4	R 2	R 1	R 1	R 3	R 2									H 1						C 1	RL 11
2	R 3	R 4	R 3	R 3	R 2				C 1			H 1				L 1	LL 11	C 1	LL 11			R 4	R 6	R 4
3	R 3	RR 11	R 2	R 1		R 1	R 2	R 2					LH 11	L 1	L 2	R 1	L 1	R 1	L 1	L 1		L 1	R 1	R 6
4	R 1	R 1	R 3	RF 11	R 2	R 2	R 2	H 1	L 1	L 1	L 1		L 1	L 1	L 1	L 1	L 1	L 1	L 1	L 1	L 1	F 1	L 1	LR 11
5	FR 11	R 1	RR 11	R 2	R 3	R 4	R 2	HL 11		L 1	LR 11			R 1				L 1	L 1				L 1	R 1
6	R 3	RR 11	R 3	R 1	R 3	RS 11	R 1	R 2	R 2	R 1	R 1			H 1	H 1	H 1	L 1	L 1	L 1	L 1	R 1			N 1
7	RR 21	R 3	R 1	R 1	R 1	RL 11	R 1	R 1		HR 11	L 1					L 1								
8			R 1			R 1		H 1	H 1										R 1	L 1	R 1	RR 11	R 6	R 6
9	R 1	R 1	R 2	N 1	R 1	R 1	R 2	R 2	R 1	R 1		L 1	C 1										FR 11	R 2
10	R 5	RR 21	R 2	R 2	R 1	R 1	R 1	R 1	R 1	L 1		C 1	R 1	R 1		L 1	L 1	R 1		L 1	L 1	R 1	R 3	R 3
11	R 3	F 2	R 5	R 2	R 2	RL 11	RL 21		R 1		R 1	R 1	H 1						R 1	R 1	R 1	R 2	R 3	R 6
12	R 2	R 4	R 4	R 3	R 2	R 1	R 1								R 1									R 1
13	R 1	R 3	R 2	R 2	R 2	R 1	R 1	R 1	R 1	L 1								H 1						R 1
14	RF 12	F 2	R 2	R 2	A 2	R 3	R 1				R 1										RR 12	R 4	FR 11	R 1
15	RF 11	R 1		R 1	R 2	R 1															R 1	R 3	R 4	R 4
16	R 4	R 1	R 1	R 1	R 1	R 1	R 1														R 1	R 2	R 2	RR 12
17	R 2	R 1		R 1	R 2	R 1	R 1		R 1												R 4	R 4	RR 11	R 2
18	R 2	R 1	RR 11			R 1	R 1	R 1															FR 11	R 5
19	R 4	R 2	R 2		R 1	R 1	R 1	L 1																F 1
20	RR 11	RR 12	RR 11	N 1	RL 11	RL 11	R 2	R 1	R 2														R 1	
21	R 1	FRR 12	R 1	R 1	R 1	R 1	R 1	R 1					H 1	H 1	R 1			H 1			L 1	L 1	RL 11	R 1
22	FFF 11	RR 11	R 2	L 1	L 1									C 1	L 1					L 1	L 1	LR 11	R 1	R 2
23	R 1	R 2	R 3	R 1	R 3	R 2	R 3	R 2	R 1	R 1			R 2		H 1	R 1	R 1	R 1		R 1	R 3	R 1	R 1	R 2
24	RR 11	R 4	R 3	R 3	R 1	R 1	R 1	R 1			R 1								R 1	R 1	R 1	R 5	R 5	R 1
25	RRF 13	R 2	R 1			R 1	R 1	R 1			H 1	H 1	C 1		R 1		L 2					L 1	L 1	
26		R 2	L 1	R 2	R 1	R 2	R 1		R 1	LR 11		H 1						L 1				R 2	R 6	R 2
27	NF 11	R 1	RRR 11	L 1	R 1			R 1	L 1								LL 11	L 1		R 1	R 4	R 2	R 1	
28	R 3	R 3	R 4	R 1	L 1	R 1	R 1			LL 11			R 1					L 1			L 1		R 2	R 5
29	R 3	R 2	R 1		R 1	R 1			R 1		R 1								C 1		R 1	RR 11	RR 11	LLL 11
30		R 1	R 1		R 1	R 1		R 1	RR 11	R 1	R 1				L 1				L 1					R 3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

SEP. 1972 | TYPES OF ES

IONOSPHERIC DATA

OCT. 1972 | FOF2 (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	F	B	B	R	A	B	A	F	U F 62	F 61	F 69	F 75	75	77	75	71	68	55	55	45	39	F 27	F 14
2	A	A	A	A	A	40	F	45	F 50	F 56	F 55	F 60	R	J R 74	79	78	79	82	64	S	50	J F 42	F 31	A
3	A	A	A	A	R	R	U R 37	R	45	51	57	63	67	73	75	75	65	68	65	60	50	43	F 35	F 29
4	A	A	A	A	A	U R 39	B	U F 45	47	B	U R 58	F 65	68	R	I R 77	F 73	F 75	F 65	F 65	F 61	F 55	F 47	F 43	F 40
5	F 36	F 32	F 27	F 29	F 32	F 40	U R 48	F 57	62	72	78	88	I R 95	95	92	R 88	75	U R 70	65	J R 63	59	R 52	38	F 25
6	R	U F 21	F	F	F	F	F 42	F 49	F 56	F 62	69	72	77	77	77	73	72	69	61	52	S 50	43	F 37	F 28
7	A	A	F	U F 35	F	F	F	U F 52	F 57	F 65	76	77	82	U R 84	91	82	80	J R 80	65	R	F 50	J R 53	F 35	F 30
8	F 33	A	A	A	R	R	R	55	59	63	59	58	58	61	60	55	55	53	J R 51	J R 50	J R 48	F 33	A	F
9	F 23	F 21	F	F	F	40	46	F	F 64	F 72	F 78	74	74	74	75	72	72	63	60	58	R	R	A	A
10	A	A	A	A	R	A	A	56	60	F 57	F 61	66	69	F 65	68	67	68	62	F 60	R 68	F	A	A	A
11	A	A	A	F	B	R	B	R	R	R	B	B	R	B	B	B	57	B	F 44	40	F 29	A	A	A
12	A	A	R	R	F	R	R	U F 62	U F 55	J F 60	59	60	F 57	58	F 56	54	F 58	F 60	F 53	F 40	U F 22	A	A	A
13	B	A	A	R	R	B	R	F	B	B	F 50	50	V 54	R	B	F 61	60	F 55	58	R	F 31	35	A	A
14	A	B	A	F	B	A	B	A	B	R	R	B	B	B	B	B	F 55	48	B	B	F 34	A	F 24	A
15	A	A	A	F	J F 35	F 42	F 51	F 52	B	B	F 63	U F 61	F	59	60	64	65	60	F 60	51	47	J F 35	A	A
16	A	A	J F 34	U F 40	B	A	B	R	B	R	U F 50	U F 49	F 56	61	63	66	66	F 64	F 53	40	40	38	F 37	U F 23
17	F	A	F	B	R	50	F 53	60	60	63	64	R 68	70	R 68	69	69	67	66	60	58	51	43	41	38
18	F	F	A	R	R	R	U R 51	J R 59	65	64	B	65	71	B	B	B	F	F	B	B	F	R	U F 46	F 40
19	A	F	A	A	F 37	A	R	B	R	B	R	B	R	B	B	F 56	B	45	39	F 34	31	23	A	A
20	A	A	A	F 23	A	R	F	52	R	B	F	F	B	B	F	F 54	55	50	F 50	F 40	F 36	F	A	A
21	A	A	A	F 38	R	U F 51	F	F	B	F	B	B	B	U F 62	F 62	62	F 57	55	50	47	R	A	A	A
22	F 32	A	A	F	B	S 48	F 52	U F 60	F 69	F 71	B	R 67	63	F 67	66	B	B	60	F 57	50	R	A	A	A
23	A	A	41	R	A	F	R	B	A	F 51	F 59	F 60	U R 67	F 71	66	68	F 64	F 55	U F 40	F 39	F 39	F 35	F	A
24	A	F 36	F 43	B	F	A	R	A	F	F 53	F 59	62	F 63	F 62	F 59	60	63	62	60	50	41	F 31	A	A
25	A	A	R	R	R	52	F 70	F 78	F 78	F 79	F 74	F 74	70	71	72	77	I R 73	J F 63	B	R	F 56	F 53	S 53	F 52
26	U F 30	F	A	A	R	J S 63	B	R	R	B	B	F	F	R	U R 88	R	R	F 82	F 80	F 76	79	F 60	R	R
27	F 40	S	S	R	R	R	F 55	F 60	F 67	F 70	F 73	F 77	80	81	85	79	76	F 72	U F 72	U F 77	U S 64	U F 37	F 39	R
28	A	A	A	F	F 47	F	F	U F 48	R	A	R	R	B	B	B	B	58	F 58	F 57	58	F 53	F 50	F 49	F 49
29	J R 46	A	A	R	R	F 51	J F 60	F 72	F 74	F	B	B	U R 53	F 59	F 66	F	U F 83	F 53	F 40	F 42	52	57	50	A
30	A	F 44	F	B	R	53	R	B	R	B	B	B	F	U F 61	B	F	F 71	B	B	50	B	J R 50	R 46	45
31	F 42	F 37	A	B	B	B	B	B	B	62	62	61	60	60	62	63	65	59	B	58	B	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	6	4	5	4	12	11	17	16	18	20	22	21	22	23	23	27	28	26	25	24	21	16	12
MED	F 34	F 34	F 38	F 35	F 36	49	F 51	F 56	F 60	F 62	F 61	65	68	68	69	68	66	62	59	51	49	43	F 38	F 34
UQ	F 41	F 37	42	U F 38	F 42	52	F 54	F 60	F 66	F 70	71	72	74	74	77	75	72	68	64	58	52	50	46	F 42
LQ	F 31	F 21	F 30	F 29	F 34	40	47	F 52	56	F 57	F 58	60	60	F 61	62	62	59	55	F 51	42	38	F 35	F 35	F 26

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OCT. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | FOF1 (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	U L 410	L	L	L	L	L									
2								340	390	U L 410	L	L	R	400	L	L								
3								320	360	400	410	430	440	L	L	L								
4								360	390	B	B	420	440	B	B		L							
5							L	L 380	L 430	L	L	L 450	L 430	L	L	L								
6								360	400	L 420	L 440	L	L 430	L 420		L								
7							F 320	U L 370	L	L	420	420	L 440	U L 430	L 420	L	L							
8						F	R	L 360	360	400	400	390	400	410	U L 400	L	L							
9							L	L	400	L 410	L 410	L	L 430	L 420	410	L								
10									L	450	420	420	420	420	B	B	L							
11								A	A	R	B	B	390	B	B	B	L							
12							R	L	410	400	400	410	410	410	410	400	400	L						
13							R	R 350	B	B	410	410	410	B	B	R 400	B	L						
14								A	B	A	410	B	B	B	B	B	L	L						
15							F 340	360	B	B	B	L	R	R	420	420	L	B						
16							B	B	B	390	420	420	410	I B 420	420	L 410	400	L						
17							L 340	L	L	420	430	430	L 430	L 430	L	L	L	L						
18							350	360	390	I R 400	B	430	R 420	B	B	B	L							
19								B	A	B	A	B	390	B	B	400	B	L	L					
20							A	A	A	B	R 410	410	B	B	410	410	B	L	L	L				
21							R	A	B	R	B	B	B	U R 420	430	I B 420	410	L	L					
22						R	L	400	410	B	B	B	R 430	430	R 430	B	B	B	L					
23							R	B	A	400	410	420	B	B	B	440	I R 420	L 400						
24							A	A	A	R 430	I R 430	B	I R 440	450	L	L	L	L						
25						A	390	410	420	430	R 430	460	460	480	460	B	L	B						
26							B	A	A	B	B	R	B	B	B	B	B	L						
27							R	400	430	440	470	470	U L 480	L	L	L								
28							A	380	R	A	420	R 430	B	B	B	B	B	380						
29						A	390	400	B	A	B	B	430	F 460	450	420	410	F 400	370	L 350				
30							A	B	B	B	B	B	B	B	B	R	R 410	B	B					
31							B	B	B	B	B	B	B	B	R	L	B	B	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	15	12	15	17	16	20	14	11	9	6	3	1	1				
MED							345	360	400	410	420	420	430	420	420	410	410	400	370	350				
UQ							390	390	415	425	430	430	L 440	430	430	420	410	400						
LQ							F 340	360	390	400	410	415	410	420	410	400	400	390						

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OCT. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | FOE (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	B	B	B	B	B	A	U A 300	280	280	290	290	A 280	270	260	230	215	A 145	115	B	B	A	A
2	A	A	B	A	A	A	A	A	A 270	265	265	270	270	280	H 280	255	240	210	H 180	110	A	B	95	A
3	C	B	A	A	A	A	180	200	220	H 240	270	280	290	I A 280	270	A 260	250	215	H 170	H 150	B	95	B	C
4	A	A	A	B	B	A	B	A	A	B	B	290	295	B	B	270	B	220	U R 175	B	B	B	B	B
5	A	A	110	I C 110	100	H 130	160	210	250	250	290	290	300	A 300	I A 280	270	H 250	225	180	150	B	B	B	A
6	A	A	A	A	A	A	165	210	250	265	280	290	290	300	A 295	285	260	220	170	H 170	A	100	A	A
7	A	A	110	U S 120	130	A	A	215	240	250	270	290	290	280	280	260	250	225	175	140	A	95	U R 100	A
8	A	B	A	A	A	A	A	225	235	A	260	275	270	280	260	260	240	H 220	200	H 130	H 110	A	A	A
9	A	A	A	A	A	A 110	A 190	210	260	270	270	300	295	295	275	A 275	270	230	180	130	105	A	A	A
10	A	B	A	B	B	B	A	H 250	250	255	280	280	H 280	290	B	B	250	215	B	B	A	A	A	A
11	A	A	A	A	B	B	B	B	B	R	B	B	R 290	B	B	B	B	B	A	B	180	A	A	A
12	A	A	B	A	A	180	200	200	240	265	275	280	285	275	260	260	240	220	185	A	190	A	A	A
13	B	B	B	B	A	B	A	280	B	B	R 280	285	290	B	B	B	B	220	B	B	A	200	A	A
14	B	B	A	A	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	A	A	170	A
15	A	B	B	A	A	A	A	A	B	B	B	A	295	I R 295	290	290	B	B	205	B	B	A	A	B
16	A	A	A	A	B	B	B	B	B	A	290	290	295	I B 290	290	280	260	225	200	165	130	A	A	105
17	125	B	B	B	A	A	H 200	230	260	265	280	295	300	295	290	290	270	240	200	140	A 115	A	A	130
18	A	150	220	A	A	220	230	230	250	280	B	300	300	B	B	B	270	B	B	B	A	B	C	A
19	B	A	A	B	A 190	B	A	B	A	B	B	B	A	B	B	275	B	230	190	150	140	H 140	A	A
20	A	B	B	A	A	A	A	A	A	B	A	300	B	B	B	B	B	210	H 200	150	C	A	A	B
21	A	A	B	A	B	A	A	A	B	A	B	B	B	B	295	B	B	250	U R 230	B	A	A	B	B
22	A	A	B	A	B	A	H 230	240	270	B	B	B	B	R 305	300	B	B	B	210	150	A	A	A	A
23	A	B	B	B	A	190	B	B	A	300	310	325	B	B	B	B	B	B	A 210	300	F 260	A	A	A
24	A	A	H 280	B	A	A	B	A	A	A	320	B	300	I B 310	305	H 300	290	270	210	F 250	A	A 150	A	C
25	A	B	200	B	A	A	A	290	A	A	A	330	330	310	305	B	R	B	B	215	A	A	A	A
26	A	A	A	B	A	A	B	A	A	B	B	A	B	B	B	B	B	B	B	B	B	A	A	A
27	A	A	A	B	B	A	260	260	280	290	305	310	300	310	305	300	295	260	245	205	155	130	A	A
28	C	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	270	225	F 200	H 150	120	A	A
29	A	A	B	B	A	A	A	A	B	A	B	B	320	A	A	305	290	285	A	220	H 250	H 195	A 160	A
30	A	A	250	B	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	240
31	240	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	1	6	2	3	5	9	14	14	13	16	19	21	17	17	17	16	21	21	19	11	9	4	3
MED	182	150	210	115	130	180	200	228	250	265	280	290	295	295	290	275	255	225	200	150	150	130	130	130
UQ			250		160	190	230	250	270	280	290	300	300	300	295	290	270	240	210	202	185	150	165	185
LQ			110		115	130	180	210	240	255	270	282	290	280	275	260	245	220	180	140	122	100	98	118

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OCT. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1972 | FOES (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	28	26	B	B	JX 54	JX 50	B	JX 53	JX 32	G	G	G	G	30	28	28	G	18	15	15	EB 9	14	12	15
2	JX 28	38	32	JX 38	49	JX 39	JX 40	39	G	G	G	G	G	G	G	JX 26	G	23	G 15	JX 30	17	EB 10	G	34
3	31	JX 70	53	JX 33	29	30	G	G	G	JX 43	G	G	JX 31	JX 83	G	32	29	G	G	G 12	12	JX 12	EB 9	JC 18
4	JX 26	37	34	33	JX 35	30	B	31	41	B	EB 45	G	G	EB 58	EB 43	G	EB 32	G	G	EB 15	EB 15	EB 13	EB 10	12
5	14	18	24	26	15	JX 38	G	G	G	32	30	G 29	G 30	JX 39	JX 53	G	26	G	G	G	EB 12	12	EB 10	JX 23
6	16	JX 20	16	JX 23	15	JX 23	19	G	G	G	G	34	JX 30	G	31	G	G	G	G	G	14	G	11	10
7	26	39	25	G	JX 25	18	20	G	G	G	G	G	G	G	G	G	G	G	G	G	11	16	G	13
8	13	JX 38	JX 43	51	33	JX 27	31	G	G	29	G	JX 28	29	G	G	G	G	G	JX 33	G	G	11	JX 33	23
9	JX 18	21	JX 21	JX 17	18	JX 24	21	JX 28	G 26	G	G	G	33	G	G	JX 30	G	G	G	G	12	12	33	23
10	JX 41	32	39	32	33	41	56	37	G	G	G	G	G	G	EB 49	EB 38	G	G	EB 26	EB 32	19	33	36	33
11	JX 40	JX 37	44	40	B	36	B	41	40	29	B	B	G	B	B	B	EB 30	B	JX 26	33	20	27	33	35
12	35	JX 32	30	32	JX 41	JX 28	JX 28	G	G	30	45	31	30	31	G	28	28	G	G	30	24	36	JX 63	60
13	32	35	38	32	32	B	30	33	B	B	G	G	G	EB 48	B	EB 38	EB 50	G	EB 33	EB 23	20	JX 25	40	JX 51
14	JX 51	B	JX 79	JX 63	B	39	B	50	B	42	32	B	B	B	B	B	EB 31	EB 30	B	B	36	33	19	JX 30
15	31	32	JX 30	26	25	28	32	31	B	B	EB 49	32	G	G	G	G	EB 28	EB 50	G	EB 21	EB 16	JX 24	JX 34	JX 62
16	JX 57	JX 65	JX 88	33	B	JX 53	B	50	B	JX 37	G	G	G	EB 54	G	G	G	G	G	23	G	18	JX 32	17
17	21	JX 40	30	B	32	JX 25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	JX 22	JX 23	JX 23	JX 22
18	JX 24	27	34	31	37	32	G	G	G	G	B	G	G	B	B	B	G	EB 38	B	B	JX 21	JX 26	JX 21	JX 38
19	JX 51	JX 35	JX 62	JX 53	22	40	32	B	JX 45	B	45	B	32	B	B	G	B	G	G	25	G	G	28	34
20	40	43	35	JX 25	40	40	35	38	40	B	35	JX 74	B	B	EB 31	EB 32	EB 49	17	29	24	30	JX 35	JX 35	JX 40
21	JX 40	JX 60	JX 45	JX 35	42	JX 34	35	46	B	38	B	B	B	EB 37	G	EB 47	EB 27	G	G	EB 26	33	JX 33	36	45
22	35	38	33	JX 32	B	29	G	G	G	EB 48	B	EB 55	EB 28	G	G	B	B	EB 52	G	23	JX 33	JX 41	JX 63	JX 38
23	JX 73	48	31	25	47	26	29	B	56	JX 66	G	G	EB 57	EB 49	EB 49	EB 33	EB 33	EB 28	JX 31	33	35	JX 34	32	JX 78
24	JX 39	39	35	B	30	55	49	JX 53	JX 50	44	G	EB 48	G	EB 37	34	G	G	G	G	G	JX 34	21	32	34
25	JX 35	JX 53	32	40	40	37	33	G	JX 31	31	32	G	G	G	G	EB 59	G	EB 46	B	31	40	26	JX 24	JX 18
26	JX 26	28	39	JX 40	35	45	B	JX 55	44	B	B	33	EB 55	EB 68	EB 50	EB 50	EB 70	EB 30	EB 38	EB 27	EB 26	16	32	JX 33
27	JX 39	JX 35	JX 61	40	35	40	35	29	JX 63	G	G	G	32	G	G	G	G	G	G	27	G	27	JX 24	33
28	47	JX 51	JX 50	JX 38	JX 35	30	JX 56	JX 63	30	JX 53	40	35	B	B	B	B	EB 48	G	G	29	JX 30	JX 24	JX 23	19
29	JX 25	JX 50	52	35	41	49	33	JX 45	EB 56	JX 50	B	B	G	35	33	G	G	32	JX 29	G	G	G	24	52
30	54	JX 30	JX 118	B	40	38	JX 35	B	57	B	B	B	EB 47	EB 47	B	EB 37	EB 34	B	B	EB 46	B	EB 32	EB 30	G
31	G	30	41	B	B	B	B	B	B	EB 54	EB 52	EB 49	EB 49	EB 48	EB 35	EB 31	EB 49	EB 55	B	EB 55	B	B	B	JX 103
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	30	26	26	29	24	27	25	24	24	25	27	25	24	26	29	29	26	29	29	30	30	31
MED	JX 32	37	36	33	35	36	32	31	U 28	30	G	G	G	EG 31	G	EG 27	EG 26	G	G	EG 23	18	23	28	33
UQ	JX 40	JX 43	JX 50	JX 40	40	40	35	46	42	42	U 34	U 31	31	EB 48		EB 33	EB 32	EB 30	U 20	U 28	30	JX 32	33	39
LQ	26	30	31	26	29	28	20	G	G	G	G	G	G	G	G	G	G	G	G	G	EG 12	12	19	18

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OCT. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | F-MIN (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	9	9	B	B	21	25	B	18	10	15	15	19	13	14	15	12	13	12	10	9	9	9	10	9
2	9	10	25	12	13	10	11	11	21	15	11	10	13	10	10	11	9	11	10	10	9	10	9	9
3	E C 14	14	12	10	10	10	12	10	10	10	10	10	10	10	12	11	10	10	10	9	10	9	9	E C 20
4	9	10	9	22	20	12	B	10	12	B	45	21	16	58	43	9	32	19	15	15	15	13	10	10
5	10	9	9	E C 12	9	10	10	10	10	10	10	14	12	10	10	10	12	16	15	14	12	10	10	9
6	9	9	9	9	9	9	10	11	10	10	10	10	10	10	11	10	10	10	9	9	9	9	9	8
7	9	10	9	9	9	9	9	10	11	10	10	10	9	10	10	10	9	13	13	13	9	9	9	9
8	9	16	11	11	10	12	15	9	10	9	9	10	10	10	10	10	9	9	9	9	9	9	9	9
9	9	9	9	9	9	9	9	9	9	10	15	11	10	10	10	10	10	9	9	9	9	8	10	9
10	11	14	11	21	19	22	13	10	9	10	10	10	10	10	49	38	18	15	26	32	9	9	E C 11	10
11	10	9	10	11	B	20	B	23	28	15	B	B	23	B	B	B	30	B	13	20	10	9	9	8
12	10	10	16	8	10	14	12	9	15	10	13	11	12	11	11	10	15	11	15	11	11	9	11	10
13	27	21	27	20	14	B	18	22	B	B	25	24	20	48	B	38	50	15	33	23	13	10	11	10
14	21	B	9	10	B	27	B	20	B	30	25	B	B	B	B	B	31	30	B	B	9	9	9	8
15	10	26	19	16	16	10	E C 20	14	B	B	49	22	26	24	17	14	28	50	16	21	16	9	9	24
16	9	12	13	16	B	31	B	45	B	15	15	15	21	54	20	19	15	14	13	16	10	11	10	9
17	9	27	15	B	15	13	10	10	10	11	10	14	14	15	13	12	10	14	9	9	8	9	8	9
18	10	9	10	11	16	18	13	10	10	15	B	25	25	B	B	B	22	38	B	B	10	19	E C 13	13
19	15	9	15	22	10	30	14	B	14	B	37	B	22	B	B	18	B	18	12	11	9	8	8	11
20	12	18	21	8	15	14	15	15	22	B	19	15	B	B	31	32	49	15	10	9	E C 20	10	11	20
21	9	11	20	10	30	10	14	15	B	20	B	B	B	37	24	47	27	E C 20	21	26	11	9	19	20
22	14	13	21	10	B	14	13	12	11	48	B	55	38	22	18	B	B	52	14	13	10	10	10	13
23	9	20	18	19	9	11	22	B	21	19	13	25	57	49	49	33	33	28	11	11	10	9	9	10
24	15	10	16	B	25	25	29	26	19	15	30	48	29	37	15	20	21	17	10	11	10	10	9	E C 20
25	9	22	10	27	20	20	10	10	10	9	24	20	19	17	25	59	24	46	B	18	14	11	10	9
26	9	10	14	21	15	14	B	15	22	B	B	26	55	68	50	50	70	30	38	27	26	12	E C 11	9
27	7	7	7	30	26	22	10	10	9	10	10	10	14	13	10	10	10	10	11	10	14	9	9	9
28	E C 23	10	10	10	10	10	12	15	13	20	19	26	B	B	B	B	48	19	15	10	11	10	9	9
29	9	15	25	26	14	13	13	15	56	21	B	B	39	20	26	25	14	14	9	9	10	9	9	12
30	8	9	20	B	23	20	22	B	45	B	B	B	47	47	B	37	34	B	B	46	B	32	30	23
31	20	20	26	B	B	B	B	B	B	54	52	49	49	48	35	31	49	55	B	55	B	B	B	31
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	9	10	14	16	15	14	14	14	14	15	19	21	21	24	24	20	22	16	13	13	10	9	10	10
UQ	12	17	20	24	24	22	26	21	36	51	50	48	43	56	50	42	34	30	24	22	13	10	10	12
LQ	9	9	10	10	10	10	12	10	10	10	10	11	12	10	12	10	11	12	10	10	9	9	9	9

OCT. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

OCT. 1972 | M(3000)F2 (0.01) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	F	B	B	R	A	B	A	F	U F 275	F 260	F 290	F 295	305	305	305	310	330	325	325	305	320	F 290	F 285
2	A	A	A	A	A	250	F	250	F 250	F 275	F 290	F 300	R	J R 305	305	310	310	330	345	S	305	J F 310	F 325	A
3	A	A	A	A	R	R	U R 250	R	230	255	260	265	285	275	320	320	310	335	325	320	325	315	F 305	F 305
4	A	A	A	A	A	R	B	F	240	B	U R 255	F 275	265	R	R	F 295	F 310	F 325	F 325	F 330	F 310	F 315	F 300	F 300
5	F 300	F 280	F 280	F 265	F 260	F 260	R	F 265	255	265	260	275	I R 290	300	310	R 325	340	R	340	J R 315	325	R 325	310	F 290
6	R	U F 265	F	F	F	F	F 275	F 260	F 260	F 275	285	300	290	300	305	320	320	340	345	315	S 330	325	F 325	F 285
7	A	A	F	U F 255	F	F	F	U F 270	F 255	F 270	285	290	290	U R 295	285	305	315	J R 325	340	R	F 320	J R 310	F 315	F 275
8	F 280	A	A	A	R	R	R	250	240	255	270	260	270	270	290	290	310	320	J R 315	J R 330	J R 315	F 310	A	F
9	F 305	F 270	F	F	F	275	270	F	F 265	F 270	F 285	285	300	300	320	315	335	340	335	320	R	R	A	A
10	A	A	A	A	R	A	A	280	270	F 260	F 260	270	275	F 275	295	295	310	305	F 310	R 340	F	A	A	A
11	A	A	A	F	B	R	B	R	R	R	B	B	R	B	B	B	290	B	F 275	280	F 275	A	A	A
12	A	A	R	R	F	R	R	U F 275	U F 265	J F 270	275	265	F 265	275	F 295	295	F 265	F 275	F 310	F 300	U F 275	A	A	A
13	B	A	A	R	R	B	R	F	B	B	F 270	260	V 265	R	B	F 290	315	F 300	310	R	F 295	315	A	A
14	A	B	A	F	B	A	B	A	B	R	R	B	B	B	B	B	F 295	270	B	B	F 295	A	F 290	A
15	A	A	A	F	J F 255	F 260	F 265	F 255	B	B	F 285	U F 260	F	290	270	285	325	320	F 310	325	320	J F 300	A	A
16	A	A	J F 265	U F 290	B	A	B	R	B	R	U F 270	U F 240	F 265	290	285	290	275	F 295	F 315	325	325	280	F 285	U F 275
17	F	A	F	B	R	280	F 285	265	265	265	270	R 285	290	R 295	295	320	330	320	325	330	335	320	315	275
18	F	F	A	R	R	R	U R 260	J R 265	260	255	B	260	245	B	B	B	F	F	B	B	F	R	U F 285	F 270
19	A	F	A	A	F 295	A	R	B	R	B	R	B	R	B	B	F 255	B	300	270	F 325	285	280	A	A
20	A	A	A	F 260	A	R	F	235	R	B	F	F	R	B	F	F 270	280	285	F 290	F 290	F 280	F	A	A
21	A	A	A	F 250	R	F	F	F	B	F	B	B	B	U F 275	F 270	285	F 265	290	280	310	R	A	A	A
22	F 280	A	A	F	B	S 255	F 255	F	F 255	F 250	B	R 265	255	F 270	250	B	B	295	F 285	310	R	A	A	A
23	A	A	265	R	A	F	R	B	A	F 255	F 235	F 250	U R 250	F 255	270	280	F 275	F 265	U F 295	F 260	F 295	F 290	F	A
24	A	F 240	F 300	B	F	B	R	A	F	F 245	F 260	275	F 265	F 275	F 270	265	290	300	295	280	280	F 290	A	A
25	A	A	R	R	R	260	F 245	F 245	F 250	F 260	F 255	F 255	255	260	270	270	I R 275	J F 300	B	R	F 305	F 305	S 285	F 270
26	U F 260	F	A	A	R	J S 255	B	R	R	B	B	F	F	R	U R 275	R	R	F 290	F 300	F 310	305	F 300	R	R
27	F 260	S	S	R	R	R	F 235	F 250	F 240	F 255	F 255	F 255	315	280	295	290	295	F 315	F	U F 265	U S 315	U F 295	F 280	R
28	A	A	A	F	F 265	F	F	U F 210	R	A	R	R	B	B	B	B	280	F 280	F 300	F 295	F 310	F 290	F 285	F 280
29	J R 275	A	A	R	R	F 245	J F 245	F 280	F 245	F	B	B	R	F 255	F 250	F	F	F 260	F 250	F 250	325	290	300	A
30	A	F 285	F	B	R	260	R	B	R	B	B	B	F	U F 230	B	F	F 240	B	B	300	B	J R 290	R 300	285
31	F 265	F 285	A	B	B	B	B	B	B	260	245	255	255	255	275	290	315	305	B	300	B	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	6	4	5	4	10	10	15	16	18	20	22	20	22	22	23	26	27	25	25	24	21	16	12
MED	F 278	F 275	F 272	F 260	F 262	260	F 258	F 260	F 255	F 260	F 265	265	268	275	288	290	310	300	310	310	308	305	F 300	F 282
UQ	F 290	F 285	F 290	F 265	F 280	260	270	F 268	262	F 270	280	285	290	295	305	308	315	322	325	325	322	315	F 312	F 288
LQ	F 262	F 265	265	255	F 258	255	245	F 250	F 242	F 255	F 258	260	260	F 270	270	285	280	F 290	F 295	295	295	F 290	F 285	F 275

The Radio Research Laboratories, Japan

OCT. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1972 | H'F2 (KM) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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									360	280	L	L	290	L	260									
2								450	445	350	L	320	R	280	270	L								
3								475	520	R	400	350	340	L	255	250								
4								450	A 500	B	410	340	360	B 380	280		250							
5							370	370	340	L	L	300	255	250	250	250								
6								400	400	350	310	300	290	270		250								
7							400	350	L	L	300	300	300	290	275	250	250							
8						R	380	410	R 425	400	370	410	380	350	300	L	L							
9							L	L	350	330	300	L	300	290	270	L								
10									L	420	390	360	320	330	325	300	270							
11								R	R	R	B	B	R	B	B	B	325							
12							R	350	380	365	350	375	380	360	325	375	360	310						
13							R	R 440	B	B	400	450	420	E B 425	B	340	B 300	280						
14								A	B	A	R	B	B	B	B	B	L	350						
15							400	390	B	B	B 350	R	300	340	350	320	255	B 280						
16							B	B	B	460	430	R 500	410	B 370	340	320	330	L						
17							320	L	L	380	355	330	300	290	L	280	255	240						
18							400	370	385	420	B	380	390	B	B	B	270							
19								B	A	B	R	B	R	B	B	R 430	B	L	L					
20							R	R 490	R	B	R	540	B	B	330	390	E B 370	L	L	L				
21							450	450	B	R	B	B	B	380	370	340	375	L	340					
22						400	L	395	400	390	B	B 390	420	375	400	B	B	B	300					
23							R	B	A	555	470	460	B	400	380	345	340	370						
24							A	A	A	480	450	375	390	375	L	L	300	280						
25						450	400	390	360	370	375	380	380	405	400	B 360	340	295						
26							B	A	400	B	B	375	350	B 360	310	330	B	280						
27							R	410	410	400	380	380	325	L	L	250								
28							A	610	R	A	R	R	B	B	B	B	B 360	340						
29						495	430	410	405	R 455	B	B	480	470	420	395	380	440	R	L				
30							R	B	A	B	B	B	520	490	B	410	450	B	B					
31							B	B	B	B 420	B 450	425	425	420	350	325	280	B	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	9	18	15	17	17	21	23	22	20	20	19	11	2					
MED						450	400	410	400	400	380	375	360	362	325	328	312	295	320					
UQ						472	400	450	418	420	410	410	400	390	360	368	355	345						
LQ						425	380	390	370	365	350	340	300	290	272	265	270	280						

OCT. 1972 | H'F2 (KM)

IONOSPHERIC DATA

OCT. 1972 | H'F (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	B	B	340	A	B	A	300	250	235	240	230	225	220	215 H	240	240	230	230	225	230	245	380
2	A	A	B	A	A	E A 425	400	260	260	250	210 H	225	R	205	210	230	225	230	215	210	215	240	240	A
3	A	A	A	A	A	A	340	245	250	210 H	230	230	210	230	255	225	220	225	225	220	205	210	240	C
4	A	A	A	B	B	A	B	A	A	B	B	250	220	B	B	230	250 B	240	230	225	225	230	245	245
5	260	295	320	325	320	305	255	240	230	230	225	225	200	225	220	230	215	230	220	225	225	220	230	280
6	A	370	375	350	320	280	250	240	240	240 H	230 H	225	220	210	240	210	240	230	220	220	225	220	230	245
7	A	A	A	350	340	305	240 H	220	240	220 H	225 H	205	210	250	220	240	220	240	220	220	220	215	240	280
8	280	A	A	A	A	230	A	290	240	230	230	205	225	210	240	220	230	230	230	240	225	240	A	A
9	350	345	360 A	350	300	260	260	230	200 H	210	210 H	200 H	210	225	240	220	230 H	240	230	220	220	210	A	A
10	A	A	A	A	A	A	A	310	250	210 H	230 H	215	225	210	B	B	230	230 H	250	230	260	A	A	A
11	A	A	A	310	B	A	B	A	A	R	B	B	250	B	B	B	250 B	B	305	A	325	A	A	A
12	A	A	A	A	A	300	250	240	230	225	230	220	220	210	220	230	230	240	250	A	430 F	A	A	A
13	B	B	B	B	330	B	A	A	B	B	260	240	240	B	B	B	B	230	260	270	320	475	A	A
14	B	B	A	355	B	A	B	A	B	A	280	B	B	B	B	B	250 B	E B 270	B	B	330	A	315	A
15	A	B	A	A	375	405 A	290	280	B	B	B	240	225	230	245	250	240	B	250	240	230	270	A	B
16	A	A	A	350	B	B	B	B	B	250	210 H	230	225	I B 250	230	240	235	230	255	250	240	260	250	320
17	A	B	A	B	A	340	250	220	200 H	220 H	220	245	230	220	225	225	230	230	240	225	225	230	230	270
18	340	470	A	A	A	A	300	240	225	230	B	240	225	B	B	B	240	250 B	B	B	240	280	280	350
19	A	A	A	A	250	B	330	B	A	B	B	B	270	B	B	260	B	245 H	305	250	320	390	A	A
20	A	A	A	A	A	A	A	A	A	B	250	220	B	B	240	240	B	240	240	280	335	A	A	A
21	A	A	A	420	A	370	A	A	B	A	B	B	B	B	245	I B 240	240	250	255	320	A	A	A	A
22	A	A	A	A	B	A	255	250	230	B	B	B	B 255	225	235	B	B	B	255	260	A	A	A	A
23	A	A	410	R	A	300	R	B	A	230	270	240	B	B	B	B 240	B 250	B 210	295	420	310	300	A	A
24	A	445	325	B	R	A	A	A	A	270	R	B	230	B 250	230	225	250	250	250	300	360	320	A	A
25	A	A	300	A	A	A	A	255	250	H 230	230	H 220	230	235	H 225	B	B 250	B	B	240	245	240	265	300
26	370	A	A	A	A	A	B	A	A	B	B	R	B	B	B	B	B	240	255	255	250	250	A	A
27	A	A 410	A	A	A	A	A 270	260	245	230	225	220	H 205	210	210	210	210	240	245	240	240	300	305	A
28	A	A	A 320	A	375	A	A	A	R	A	275	250	B	B	B	B	B	245	270	250	250	260	275	270
29	300	A	A	A	A	A	A	A	B	A	B	B	275	250	250	240	230	280	A	330	250	275	270	A
30	A	310	A	B	A	A	A	B	B	B	B	B	B	B	B	B 260	285	B	B	B	B	285	B 280	320
31	345	A 350	A	B	B	B	B	B	B	B	B	B	B	B	230	B 230	B	B	B	B	B	B	B	R
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	8	7	8	9	11	13	15	15	17	19	21	22	18	20	22	24	25	25	25	27	23	16	11
MED	340	360	325	350	330	302	260	245	240	230	230	225	225	225	230	230	238	240	250	240	240	250	248	280
UQ	348	428	368	352	340	338	300	260	250	240	242	240	230	235	240	240	250	242	255	260	315	282	278	320
LQ	290	328	320	338	320	290	250	240	230	220 H	225	220	220	210	220	225	230	230	230	225	225	230	240	270

The Radio Research Laboratories, Japan

OCT. 1972 | H'F (KM)

IONOSPHERIC DATA

OCT. 1972 | H'ES (KM) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	120	120	B	B	170	100	B	105	120	G	G	G	G	120	100	105	G	100	105	105	B	130	150	150
2	110	120	120	110	100	110	115	105	G	G	G	G	G	G	G	110	G	105	105	140	100	B	G	120
3	120	115	100	105	110	110	G	G	G	110	G	G	125	105	G	110	120	G	G	100	130	125	B	C
4	110	110	105	120	100	110	B	105	105	B	B	G	G	B	B	G	B	G	G	B	B	B	B	130
5	120	140	150	100	100	150	G	G	G	100	100	110	110	105	100	G	100	G	G	G	B	120	B	190
6	180	170	130	120	115	120	160	G	G	G	G	120	105	G	105	G	G	G	G	G	100	G	120	110
7	125	110	140	G	130	120	120	G	G	G	G	G	G	G	G	G	G	G	G	G	110	120	G	120
8	120	130	100	100	100	110	120	G	G	105	G	105	105	G	G	G	G	G	140	G	G	180	110	120
9	125	130	120	130	120	120	110	110	110	G	G	G	105	G	G	110	G	G	G	G	150	105	105	110
10	110	110	100	125	120	120	110	120	G	G	G	G	G	G	B	B	G	G	B	B	150	120	115	110
11	110	100	100	110	B	120	B	125	110	110	B	B	G	B	B	B	B	B	120	120	140	110	110	110
12	110	120	125	110	180	130	110	G	G	130	105	120	130	120	G	130	160	G	G	105	200	105	110	105
13	130	120	130	120	120	B	110	140	B	B	G	G	G	B	B	B	B	G	B	B	150	120	110	110
14	100	B	100	180	B	125	B	100	B	110	110	B	B	B	B	B	B	B	B	B	105	110	130	105
15	110	125	110	130	125	100	110	110	B	B	B	120	G	G	G	G	B	B	G	B	B	125	105	180
16	160	120	140	110	B	130	B	120	B	105	G	G	G	B	G	G	G	G	G	155	G	130	120	130
17	130	150	125	B	100	110	G	G	G	G	G	G	G	G	G	G	G	G	G	G	100	100	100	100
18	160	140	140	110	120	120	G	G	G	G	B	G	G	B	B	B	G	B	B	B	130	120	160	125
19	115	105	100	100	110	110	110	B	110	B	130	B	120	B	B	G	B	G	G	130	G	G	105	120
20	105	110	110	110	110	110	110	115	120	B	110	100	B	B	B	B	B	175	150	150	135	110	110	120
21	150	105	105	110	125	100	115	100	B	100	B	B	B	B	G	B	B	G	G	B	110	105	125	105
22	120	115	130	100	B	110	G	G	G	B	B	B	B	G	G	B	B	B	G	140	110	120	140	100
23	100	110	130	120	130	140	120	B	100	130	G	G	B	B	B	B	B	B	150	170	105	160	110	175
24	105	125	145	B	120	105	110	100	105	105	G	B	G	B	125	G	G	G	G	G	120	150	110	140
25	150	100	110	110	120	105	105	G	100	105	110	G	G	G	G	B	G	B	B	130	130	120	125	125
26	110	120	110	160	115	110	B	105	110	B	B	110	B	B	B	B	B	B	B	B	B	145	110	100
27	100	100	175	110	110	110	130	110	125	G	G	G	115	G	G	G	G	G	G	170	G	140	125	120
28	100	110	125	105	105	105	105	105	105	100	110	120	B	B	B	B	B	G	G	145	140	120	120	110
29	120	130	105	130	105	105	120	105	B	100	B	B	G	110	120	G	G	150	100	G	G	G	125	110
30	120	100	105	B	100	115	120	B	125	B	B	B	B	B	B	B	B	B	B	B	B	B	B	G
31	G	150	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	125
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	25	26	29	19	17	13	13	7	8	8	5	5	5	3	4	7	13	19	24	24	29
MED	120	120	120	110	115	110	110	105	110	105	110	115	112	110	105	110	120	128	120	140	130	120	112	120
UQ	125	130	130	120	120	120	120	115	120	110	110	120	122	120	120	110	140	162	145	150	140	130	125	125
LQ	110	110	105	110	105	110	110	105	105	100	108	108	105	105	100	110	110	102	105	120	108	110	110	110

The Radio Research Laboratories, Japan

OCT. 1972 | H'ES (KM)

IONOSPHERIC DATA

OCT. 1972 | TYPES OF ES | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	R 4	R 3			R 1	R 1		R 1	R 1					H 1	L 1	L 1		L 1	L 1	L 1		L 1	R 1	R 1
2	RL 31	R 2	R 1	R 2	R 2	R 2	R 1	R 2								L 1		R 1	L 1	L 1	L 1			R 2
3	R 5	R 2	R 2	R 2	R 2	R 2				L 1			H 1	L 1		R 1	H 1			L 1	L 1	H 1		R 1
4	R 2	R 3	R 2	R 1	R 1	R 1		R 1	R 1															H 1
5	R 1	RR 11	R 1	LR 11	L 1	H 1				R 1	R 1	L 1	L 1	L 2	L 3		L 1					L 1		R 1
6	R 1	R 1	R 1	L 1	R 1	LR 11	H 1					H 1	R 1		R 1						L 2		L 1	L 1
7	R 1	R 2	R 1		L 1	R 1	R 1														L 1	H 1		L 1
8	R 1	R 1	R 2	R 1	R 2	R 1	R 2			R 1		R 1	R 1						L 1			R 1	R 4	R 3
9	R 1	R 1	R 1	R 1	R 1	C 1	R 1	L 1	L 1				R 1			LL 11					LL 11	LR 11	R 2	R 2
10	R 2	R 1	R 1	R 1	L 1	R 1	R 1	R 1													R 1	R 3	R 5	R 5
11	R 4	R 3	R 2	R 1		L 1		R 1	L 1	L 1									R 1	R 1	R 1	R 2	R 2	R 6
12	R 4	R 4	R 2	R 2	RR 11	H 1	R 1			H 1	LH 11	H 1	H 1	H 1		R 1	H 1			R 2	H 1	R 4	R 1	R 2
13	R 1	R 1	R 1	R 1	R 2		R 1	R 1													R 1	R 1	R 2	R 1
14	LR 11		L 3	LR 12		R 1		R 1		R 1	R 1										R 1	R 3	R 1	R 2
15	R 2	R 1	R 1	R 1	R 1	R 1	R 1	R 1				R 1										R 2	R 3	RR 11
16	RR 12	R 2	LR 11	R 1		L 1		L 1		R 1										R 1		R 1	R 2	H 3
17	H 2	R 1	R 2		R 1	R 1															L 1	L 1	L 1	L 1
18	RR 11	R 1	RL 11	R 1	L 1	R 1															LL 11	RR 11	R 1	R 1
19	R 2	R 3	R 2	L 1	R 2	R 1	R 1		R 2		R 1		R 1							H 2			R 2	R 1
20	R 2	R 1	R 1	R 2	R 1	R 1	R 1	RL 11	L 1		R 1	L 1						H 1	H 1	RL 11	R 2	R 1	R 2	R 1
21	RR 12	RR 11	R 1	R 2	R 1	RL 11	R 1	R 1		R 1											R 1	R 2	R 1	R 1
22	R 2	R 2	LL 11	R 1		R 1														R 1	L 1	R 2	LR 11	R 1
23	R 2	R 1	R 1	L 1	RLR 11	R 1	R 1		R 1	LLR 11									H 1	R 1	R 1	LR 12	R 5	RR 11
24	R 1	RL 11	H 1		L 1	R 1	R 1	R 1	L 1	R 1					H 1						R 2	R 1	R 3	R 2
25	RR 12	R 1	R 1	R 1	R 1	R 1	R 2		R 2	R 2	R 1									H 1	R 1	R 1	R 1	RL 11
26	R 2	R 2	R 2	R 1	R 1	R 2		L 1	R 1			R 1										R 1	R 3	R 2
27	R 2	R 2	RR 11	R 1	R 1	R 1	R 1	R 1	L 1				H 1							R 1		R 1	R 1	R 6
28	R 1	R 2	RR 11	R 3	R 1	R 2	R 2	R 2	LS 11	R 1	R 1	R 1								H 1	H 2	R 1	L 2	L 1
29	R 2	R 1	R 1	R 1	R 1	R 2	R 1	R 1		R 1				R 1	L 1			H 1	R 2				C 1	R 2
30	R 1	R 2	LLH 11		L 1	R 1	R 1		R 1															
31		R 1	R 1																					LR 11
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

OCT. 1972 | TYPES OF ES

IONOSPHERIC DATA

NOV. 1972 | FOF2 (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	R	A	R	J F 44	B	A	B	R	B	B	R	R	R	R	R	R	E G 34	35	34	F 33	34	F 29	F 26
2	A	A	U F 41	U F 37	F	F 39	A	B	A	F 45	R	E G 40	E G 40	F 45	F 42	F 44	U R 44	47	F 45	45	A	A	F	B
3	A	B	A	R	F	R	A	F	U F 60	B	53	F 53	F 57	F 59	F 56	F 52	F 52	F 50	F 50	F 50	F 50	45	F 42	F 40
4	F 31	F	F 39	B	A	F	U F 55	F 65	J F 69	J F 69	F 67	F 67	67	69	70	F 69	F 64	J F 59	F 53	F 55	51	F 40	F 38	F
5	A	A	A	R	F 36	F 39	R 45	F 47	F 50	58	60	59	60	64	63	67	64	F 60	54	56	51	51	55	53
6	50	U F 31	A	F 40	F 40	F 44	A	F	F 52	J F 63	F 65	68	64	64	69	68	65	61	60	58	F 53	51	U F 41	F 32
7	U F 28	U F 31	R	J F 50	J F 55	F	F 60	F 64	J F 69	F 73	R	F	F	B	B	U F 85	U F 75	F 62	F 58	F 55	F 50	F 50	U R 43	R
8	R	A	R	R	R	R	U F 55	F	F	F	F 71	U F 72	F 71	F 68	68	62	58	53	51	50	44	50	F 32	F
9	F	F	A	R	U F 50	J F 63	F 66	J F 78	U F 80	F	U F 70	F 72	72	72	69	F 65	F 65	F 61	F 59	F 55	F 50	F 51	U F 35	A
10	A	F 40	F 43	R	F	F 52	F 65	J F 71	F 77	U F 79	F	U F 71	F 66	67	F 67	65	61	60	58	57	47	50	F 50	50
11	F 55	F	R	U F 44	U R 52	U F 56	R 50	F	F	F	U F 70	U F 64	F 66	F 66	F 64	59	57	58	54	F 50	44	F 45	I A 35	U F 32
12	38	F 40	40	R	U R 47	F 46	F	F 55	F	U F 69	U F 72	J F 69	F 79	F 80	U F 67	F 60	63	64	59	F 57	51	52	48	45
13	47	42	U F 43	I A 46	F 51	I R 50	F 54	F 60	F 69	F 73	F 77	F 75	F 71	61	61	F 56	55	52	50	50	52	55	52	54
14	51	F	R 53	U F 50	F	F 52	U F 62	F	F 85	F 86	F 81	U F 73	F 72	67	63	60	60	60	F 53	54	55	55	F 50	F 45
15	F 44	S	R	S	F 50	S 60	F 75	F 81	F 76	U F 75	F	F	F 67	F 72	F 67	F 67	F 74	J F 68	F 54	R	A	F 49	A	A
16	A	F	F 40	B	R	F	F	R	B	E G 40	E G 40	F 46	B	B	63	U F 67	52	F	R	42	F 40	F 46	A	A
17	A	A	R	A	R	U F 46	B	F 56	U F 66	F	J F 64	F 63	F 63	F 66	70	U F 73	F 63	F 63	F 48	F	F 39	41	45	F 33
18	A	A	B	F	F	R	R	F	F	J F 63	F 62	R 61	66	F 61	F 64	F 60	F 61	F 56	F 52	F 41	F 39	F 41	F 36	F 40
19	40	F	F	R	F	49	F 58	48	R	F 56	F	F	U R 60	U R 57	J F 60	F 65	F 63	F 61	F 57	F 50	F 51	F 47	F 47	U F 42
20	A	R	41	B	R	B	R	A	A	F	U F 56	F 60	U F 64	B	B	F	F 59	C	C	R	F 41	44	A	A
21	F 40	45	A	F	B	R	R	R	R	F 51	F 51	51	55	F 60	57	F 57	F 59	F 56	F 60	53	F 50	F 50	49	F 41
22	36	42	U F 48	R	R	U F 47	F 48	J F 61	J F 67	F 75	71	70	70	F 70	F 71	F 71	72	F 58	R	F	F	A	A	F 45
23	F	F	A	J F 45	U F 45	A	F 51	U R 48	F 54	65	64	F 63	58	56	54	F 58	F 64	60	50	R	F	48	51	F 53
24	F 44	R	A	F	F	F	E G 39	F 44	F 51	F 56	F 63	F 66	F 70	69	69	F 69	F 66	F 62	F 59	F 55	55	49	50	F 50
25	F 42	46	52	J F 46	F	F 56	F	F 58	F	F	F	F 64	69	F 71	76	78	J F 77	F 68	F 66	F 60	60	55	U F 41	40
26	41	F	J F 54	F	U F 47	R	R	F	F	U F 62	F 57	F 60	F 61	F 67	F 70	F 72	F 74	F 59	F 54	F 54	F 50	F 45	F 44	F 44
27	45	47	R 47	F 47	A	A	F 55	U F 61	F 71	F 78	F 80	F 75	F 74	F 75	67	F 60	59	56	50	F 40	F 40	A	F 40	F 41
28	F 40	R	A	U F 52	B	A	F 50	F 60	F 67	F 73	76	76	73	63	64	61	59	58	F 50	R	R	46	A	A
29	A	F	F 40	F	F 42	A	F 42	R	B	F	U F 62	F 60	F 62	62	67	F 67	67	61	55	54	52	53	40	F
30	U F 37	A	R	R	F 53	U F 57	F 64	F 69	F 72	F 75	70	66	67	70	65	62	59	57	59	55	54	52	45	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	9	13	10	13	15	18	17	17	21	23	26	27	26	27	28	29	28	27	24	25	27	24	19
MED	F 41	42	F 43	F 46	F 47	F 50	F 55	F 60	F 69	F 69	F 65	F 65	F 66	66	67	F 65	63	60	F 54	54	F 50	49	F 44	F 42
UQ	45	45	F 48	F 50	F 51	F 56	F 62	F 65	F 72	F 75	F 71	F 71	F 70	F 70	69	F 68	F 65	F 61	58	F 55	52	51	50	F 48
LQ	F 38	F 40	F 40	F 44	F 44	F 46	F 50	F 55	F 60	F 58	F 61	F 60	62	61	63	F 60	59	56	F 50	50	F 44	45	F 39	F 40

The Radio Research Laboratories, Japan

NOV. 1972 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1972 | FOF1 (0.01 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	R	B	B	R	400	F 380	F 390	F 390	R	F 340						
2							A	B	A	F 400	410	400	400	410	400	410	L	L						
3							A	A	A	B	B	410	420	420	430	420	410		L					
4						360	F 360	F 370	390	400	400	420	430	420	440	420	L	L						
5						L	370	370	380	400	410	410	420	430	430	410	U L 400	L	L					
6					310	F 330	A	360	390	400	420	430	430	450	440	440	L	L	L					
7				L	320	350	370	400	400	R	B	430	440	B	B	B	420	L 380	L					
8						A	A	H 400	400	410	410	420	420	420	420	410	L	B						
9					A	A	F 370	F 390	F 390	I A 400	410	410	410	420	420	420	400	390	L					
10						F 350	F 390	390	410	I R 400	410	420	430	420	410	410	400	390	L	L				
11					A	A	A	390	F 400	410	410	420	410	420	420	420	410	400	L	L				
12						F 370	A	F 400	F 400	400	I A 410	A 400	420	430	I A 430	430	400	L	L	L				
13							F 390	390	390	400	400	420	410	430	420	L	L	L						
14					L	340	J R 360	F 390	F 390	F 410	410	420	430	430	430	L 430	L 400	L		L	L			
15					340	F 380	F 390	F 400	410	I A 420	F 420	F 420	450	F 420	440	440	L 400	410	A	A				
16					A	F 360	F 390	F 410	B	F 400	400	400	B	B	B	400	F 400	A	R	L	L			
17					A	A	B	A	R	A	410	420	430	430	I B 420	F 420	410	F 370						
18					F 330	A	R	F 400	400	420	430	B	R 430	U R 430	440	410	410	L	F 380	L				
19					F	A	R	A	A	420	430	B	B	B	R 430	430	U L 430	420	L	L				
20					A	B	A	A	A	420	U R 420	R	F 420	B	B	B	400	C	C					
21					B	A	A	R	400	410	420	B	I B 430	450	I B 450	450	440	L	L	L				
22					A	A	390	410	420	430	440	470	460	470	460	460	440	420	400	A				
23						A	A	A	400	420	430	430	440	440	450	440	450	430	L 410	F 340	F			
24						F 350	390	390	400	410	430	450	460	470	470	450	450	410	L	L	L			
25					U F 380	F 400	F 380	F 390	A	410	460	U A 450	480	480	470	460	U L 440	L	L					
26					F 400	A	R	F 400	A	420	450	440	450	450	470	F 440	450	L	L	L				
27							F 390	400	400	410	420	420	450	450	450	460	440	L	L	F 360				
28						A	390	400	410	420	430	440	440	470	450	440	430	L 430	F 380	F	390			
29						U F 390	F 370	A	B	A	410	430	440	I B 440	U R 430	430	430	410	L					
30					350	F 370	F 400	400	410	410	420	420	450	450	440	440	440	L 420	L	L	L			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					7	12	16	21	20	25	27	25	28	26	27	27	24	14	4	2	1			
MED					340	F 360	F 390	400	400	410	420	420	430	430	430	430	415	410	390	F 350	390			
UQ					365	F 375	F 390	400	405	420	430	430	445	450	450	440	440	420	405					
LQ					325	F 350	370	390	390	400	410	420	420	420	420	415	400	390	F 380					

The Radio Research Laboratories, Japan

NOV. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

NOV. 1972 | FOE (0.01 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	B	A	B	B	A	320	H 305	I A 305	305	R	250	235	200	180	140	F 210	H 180
2	A	A	A	200	180	210	A	B	A	305	305	295	300	300	I A 295	A 300	280	250	215	180	A	A	A	B
3	B	B	A	B	A	A	A	A	A	B	B	300	300	290	285	280	270	255	240	210	175	150	A	A
4	A	A	A	B	A	A	240	230	280	H 290	300	300	300	295	A 320	290	A	240	H 230	F 210	150	150	F 120	A
5	A	A	A	A	230	220	250	265	260	280	290	300	300	300	300	A 300	290	250	230	H 190	H 170	100	100	I C 90
6	95	A	A	A	A	A 220	A	A	280	290	300	290	305	305	300	290	280	245	220	205	H 160	H 160	100	105
7	A	120	A	175	H 180	200	210	250	265	B	B	300	A	B	B	B	B	260	235	200	140	A	A 265	A
8	A	A	A	A	B	B	A	U A 280	280	I A 295	300	305	300	295	270	290	I A 290	B	R 220	210	150	C	A	A
9	A	A	B	A	A	A 260	230	A	270	A	290	300	300	290	290	285	270	240	220	220	190	A 170	A 140	A
10	A	A	A	A	A	A	220	240	A	A	285	300	300	290	A 290	U A 280	265	240	225	200	180	140	110	95
11	U A 120	A	B	A	A	A	A	A 290	300	290	295	295	300	295	295	I A 290	270	250	220	190	A	A	A	F 180
12	200	A	A	A	A	A	A	260	A	300	300	I A 310	R 310	300	280	A	U A 280	250	235	205	170	125	100	100
13	110	160	A	A	A	A	280	270	270	280	300	300	295	300	290	290	280	255	235	200	170	180	A	A
14	A	A	A	A	195	210	A 220	A 270	270	290	295	300	300	280	A	A 280	A 270	A	A	200	180	F 140	F 110	A
15	A	A	B	A	A	260	230	260	A	A	U A 300	295	300	295	290	270	275	265	A	A	A	F 380	A	A
16	A	A	A	B	A	215	A	280	B	A	300	R 300	B	B	B	280	330	A	350	F 240	215	A	A	A
17	A	B	B	A	B	A	B	B	A	A	A 300	295	290	290	B	270	250	R 260	A 210	A	A	A 320	310	A
18	A	A	B	A	F 270	B	A	A	290	300	290	B	U R 315	R 310	290	290	280	280	A 220	R 230	A	A	A	200
19	A	310	A	A	A	A	A	A	A	A	A	B	B	B	R 300	290	B	B	260	H 225	200	B	A	A
20	A	A	300	B	A	B	A	A	A	325	A	A	330	B	B	B	B	C	C	A	265	305	A	A
21	A	A	A	A 190	B	A	A	A	315	300	B	B	B	R	B	R 280	285	260	F 260	225	200	F 200	130	F 150
22	130	A	A	A	A	A	A	300	290	290	300	310	300	U A 320	305	A	B	265	A	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A	300	305	330	320	310	300	300	295	270	250	250	A	350	340	355
24	330	A	A	A	A	320	320	300	280	300	305	310	310	310	300	I A 300	300	H 280	260	230	205	H 190	A	H 180
25	H 150	H 145	250	A 200	A	220	270	275	I A 295	300	310	310	330	310	310	I A 300	300	280	260	230	200	H 150	A	A
26	A	A	A	A	295	A	R	A	A	300	305	310	310	300	285	H 290	285	I B 270	250	230	F 210	180	I A 180	160
27	H 160	290	270	A	A	A	U A 300	290	285	295	300	305	300	300	300	290	A 290	280	240	230	A	A	A	A
28	A	B	A	A	B	A	A	260	290	300	300	300	300	300	280	280	280	265	U R 300	A	250	300	A	A
29	A	A	290	A	215	A	260	A	B	290	300	300	300	I B 310	305	A	A	275	240	240	215	185	320	320
30	A	A	A	A	A	A	245	260	270	300	300	300	300	I A 310	300	300	290	280	250	210	200	170	290	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	5	4	4	7	10	13	17	17	21	24	25	26	25	24	25	23	25	26	25	22	21	15	13
MED	140	160	280	195	215	220	245	270	280	300	300	300	300	300	298	290	280	260	235	210	185	170	140	180
UQ	180	290	295	200	250	260	270	280	290	300	300	305	310	310	300	300	290	270	250	230	205	200	278	200
LQ	115	145	260	182	188	210	230	260	270	290	298	300	300	295	290	280	272	250	220	200	170	150	110	105

The Radio Research Laboratories, Japan

NOV. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

NOV. 1972 | FOES (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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 B 27	32	48	32	E B 27	B	J X 46	B	30	B	B	J X 34	35	38	31	34	G	31	35	J X 34	26	J X 24	G	24
2	32	J X 44	31	J X 26	22	J X 54	J X 78	B	J X 50	J X 34	G	G	G	G	J X 54	32	G	G	28	25	J X 64	J X 83	J X 95	B
3	J X 46	B	J X 89	33	31	40	J X 56	J X 39	40	B	E B 44	G	37	G	G	G	G	G	29	J X 29	25	20	J X 25	J X 34
4	30	J X 29	41	B	J X 54	31	G	G	G	G	31	52	42	36	J X 66	30	40	J X 34	G	25	21	G	G	J X 26
5	J X 64	45	40	40	29	J X 24	G	G	G	G	G	37	37	J X 35	40	32	G 29	28	G	G	22	21	16	J X 24
6	12	28	44	35	J X 29	31	47	32	G	G	G	31	34	37	G	G	33	31	G	23	26	G	17	20
7	16	J X 18	32	25	G	G	28	J X 35	33	E B 31	E B 55	33	32	B	B	E B 49	E B 30	31	31	32	J X 60	J X 35	31	35
8	35	J X 52	43	J X 38	46	40	J X 46	36	G	30	32	G	31	30	33	33	30	E B 35	G	24	21	E C 15	J X 34	31
9	J X 21	30	J X 114	39	33	J X 40	40	34	J X 40	40	G	35	G	G	J X 32	G	G	31	J X 27	28	32	J X 36	30	32
10	J X 40	40	35	44	J X 45	35	J X 30	G	J X 38	37	G	G	31	J X 31	34	J X 33	G	G	G	J X 23	J X 23	18	14	15
11	J X 30	J X 28	J X 51	J X 42	33	J X 34	38	41	G	G	32	G	G	31	J X 32	36	32	G	G	G	J X 26	34	52	J X 26
12	25	30	33	32	J X 35	30	40	J X 42	J X 37	33	47	J X 52	J X 36	40	85	J X 95	J X 30	32	31	25	30	J X 22	J X 23	J X 36
13	28	19	28	J X 54	45	46	J X 70	G	32	30	40	G	35	32	30	33	G	34	J X 56	J X 55	J X 54	20	22	J X 27
14	J X 21	25	20	J X 21	J X 26	J X 40	J X 34	J X 34	29	G	35	34	33	33	J X 65	60	34	J X 37	J X 52	J X 33	23	20	G	14
15	J X 19	J X 34	30	47	32	J X 30	G	J X 27	J X 40	50	J X 33	G	G	G	G	33	G	G	44	40	J X 56	G	J X 53	J X 46
16	J X 44	J X 37	J X 63	B	39	J X 34	J X 38	34	B	37	G	G	B	B	E B 55	G	G	40	42	G	G	J X 40	42	J X 60
17	40	J X 46	38	J X 46	40	37	B	39	33	41	J X 66	G	G	G	E B 47	G	32	G	27	35	33	J X 35	G	J X 62
18	J X 40	40	B	J X 93	32	41	34	J X 44	G	G	33	E B 55	G	G	G	J X 33	G	G	29	G	28	32	J X 24	J X 30
19	J X 34	37	35	35	37	41	38	50	52	J X 34	33	E B 48	E B 58	E B 48	G	G	E B 35	E B 28	G	J X 31	34	26	25	31
20	D C 67	32	33	B	J X 34	B	42	J X 64	J X 59	J X 65	34	37	G	B	B	E B 48	E B 32	C	C	39	31	G	95	J X 112
21	J X 39	J X 74	52	63	B	43	J X 45	35	34	G	E B 38	E B 46	E B 47	G	E B 50	G	G	G	J X 29	27	24	J X 27	J X 24	G
22	20	J X 26	26	40	48	48	40	J X 34	G	J X 63	G	34	35	33	G	J X 33	E B 38	29	36	J X 71	J X 104	J X 134	75	35
23	37	J X 36	J X 65	J X 67	J X 54	J X 64	42	40	34	G	G	G	G	J X 39	35	G	G	G	G	G	43	G	G	38
24	40	42	65	34	J X 35	G	J X 34	41	G	G	35	39	J X 60	41	33	J X 39	G 28	J X 44	J X 70	J X 44	J X 24	25	20	G
25	G	G	G	J X 33	39	J X 36	32	G	42	G	J X 87	J X 75	G	39	33	J X 37	J X 31	G	29	J X 40	J X 48	27	J X 34	30
26	34	J X 34	J X 64	33	J X 34	44	39	42	J X 70	G	33	37	34	J X 41	35	G	J X 106	E B 38	J X 66	J X 107	J X 28	25	22	J X 30
27	23	33	30	39	J X 54	J X 50	J X 41	31	G	J X 57	J X 34	G	J X 36	35	G	32	J X 35	33	G	G	40	J X 72	J X 49	40
28	39	E B 38	J X 95	42	B	49	J X 39	G	G	32	J X 33	33	35	34	J X 34	G	G	G	G	J X 33	32	G	J X 62	38
29	45	35	32	J X 44	27	128	G	40	B	43	G	G	38	E B 45	35	J X 50	33	G	G	J X 29	J X 43	J X 31	G	34
30	J X 35	53	J X 31	J X 44	J X 39	J X 40	J X 56	J X 35	J X 44	G	G	33	41	33	G	G 30	G	G	J X 33	J X 64	31	J X 27	G	J X 60
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	27	28	28	29	28	28	28	29	30	29	27	28	30	30	29	29	30	30	30	30	29
MED	34	34	38	39	34	40	39	35	33	30	32	32	34	33	32	32	E G 30	E G 28	29	29	30	25	24	31
UQ	J X 40	40	52	44	42	45	J X 45	40	J X 40	38	34	36	36	37	U 40	34	32	32	35	J X 39	43	J X 34	J X 42	38
LQ	22	29	31	33	30	32	34	29	G	G	G	G	G	E G 30	G	G	G	G	G	23	24	18	14	26

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NOV. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1972 | F-MIN (0.1 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	27	22	27	22	27	B	37	B	21	B	B	26	25	14	16	13	12	12	15	11	11	10	11	10
2	10	12	10	10	10	9	20	B	20	15	13	12	10	10	10	16	25	11	9	7	14	13	9	B
3	21	B	13	21	19	20	12	15	25	B	44	23	13	16	10	14	14	25	9	8	14	14	10	10
4	9	8	15	B	10	15	10	10	10	12	12	12	10	14	15	11	10	10	10	10	9	10	9	9
5	10	12	15	20	11	11	9	9	9	9	10	10	10	11	15	12	10	10	9	10	9	9	7	E C 10
6	7	10	12	11	10	10	19	18	10	10	9	10	16	10	10	10	10	10	9	10	9	9	8	11
7	9	8	12	9	9	10	9	9	10	31	55	20	18	B	B	49	30	26	20	20	16	10	13	9
8	8	14	15	10	29	31	14	10	10	12	17	17	10	10	13	24	13	35	15	10	9	15	7	7
9	7	8	21	12	12	10	9	10	12	20	10	9	13	10	10	15	20	10	10	19	18	11	9	7
10	9	9	11	20	11	9	9	8	19	16	10	9	10	9	9	9	14	13	13	13	10	11	9	7
11	8	E C 12	22	10	22	14	20	15	10	9	9	10	10	10	10	9	9	9	9	10	15	9	7	8
12	E C 12	10	12	20	13	10	10	9	8	8	9	10	18	20	12	10	10	10	9	10	9	10	9	9
13	9	7	7	10	10	12	9	7	7	8	8	8	8	9	10	9	10	9	8	8	9	8	7	9
14	7	8	8	8	10	9	8	9	9	8	9	10	10	9	9	9	9	9	10	8	10	10	10	10
15	13	9	24	11	10	7	9	9	10	11	10	10	10	10	9	10	10	9	10	12	10	9	9	6
16	10	8	8	B	9	10	10	10	B	10	10	23	B	B	55	15	9	10	30	10	9	10	14	10
17	13	20	27	20	26	24	B	28	21	15	16	10	10	9	47	19	19	20	11	20	10	8	8	10
18	20	15	B	8	10	30	22	15	10	10	10	55	30	24	13	10	19	12	9	21	10	9	8	9
19	10	10	15	23	10	16	21	13	20	18	20	48	58	48	21	20	35	28	17	19	8	20	13	7
20	9	20	14	B	18	B	25	20	20	11	20	20	21	B	B	48	32	C	C	21	9	E C 12	8	20
21	8	10	16	8	B	13	23	21	20	10	38	46	47	21	50	22	15	13	9	9	10	7	8	7
22	7	8	7	22	20	13	10	10	9	10	10	9	10	10	9	9	38	10	11	9	9	10	8	8
23	8	7	10	8	10	15	10	14	9	9	10	12	10	10	10	10	8	19	13	9	11	8	14	10
24	10	10	12	10	10	10	15	10	10	10	10	9	10	9	9	9	14	10	9	9	7	7	E C 17	7
25	8	7	8	8	9	10	9	9	10	13	10	10	19	14	10	11	9	E C 14	10	10	9	8	8	10
26	8	8	E C 15	8	14	24	15	9	10	10	10	10	10	10	17	12	10	38	13	11	10	10	10	8
27	8	8	15	11	11	10	10	10	9	10	10	9	9	9	10	9	10	9	9	9	10	10	8	8
28	E C 14	38	12	19	B	13	10	10	10	9	9	10	10	10	10	10	9	10	10	9	10	10	10	9
29	9	10	10	10	14	9	10	19	B	10	10	10	10	45	23	15	13	10	14	12	11	10	8	18
30	13	20	10	10	E C 15	10	9	10	9	9	9	10	10	15	13	10	10	10	9	E C 15	7	7	8	8
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30
MED	9	10	12	11	11	12	10	10	10	10	10	10	10	10	11	11	11	10	10	10	10	10	8	9
UQ	11	14	15	20	19	16	20	15	20	15	16	20	18	20	17	15	19	14	13	12	11	10	10	10
LQ	8	8	10	10	10	10	9	9	9	9	10	10	10	10	10	10	10	10	9	9	9	9	8	8

The Radio Research Laboratories, Japan

NOV. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1972 | M(3000)F2 (0.01) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	R	A	R	J F 285	B	A	B	R	B	B	R	R	R	R	R	R	G	290	280	F 275	290	F 250	F 260
2	A	A	U F 265	U F 270	F	F 305	A	B	A	F 245	R	G	G	F 245	F 215	F 230	U R 285	300	F 290	310	A	A	F	B
3	A	B	A	R	F	R	A	F	U F 250	B	250	F 255	F 260	F 270	F 285	F 300	F 310	F 290	F 305	F 305	F 300	310	F 310	F 280
4	F 265	F	F 255	B	A	F	F	F 245	J F 245	J F 260	F 260	F 250	270	270	285	290	F 315	J F 295	F 300	F 315	315	F 300	F 290	F
5	A	A	A	R	F 270	F 260	R 250	F 240	F 240	245	250	265	240	260	270	285	295	F 305	315	305	315	315	305	310
6	280	U F 275	A	F 275	F 265	F 250	A	F	F 250	J F 250	F 260	275	280	260	275	295	290	310	300	305	F 320	300	U F 315	F 305
7	U F 285	U F 305	R	J F 270	J F 265	F	F 260	F 270	J F 255	F 255	R	F	F	B	B	F	U F 285	F 330	F 310	F 330	F 300	F 290	U R 285	R
8	R	A	R	R	R	R	U F 255	F	F	F	F 280	F	F 290	F 270	295	300	295	325	315	320	305	305	F 315	F
9	F	F	A	R	U F 245	J F 255	F 260	J F 245	U F 255	F	U F 260	F 270	280	280	275	F 275	F 300	F 310	F 305	F 320	F 320	F 315	U F 290	A
10	A	F 275	F 265	R	F	F 270	F 260	J F 255	F 275	U F 260	F	U F 275	F 260	285	F 290	290	275	305	305	335	305	310	F 305	310
11	F 295	F	R	U F 255	U R 275	U F 285	R 250	F	F	F	U F 280	U F 265	F 275	F 275	F 300	290	280	295	295	F 280	300	F 320	I A 315	U F 305
12	285	F 290	290	R	U R 265	F 250	F	F 255	F	U F 260	U F 265	J F 255	F 270	F 295	U F 295	F 270	285	310	320	F 315	310	315	315	315
13	300	305	U F 300	I A 300	F 275	I R 260	F 280	F 260	F 260	F 260	F 275	F 280	F 295	290	305	F 305	300	315	320	315	325	325	310	305
14	295	F	R 275	U F 270	F	F 235	F	F	F 250	F 260	F 280	U F 280	F 280	285	295	300	300	315	F 315	315	325	305	F 300	F 290
15	F 305	S	R	A	F 260	S 260	F 265	F 275	F 250	U F 240	F	F	F 270	F 290	F 275	F 255	F 275	J F 265	F 265	R	A	F 325	A	A
16	A	F	F 290	B	R	F	F	R	B	G	G	F 235	B	B	240	U F 245	225	F	R	280	F 275	F 285	A	A
17	A	A	R	A	R	F	B	F 245	F	F	J F 265	F 265	F 255	F 260	270	U F 265	F 265	F 270	F 265	F	F 275	330	290	F 305
18	A	A	B	F	F	R	R	F	F	J F 255	F 270	R 250	265	F 260	F 265	F 285	F 275	F 280	F 265	F 270	F 295	F 310	F 305	F 300
19	300	F	F	R	F	265	F 245	R	R	F 265	F	F	R	R	J F 265	F 265	F 285	F 295	F 300	F 300	F 295	F 300	F 280	U F 305
20	A	R	R	B	R	B	R	A	A	F	U F 255	F 245	F	B	B	F	F 260	C	C	R	F 275	320	A	A
21	F 265	310	A	F	B	R	R	R	R	F 265	F 250	255	250	F 275	255	270	F 285	F 290	F 300	F 315	F 305	F 300	300	F 295
22	280	300	U F 270	R	R	U R 250	F 215	J F 255	J F 255	F 260	265	260	255	F 255	F 275	F 255	265	F 260	R	F	F	A	A	F 265
23	F	F	A	J F 265	U F 265	R	F 230	U R 215	F 225	250	250	F 240	260	255	245	F 240	F 265	275	270	R	F	300	320	F 285
24	F 275	R	A	F	F	F	G	F 225	F 235	F 250	F 255	F 260	F 260	255	260	275	F 290	F 300	F 290	F 305	310	300	300	F 280
25	F 285	305	285	J F 285	F	F 245	F	F 225	F	F	F	245	265	F 270	260	260	J F 285	F 295	F 305	F 300	300	305	U F 280	300
26	270	F	J F 280	F	U F 270	R	R	F	F	U F 250	F 245	F 245	F 245	F 240	F 255	F 265	F 285	F 275	F 315	F 310	F 300	F 310	F 320	F 305
27	315	315	R 285	F 300	A	A	F 245	U F 260	F 240	F 240	F 260	F 255	F 255	F 265	285	F 270	285	300	280	F 260	F 250	A	F 300	F 315
28	F 275	R	A	U F 280	B	A	F 240	F 245	F 250	F 250	265	265	280	260	285	275	245	265	F 245	R	R	290	A	A
29	A	F	F 270	F	F 285	A	F 230	R	B	F	U F 265	F 250	F 255	255	270	F 285	290	310	280	295	320	300	310	F
30	F	A	R	A	F 255	U F 295	240	F 240	F 245	F 250	260	260	265	270	310	290	275	295	295	310	315	300	305	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	9	12	10	13	14	16	16	16	21	23	25	25	25	27	27	29	28	27	24	25	27	24	19
MED	285	305	F 278	F 272	F 265	F 260	F 248	F 245	F 250	F 250	F 260	F 255	F 265	F 270	275	F 275	285	295	F 300	308	F 305	305	F 305	F 305
UQ	298	305	288	F 285	F 275	F 270	F 260	F 258	F 255	F 260	F 265	F 265	275	275	288	290	290	310	F 308	315	315	315	312	F 305
LQ	F 275	F 290	F 268	U F 270	F 265	F 250	F 235	F 240	F 242	F 250	F 252	F 250	F 255	260	262	265	F 275	F 278	F 285	F 298	F 295	300	F 290	F 288

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NOV. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

NOV. 1972 | H'F2 (KM) | 45 E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	B	R	B	B	R	R	R	R	R	R	G						
2							A	B	A	525	R	G	G	540	700	575	L	L						
3							A	445	415	B	450	450	410	370	350	350	330		L					
4						425	460	390	380	370	380	375	365	355	345	310	275	L						
5						L	450	495	500	420	410	400	430	380	330	330	270	L	L					
6					440	450	A	F	455	395	360	340	345	400	340	310	L	L	260					
7				345	355	390	365	350	360	350	375	330	375	B	B	280	325	260	270					
8						R	400	340	340	370	340	340	320	340	305	300	L	260						
9					420	365	400	355	355	350	350	350	345	325	340	340	300	290	280					
10						370	380	310	340	340	320	350	370	335	325	310	350	290	220	240				
11					400	275	395	345	320	330	370	R	345	350	305	345	340	310	L	L				
12						475	R	430	350	375	350	410	325	300	305	360	330	280	260	255				
13							410	390	350	370	330	330	320	340	310	L	310	L						
14					360	450	400	390	360	330	300	320	325	330	310	305	290	270		L	250			
15					420	390	340	310	380	380	340	320	365	320	345	380	300	360	400	A				
16					R	F	F	R	B	G	G	550	B	B	B	430	540	A	R	L	L			
17					R	430	B	450	420	410	390	390	400	400	350	320	390	330	430					
18					320	A	R	430	455	390	370	B	370	E R 450	370	345	340	L	395	L				
19					400	R	460	A	A	400	380	350	B	450	380	380	330	330	230	L				
20					R	B	R	A	A	450	430	455	425	B	B	B 330	390	C	C					
21					B	A	A	R	R	440	490	500	470	380	430	380	365	L	L	250				
22					A	A	580	430	395	355	370	375	390	390	350	380	370	405	R	A				
23						A	550	A	530	405	400	445	425	450	500	470	395	370	400	R	A			
24						575	G	550	505	450	420	410	390	410	390	360	340	300	L	L	L			
25					420	460	430	500	530	400	395	450	380	380	380	350	300	L	290					
26					L	R	R	F	500	420	470	450	470	425	390	355	330	L	300	L				
27							460	460	430	400	370	380	380	360	330	380	345	L	L	430				
28						A	490	440	400	395	360	360	350	400	350	370	450	380	450	R	R			
29						A	540	R	B	410	400	420	430	390	380	355	320	300	L					
30					410	340	440	400	390	380	375	360	375	370	320	325	350	330	L	L	L			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	10	13	19	20	23	28	28	27	27	26	26	28	26	17	13	4	1			
MED				345	405	425	440	415	395	395	375	380	375	378	348	350	335	310	290	252	250			
UQ					420	450	475	448	455	415	405	448	418	400	380	380	365	360	400	342				
LQ					360	370	400	352	358	370	355	350	348	340	325	322	310	290	260	245				

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NOV. 1972 | H'F2 (KM)

IONOSPHERIC DATA

NOV. 1972 | H'F (KM) | 45 E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	A	B	A	340	B	B	B	R	B	B	R	300	310	E R 300	275	R	240	A 300	A 330	345	320	400	470
2	A	A	400	F 370	310	A 300	A	B	A	250	225	200	210	H 220	220	250	250	230	240	250	A	A	430	B
3	A	B	A	A	A	A	A	A	A	B	B	230	H 215	210	H 200	210	220	230	245	250	250	250	250	295
4	390	A	400	B	A	330	250	225	225	230	225	A	A	210	H 230	200	200	200	240	250	250	H 270	270	A 370
5	A	A	A	A	310	300	240	240	230	220	220	230	H 200	240	230	205	240	230	225	250	240	245	250	230
6	250	A	A	375	360	300	A	275	210	240	H 205	210	205	210	205	230	215	220	220	240	250	250	255	280
7	280	300	A	320	260	230	220	210	H 205	225	I B 215	215	220	B	B	B	235	250	240	250	240	250	320	A
8	330	A	A	320	A	A	A	240	210	215	240	220	220	H 200	H 215	230	210	B	240	250	240	250	260	A
9	310	315	A	A	A	A	300	270	H 205	A	220	200	225	210	230	215	230	225	240	240	245	250	300	A
10	A	380	395	A	A	320	H 240	210	270	I A 235	240	H 210	220	210	205	215	230	230	230	230	240	245	250	250
11	240	A	A	A	A	A	A	250	230	200	210	215	H 200	H 200	230	220	220	230	230	H 250	290	290	A	310
12	300	355	370	R	A	250	A	A	205	220	A	A	A	230	A	220	215	230	220	240	250	250	240	250
13	250	270	300	I A 325	A	A	H 290	245	210	210	240	210	210	225	200	210	200	225	A 260	I A 275	A 250	250	250	245
14	210	280	260	275	H 290	280	230	210	220	H 200	215	205	200	205	230	220	220	A 230	250	210	240	255	255	250
15	255	280	A	A	A	270	210	210	225	I A 225	210	210	H 200	H 200	230	220	220	250	A	A	A	275	A	A
16	A	A	305	B	A	250	A	H 210	B	A	205	H 210	B	B	B	240	305	A	R	265	280	355	A	A
17	A	A	A	A	A	A	B	A	R	A	240	210	220	225	I B 220	220	230	230	230	A	A 390	300	310	280
18	A	A	B	A	300	A	A	300	220	225	230	B	250	H 220	240	210	225	230	240	225	275	300	260	270
19	A	340	375	A	A	A	A	A	A	210	H 230	B	B	B	230	230	B 230	230	230	230	250	250	250	300
20	A	A	360	B	A	B	A	A	A	230	R 240	A	210	B	B	B	230	C	C	A	325	300	A	A
21	360	275	A	320	B	A	A	A	245	200	B	B	I B 230	240	I B 230	220	230	230	230	240	245	260	250	290
22	300	290	300	A	A	A	A 350	H 260	210	230	210	225	210	220	200	225	B 260	230	A	A	A	A	A	355
23	A 450	325	A	300	340	A	A	A	240	210	210	220	210	250	240	220	245	225	240	250	A	305	290	375
24	370	A	A	250	A	390	A	240	205	225	230	220	E A 260	250	210	230	225	240	230	230	250	250	260	280
25	280	255	300	270	A	300	225	230	I A 225	225	210	A 225	230	225	220	225	210	225	230	250	250	250	340	320
26	390	300	300	300	280	A	A	A	A	200	220	240	230	230	220	225	230	B 255	A	255	275	260	240	260
27	250	275	330	350	A	A	300	240	200	H 200	205	H 200	240	200	240	220	205	240	H 210	H 250	A	A	A	325
28	420	B	A	A	B	A	275	220	240	210	210	205	200	200	H 220	220	225	220	R 340	A	305	350	A	A
29	A	A	380	A	300	290	240	A	B	210	200	H 210	H 205	B	225	230	230	215	240	255	250	250	320	380
30	400	A	A	A	A	295	270	200	200	230	220	225	265	220	230	215	225	210	250	220	A 240	250	300	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	14	14	12	10	14	14	19	21	25	26	23	26	25	26	28	29	27	25	25	25	27	23	21
MED	300	295	345	320	305	298	245	240	220	220	220	210	215	220	225	220	225	230	240	250	250	250	260	290
UQ	380	325	380	338	340	300	290	248	230	230	230	222	230	230	230	230	230	230	240	250	275	295	305	325
LQ	252	275	300	288	290	270	230	210	205	210	210	210	205	210	215	215	220	225	230	240	245	250	250	260

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NOV. 1972 | H'F (KM)

IONOSPHERIC DATA

NOV. 1972 | H'ES (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Day \ Hour	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 130	120	125	B	B	100	B	110	B	B	120	150	130	110	100	G	155	130	130	130	125	G	140	
2	105	110	105	100	150	160	160	B	100	110	G	G	G	G	100	110	G	G	160	150	160	110	100	B
3	100	B 150	115	100	100	100	110	110	B	B	G	120	G	G	G	G	G	170	100	125	130	165	115	
4	115	100	120	B	100	110	G	G	G	G	110	115	110	110	105	100	100	100	G	150	150	G	G	110
5	150	105	105	105	110	105	G	G	G	G	G	125	130	115	115	110	100	130	G	G	130	125	125	110
6	120	110	110	105	105	105	100	110	G	G	G	110	105	110	G	G	100	100	G	130	150	G	150	155
7	125	120	125	140	G	G	120	100	100	B	B	125	105	B	B	B	B	120	130	150	130	130	130	110
8	105	160	100	100	110	115	100	100	G	105	110	G	100	110	105	120	105	B	G	100	135	C	100	110
9	110	105	120	105	110	150	100	100	105	105	G	120	G	G	100	G	G	100	100	130	125	125	125	100
10	105	110	110	110	110	100	100	G	105	100	G	G	120	110	100	100	G	G	G	105	100	145	130	105
11	100	105	110	125	130	100	100	105	G	G	100	G	G	125	110	100	100	G	G	G	130	105	105	110
12	110	115	130	120	110	100	100	100	100	100	115	120	120	110	105	110	100	105	130	130	130	120	130	110
13	100	100	105	100	100	100	120	G	100	100	100	G	100	100	100	130	G	140	125	120	115	110	105	100
14	100	130	175	130	130	130	100	150	130	G	120	100	110	105	100	170	100	100	100	100	130	150	G	110
15	105	110	140	100	100	100	G	100	100	100	100	G	G	G	G	105	G	G	105	110	160	G	110	100
16	100	100	100	B	110	100	105	130	B	100	G	G	B	B	B	G	G	105	145	G	G	110	110	130
17	100	100	100	100	110	120	B	125	100	100	120	G	G	G	B	G	110	G	100	115	110	100	G	120
18	100	100	B 140	180	100	100	100	G	G	120	B	G	G	G	100	G	G	105	G	150	110	140	100	
19	115	170	120	130	100	100	100	100	100	100	105	B	B	B	G	G	B	B	G 140	130	140	130	105	
20	100	130	140	B	110	B	105	100	100	130	100	100	G	B	B	B	B	C	C 120	140	G	100	100	
21	100	110	100	140	B	100	100	100	100	G	B	B	B	G	B	G	G	G	100	150	155	140	130	G
22	150	100	100	100	125	100	100	100	G	110	G	120	110	100	G	100	B	100	100	175	190	100	150	100
23	100	130	150	100	120	100	100	100	100	G	G	G	G	100	110	G	G	G	G	G	150	G	G	120
24	130	100	190	100	100	G	100	100	G	G	130	125	110	105	105	100	100	100	100	100	100	130	125	G
25	G	G	G	100	120	100	100	G	100	G	130	125	G	120	130	100	100	G	100	130	130	140	105	125
26	100	110	130	130	100	110	140	100	100	G	150	125	120	100	100	G	100	B	150	130	140	150	130	120
27	125	100	130	105	100	100	100	150	G	100	100	G	100	115	G	105	110	100	G	G	100	140	100	140
28	100	B 100	105	B	100	100	G	G	100	105	110	110	110	100	G	G	G	G	100	160	G	150	100	
29	130	100	175	100	130	180	G	105	B	100	G	G	110	B	110	100	100	G	G	100	125	125	G	125
30	110	100	100	100	110	100	100	100	100	G	G	140	115	100	G	100	G	G	100	120	120	100	G	105
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	27	26	26	25	22	18	15	16	15	18	18	17	18	13	13	18	24	29	23	23	27
MED	105	110	120	105	110	100	100	100	100	100	110	120	110	110	105	100	100	100	105	125	130	125	125	110
UQ	118	118	135	125	120	110	100	110	105	105	120	125	120	115	110	110	100	120	130	135	150	140	130	120
LQ	100	100	102	100	100	100	100	100	100	100	100	112	105	100	100	100	100	100	100	102	125	110	105	102

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NOV. 1972 | H'ES (KM)

IONOSPHERIC DATA

NOV. 1972 | TYPES OF ES | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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 1	R 1	R 1			L 1		R 1			L 1	H 1	H 1	R 1	R 1		H 1	H 1	H 1	H 1	H 1		H 1
2	R 3	L 3	R 2	L 1	H 1	R 1	RR 11		R 1	L 1					R 1	R 1			H 1	R 1	RR 11	RR 11	RR 11	
3	L 1		LL 12	R 1	R 1	R 1	R 2	R 2	R 1				H 1						H 1	LR 11	C 1	H 1	H 1	LR 11
4	R 2	R 2	R 1		R 1	R 1					L 1	C 2	H 2	C 1	C 1	L 1	L 2	L 2		H 1	R 1			R 3
5	RR 13	R 2	R 1	R 1	R 1	L 1						H 1	H 1	H 1	H 1	R 1	R 1	H 1			H 2	H 4	H 1	L 1
6	H 2	R 2	R 1	R 2	R 1	R 1	R 1	L 1				H 1	R 1	H 1			R 1	R 1		H 1	H 1		R 1	R 1
7	R 1	H 1	R 1	R 1			H 1	L 2	R 1			H 1	R 1					C 1	C 1	H 1	HL 11	HL 11	R 1	R 3
8	R 5	LR 12	R 1	R 2	R 1	R 1	R 1	R 1		R 1	R 1		L 1	H 1	C 1	C 1	R 1			L 1	R 1		LR 11	R 4
9	R 1	R 3	LL 11	R 1	R 2	H 1	R 1	R 2	L 1	R 1		H 1			L 1			L 1	L 1	H 1	H 1	H 1	R 1	R 5
10	R 3	R 3	R 2	R 1	R 2	R 1	L 2		R 1	L 1			H 1	H 1	L 1	L 2				L 1	L 1	H 1	H 1	C 1
11	LL 21	R 3	L 1	RL 12	R 1	L 1	L 1	R 1			L 1			H 1	H 1	R 1	L 2				R 1	R 2	R 5	R 1
12	R 1	R 3	R 1	R 1	R 2	RL 21	R 1	R 2	L 2	L 2	H 3	RL 11	C 1	C 1	C 2	RR 12	R 1	C 1	HL 12	H 1	CL 42	LH 11	H 2	C 4
13	L 1	L 6	R 3	R 2	R 2	R 2	LR 11		L 2	L 1	R 1		L 2	L 1	L 1	H 1		H 1	H 3	H 4	C 2	H 4	H 3	LL 11
14	LR 11	R 1	R 1	R 1	R 1	H 1	R 1	H 1	H 1		H 1	L 1	H 1	H 1	L 2	LC 12	C 1	L 2	L 3	L 1	H 1	R 1		L 1
15	L 1	R 1	R 1	R 1	R 4	L 1		L 1	R 1	R 1	R 2					H 1			R 1	R 1	RR 12		R 3	R 2
16	R 2	R 2	R 3		RL 21	LR 12	R 2	R 1		R 2								RR 11	H 1			R 2	R 1	RRR 11
17	R 2	R 1	L 1	R 1	R 1	R 1		R 1	RL 11	R 1	LR 11						C 1		R 1	R 1	R 1	R 4		R 1
18	R 1	R 1		RR 11	HL 11	L 1	L 1	R 1			H 1					L 1			R 1		RR 11	R 2	RL 11	C 1
19	R 3	H 1	R 1	R 1	R 1	R 1	L 1	R 1	R 1	R 1	R 1									H 1	R 1	L 1	R 1	R 4
20	R 2	R 1	R 1		R 1		R 1	R 1	R 1	H 1	R 1	R 1								R 1	H 1		R 2	RR 11
21	R 2	LR 11	R 1	RL 11		R 1	R 1	R 1	L 1										L 1	R 1	H 1	H 1	L 1	
22	R 1	LR 11	R 1	R 1	R 1	R 1	R 1	R 1		L 1		H 1	H 1	L 1		L 1		R 1	R 1	RR 11	RR 11	R 1	RR 12	R 2
23	R 2	RL 21	RR 12	R 1	RL 21	R 1	R 2	R 1	R 2					C 1	H 1						RR 11			R 2
24	R 1	R 2	RR 11	R 1	R 2		L 1	R 1			H 1	H 1	H 3	H 2	C 1	L 2	L 1	L 2	L 2	RH 21	L 1	H 1	R 1	
25				RRL 11	RL 21	LR 11	LH 11		R 1		H 1	H 1		H 1	H 1	L 1	L 2		LH 11	HL 11	H 3	H 1	H 3	R 2
26	R 3	R 3	RL 11	RL 11	LH 11	R 1	H 1	R 1	R 2		H 1	H 1	H 1	C 2	C 1		L 1		LH 12	H 2	HL 11	R 1	C 2	H 2
27	H 1	L 1	R 1	R 2	L 1	R 2	R 1	H 1		L 1	L 2		L 2	H 1		H 1	H 1	C 2			RS 11	RR 11	R 2	RR 12
28	R 2		LL 11	R 1		R 1	R 2			L 1	H 1	H 1	H 1	H 1	C 1					R 1	R 1		RR 12	RS 11
29	RR 11	R 1	H 1	R 1	R 1	NR 11		R 1		R 1			H 1		C 1	L 1	L 1			L 1	H 2	C 3		R 1
30	R 1	R 1	R 1	R 2	R 2	L 2	L 2	L 1	L 1			H 1	H 2	R 1		L 1			L 1	C 1	H 2	L 1		R 3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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NOV. 1972 | TYPES OF ES

IONOSPHERIC DATA

DEC. 1972 | FOF2 (0.1 MHZ) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	R	R	F 53	F	A	A	R	U F 55	F	U F 64	F	F 68	F 67	F 64	64	66	60	55	F 56	55	52	F 43	42
2	J R 45	45	F	F 50	53	R	F	F 60	U F 66	F	F 74	F 75	F 78	F 83	U F 74	F 72	70	59	55	51	50	F	46	F 40
3	46	49	S	F 54	F	U F 51	F	A	U F 57	F 71	U F 73	F 70	F 72	66	F 64	63	F 63	61	54	52	52	50	49	U F 41
4	F 40	43	F 43	F 50	F 56	F 55	F 55	67	64	66	72	70	68	56	53	57	56	55	53	51	49	48	45	F 40
5	F 40	40	S	49	F 54	U F 57	F 62	F 72	F 75	F 75	70	64	63	61	59	55	54	50	50	49	47	48	48	50
6	51	51	R	F	F 58	U F 60	J F 66	U F 75	86	87	82	83	81	76	72	67	58	57	F 55	F 50	50	53	53	51
7	F	R	R	F 45	F	A	F	A	A	F 72	F 81	J F 86	F 69	F 64	F 57	F 60	F 67	F 63	F 56	57	50	51	F 52	50
8	S 51	48	F 43	F 45	F 48	F 50	F 49	F 50	F 47	F 50	F 57	57	54	56	57	F 50	55	56	F 52	F 54	F 47	F 43	F 39	F 34
9	43	A	A	A	F 51	F 59	65	F 63	F 61	62	60	60	62	63	57	54	54	50	49	50	50	49	50	50
10	48	A	U A 43	A	F 49	F 49	59	60	F 61	59	60	58	57	58	59	57	50	52	49	48	50	52	49	44
11	F	F	F	S	F	J F 67	F 70	F 72	F 76	F 79	75	74	67	62	64	60	60	61	56	55	53	54	52	44
12	40	A 39	F 49	J S 55	53	F	F 70	80	81	84	81	71	73	65	66	H 59	59	61	60	60	57	57	52	J S 50
13	41	S	F 49	F	F	F	J F 65	F 66	U F 75	R	R	R	F	U F 52	U F 64	F	F	R	F 51	U F 51	F	A	A	A
14	A	F	U F 40	F	R	F	F	U F 55	I R 55	F 50	F 53	F 59	59	53	54	51	54	F 59	50	47	F 40	44	46	42
15	A	F 48	F 50	F 57	R	F 51	U F 65	F	F 61	U F 65	F 67	F 69	F 73	U R 77	R 82	F 82	87	F 55	E G 41	F	F	F 47	F 49	A
16	A	B	R	F 50	F	R	R	B	R	U R 46	B	B	R	F 55	B	F 60	F 62	B	A	47	42	F 45	F 41	F
17	F	B	F	U F 37	F 44	B	F 46	A	F 57	U F 60	F 64	I C 65	64	63	B	R	60	B	45	B	F 47	F 43	44	45
18	F 42	F 42	A	F	F 49	F 54	F 55	F	U F 64	F 72	F 73	79	76	67	66	63	60	55	46	B	F 47	48	45	44
19	F 47	42	F 44	F 47	F 55	60	F 70	F 75	78	82	83	80	80	70	67	F 65	62	64	59	57	F 50	F 41	46	41
20	U A 44	I R 48	F 46	F 51	F 52	F 57	R	A	U F 68	F	F	F 66	F 61	F 60	61	63	F 64	F 65	F 59	62	54	54	55	F 57
21	J R 46	45	53	U F 49	F 54	F 60	F 67	F 73	F 80	F 81	F 79	F 75	F 75	69	68	66	60	62	58	54	55	60	57	60
22	60	65	S	R	F	F	F 72	U F 82	U F 92	F 93	F 90	F 86	F 80	78	72	F 69	F 74	F 74	F 68	J F 65	F 45	F	F	A
23	A	F 39	F	A	A	A	A	R	R	R	R	R	R	F 48	F 47	F 50	F 60	52	48	F	F 46	F	F	A
24	37	F	B	A	F 41	B	R	R	F 48	52	R 58	R	R	F	52	F 55	F 56	F 60	F 60	58	57	60	60	55
25	55	60	48	43	F 50	F 51	U F 61	F 63	F 70	F 70	65	F 61	60	57	54	55	54	57	54	52	54	58	54	53
26	53	B	F	R	F	F	F	F	F	F	J F 81	J F 73	73	74	66	64	65	F 65	72	F 60	F 59	J R 64	54	56
27	50	49	54	U F 53	U F 57	F 61	F 68	F 62	J F 73	F 80	F 82	F 81	F 73	64	62	61	58	58	56	57	F 58	U F 58	U S 57	U R 56
28	54	J R 54	U R 60	65	S	83	U R 90	F 89	J R 90	U F 89	U F 79	F 75	77	F 75	F 72	72	76	F 73	F 71	F 62	63	52	45	50
29	43	F 46	F	A	A	A	R	R	R	F 49	F 50	F 50	U F 50	50	52	56	F 51	56	54	F	F	F 46	F 42	46
30	F	A	A	F	A	F	A	R	R	R	U F 46	F 46	54	R 50	50	56	F 52	50	48	F 53	F 50	F 37	45	F 47
31	R	R	R	R	B	F	F 55	B	R	R	F 46	52	U R 49	51	52	B	F 50	F 54	54	F 57	F 51	F 50	F	42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	18	13	17	16	16	19	17	24	23	27	26	27	30	29	28	30	28	30	26	28	27	27	26
MED	46	47	F 48	F 50	F 52	F 57	F 65	F 67	F 67	F 71	F 72	F 70	68	63	62	60	60	58	54	54	50	50	49	46
UQ	51	49	50	F 53	F 54	F 60	F 69	F 75	F 77	F 80	F 80	F 75	F 74	69	66	64	64	62	58	57	54	54	52	51
LQ	42	42	F 43	F 47	F 49	F 51	F 57	F 62	F 59	F 60	F 60	60	60	56	54	56	54	55	50	51	F 47	46	45	42

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IONOSPHERIC DATA

DEC. 1972 | FOF1 (0.01 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	A	A	A	410	430	420	430	440	450	L 450	450	420	U L 420		L	L	L		
2					U F 360	F 400	F 410	F 420	420	430	430	430	430	450	430	450	420	L	L	L	L			
3					F	A	A	A	400	400	420	420	430	H 440	430	440	430	L 410	U L 380	L	L			
4			300	F 300	350	F 360	360	380	390	400	400	410	420	430	L	430	410	L 390	L	L				
5				320	F 350	F 350	370	380	400	400	410	410	410	420	420	420	410	L	L	L	L			
6			L	A	F 350	F 380	400	400	400	410	410	420	430	430	430	410	L	410	L 380	L		L	L	
7				A	A	A	F	A	A	410	410	F 420	430	440	430	F 420	420	L 410	L	L	L	L	L	
8				F 300	F 330	F 350	F 370	F 390	390	F 400	410	420	420	430	420	430	410	400	400	L 370	L	L		
9				A	F 350	390	360	390	400	410	420	430	430	420	420	430	420	410	L	L	L	L		
10				A	R	F 380	370	400	400	410	410	420	420	430	420	430	L	410	L	A	L	L		
11			L	340	F 350	F 360	F 390	F 400	F 400	420	430	440	440	460	450	450	450	430	L	L		L		
12				L	L	400	F 400	410	430	430	430	450	A	A	450	L	440	430	L	L 380	L		L	
13				A	A	A	A	430	A	A	F 440	430	430	I B 430	420	420	430	F 430	A	A				
14					F	F 350	F 360	F 390	A	420	430	430	R	440	F 440	F 430	410	420	410		L			L
15					R	R	390	410	430	420	430	440	430	B	B	R 450	420	F 420	F 410	L	L			
16				A	F 360	A	F 390	B	A	400	B	B	430	430	B	420	420	B	B	390				
17					F 360	B	F 380	A	410	410	420	C	B	430	B	B	430	B			L			
18					R	F 380	400	F 410	420	420	420	430	450	450	450	450	440	430	F 410	B	U L 380			
19				350	F 360	390	400	420	430	440	440	450	460	470	460	460	460	430	410	L	370	L		
20				A	390	380	A	A	F 410	F 420	F 440	F 440	460	460	460	450	450	440	L 420	U L 400	L	L		
21	L			L	L	400	F 410	430	430	440	450	I A 450	460	I A 460	460	460	A	A	L					
22		L	L	L 330	A	F 400	F 400	400	410	430	450	F 450	450	470	480	450	450	440	U L 430	U L 400	L 350			
23				A	F 350	A	A	F	390	F	R	430	R 430	430	420	410	440	R 420	F 400	F 410				
24						B	R	A	A	410	B	R	R	430	H 440	430	440	430	410	L	L	L		
25				A	F 350	380	F 380	400	420	420	430	410	450	440	450	H 450	450	420	L	L	L	L		
26				F 330	360	390	F 400	F 400	F 430	F 430	F 430	440	440	440	450	450	H 450	F 410	L 400	L				
27		L	L	L	380	390	400	I R 400	410	420	420	430	440	450	440	430	410	L 420	U L 400	L	A	L		
28			L	330	350	370	390	420	420	420	450	450	440	440	450	430	430	440	U L 400	380	L	L	A	
29				A	A	A	A	A	A	410	410	420	450	R 450	440	430	430	430	400	R				
30					A	A	A	A	A	A	410	410	420	430	410	R 410	420	410	L	400	L			
31				R	B	A	F 400	B	410	410	400	420	B	430	430	B	F 410	F 400	390	A	L	L	L	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			1	8	16	19	22	20	24	28	28	28	26	29	27	28	28	26	16	8	3			
MED			300	330	F 350	F 380	F 390	400	410	420	420	430	430	440	440	430	430	420	400	395	L 370			
UQ				335	360	390	F 400	415	420	425	430	440	450	450	450	450	440	430	410	400	375			
LQ				310	F 350	F 365	370	395	400	410	410	420	430	430	425	425	420	410	L 400	380	360			

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DEC. 1972 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

DEC. 1972 | FOE (0.01 MHZ) | 45 E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A 220	A	A	A	320	320	290	H 320	310	310	300	300	280	265	250	230	190	H 190	A	A 130
2	A	A	250	270	280	250	A	A	280	290	300	300	300	300	300	300	280	275	250	230	190	A	A	170
3	A	A	A	310	A	A	A	A	270	280	300	300	300	I A 285	295	290	280	265	250	H 230	210	F 200	H 200	A
4	A	A	A	A	205	A	240	250	270	285	290	300	A 300	310	300	300	270	260	240	230	200	180	F 180	F 150
5	A	A	A	195	200	220	240	250	265	280	300	300	305	300	A	A	A 280	260	240	H 235	200	A	A	A
6	A	H 150	170	A	A	A	250	260	285	290	300	300	I C 300	300	310	A	290	270	240	230	220	170	F 180	A 185
7	A	A	A	A	A	A	A	A	A	A	A	300	315	310	310	A 300	285	265	250	235	210	180	170	A
8	A	U F 150	A	F 200	200	225	250	270	A	A	A	300	A 305	305	295	300	295	250	240	215	200	200	A	185
9	A	A	A	A	260	A 260	255	265	270	290	295	300	300	300	300	300	280	270	255	250	200	190	160	130
10	H 160	A	A	A	250	255	240	260	280	300	300	300	A 295	300	300	295	260	280	255	240	200	190	170	155
11	135	H 130	130	A 150	180	240	260	A 250	270	280	300	305	310	I A 310	310	310	295	270	270	230	210	170	C	A
12	A	A	240	A	220	230	240	A 250	285	300	315	310	315	310	300	A	A	290	H 280	240	H 225	200	180	A
13	190	A	F 350	A	A	A	A	F 310	A	A	A	330	A 310	I A 320	310	A 300	I B 300	300	A	A	A	A	A	A
14	A	A	A	165	A	210	J C 260	A	A	A 300	300	A 320	310	320	310	I A 300	300	I R 265	260	F 250	240	245	H 190	190
15	A	300	300	310	300	295	230	A 250	A	A	A 320	A	A	B	B	R	A	300	A 270	270	250	255	A	A
16	A	B	A	A	250	A	270	B	A	A	B	B	310	300	B	300	300	B	B	235	A	330	290	A
17	350	B	A	A	F 290	B	U A 310	A	A	300	300	C	B	B	B	B	R	B	270	B	225	A	360	H 230
18	260	300	A	A	305	265	320	280	280	U R 280	320	320	320	320	I A 310	300	290	280	A	B	220	220	200	220
19	150	160	170	A	A	250	250	265	280	290	I B 320	320	330	330	305	I A 300	295	295	260	240	210	215	280	290
20	A	B	350	325	260	A	A	A	320	A 320	300	305	300	305	300	300	310	I R 290	260	240	230	215	180	A
21	U F 200	200	260	210	F 265	250	A 265	280	270	300	315	310	310	I A 305	A 305	A	A	A	A	250	H 230	200	160	A
22	A	A 150	150	B	A	210	270	280	290	300	310	I A 315	300	290	I A 305	300	290	285	270	250	230	A	A	A
23	A	250	A	A	A	A	A	275	280	A 320	I A 320	320	I A 310	300	305	A 300	290	I R 290	265	240	A 230	A	180	A
24	A	270	B	A	A	B	A	A	290	A	B	U R 320	I R 330	310	300	R 300	290	270	250	250	220	210	170	130
25	H 150	A 210	A	A	A 300	245	250	270	295	300	295	300	310	310	290	A 310	I A 310	290	275	A	A	A	180	150
26	A 150	B	A	170	200	H 230	260	A	A	300	310	305	305	300	300	300	290	290	R 265	250	230	190	B	165
27	130	A 160	A 190	F 190	195	250	250	A	A	300	300	305	305	310	310	305	295	275	A 265	A	A	A	A	140
28	150	A 140	150	A 180	205	215	240	270	285	290	A 290	A	A	A 320	305	300	295	270	230	235	H 215	H 205	A	280
29	H 250	A	A	A	A	A	A	A	A	300	290	300	275	I R 300	300	300	280	280	A	A	A	A	A	A
30	A	A	A	A	A	A	A	A	A	A	A	325	325	U R 320	R 320	R 300	300	282	270	F 260	200	A	360	330
31	A	B	B	A	B	A	A 270	B	A	A	300	B	B	300	B	B	290	285	265	260	220	200	F 200	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	12	12	19	17	21	17	19	23	25	26	27	29	26	24	27	28	26	25	26	21	19	17
MED	155	160	215	198	250	245	250	265	280	300	300	305	310	305	302	300	290	278	260	240	218	200	180	170
UQ	225	250	280	290	272	250	265	275	288	300	310	320	310	310	310	300	295	290	270	250	230	215	200	220
LQ	150	150	160	175	202	225	240	250	270	290	300	300	300	300	300	300	280	268	250	230	200	190	175	150

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DEC. 1972 | FOE (0.01 MHZ)

IONOSPHERIC DATA

DEC. 1972 | FOES (0.1 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / 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	J X 64	38	36	J X 54	J X 39	54	62	52	J X 40	G	G	G	115	G	G	G	G	G	G	40	G	G	J X 28	J X 26
2	J X 25	J X 25	J X 26	G	30	39	40	J X 44	J X 65	G	G	G	G	35	J X 32	35	34	32	G	G	J X 34	37	33	25
3	25	27	29	G	J X 34	45	45	45	G	G	G	G	J X 33	37	G	33	G	32	G	J X 24	G	G	G	51
4	J X 86	34	30	27	28	29	G	G	G	32	G	G	33	G	G	J X 61	30	32	G	G	G	G	22	J X 33
5	J X 25	30	28	29	J X 29	J X 23	30	J X 28	39	37	35	J X 44	J X 50	34	J X 34	J X 32	31	31	J X 25	26	25	J X 42	J X 28	J X 62
6	J X 26	J X 25	J X 33	34	32	40	29	J X 27	G	G	G	37	C	G	J X 34	J X 34	35	33	J X 39	J X 31	J X 27	27	G	42
7	J X 24	J X 24	36	D	39	J X 55	51	60	J X 57	J X 33	36	G	J X 43	G	33	J X 34	G	G	J X 26	29	29	J X 60	23	J X 40
8	J X 24	25	J X 17	J X 26	J X 26	G	J X 32	33	71	42	J X 59	J X 68	J X 34	J X 40	34	G	G	G 25	27	J X 23	G	23	J X 30	26
9	36	J X 42	J X 51	J X 43	G	J X 27	G	33	30	32	G	33	G	35	G	J X 32	33	G	G	J X 28	J X 28	J X 26	G	19
10	21	J X 42	45	J X 44	G	33	J X 32	J X 34	J X 29	G	34	36	J X 42	33	34	34	109	31	29	J X 44	J X 36	31	J X 33	24
11	J X 23	J X 22	20	J X 26	J X 31	28	29	J X 64	G	G	31	33	67	J X 33	G	37	34	31	30	26	30	24	J X 34	J X 31
12	J X 30	39	38	31	30	J X 26	G	J X 27	J X 30	38	36	38	J X 66	J X 55	J X 118	J X 37	42	38	34	G	27	J X 24	J X 26	J X 29
13	J X 38	J X 52	G	J X 54	40	45	47	40	45	44	39	41	33	E B 45	G	J X 33	E B 33	G	40	51	J X 33	47	J X 107	49
14	47	J X 38	J X 36	J X 40	35	77	G	36	48	J X 100	G	33	G	J X 40	37	32	G	J X 75	G	G	30	31	J X 42	J X 54
15	J X 64	J X 34	G	30	G	G	J X 34	J X 28	J X 44	41	35	44	J X 51	E B 61	E B 61	G	31	G	41	G	32	G	J X 32	44
16	J X 67	B	42	35	J X 34	J X 46	31	B	J X 46	37	J X 95	B	G	G	B	G	G	B	59	30	35	37	39	35
17	G	B	J X 117	31	G	B	36	93	42	G	G	C	E B 45	E B 42	B	E B 51	G	B	40	B	28	35	G	40
18	33	G	J X 44	J X 42	G	G	G	G	G	G	G	G	G	33	33	G	G	G	J X 39	B	G	25	J X 24	30
19	J X 27	24	25	30	29	G	J X 26	G	G	G	E B 38	G	36	40	35	33	G	G	G	G	G	28	G	32
20	J X 48	45	39	36	31	37	40	99	43	42	G	G	G	G	G	G	G	G	G	33	37	J X 81	G	J X 25
21	31	38	J X 29	J X 26	29	35	J X 29	J X 79	32	J X 71	J X 62	J X 50	38	J X 77	J X 35	J X 37	J X 86	J X 83	54	J X 34	31	32	J X 66	J X 26
22	20	19	25	J X 32	45	J X 34	29	71	G	G	G	J X 56	J X 62	J X 44	J X 34	G	G	G	G	G	G	J X 49	J X 82	J X 81
23	J X 45	G	D	J X 44	84	D	J X 87	31	32	J X 39	38	G	33	34	G	34	G	G	G	31	33	J X 123	J X 33	39
24	36	J X 78	B	46	42	B	40	J X 44	J X 43	J X 35	E B 50	G	G	35	G	G	G	G	32	35	36	27	24	21
25	17	J X 29	J X 29	J X 42	38	J X 25	J X 34	120	G	36	63	J X 64	40	35	36	32	46	J X 63	41	40	41	36	J X 28	J X 23
26	J X 34	B	32	37	28	26	G	J X 39	J X 42	J X 69	G	37	30	G	35	35	G	G	32	J X 64	J X 52	31	J X 32	21
27	32	J X 37	J X 84	31	41	G	G	39	J X 38	J X 34	32	33	G	G	33	G	30	44	33	J X 46	J X 54	J X 32	21	J X 24
28	25	25	J X 24	26	J X 23	J X 33	31	J X 63	G	40	J X 76	J X 63	J X 69	J X 46	39	G	36	J X 36	46	J X 30	24	G	35	J X 34
29	31	J X 30	J X 54	65	J X 46	J X 51	43	46	41	G	G	G	G	G	G	G	G	35	28	28	39	42	40	36
30	J X 61	J X 45	J X 37	J X 29	J X 74	53	J X 69	43	42	42	J X 38	G	G	G	35	G	35	J X 33	J X 52	J X 46	30	30	37	J X 63
31	40	41	35	35	B	39	J X 32	B	43	47	G	E B 37	E B 46	G	E B 38	B	G	35	39	J X 36	J X 64	25	32	32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	28	30	31	30	29	31	29	31	31	31	29	30	31	29	30	31	29	31	29	31	31	31	31
MED	J X 31	32	34	34	31	34	32	40	39	35	E G 32	33	34	34	34	32	G	31	30	30	30	31	30	32
UQ	J X 42	J X 40	42	42	39	45	40	60	43	42	38	41	J X 46	U 38	35	34	34	35	40	J X 36	36	37	J X 34	41
LQ	25	25	26	29	28	26	28	31	G	G	G	G	G	G	G	G	G	G	G	23	24	24	22	26

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DEC. 1972 | FOES (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1972 | F-MIN (0.1 MHZ) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	12	15	25	20	9	20	15	20	10	12	10	11	10	10	10	9	9	9	12	13	9	10	8	7
2	7	9	8	9	10	10	10	10	9	9	9	10	10	10	10	9	9	10	10	9	9	10	8	8
3	8	8	8	10	8	9	10	8	9	9	9	10	10	10	10	9	9	8	9	8	9	8	8	13
4	9	10	10	10	9	9	9	8	8	9	9	10	10	9	10	9	9	10	10	10	9	9	7	9
5	10	7	8	8	8	8	9	8	9	9	9	8	10	10	10	9	9	9	9	8	9	8	8	7
6	7	7	8	9	10	9	9	9	9	9	10	9	E C 40	9	10	10	9	9	8	8	8	9	7	7
7	9	8	9	19	10	15	10	13	11	10	13	10	10	8	9	9	10	9	8	8	10	9	8	8
8	8	8	E C 11	7	7	8	E C 12	10	16	9	10	10	9	9	9	8	10	9	9	10	9	10	8	8
9	8	9	10	12	10	9	10	9	9	9	9	9	10	9	8	9	9	10	8	8	8	7	8	8
10	8	10	10	10	10	10	8	9	9	9	9	8	7	8	9	9	E C 15	8	9	9	9	8	7	7
11	7	7	9	8	8	8	10	9	10	10	10	10	10	10	10	10	9	10	10	10	9	9	E C 20	7
12	10	9	9	8	8	8	8	8	9	10	10	9	10	9	9	9	10	10	10	8	7	E C 12	8	8
13	8	13	8	9	10	9	9	9	10	16	10	10	23	45	21	20	33	20	10	9	11	10	10	9
14	9	9	9	8	11	9	8	10	10	10	12	11	21	26	13	9	12	E C 20	13	8	9	9	8	8
15	8	8	9	9	20	10	10	10	13	22	19	9	14	61	61	23	10	10	9	10	10	8	8	9
16	20	B	9	10	8	25	10	B	23	16	55	B	12	17	B	19	24	B	41	10	9	13	21	10
17	15	B	15	15	10	B	10	13	10	10	9	C	45	42	B	51	10	B	26	B	9	19	19	9
18	9	10	20	13	28	10	11	9	9	22	25	22	23	14	10	11	16	10	9	B	10	10	9	8
19	9	10	12	10	10	9	9	9	9	10	38	18	12	10	10	10	10	10	10	12	9	10	10	26
20	15	27	13	13	10	10	26	15	10	10	9	10	10	10	10	21	20	25	16	11	11	18	9	9
21	9	8	9	10	8	8	8	9	8	10	9	10	10	10	10	10	9	10	10	10	10	11	10	E C 12
22	8	9	9	24	10	9	9	8	10	10	9	10	15	10	10	9	9	9	10	21	10	10	7	18
23	8	7	10	10	7	12	10	9	9	11	15	14	16	10	10	10	11	17	10	11	10	9	9	12
24	13	13	B	23	10	B	20	15	10	12	50	23	24	15	15	25	15	10	17	18	10	14	10	9
25	9	8	12	11	9	8	8	9	9	10	10	10	10	10	10	9	9	9	9	8	7	9	9	7
26	7	B	9	9	8	9	9	12	10	9	9	9	9	10	9	10	10	10	16	10	9	9	20	14
27	9	9	9	9	8	E C 20	9	10	12	10	9	9	10	10	12	10	E C 18	E C 12	9	8	8	8	7	8
28	8	8	8	8	9	8	8	9	9	8	9	9	9	9	10	9	9	11	11	9	9	10	16	8
29	9	8	9	15	10	10	15	10	10	10	9	9	13	22	21	13	10	9	10	13	11	13	13	8
30	9	9	8	8	9	14	13	12	11	10	13	17	23	29	25	26	E C 28	19	16	10	9	10	9	14
31	15	29	26	22	B	14	10	B	10	12	9	37	46	10	38	B	15	21	26	25	14	10	10	9
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	9	9	9	10	10	9	10	9	10	10	10	10	10	10	10	10	10	10	10	10	9	10	8	8
UQ	10	12	12	13	10	12	10	12	10	10	12	11	17	14	14	16	U 12	U 12	12	12	10	10	10	10
LQ	8	8	9	9	8	9	9	9	9	9	9	9	10	10	10	9	9	9	9	8	9	9	8	8

DEC. 1972 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

DEC. 1972 | M(3000)F2 (0.01) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	R	R	250	F	A	A	R	F	F	F	F	315 F	290 F	270 F	275	305	305	305	305 F	305	330	325 F	310
2	J R 300	295	F	285 F	300	R	F	250	U F 260	F	265 F	255 F	265 F	265 F	U F 285	300 F	315	320	310	310	305	F	325	300 F
3	295	285	S	260 F	F	F	F	A	U F 240	245 F	U F 260	270 F	280 F	270	280 F	285	295 F	310	315	310	315	300	305	U F 315
4	275 F	265	260 F	260 F	250 F	250 F	240 F	270	265	245	265	255	295	305	275	265	285	300	300	315	295	315	295	315 F
5	320 F	300	S	260	265 F	U F 270	260 F	245 F	255 F	265 F	270	275	285	280	290	285	295	290	320	325	320	315	315	320
6	315	300	R	F	270 F	U F 285	J F 270	U F 265	265	270	275	305	280	275	300	315	295	305	320 F	320 F	340	315	320	310
7	F	R	R	275 F	F	A	F	A	A	265 F	265 F	J F 280	290 F	275 F	270 F	280 F	285 F	300 F	290 F	335	285	300	280 F	300
8	315 S	290	280 F	260 F	275 F	270 F	275 F	250 F	250 F	260 F	275 F	265	260	290	280	300 F	290	305	300 F	320 F	320 F	350 F	295 F	295 F
9	300	A	A	A	290 F	255 F	275	270 F	275 F	270	270	265	275	295	275	280	295	320	310	320	315	310	315	300
10	315	A	U A 280	A	260 F	260 F	245	300	255 F	255	265	275	270	270	305	300	290	310	305	295	310	325	320	305
11	F	F	F	S	F	J 270 F	260 F	255 F	265 F	275 F	270	275	295	270	285	290	285	310	305	310	310	315	315	305
12	325	A 305	F 285	J S 280	290	F	F 285	265	255	270	285	260	280	270	295	H 250	300	300	300	330	315	320	315	J S 300
13	305	S	F 295	F	F	F	J F 260	F 255	U F 265	R	R	R	F	F	U F 230	F	F	R	F 260	U F 295	F	A	A	A
14	A	F	U F 225	F	R	F	F	F	R	F 240	F 255	F 270	260	270	270	245	245	F 270	260	285	F 270	320	310	285
15	A	F 275	F 280	F 270	R	F 265	U F 245	F	F 240	F	F 270	F 245	F 265	R	R 250	F 250	250	F 290	G	F	F	300	F 275	A
16	A	B	R	F 240	F	R	R	B	R	R	B	B	R	F 245	B	F 240	F 240	B	A	245	300	F 300	F 305	F
17	F	B	F	U F 250	F 230	B	F 240	A	F 250	U F 245	U F 265	I C 260	265	255	B	R	245	B	330	B	F 310	F 300	295	305
18	F 285	F 265	A	F	F 240	F 275	F 240	F	U F 250	F 250	F 245	255	275	265	265	265	265	280	235	B	F 290	325	305	315
19	F 300	335	F 295	F 255	F 260	250	F 255	F 250	250	255	265	260	280	270	285	F 275	275	280	285	280	F 280	F 300	315	295
20	U A 285	I R 290	F 290	F 265	F 265	F 240	R	A	U F 245	F	F	F 275	F 260	F 255	250	280	F 265	F 310	F 305	295	315	295	310	F 300
21	J R 315	280	285	F	F 260	F 260	F 270	F 245	F 250	255	F 260	F 265	F 270	255	285	290	275	290	295	295	305	315	300	300
22	300	275	S	R	F	F	F 235	U F 270	U F 240	F 245	F 255	F 265	F 270	255	270	F 260	F 255	F 255	F 260	J F 275	F 300	F	F	A
23	A	F 335	F	A	A	A	A	R	R	R	R	R	R	F 250	F 235	F 240	F 250	290	250	F	F 295	F	F	A
24	225	F	B	A	F 330	B	R	R	F 225	230	R 265	R	R	F	290	F 270	F 270	F 275	F 295	295	290	300	305	310
25	290	280	270	280	F 255	F 260	U F 270	F 270	F 245	F 275	270	F 260	265	265	260	280	280	295	295	305	285	300	315	320
26	300	B	F	R	F	F	F	F	F	F	J F 280	J F 260	265	285	270	260	270	F 270	300	F 300	F 280	J R 315	315	315
27	300	265	280	U F 265	U F 265	F 260	F 270	F 240	J F 240	F 270	F 265	F 285	F 290	275	275	295	300	315	305	315	F 305	U F 295	U S 320	U R 320
28	315	J R 280	U R 265	265	S	265	U R 275	265	J R 260	U F 270	U F 265	F 265	275	F 285	F 280	275	295	285	310	F 305	305	305	315	310
29	315	F 285	F	A	A	A	R	R	R	F 235	F 290	F 260	U F 280	290	265	285	F 260	270	255	F	F	F 305	F 290	320
30	F	A	A	F	A	F	A	R	R	R	U F 225	F 225	280	R 255	245	270	F 280	270	270	285	F 300	F 275	295	F 315
31	R	R	R	R	B	F	F 275	B	R	R	F 215	260	U R 245	245	270	B	F 255	F 275	280	F 300	F 315	F 300	F	340
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	18	13	16	16	15	19	16	22	21	26	26	27	28	29	28	30	28	30	26	28	27	27	26
MED	300	285	280 F	262 F	265 F	260 F	260 F	260 F	250 F	255 F	265 F	265 F	275	270	275	278	280	292	300	305	305	305	310	310
UQ	315	300	285 F	272 F	282 F	270 F	272 F	270 F	260 F	270 F	270	275 F	280	282	285	288	295	308	305	315	315	315	315	315
LQ	295	275	270	258 F	258 F	258 F	245 F	250 F	245 F	245 F	260 F	260 F	265	255	265	262	260 F	278	270	295	292 F	300	298	300

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DEC. 1972 | M(3000)F2 (0.01)

IONOSPHERIC DATA

DEC. 1972 | H'F2 (KM) | 45° E Mean Time (G. M. T.+ 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Day \ Hour	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					360	A	A	A	490	450	365	355	350	330	L	350	295	300		300	L	250		
2					340	420	390	430	400	375	350	380	350	345	300	310	290	275	280	L	280			
3					400	A	A	A	465	380	360	340	330	360	340	340	320	290	280	L	L			
4			400	390	350	395	450	365	350	400	360	370	315	320	L	380	350	290	L	L				
5				370	380	350	350	375	350	350	345	355	345	350	340	340	340	L	280	L	L			
6			350	350	350	340	345	330	305	305	320	315	320	330	305	280	L	290	270	L		L	250	
7				A	F 500	A	320	A	A	360	340	305	310	330	350	350	340	295	L	255	L	L	L	
8				380	375	365	380	430	445	450	380	390	415	350	360	350	350	300	330	260	L	250		
9				A	350	390	310	350	350	370	380	395	365	330	370	380	330	310	L	280	L	L		
10				A	400	430	370	330	400	400	390	360	390	380	320	320	L	320	L	F A 280	280	L		
11			L	330	330	340	320	345	350	330	345	340	340	380	350	340	350	290	L	L		270		
12				340	305	360	330	350	360	340	310	370	A	A	320	L	330	265	295	270	L		L	
13				340	F 430	A	400	390	360	R	R	R	555	B 550	450	400	F	R	380	A				
14					R	F	C	580	A	450	450	400	425	410	400	500	500	350	450		L			L
15					R	430	400	440	470	430	360	405	355	B 410	400	400	370	350	G	L	L			
16				460	F	A	R	B	A	R	B	B	R	465	B	470	440	B	A	460				
17					530	B	500	A	440	445	330	I C 400	410	430	B	370	450	B			L			
18					455	370	490	400	430	395	395	370	345	380	390	350	410	365	550	B	350			
19				405	400	400	355	390	370	370	350	350	330	350	350	360	360	320	330	L	355	L		
20				400	400	445	R	A	410	365	370	350	395	430	425	380	360	300	280	295	L	L		
21	270			L	L	365	350	400	370	360	350	350	350	380	355	330	365	A 320	L					
22		L	300	350	380	425	370	345	350	355	350	340	340	355	350	370	375	350	L	300	330			
23				A	A	A	A	R	L	R	R	R	R 590	500	595	540	400	350	490	F				
24						B	R	R	550	520	B	R	R	R	380	430	415	350	290	315	290	280		
25				A	420	400	360	370	420	350	365	410	400	400	450	380	380	340	L	300	L	275		
26				360	350	340	390	350	390	350	310	365	350	340	370	390	350	350	295	280				
27		L	310	L	375	375	360	420	400	350	340	310	320	370	330	310	300	300	295	270	280	L		
28			L	330	325	320	305	320	320	320	350	350	330	330	330	350	300	315	280	270	280	L	325	
29				A	A	A	A	A	R	510	370	460	425	400	450	350	450	375	420	R				
30					A	A	A	R	R	R	R 580	580	380	475	500	400	390	445	L	340	L			
31				R	B	400	380	B	R	R	610	430	B	480	430	B	470	375	350	310	300	L	320	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1		4	13	22	20	22	20	24	26	27	27	27	29	27	29	28	27	19	16	9	5	3	
MED	270		330	360	378	382	365	372	395	370	360	365	350	380	360	360	360	320	295	288	290	270	320	
UQ			375	390	400	410	390	410	435	430	375	398	398	410	412	390	405	350	400	305	330	275	322	
LQ			305	340	350	355	345	348	350	350	345	350	335	345	340	340	335	298	280	270	280	250	285	

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DEC. 1972 | H'F2 (KM)

IONOSPHERIC DATA

DEC. 1972 | H'F (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	R	400	A 430	230	A	A	A	250	H 200	210	230	240	210	210	220	210	H 210	250	240	240	260	240	240
2	240	270	325	320	260	A	A	250	245	220	210	200	200	210	205	225	205	205	200	250	240	425	280	305
3	300	300	330	370	A	A	A	A	H 190	200	225	210	H 200	210	220	225	200	240	210	220	240	245	250	A
4	A 405	380	A 350	300	300	315	230	215	200	200	200	215	200	210	220	210	220	230	210	220	250	250	250	250
5	240	330	305	250	245	230	230	210	210	210	205	205	200	210	220	200	210	230	230	225	220	240	250	250
6	245	250	310	A	320	A	250	200	H 200	225	200	H 200	I C 200	200	205	200	200	230	205	205	240	240	240	260
7	275	250	305	A	A	A	A 245	A	A	200	220	220	220	200	205	210	215	215	230	230	230	260	250	255
8	250	290	280	255	230	230	210	H 210	220	200	200	200	230	250	230	220	210	210	H 215	230	205	220	280	280
9	310	A	A	A	310	240	230	210	H 200	205	H 195	H 195	H 210	210	210	205	210	H 205	210	250	240	225	240	245
10	240	A	A	A	R	250	195	210	200	240	H 200	210	210	210	220	220	205	210	H 210	A	250	230	250	250
11	260	290	250	I C 240	230	220	H 200	205	210	200	200	200	210	200	230	210	230	H 200	230	H 210	230	200	240	255
12	280	280	300	340	250	H 220	210	240	220	230	215	210	A	A	A	240	220	220	220	215	230	H 230	240	270
13	310	S	330	A	A	A	A	230	A	A	A	210	230	I B 240	230	265	230	R	A	A	A	A	A	A
14	A	A	A	260	A	200	C 230	220	A	225	220	200	230	220	H 200	210	H 240	230	225	H 240	250	255	A 290	290
15	A	325	360	325	R	R	H 240	230	220	A 230	200	225	225	B	B	250	250	230	360	250	260	255	325	A
16	A	B	A	A	260	A	230	B	A	250	B	B	230	220	B	240	220	B	B	255	315	340	A 340	A
17	375	B	A	A	300	B	300	A	240	220	215	C	B	B	B	B	220	B	250	B	240	270	350	300
18	325	360	A	A	R	270	300	255	270	210	230	250	230	225	H 200	210	205	210	300	B	250	250	250	280
19	230	255	280	300	A 300	240	230	215	210	H 200	E B 250	210	200	200	220	H 215	220	205	H 200	215	250	250	280	330
20	345	I A 350	350	A	280	A	A	A	220	230	245	200	H 190	H 200	H 200	240	240	230	240	250	A 250	250	250	250
21	260	300	340	270	300	240	H 205	205	200	H 200	H 210	I A 220	210	I A 200	H 200	210	A	A	230	230	245	250	E A 280	250
22	250	260	280	A	210	270	255	210	210	200	210	210	220	210	200	H 200	200	220	230	255	250	A	A	A
23	A	280	A	A	A	A	A	220	230	210	I R 210	210	200	225	205	240	240	I R 225	240	230	260	310	230	A
24	A	A	B	A	A 300	B	A	A	A	250	B	R	R	230	220	200	205	220	240	A 240	230	270	260	245
25	260	275	320	E A 370	330	240	260	H 225	205	200	260	I A 200	220	H 195	220	200	H 200	220	230	215	225	240	240	240
26	240	B	400	255	230	210	230	250	240	H 190	190	H 195	H 190	220	H 200	240	205	260	240	240	250	250	260	250
27	240	300	300	260	255	275	240	I A 235	240	230	200	220	225	210	H 195	200	200	H 200	210	A 255	A	230	230	240
28	240	250	250	250	250	220	230	210	H 195	A	A	A	A	A 240	210	200	215	225	I A 230	210	230	245	A	320
29	300	330	A	A	A	A	A	A	A	230	200	200	215	225	210	210	H 215	220	240	A	F	310	A	300
30	F	A	A	A	A	A	A	A	A	A	250	230	240	240	225	230	240	225	230	245	280	230	350	300
31	A	A	A	A	B	A	250	B	A	275	210	235	B	H 200	B	B	H 205	230	E A 250	A	A 250	230	300	260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	20	20	16	20	16	22	21	23	28	27	27	26	28	26	29	30	27	29	25	28	29	27	25
MED	260	290	315	275	260	240	230	215	210	210	210	210	212	210	210	210	212	220	230	230	242	250	250	255
UQ	305	328	345	327	300	260	250	230	235	230	219	220	230	225	220	230	220	230	240	250	250	260	280	290
LQ	240	265	290	255	238	220	230	210	200	200	200	200	200	200	200	205	205	210	210	220	230	230	240	250

The Radio Research Laboratories, Japan

DEC. 1972 | H'F (KM)

IONOSPHERIC DATA

DEC. 1972 | H'ES (KM) | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatio operation

Hour / 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	175	110	130	100	100	100	100	100	100	G	G	G	120	G	G	G	G	G	G	130	G	G	100	100
2	100	100	110	G	100	100	100	100	110	G	G	G	G	100	100	110	120	120	G	G	100	120	100	100
3	110	100	100	G	130	100	100	100	G	G	G	G	100	100	G	100	G	100	G	100	G	G	G	120
4	100	110	125	100	150	100	G	G	G	110	G	G	100	G	G	110	100	100	G	G	G	G	150	130
5	155	100	100	180	110	100	100	100	115	115	120	110	105	105	100	100	100	110	100	130	120	105	100	100
6	100	110	130	100	100	180	100	100	G	G	G	110	C	G	100	100	105	120	120	120	120	120	G	130
7	100	140	105	180	100	105	100	100	100	100	100	G	120	G	100	100	G	G	100	130	120	100	130	105
8	110	130	100	105	100	G	100	105	100	100	130	125	100	100	100	G	G	100	100	100	G	160	100	165
9	105	105	100	100	G	100	G	100	130	125	G	115	G	120	G	100	105	G	G	100	100	130	G	125
10	130	100	100	100	G	160	100	100	100	G	100	110	100	105	100	120	100	100	150	120	110	140	120	120
11	100	140	100	100	110	100	125	100	G	G	100	105	125	100	G	100	100	110	110	110	140	120	105	100
12	110	115	105	130	100	100	G	100	110	105	130	120	110	105	130	100	100	135	120	G	130	100	100	130
13	130	120	G	100	100	100	100	100	100	100	100	130	115	B	G	100	B	G	100	100	100	100	180	100
14	100	100	100	160	105	120	G	100	100	105	G	100	G	130	130	100	G	130	G	G	100	140	130	120
15	125	100	G	110	G	G	105	110	100	100	110	100	100	B	B	G	100	G	100	G	130	G	100	100
16	150	B	110	110	100	100	150	B	100	100	150	B	G	G	B	G	G	B	130	145	100	150	130	105
17	G	B	150	100	G	B	110	125	100	G	G	C	B	B	B	B	G	B	130	B	105	105	G	100
18	100	G	150	110	G	G	G	G	G	G	G	G	G	100	100	G	G	G	100	B	G	150	110	100
19	100	130	125	110	100	G	160	G	G	G	B	G	100	100	105	100	G	G	G	G	G	160	G	150
20	100	100	100	110	130	100	125	100	100	100	G	G	G	G	G	G	G	G	G	130	120	110	G	105
21	110	100	100	130	100	100	100	105	100	115	130	105	105	100	100	100	100	100	100	100	130	120	105	100
22	100	100	150	130	100	110	130	130	G	G	G	100	110	100	100	G	G	G	G	G	G	100	180	150
23	100	G	100	100	125	100	180	140	100	130	100	G	105	110	G	100	G	G	G	125	110	100	130	100
24	105	110	B	110	150	B	100	100	100	100	B	G	G	120	G	G	G	G	150	125	130	120	115	110
25	120	140	110	105	100	100	100	105	G	100	100	110	110	110	100	100	100	110	100	100	100	100	100	100
26	100	B	110	130	130	130	G	100	100	130	G	110	110	G	100	110	G	G	120	200	125	120	120	120
27	105	150	125	145	105	G	G	140	100	100	115	110	G	G	100	G	100	100	100	100	100	100	100	120
28	125	130	130	130	110	110	110	120	G	110	165	100	100	100	115	G	100	105	100	100	130	G	120	130
29	150	100	100	100	100	100	100	100	100	G	G	G	G	G	G	G	G	150	100	105	105	110	120	100
30	130	100	100	100	170	105	140	100	100	100	100	G	G	G	150	G	130	130	150	195	125	110	105	165
31	100	115	120	120	B	105	100	B	100	100	G	B	B	G	B	B	G	140	135	120	125	140	140	110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	26	28	29	25	24	24	26	22	20	15	16	18	17	17	17	14	17	21	22	24	26	25	31
MED	105	110	108	110	100	100	100	100	100	100	110	110	105	100	100	100	100	110	100	120	120	120	115	110
UQ	125	130	125	130	125	108	125	105	100	112	130	112	110	110	105	100	105	130	130	130	128	140	130	128
LQ	100	100	100	100	100	100	100	100	100	100	100	102	100	100	100	100	100	100	100	100	100	100	100	100

DEC. 1972 | H'ES (KM)

IONOSPHERIC DATA

DEC. 1972 | TYPES OF ES | 45° E Mean Time (G. M. T. + 3h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 0.5 MHz to 15 MHz in 30 sec in automatic operation

Day \ Hour	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	RR 11	R 1	R 1	L 1	LH 21	R 1	R 1	R 1	R 1				H 1							H 1			LR 11	LR 11
2	LR 11	LR 11	L 1		L 1	R 1	R 2	R 1	L 1					C 1	R 1	H 1	H 1	H 1			L 1	R 2	R 2	R 1
3	R 1	R 1	R 2		LL 11	R 2	R 2	R 2					R 1	C 2		L 1		C 1		L 1				R 2
4	RR 13	RL 31	RL 11	R 1	H 1	R 2				H 1			R 1			L 1	C 2	LH 11					H 2	C 1
5	LLH 11	R 3	R 2	HHL 11	L 1	R 1	R 1	L 2	HL 11	HR 11	HL 12	R 1	H 2	H 1	C 2	L 1	R 1	H 1	L 1	H 1	H 1	C 3	C 4	L 3
6	L 3	L 1	RL 11	R 3	R 2	RR 12	R 1	L 1				H 1			L 1		H 1	H 1	HL 11	H 1	HL 12	H 1		H 3
7	LR 13	RL 11	R 3	NR 11	R 1	R 1	R 1	R 2	R 1	R 1	R 1		H 1		R 1	R 1			C 2	H 1	H 1	LH 11	H 1	L 2
8	R 2	HL 11	R 2	L 1	L 1		L 1	C 1	RS 11	L 2	LL 12	L 1	R 2	R 2	L 1			L 1	C 2	L 1		R 1	RL 11	H 1
9	R 3	R 2	R 2	R 2		C 1		C 1	H 1	H 1		H 2		H 2		C 1	H 1			L 1	LH 11	H 1		H 1
10	H 4	R 2	R 2	R 2		HL 11	L 2	L 1	L 1		L 1	H 1	C 1	L 1	R 1	HL 11	C 2	L 1	H 1	H 3	H 2	H 1	H 3	H 4
11	LR 11	LR 11	H 1	C 1	C 1	L 1	H 1	L 2			H 1	H 1	LH 11	C 1		L 1	C 2	H 1	H 1	CL 11	HL 11	H 1	LL 11	R 1
12	R 1	R 1	R 2	RL 11	L 1	L 1		C 2	R 2	H 2	H 1	H 1	H 2	H 2	NC 12	L 2	R 2	H 1	H 1		HL 11	L 1	L 1	RL 11
13	R 2	R 1		R 2	R 3	R 2	R 2	R 2	R 2	L 1	R 1	H 1	H 1			L 1			R 1	RS 11	L 1	R 2	H 1	R 2
14	R 1	R 1	RL 21	H 1	R 1	R 1		R 1	R 2	LR 11		R 1		H 1	H 1	R 2		H 1			R 2	R 1	H 2	H 3
15	H 3	L 1		L 1			H 2	H 1	LR 11	R 1	H 1	L 2	L 2				R 1		R 1		H 1		R 3	R 3
16	RR 11		RL 11	RL 11	L 1	R 1	H 1		R 1	R 1	R 1								L 1	H 1	R 2	H 1	H 1	R 1
17			LL 11	LR 11			RL 21	LR 11	R 1										H 1		R 2	R 2		R 1
18	R 2		LR 11	R 1										R 1	R 1				R 2			H 1	L 1	RR 21
19	LH 11	R 1	R 1	R 1	R 1		L 1						L 1	L 2	H 1	R 1						H 1		R 1
20	R 1	R 1	R 2	R 2	H 1	R 2	R 1	LR 11	R 1	R 1										HL 11	H 2	C 1		R 1
21	R 1	R 2	L 1	RL 11	R 1	L 1	LH 12	LH 12	R 2	L 1	HL 11	H 2	H 2	L 2	C 2	L 3	N 3	L 3	L 2	L 1	HL 11	C 2	C 2	L 2
22	C 2	C 2	RL 11	R 1	R 1	R 1	H 1	L 1				R 2	H 1	C 2	R 1							R 2	RR 12	RR 12
23	RL 21		RL 21	R 1	LR 12	R 1	RRR 11	H 1	R 2	H 1	L 1		L 1	H 1		R 1				HL 11	RL 11	R 1	RL 11	R 1
24	R 2	RR 11		R 1	HR 11		L 1	L 1	R 1	R 1				H 1					H 1	H 1	H 1	C 1	CL 11	C 1
25	H 1	H 1	R 1	R 1	R 1	L 1	L 1	L 1		H 1	L 1	H 2	H 1	H 1	C 2	L 2	L 3	HL 11	L 1	L 3	L 2	L 2	L 2	L 3
26	L 2		R 2	HL 11	H 1	H 1		R 1	R 1	L 1		H 1	H 1		L 2	H 1			H 1	HH 11	H 2	H 1	L 1	L 1
27	CH 11	H 1	H 1	H 1	C 2			H 1	L 2	L 2	H 1	H 1			L 1		L 1	LH 11	L 2	C 3	L 4	L 4	R 3	HL 11
28	HL 12	H 1	CL 11	H 1	L 1	H 1	H 2	LH 11		H 2	RC 12	R 2	L 2	L 2	HL 11		RH 11	C 2	C 3	LH 11	H 1		R 1	H 2
29	R 1	R 2	RL 11	R 1	R 1	R 2	R 1	R 2	R 1									H 1	R 2	R 1	R 1	R 2	R 2	RL 41
30	R 1	R 2	RL 11	R 1	R 1	R 2	R 1	R 2	R 1						H 1		H 1	H 1	H 1	H 1	RL 11	R 1	R 3	HR 11
31	L 1	R 1	R 1	R 1		R 1	R 1		RH 11	R 2								H 1	H 1	H 1	H 2	H 1	R 1	R 2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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DEC. 1972 | TYPES OF ES

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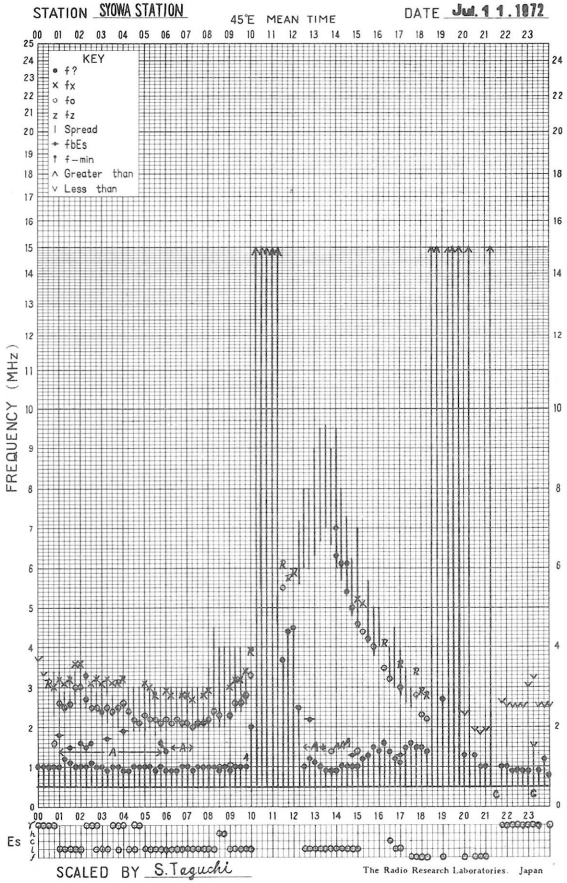

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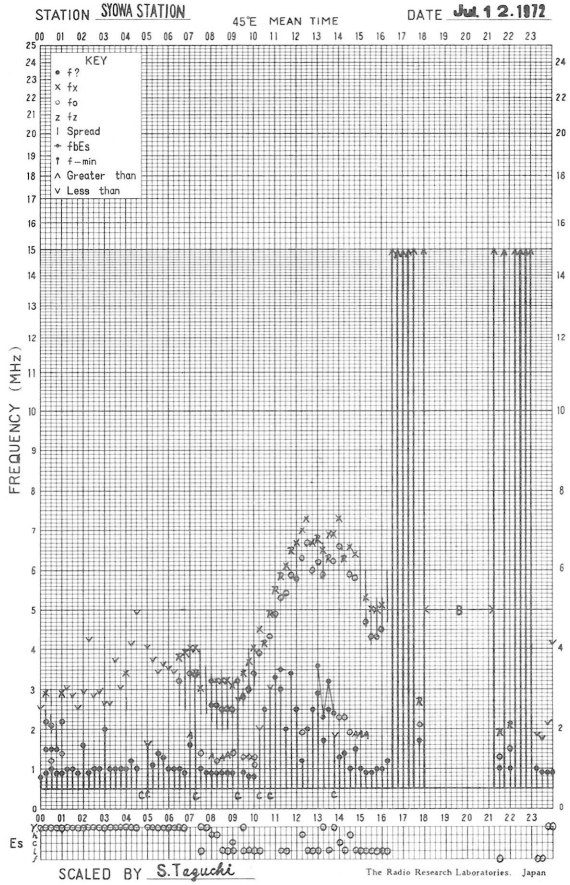

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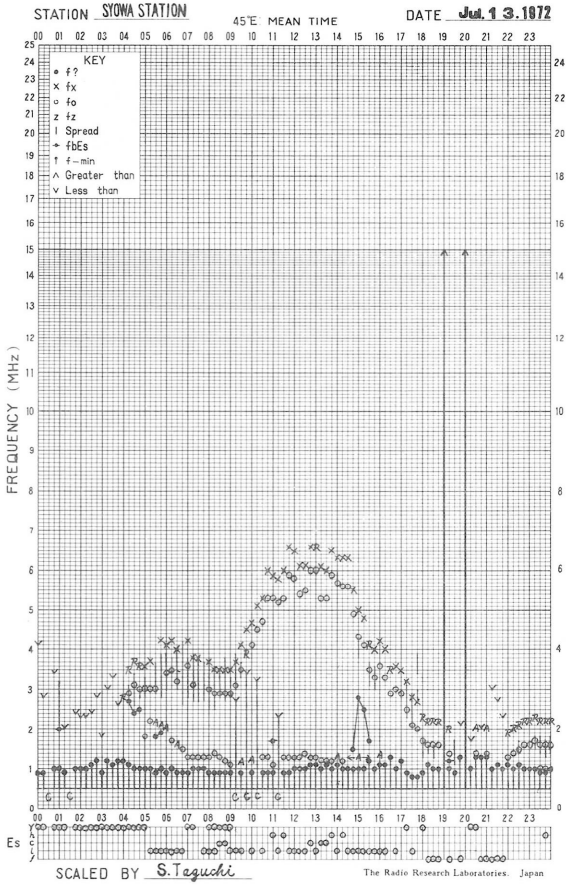

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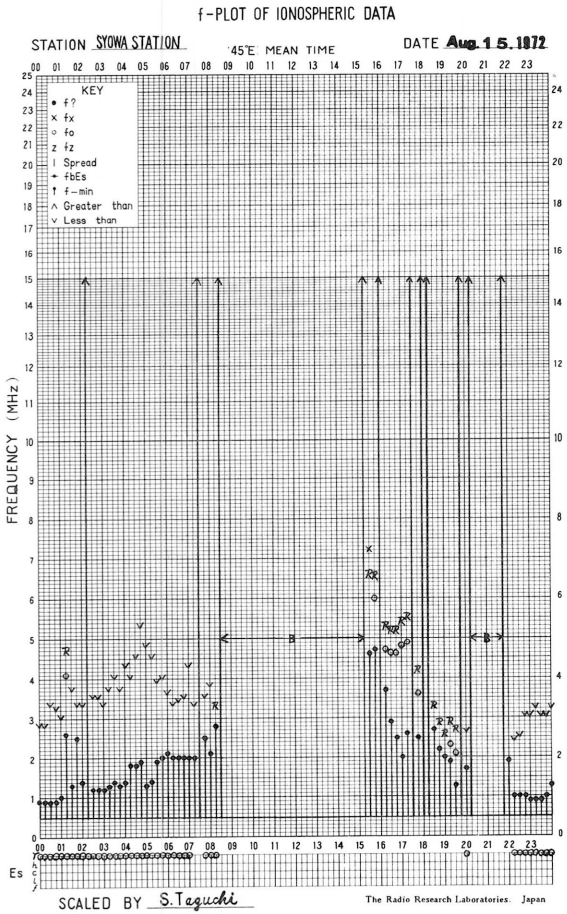
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DATE Aug. 15. 1972
KEY
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○ fo
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+ fbEs
↑ f-min
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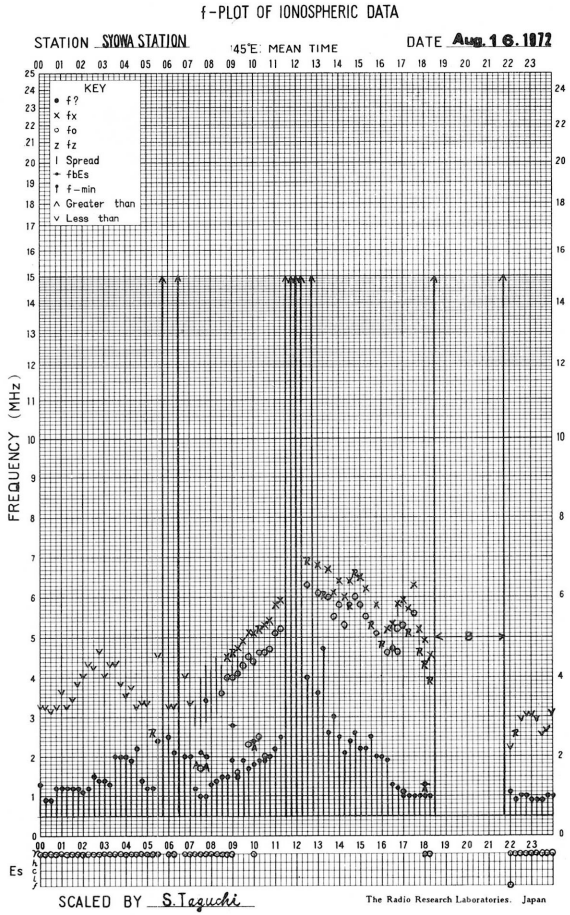
v Less than
FREQUENCY (MHz)
Es
SCALED BY S.Taguchi
The Radio Research Laboratories. Japan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DATE Aug. 16. 1972
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v Less than
FREQUENCY (MHz)
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SCALED BY S.Taguchi
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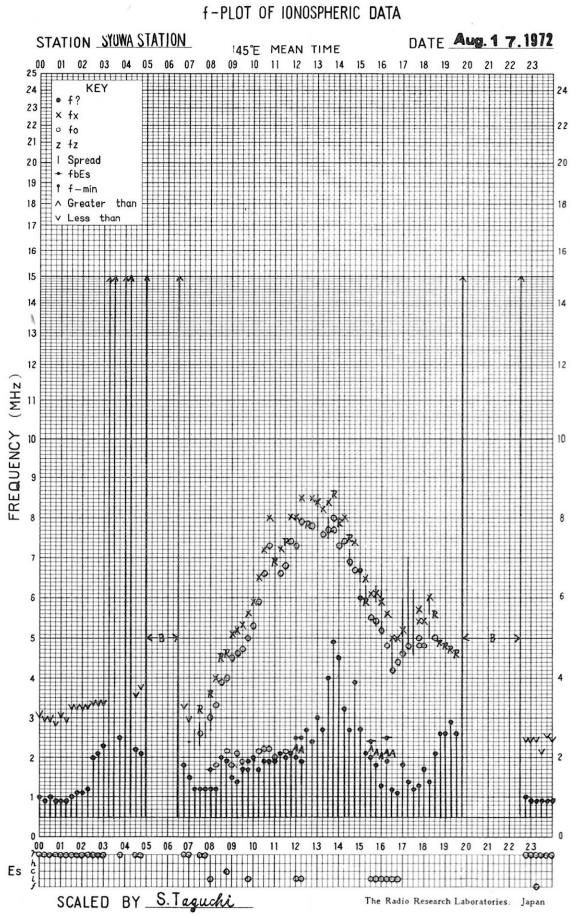
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○ fo
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| Spread
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^ Greater than
v Less than
FREQUENCY (MHz)
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SCALED BY S.Taguchi
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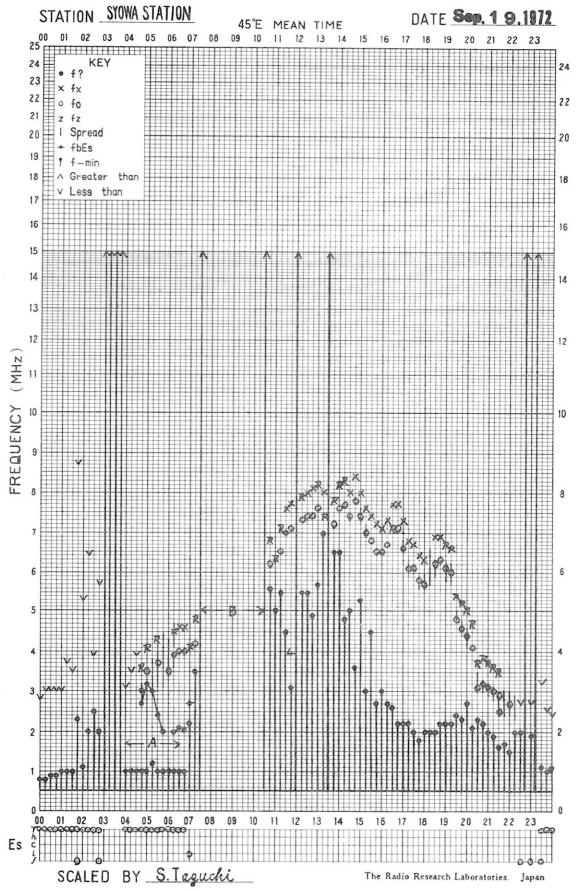

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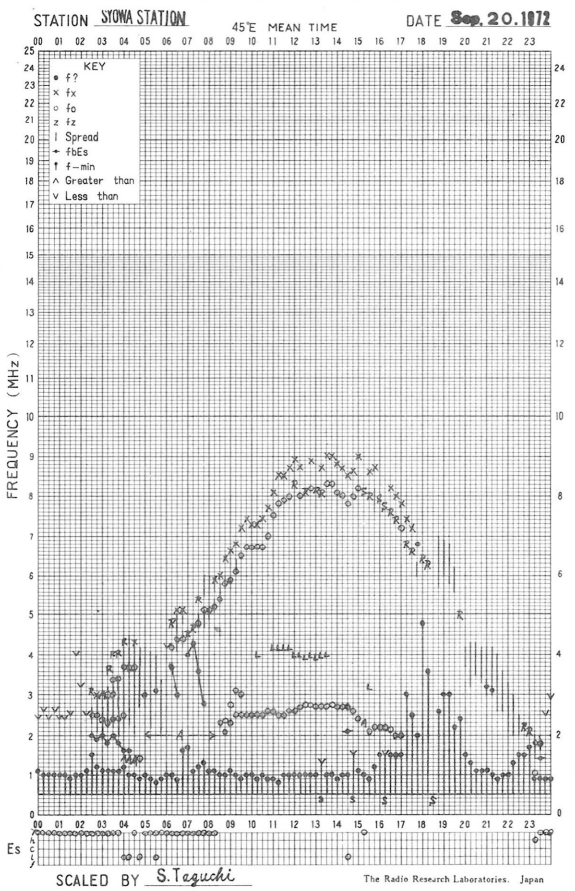

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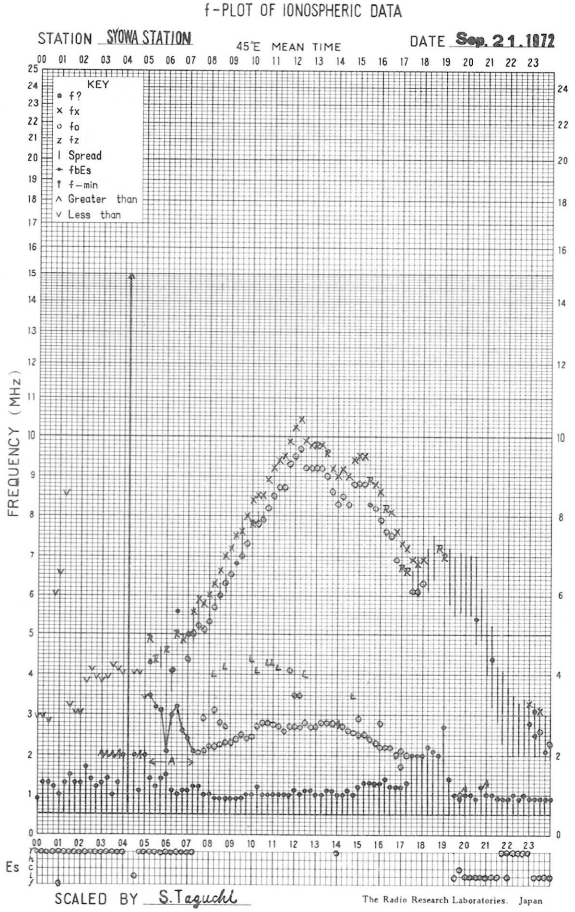

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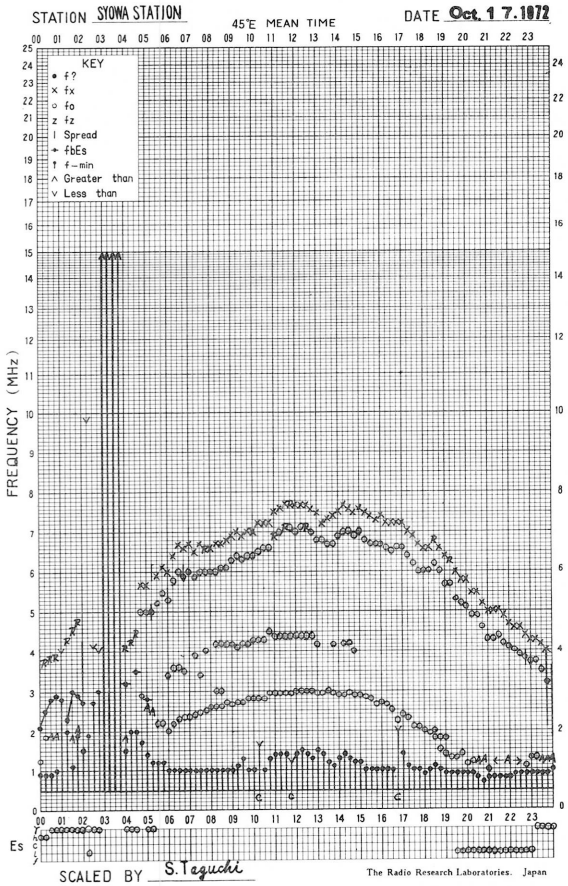

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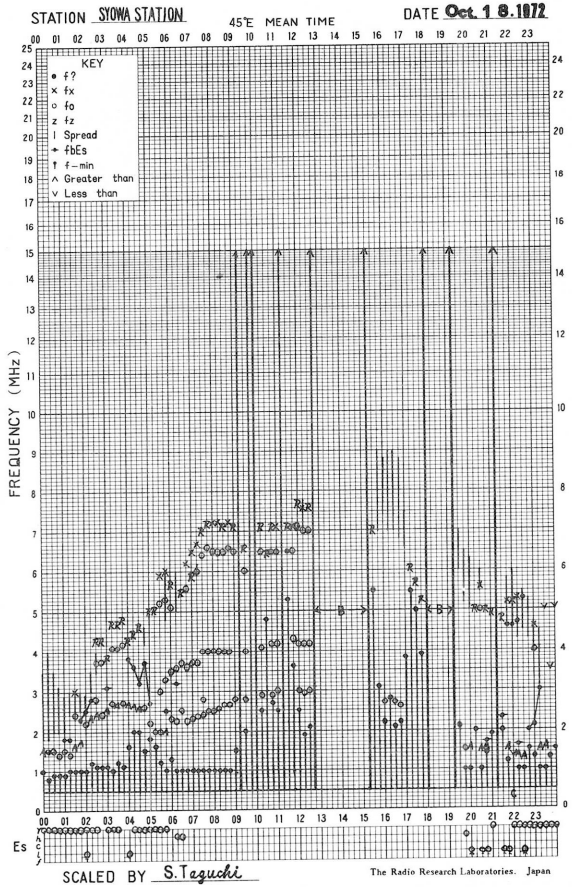

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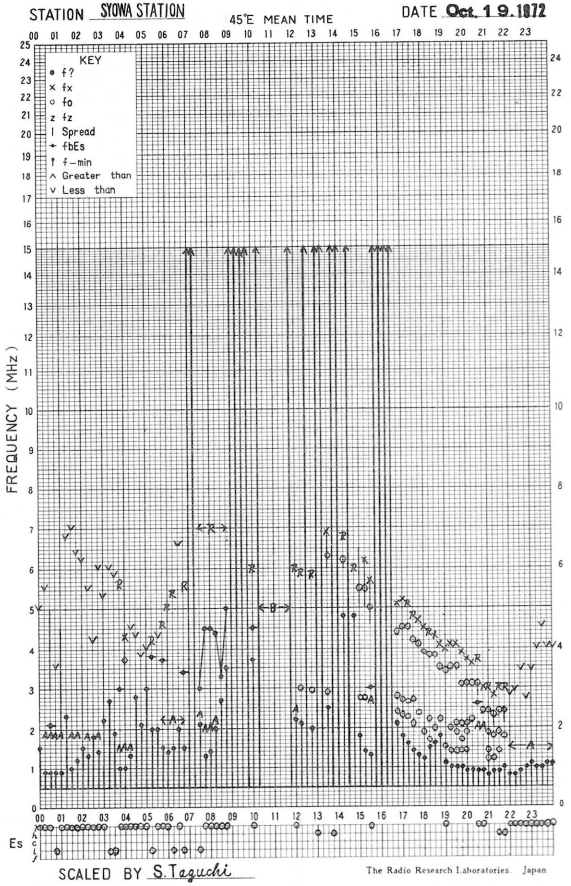

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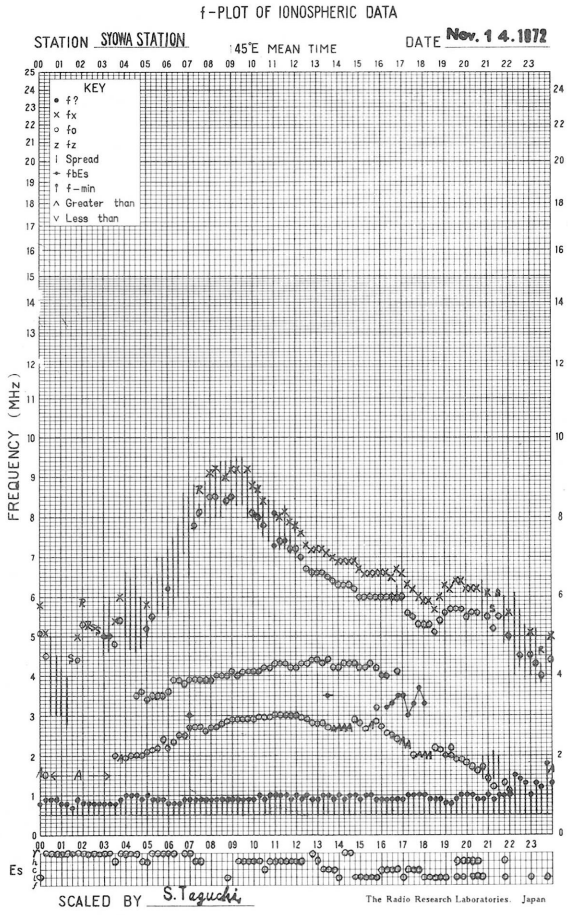
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DATE Nov. 14. 1972
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fbEs
f-min
Greater than
Less than
FREQUENCY (MHz)
Es
SCALED BY S.Taguchi
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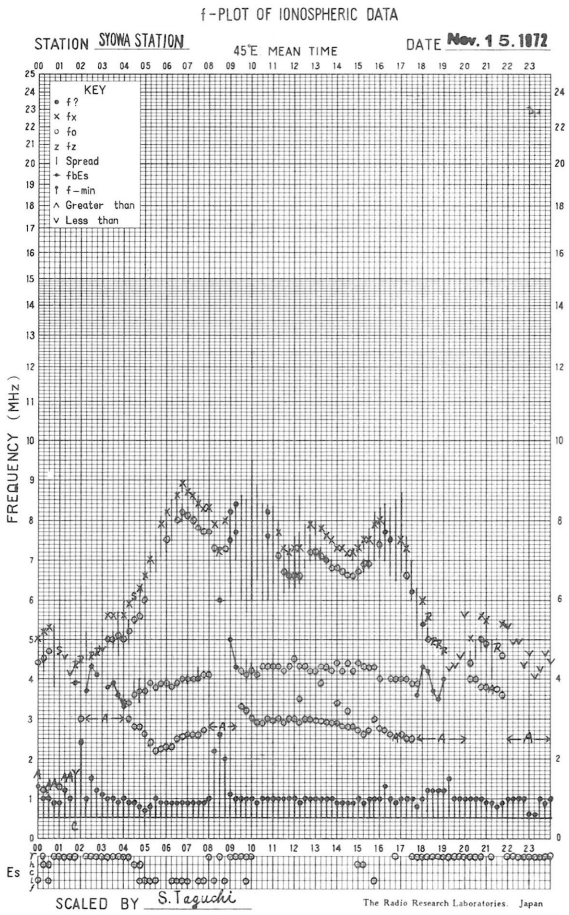
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DATE Nov. 15. 1972
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FREQUENCY (MHz)
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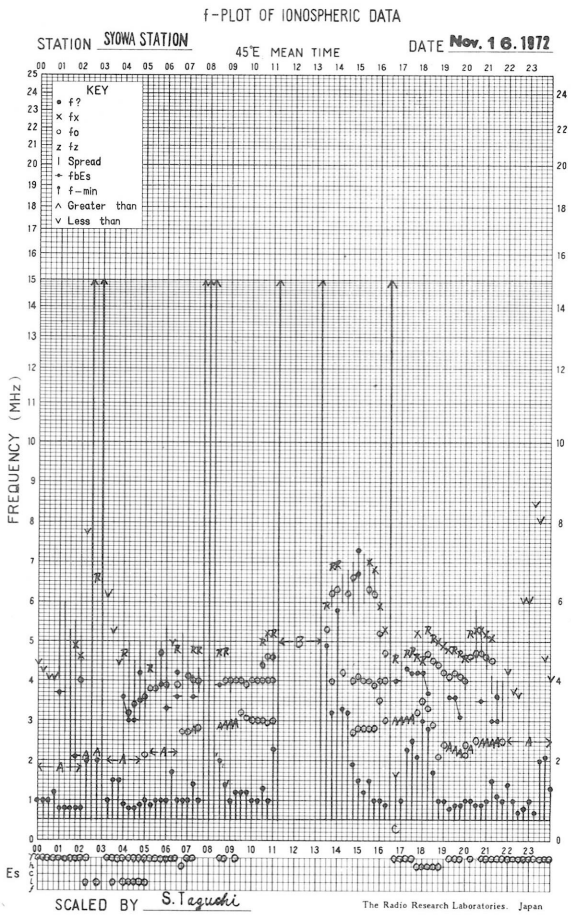
The Radio Research Laboratories. Japan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DATE Nov. 16. 1972
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fo
fz
Spread
fbEs
f-min
Greater than
Less than
FREQUENCY (MHz)
Es
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The Radio Research Laboratories. Japan

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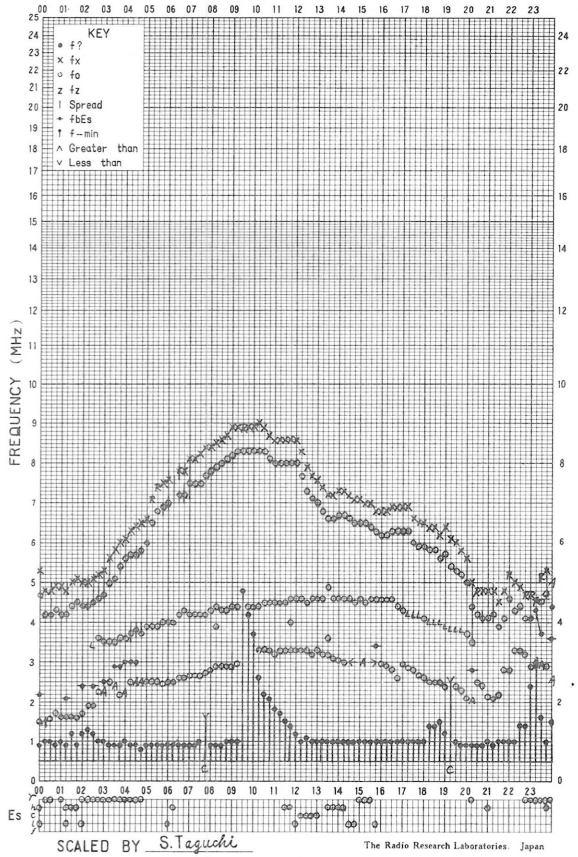

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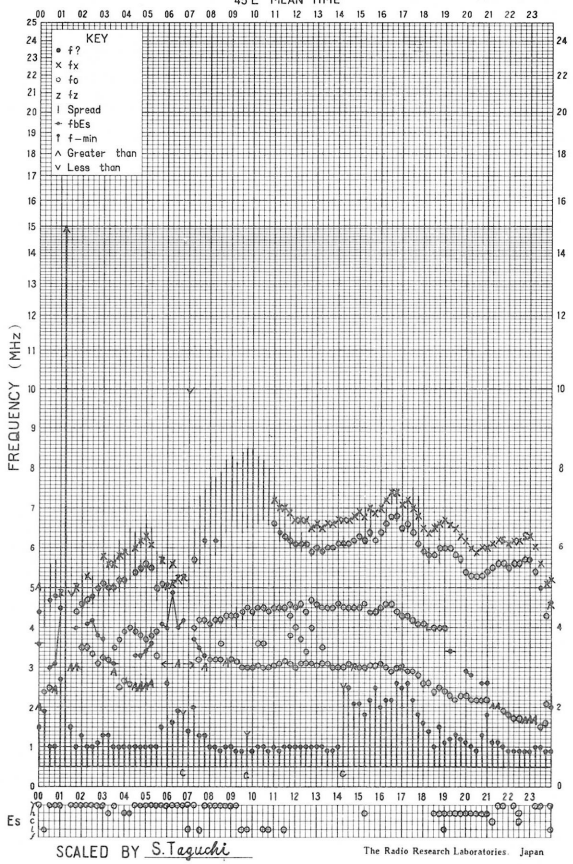

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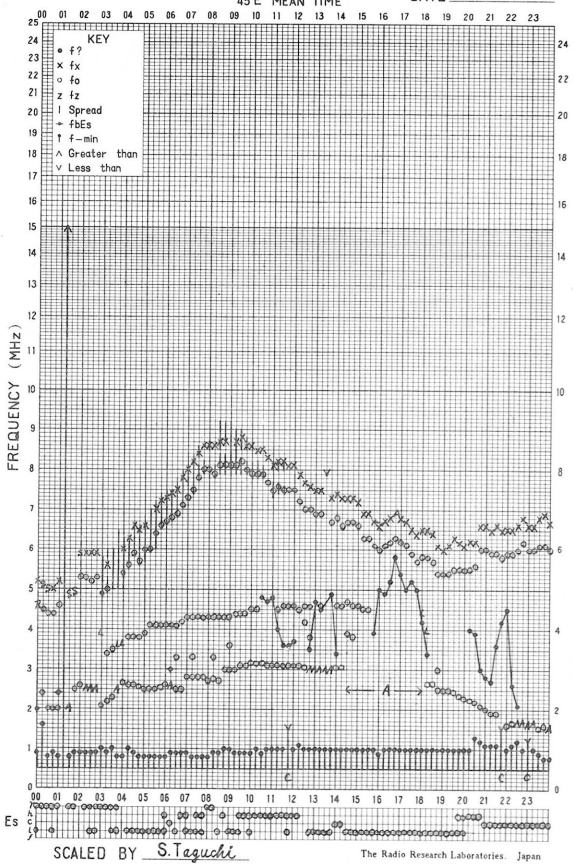

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