

# IONOSPHERIC DATA AT SYOWA STATION (ANTARCTICA)

July 1973-December 1973

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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 $\mu$ sec
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 600 $\Omega$
Receiving Antenna	25 m height vertical delta terminated by 600 $\Omega$

### 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

$f_oF2$	The ordinary wave critical frequency for the $F2$ , $F1$ and $E$ layers respectively.
$f_oF1$	
$f_oE$	
$f_oEs$	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$f\text{-min}$	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 $f_oEs$ .

### 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 $f\text{-min}$ .
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 preceding symbol on monthly tabulation sheets.

D	<i>greater than</i> .....
E	<i>less than</i> .....
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.

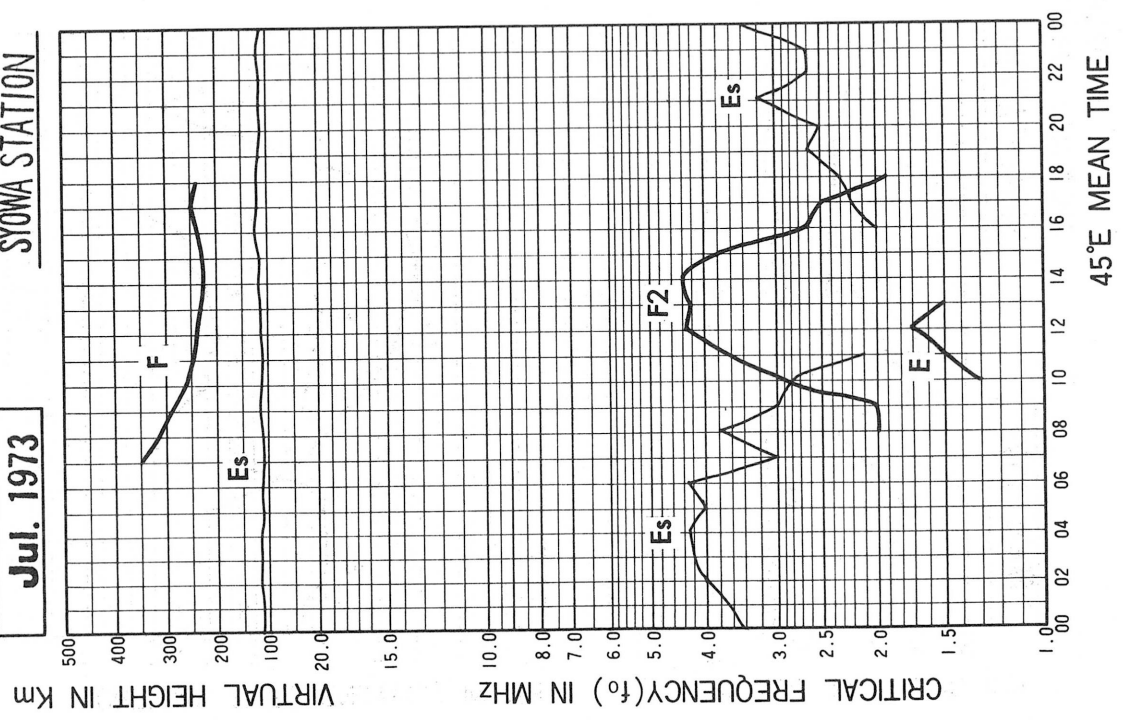
#### c. f-plot

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

IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS

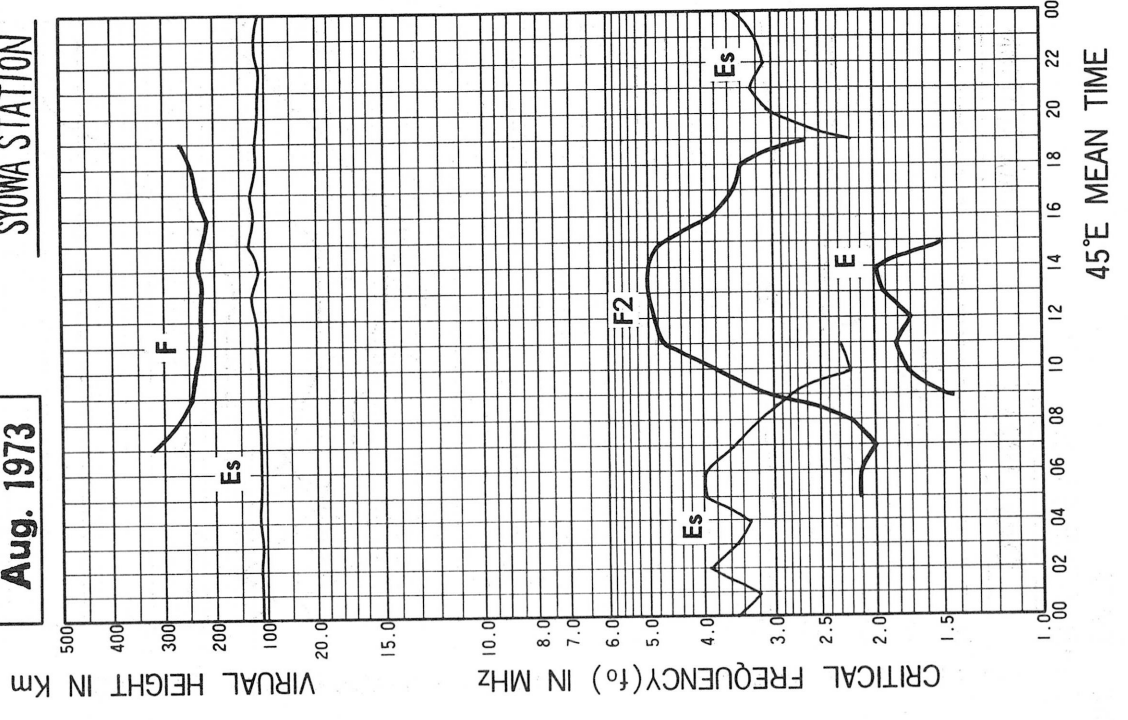
**Jul. 1973**

**SYOWA STATION**



**Aug. 1973**

**SYOWA STATION**



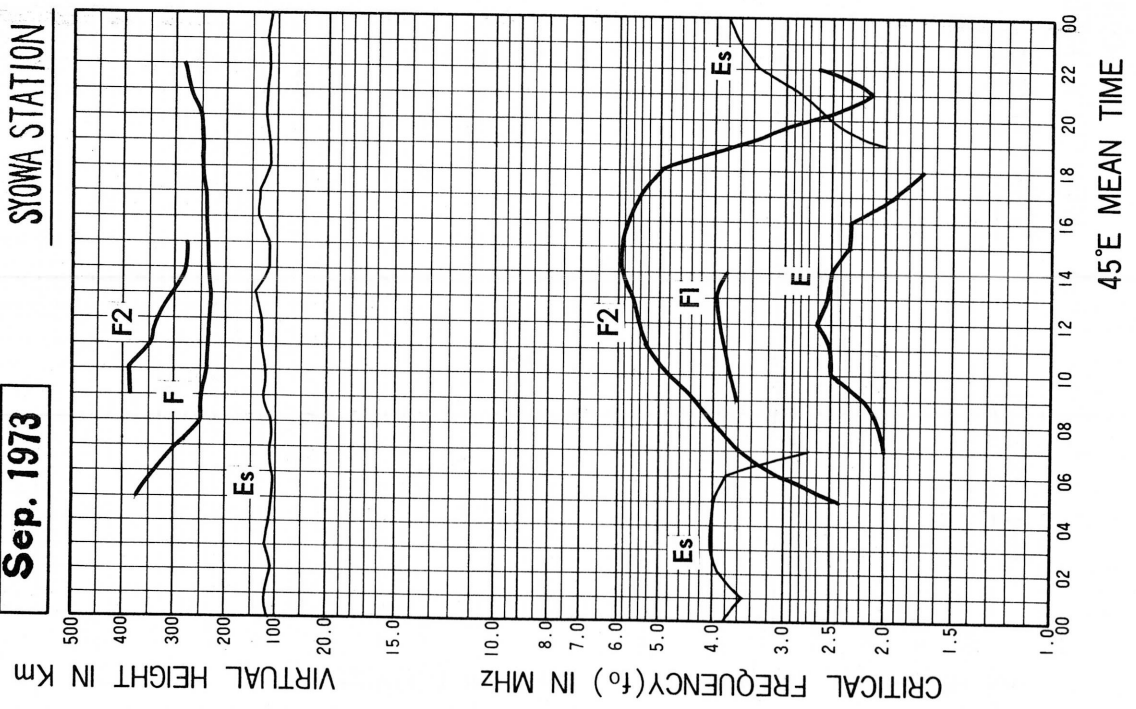
45°E MEAN TIME

45°E MEAN TIME

IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS

**Sep. 1973**

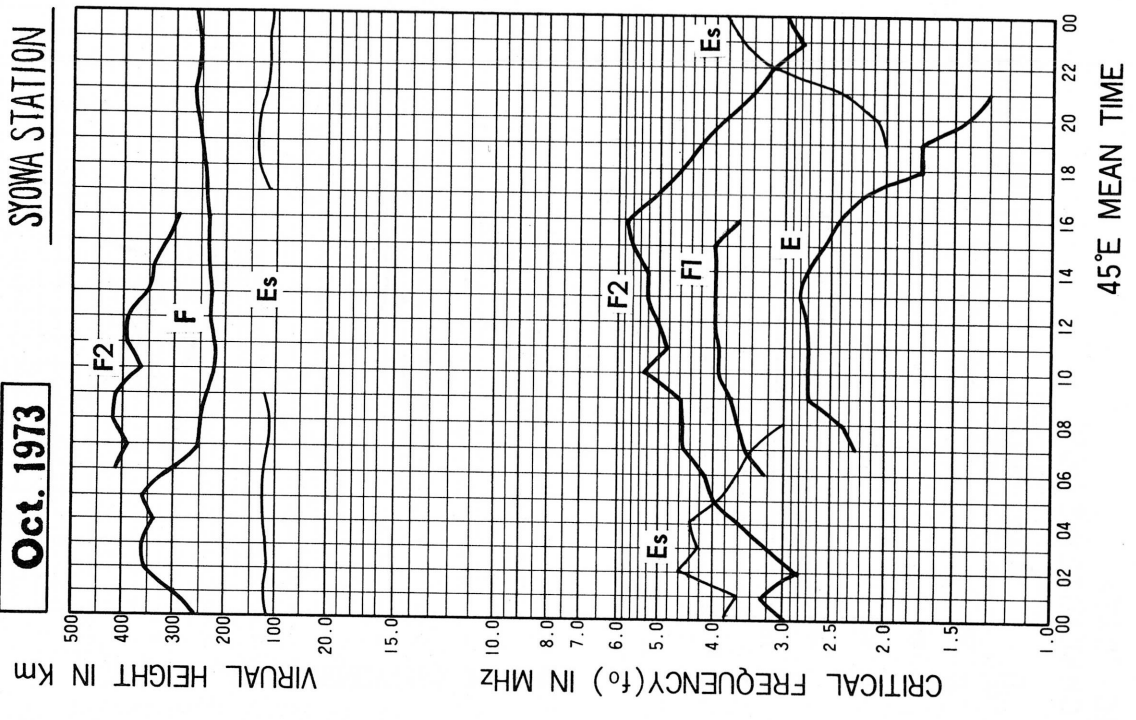
SYOWA STATION



45°E MEAN TIME

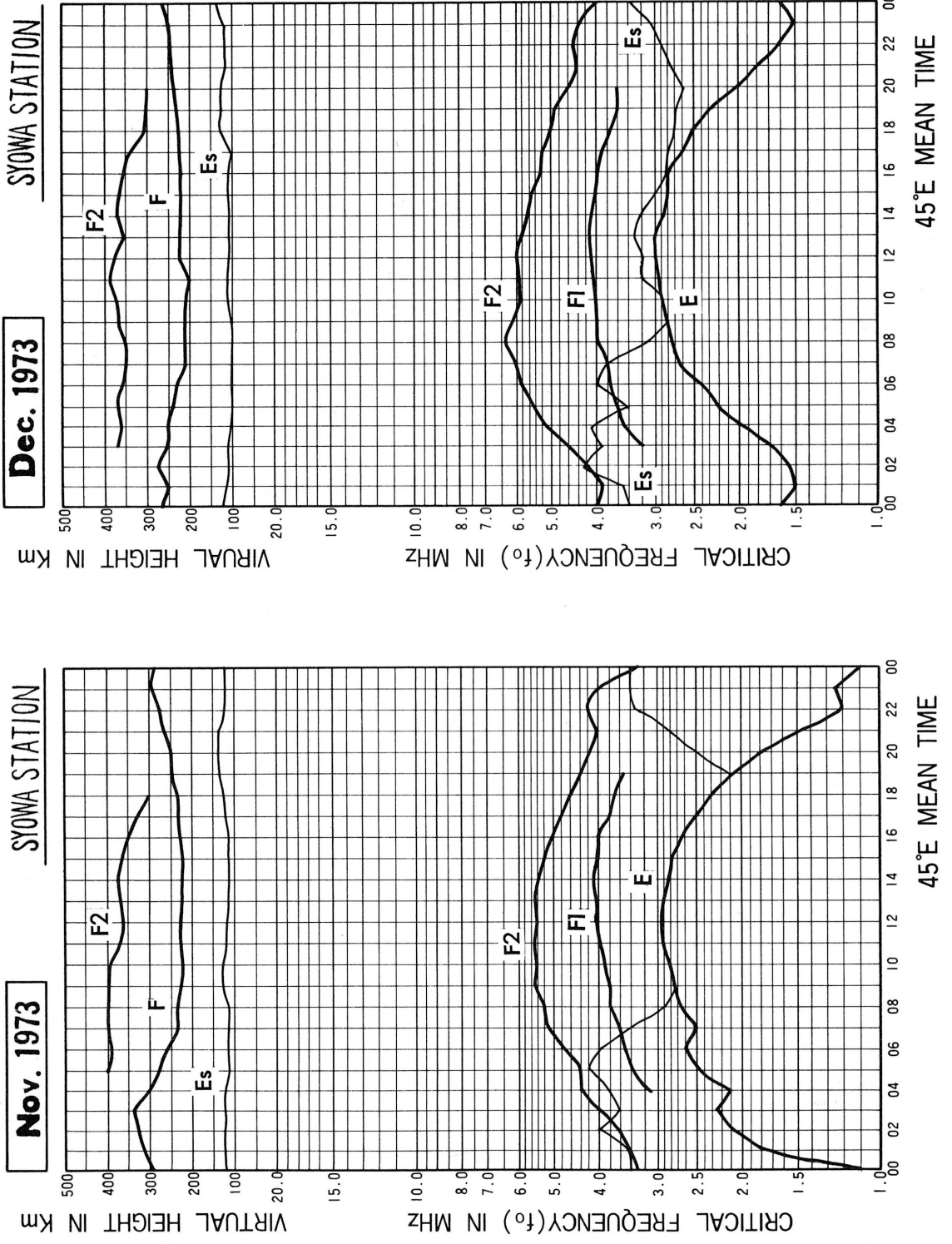
**Oct. 1973**

SYOWA STATION



45°E MEAN TIME

IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



# IONOSPHERIC DATA

JUL. 1973

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69 00.4 S, Long. 39 35.4 E		Sweep 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	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
2	A	B	A	H	B	A	B	B	B	A	B	B	F <sub>43</sub>	B	B	B	B	R	B	B	B	B	B	R	R
3	A	A	B	A	A	A	B	B	A	A	B	B	B	39	B	B	B	B	B	B	B	B	B	A	
4	A	A	A	A	A	A	A	A	A	A	28	29	34	J <sub>50</sub>	R <sub>40</sub>	R	A	A	A	14	A	A	U <sub>16</sub>	F <sub>A</sub>	
5	A	F	A	A	A	A	A	A	15	F <sub>17</sub>	F <sub>26</sub>	F <sub>37</sub>	F <sub>40</sub>	F <sub>41</sub>	U <sub>44</sub>	B	B	R	A	A	B	B	R	B	
6	A	A	A	A	A	C	C	C	A	A	B	U <sub>34</sub>	B	B	R	B	28	B	B	B	B	B	B	U <sub>13</sub>	
7	A	A	U <sub>14</sub>	A	A	U <sub>28</sub>	J <sub>27</sub>	F	F	F <sub>16</sub>	F	F	F	B	R	F	F <sub>32</sub>	U <sub>25</sub>	19	B	A	R	A	A	
8	A	F	A	A	A	U <sub>27</sub>	A	A	A	A	F <sub>32</sub>	J <sub>33</sub>	J <sub>44</sub>	J <sub>46</sub>	F	U <sub>50</sub>	R	B	B	A	A	A	A	A	
9	B	F	A	A	A	F	U <sub>32</sub>	F	B	B	A	F	F <sub>41</sub>	F <sub>47</sub>	J <sub>55</sub>	B	B	B	B	B	B	B	B	A	
10	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	
11	B	B	B	B	B	B	B	B	B	B	B	B	B	U <sub>40</sub>	U <sub>45</sub>	F	U <sub>22</sub>	U <sub>20</sub>	R	B	R	R	R	R	
12	A	A	A	B	B	B	A	A	F <sub>33</sub>	U <sub>31</sub>	R	B	F	42	43	36	B	R	R	R	A	F	A	A	
13	A	A	B	A	B	A	A	A	A	B	A	A	B	42	B	F <sub>42</sub>	F <sub>22</sub>	C	B	B	B	B	A	A	
14	A	A	A	A	F	A	A	A	A	A	F <sub>29</sub>	35	45	R	F <sub>39</sub>	F	F <sub>26</sub>	F <sub>23</sub>	15	15	A	B	A	C	
15	A	A	A	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
16	A	A	B	B	B	B	A	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	F	
17	A	A	A	B	B	B	B	A	R	R	29	40	43	40	45	34	B	U <sub>23</sub>	A	B	B	A	A	A	
18	A	A	B	A	B	R	A	A	B	A	F <sub>29</sub>	40	J <sub>47</sub>	J <sub>43</sub>	48	40	U <sub>26</sub>	F <sub>25</sub>	R	B	A	B	R	R	
19	A	A	B	F	F <sub>24</sub>	F <sub>23</sub>	F <sub>22</sub>	F <sub>20</sub>	F <sub>17</sub>	B	B	B	B	B	R	35	F <sub>31</sub>	B	B	B	B	B	A	A	
20	A	A	A	R	A	B	A	A	A	F	F <sub>30</sub>	36	47	F <sub>39</sub>	R	B	B	F <sub>30</sub>	J <sub>19</sub>	B	B	A	A	A	
21	B	A	A	B	A	A	B	F <sub>17</sub>	F <sub>20</sub>	F <sub>20</sub>	29	43	45	42	45	46	F	F	R	R	B	R	B	B	
22	B	B	B	A	A	A	R	F <sub>24</sub>	F <sub>21</sub>	F <sub>21</sub>	34	J <sub>46</sub>	40	J <sub>47</sub>	40	C	C	U <sub>18</sub>	U <sub>19</sub>	F <sub>15</sub>	A	F	A	C	
23	F	A	A	A	A	A	A	F	F	A	A	F <sub>35</sub>	F <sub>39</sub>	F	39	B	F	F	F <sub>28</sub>	A	A	A	A	A	
24	B	A	A	A	B	A	A	A	A	A	F <sub>28</sub>	F <sub>37</sub>	B	B	B	35	F <sub>28</sub>	F	B	B	B	B	R	A	
25	A	A	A	A	B	B	A	B	B	R	B	B	B	B	B	B	B	B	U <sub>34</sub>	B	B	B	R	A	
26	A	A	A	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	
27	A	A	A	B	A	A	A	B	A	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	
28	B	A	A	A	A	A	H	B	B	B	B	B	B	B	B	H	B	B	B	B	B	A	A	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31	A	A	B	A	B	B	H	B	B	B	B	B	B	B	B	B	B	B	F	B	B	C	C	C	
	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	3	3	4	5	5	10	14	13	14	12	10	9	9	5	3			1	1	
MED			U <sub>14</sub>		F <sub>24</sub>	U <sub>27</sub>	F <sub>27</sub>	F <sub>22</sub>	F <sub>20</sub>	F <sub>20</sub>	F <sub>29</sub>	36	F <sub>43</sub>	42	44	F <sub>38</sub>	F <sub>26</sub>	U <sub>25</sub>	F <sub>19</sub>	F <sub>15</sub>			U <sub>16</sub>	U <sub>13</sub>	
UQ					U <sub>28</sub>	F <sub>30</sub>	F <sub>24</sub>	F <sub>21</sub>	F <sub>21</sub>	F <sub>30</sub>	40	45	J <sub>46</sub>	46	46	F <sub>28</sub>	F <sub>30</sub>	F <sub>19</sub>	F <sub>15</sub>						
LQ					F <sub>25</sub>	F <sub>24</sub>	F <sub>18</sub>	F <sub>17</sub>	F <sub>17</sub>	F <sub>28</sub>	34	F <sub>40</sub>	40	40	35	F <sub>25</sub>	U <sub>23</sub>	F <sub>19</sub>	F <sub>14</sub>						

The Radio Research Laboratories, Japan

JUL. 1973

FOF2 (0.1 MHz)



# IONOSPHERIC DATA

JUL. 1973

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 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																								
7																								
8															L									
9																								
10																								
11																								
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27																								
28																								
29																								
30																								
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																								

JUL. 1973

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

JUL. 1973

FOE (0.01 MHz)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	B	B	B	R	B	B	B	B	B						
2								B	B	A	B	R	R	B	B	U	B	B						
3								B	B	B	B	R	B	B	B	B	B	B						
4								A	A	A	A	A	A	A	B	H	A	A						
5								A	A	A	A	A	A	A	A	B	B	A						
6								C	A	A	B	R	R	B	B	B	B	B						
7								B	B	A	A	U	R	B	U A	H	S	A						
8								A	A	A	A	A	A	A	A	A	B	B						
9								A	150	130	B	B	R	A	A	150	120	U	B	B				
10								B	B	B	R	H	R	B	B	B	U	B	B					
11								R	B	B	R	R	B	B	B	R	U A	A						
12								A	A	A	B	R	B	B	160	B	B	B						
13								A	B	B	A	A	B	B	B	B	B	B	C					
14								A	B	A	145	B	R	B	B	A	A	A						
15								B	B	B	B	B	B	B	B	B	B	130						
16								B	B	B	R	R	B	B	B	B	U	B	B					
17								R	A	B	120	U A	R	B	A	A	B	A						
18								A	R	B	A	R	180	190	B	A	B	A						
19								A	130	100	B	R	B	R	B	B	B	A	B					
20								A	A	A	150	U A	170	150	B	B	B	A						
21								145	130	115	130	150	B	B	B	A	A	A						
22								U A	A	B	130	B	R	A	B	C	C	A						
23								A	A	B	B	A	135	130	B	B	A							
24								A	A	A	A	150	B	B	B	B	B	B						
25								B	B	B	B	R	B	B	B	B	B	B						
26								B	B	B	R	R	B	B	B	B	B	B						
27								B	B	B	R	R	B	B	B	B	B	B						
28								B	B	B	B	R	B	B	B	B	B	B						
29								C	C	C	C	C	C	C	C	C	C	C						
30								C	C	C	C	C	C	C	C	C	C	C						
31								B	B	B	B	R	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	3	4	2	6	4	3	4	3		2	1						
MED							A	140	130	122	118	130	150	170	150	150	122	130						
UQ								138	128		145	U A	160	175	170	155								
LQ								125	110		125	150	152	140	135									

JUL. 1973

FOE (0.01 MHz)

# IONOSPHERIC DATA

JUL. 1973

FOES (0.1 MHz)

45 E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69 00.4 S.		Long. 39 35.4 E		Sweep 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	38	29	B	B	50	32	J <sub>39</sub> X	B	B	B	B	B	B	B	B	B	B	B	B	B	22	J <sub>66</sub> X	27	37				
2	J <sub>63</sub> X	32	J <sub>39</sub> X	J <sub>44</sub> X	47	J <sub>43</sub> X	B	B	B	J <sub>29</sub> X	B	B	G	B	B	B	B	E <sub>27</sub> B	B	B	B	B	B	18				
3	J <sub>33</sub> X	J <sub>60</sub> X	38	J <sub>40</sub> X	J <sub>35</sub> X	40	B	B	40	32	B	B	B	E <sub>21</sub> B	B	B	B	B	B	B	B	B	B	23				
4	J <sub>24</sub> X	32	32	43	J <sub>42</sub> X	J <sub>45</sub> X	J <sub>33</sub> X	J <sub>32</sub> X	20	21	17	18	24	J <sub>21</sub> X	E <sub>18</sub> B	E <sub>20</sub> B	35	J <sub>75</sub> X	J <sub>35</sub> X	J <sub>22</sub> X	40	J <sub>32</sub> X	E <sub>10</sub> B	J <sub>24</sub> X				
5	25	J <sub>26</sub> X	J <sub>70</sub> X	J <sub>26</sub> X	J <sub>26</sub> X	32	J <sub>36</sub> X	J <sub>27</sub> X	21	16	J <sub>32</sub> X	J <sub>29</sub> X	22	J <sub>20</sub> X	20	B	B	26	J <sub>23</sub> X	J <sub>24</sub> X	B	B	B	25				
6	J <sub>30</sub> X	J <sub>54</sub> X	J <sub>40</sub> X	J <sub>42</sub> X	J <sub>34</sub> X	C	C	C	J <sub>35</sub> X	D <sub>40</sub> S	B	E <sub>21</sub> B	B	B	E <sub>26</sub> B	B	E <sub>25</sub> B	B	B	B	B	B	B	J <sub>26</sub> X				
7	J <sub>34</sub> X	17	15	J <sub>28</sub> X	J <sub>32</sub> X	J <sub>26</sub> X	E <sub>10</sub> B	J <sub>24</sub> X	E <sub>10</sub> B	J <sub>32</sub> X	J <sub>66</sub> X	E <sub>15</sub> B	B	E <sub>20</sub> B	D <sub>17</sub> S	E <sub>12</sub> B	G	J <sub>54</sub> X	J <sub>13</sub> X	B	J <sub>16</sub> X	13	J <sub>26</sub> X	J <sub>31</sub> X				
8	J <sub>31</sub> X	J <sub>20</sub> X	J <sub>30</sub> X	J <sub>34</sub> X	J <sub>44</sub> X	J <sub>50</sub> X	J <sub>21</sub> X	J <sub>26</sub> X	49	J <sub>42</sub> X	J <sub>32</sub> X	J <sub>41</sub> X	J <sub>31</sub> X	23	29	17	E <sub>26</sub> B	B	B	32	J <sub>42</sub> X	J <sub>53</sub> X	J <sub>41</sub> X	45				
9	47	J <sub>64</sub> X	J <sub>50</sub> X	J <sub>46</sub> X	J <sub>41</sub> X	40	21	J <sub>24</sub> X	B	B	30	J <sub>30</sub> X	J <sub>24</sub> X	18	18	B	B	B	B	B	B	44	30	30				
10	J <sub>34</sub> X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
11	B	B	B	B	B	B	B	B	B	B	B	B	B	E <sub>21</sub> B	19	E <sub>15</sub> B	J <sub>33</sub> X	26	17	B	15	16	B	17				
12	J <sub>61</sub> X	J <sub>02</sub> X	J <sub>51</sub> X	52	56	56	60	J <sub>50</sub> X	22	17	B	B	E <sub>20</sub> B	E <sub>17</sub> B	G	E <sub>21</sub> B	B	28	20	16	J <sub>43</sub> X	J <sub>20</sub> X	J <sub>26</sub> X	35				
13	36	J <sub>43</sub> X	40	J <sub>61</sub> X	59	J <sub>54</sub> X	J <sub>50</sub> X	J <sub>39</sub> X	46	B	40	38	B	E <sub>27</sub> B	B	E <sub>26</sub> B	E <sub>11</sub> B	C	B	B	B	B	26	27				
14	35	37	J <sub>67</sub> X	32	J <sub>51</sub> X	40	45	37	45	38	G	E <sub>21</sub> B	E <sub>25</sub> B	E <sub>41</sub> B	E <sub>15</sub> B	20	15	17	14	14	20	J <sub>56</sub> X	21	C				
15	20	36	40	37	B	62	70	31	B	B	B	B	B	B	B	B	B	16	B	B	B	J <sub>42</sub> X	50	D <sub>40</sub> S				
16	41	36	J <sub>59</sub> X	B	B	B	J <sub>38</sub> X	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	J <sub>26</sub> X				
17	J <sub>24</sub> X	35	22	35	B	40	B	35	20	18	G	21	G	E <sub>16</sub> B	J <sub>17</sub> X	15	B	17	J <sub>25</sub> X	B	B	J <sub>19</sub> X	J <sub>26</sub> X	20				
18	28	33	B	J <sub>54</sub> X	55	B	40	28	B	30	23	E <sub>17</sub> B	23	30	30	J <sub>26</sub> X	J <sub>39</sub> X	19	19	B	16	B	15	13				
19	J <sub>29</sub> X	J <sub>31</sub> X	31	J <sub>25</sub> X	J <sub>30</sub> X	J <sub>33</sub> X	J <sub>26</sub> X	J <sub>16</sub> X	G	30	B	B	B	E <sub>47</sub> B	E <sub>25</sub> B	18	B	B	B	B	B	22	22					
20	J <sub>40</sub> X	J <sub>87</sub> X	42	42	42	40	46	J <sub>39</sub> X	40	J <sub>31</sub> X	G	J <sub>21</sub> X	J <sub>30</sub> X	18	E <sub>19</sub> B	B	B	J <sub>19</sub> X	19	B	B	18	40	D <sub>47</sub> S				
21	40	47	J <sub>34</sub> X	J <sub>52</sub> X	J <sub>49</sub> X	48	104	18	G	G	J <sub>37</sub> X	18	E <sub>19</sub> B	E <sub>17</sub> B	E <sub>24</sub> B	D <sub>34</sub> S	J <sub>79</sub> X	J <sub>22</sub> X	38	36	B	B	B	70				
22	J <sub>46</sub> X	J <sub>46</sub> X	45	J <sub>99</sub> X	40	J <sub>41</sub> X	25	20	13	E <sub>11</sub> B	16	18	E <sub>17</sub> B	J <sub>28</sub> X	J <sub>26</sub> X	C	C	48	J <sub>74</sub> X	J <sub>26</sub> X	J <sub>47</sub> X	30	18	J <sub>26</sub> X				
23	J <sub>19</sub> X	J <sub>81</sub> X	J <sub>61</sub> X	30	J <sub>49</sub> X	60	J <sub>57</sub> X	J <sub>30</sub> X	J <sub>41</sub> X	J <sub>78</sub> X	50	30	G	G	E <sub>33</sub> B	B	23	28	J <sub>26</sub> X	J <sub>26</sub> X	J <sub>25</sub> X	30	J <sub>27</sub> X	J <sub>42</sub> X				
24	58	J <sub>36</sub> X	43	41	B	34	43	30	43	J <sub>40</sub> X	26	G	B	B	B	E <sub>25</sub> B	E <sub>18</sub> B	E <sub>17</sub> B	B	B	B	B	18	J <sub>32</sub> X				
25	J <sub>27</sub> X	34	J <sub>64</sub> X	55	B	J <sub>60</sub> X	J <sub>52</sub> X	67	B	B	B	B	B	E <sub>33</sub> B	E <sub>19</sub> B	E <sub>19</sub> B	E <sub>25</sub> B	E <sub>23</sub> B	B	B	B	B	J <sub>26</sub> X	19				
26	33	J <sub>42</sub> X	33	J <sub>37</sub> X	J <sub>46</sub> X	J <sub>42</sub> X	B	D <sub>60</sub> S	J <sub>62</sub> X	B	B	B	B	B	B	B	B	E <sub>54</sub> B	38	75	80	J <sub>103</sub> X	D <sub>85</sub> S	J <sub>108</sub> X				
27	J <sub>49</sub> X	47	J <sub>76</sub> X	B	36	J <sub>40</sub> X	46	67	J <sub>60</sub> X	B	B	B	B	B	B	B	B	B	B	30	B	32	J <sub>46</sub> X	B				
28	43	40	J <sub>40</sub> X	J <sub>44</sub> X	40	20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	43	J <sub>46</sub> X	C				
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
31	36	32	B	J <sub>84</sub> X	57	B	51	B	B	B	B	B	B	B	B	B	B	E <sub>54</sub> B	B	B	C	C	C	C				
	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	24	24	22	23	21	20	18	17	14	15	13	17	17	13	13	18	13	10	11	16	20	24				
MED	J <sub>34</sub> X	36	J <sub>40</sub> X	J <sub>42</sub> X	J <sub>43</sub> X	40	43	30	38	30	28	21	E <sub>22</sub> G	E <sub>21</sub> B	E <sub>19</sub> G	E <sub>20</sub> B	U <sub>20</sub>	U <sub>22</sub>	23	26	25	32	26	26				
UQ	42	J <sub>47</sub> X	J <sub>55</sub> X	J <sub>52</sub> X	50	J <sub>49</sub> X	51	39	45	J <sub>38</sub> X	J <sub>37</sub> X	30	24	E <sub>27</sub> B	U <sub>22</sub>	E <sub>25</sub> B	33	U <sub>38</sub>	J <sub>35</sub> X	32	J <sub>42</sub> X	J <sub>48</sub> X	40	38				
LQ	J <sub>28</sub> X	32	34	34	J <sub>36</sub> X	37	J <sub>33</sub> X	J <sub>25</sub> X	20	18	16	F <sub>17</sub> G	E <sub>18</sub> B	E <sub>18</sub> B	E <sub>17</sub> G	E <sub>17</sub> B	E <sub>18</sub> G	18	19	J <sub>22</sub> X	18	20	22	22				

JUL. 1973

FOES (0.1 MHz)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUL. 1973

F-MIN (0.1 MHZ)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69° 00' 4" S, Long. 39° 35' 4" E		Sweep 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	10	9	B	B	28	13	12	B	B	B	B	B	B	B	B	B	B	B	B	B	10	9	11	10	
2	10	20	10	20	25	14	B	B	B	10	B	B	10	B	B	B	B	27	B	B	B	B	B	10	
3	10	9	20	10	15	14	B	B	17	18	B	B	B	21	B	B	B	B	B	B	B	B	B	10	
4	9	9	9	10	10	10	10	9	10	9	9	10	9	9	9	9	10	10	10	10	10	9	9	10	
5	10	10	18	20	10	10	10	9	10	10	10	9	10	10	10	B	B	10	13	10	B	B	B	20	
6	9	10	9	9	10	C	C	C	10	E <sub>10</sub> S	B	21	B	B	26	B	25	B	B	B	B	B	B	9	
7	9	9	9	9	9	9	10	9	10	9	10	13	B	20	10	12	10	10	10	B	10	9	9	10	
8	9	9	E <sub>11</sub> C	E <sub>12</sub> C	9	9	8	10	12	11	11	10	9	8	10	10	26	B	B	10	10	10	9	10	
9	22	9	13	10	10	9	9	9	B	B	17	12	10	10	9	B	B	B	B	B	20	22	16		
10	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
11	B	B	B	B	B	B	B	B	B	B	B	B	B	21	17	15	9	9	10	B	10	10	B	10	
12	10	11	15	23	23	23	16	11	10	10	B	B	20	17	11	21	B	15	13	12	9	9	9	9	
13	9	10	22	17	26	10	12	10	20	B	10	12	B	27	B	26	11	C	B	B	B	B	16	9	
14	17	13	10	10	9	16	20	10	20	10	10	21	25	41	15	10	11	9	10	9	9	20	12	C	
15	9	9	11	10	B	25	25	15	B	B	B	B	B	B	B	B	B	12	B	B	B	10	9	20	
16	15	13	23	B	B	B	10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	10	
17	15	10	12	18	B	20	B	15	10	12	10	9	11	16	10	10	B	10	16	B	B	10	9	9	
18	10	9	B	17	25	B	13	11	B	19	13	17	15	17	16	10	17	9	10	B	9	B	9	9	
19	9	9	19	9	9	9	9	9	9	20	B	B	B	B	47	25	12	B	B	B	B	B	12	10	
20	16	11	10	31	13	27	20	9	10	10	10	10	10	9	19	B	B	10	E <sub>10</sub> S	B	B	12	9	10	
21	20	10	11	20	13	10	27	10	9	9	9	10	19	17	24	13	10	11	20	21	B	B	B	21	
22	21	18	18	13	12	16	11	10	10	11	10	12	17	13	14	C	C	9	9	9	9	9	9	E <sub>18</sub> C	
23	9	9	9	9	10	17	10	E <sub>10</sub> C	8	17	22	10	13	12	33	B	13	10	14	12	15	9	9	14	
24	38	16	16	13	B	11	13	10	10	10	10	12	B	B	B	25	18	17	B	B	B	B	10	9	
25	9	13	9	14	B	24	17	28	B	B	B	B	B	33	19	19	25	23	B	B	B	B	9	13	
26	8	10	E <sub>13</sub> S	9	15	15	B	20	20	B	B	B	B	B	B	B	B	54	E <sub>32</sub> S	9	31	9	9	9	
27	10	9	14	B	18	10	21	29	19	B	B	B	B	B	B	B	B	B	B	B	10	B	10	13	B
28	26	10	10	10	10	15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	11	10	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31	10	12	B	11	52	B	26	B	B	B	B	B	B	B	B	B	B	54	B	B	C	C	C	C	
CNT	29	29	29	29	29	28	28	28	29	29	29	29	29	29	29	28	28	28	29	29	28	28	28	26	
MED	10	10	13	13	15	14	16	11	19	18	B	21	B	27	26	B	B	20	B	B	B	16	10	10	
UQ	16	13	20	20	52	24	D <sub>27</sub> B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	15	
LQ	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	9	

JUL. 1973

F-MIN (0.1 MHZ)

### IONOSPHERIC DATA

JUL. 1973

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
2	A	B	A	R	B	A	R	B	B	A	B	B	335	B	B	B	B	R	B	B	B	B	B	R
3	A	A	R	A	A	A	B	B	A	A	B	B	340	B	B	B	B	B	B	B	B	B	B	A
4	A	A	A	A	A	A	A	A	A	A	330	310	325	R	350	R	A	A	A	305	A	A	U F 375	A
5	A	F	A	A	A	A	A	A	285	275	290	F 320	F 345	F 330	U F 345	B	B	R	A	A	B	B	B	B
6	A	A	A	A	A	C	C	C	A	A	R	U R 330	B	B	R	B	320	B	B	B	B	B	B	U F 245
7	A	A	F	A	A	U F 255	F	F	F	295	F	265	B	R	325	F 375	355	F	370	B	A	R	A	A
8	A	F	A	A	A	F	A	A	A	A	335	F 305	F 315	F	U F 320	R	B	B	A	A	A	A	A	A
9	B	F	A	A	A	U F 250	F 250	F	B	B	A	325	F 320	F 320	U R 345	B	B	B	B	R	B	B	B	A
10	A	B	B	R	B	R	B	B	B	B	R	R	R	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	R	B	B	B	B	B	B	B	B	R	U R 335	F	U F 320	U F 325	R	B	R	R	R	B	R
12	A	A	A	R	B	B	A	A	290	U F 295	R	B	320	F 350	F	355	B	R	R	R	A	F	A	A
13	A	A	B	A	B	A	A	A	A	B	A	A	B	335	B	F 310	F 340	C	B	B	B	B	A	A
14	A	A	A	A	F	A	A	A	A	A	F 310	310	310	R	F 310	R	325	F 350	F 335	F 335	A	B	A	C
15	A	A	A	A	R	B	B	A	B	R	B	B	B	B	B	B	B	335	B	B	R	A	A	B
16	A	A	B	R	B	B	A	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	R	F
17	A	A	A	R	B	B	B	A	R	R	300	325	355	350	355	350	B	F	A	B	B	A	A	A
18	A	A	B	A	B	B	A	A	B	A	F 310	340	U R 300	U R 325	330	350	A	F 395	R	B	A	B	R	R
19	A	A	R	F	F 290	F 305	F 265	F 290	F 295	B	R	R	B	B	R	345	345	R	B	B	B	B	A	A
20	A	A	A	B	A	B	A	A	A	F	330	320	340	F 330	R	B	B	355	F	B	B	A	A	A
21	B	A	A	B	A	A	B	F 295	F 250	F 300	F 310	350	355	335	335	335	F	F	R	R	B	B	B	B
22	B	B	B	A	A	A	R	285	F 295	F 295	325	U R 335	325	U R 360	345	C	C	F	F	335	A	F	A	C
23	F	A	A	A	A	A	F	F	A	A	290	F 335	F	310	B	F	F	F	320	A	A	A	A	A
24	B	A	A	A	B	A	A	A	A	A	320	F 320	B	B	B	335	370	F	B	B	B	R	A	A
25	A	A	A	A	B	B	A	B	R	B	R	H	B	F	F	F	375	U R 325	B	B	B	B	A	A
26	A	A	A	A	A	A	B	A	A	B	R	R	B	B	B	B	B	R	A	A	B	A	A	A
27	A	A	A	B	A	A	A	R	A	B	R	H	B	B	B	B	B	B	B	A	B	A	A	R
28	B	A	A	A	A	A	B	B	B	B	R	R	B	B	B	B	B	B	B	B	B	A	A	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	A	A	B	A	B	B	B	B	B	B	R	B	B	B	B	B	B	F	B	B	C	C	C	C
	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	2	4	5	5	10	13	13	11	11	9	8	6	3	3			1	1
MED					F 290	F 280	F 258	F 288	F 290	F 295	F 315	F 320	F 325	F 335	F 335	F 345	F 342	F 342	F 335	F 335			U F 375	U F 245
UQ								F 292	F 295	F 295	F 330	F 330	F 340	F 345	F 345	F 350	F 362	F 355	F 352	F 335				
LQ								F 268	F 285	F 295	F 310	F 310	F 320	F 328	F 328	F 335	F 322	F 325	F 328	F 320				

JUL. 1973

M(3000)F2 (0.01)

# IONOSPHERIC DATA

JUL. 1973

H'F2 (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00' .4" S		Long. 39° 35' .4" E		Sweep		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																								

JUL. 1973

H'F2 (KM)

# IONOSPHERIC DATA

JUL. 1973

H'F (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00.4' S. Long. 39° 35.4' E		Sweep 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	R	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
2	A	B	A	B	R	A	B	R	B	A	B	R	235	B	B	B	B	U <sub>B</sub> 290	B	B	B	B	B	A
3	A	A	B	A	A	A	B	B	R	A	B	R	B	230	B	B	B	B	B	B	B	B	B	A
4	A	A	A	A	A	A	A	A	A	A	245	250	210	200	225	220	B	A	A	A	A	A	195	A
5	A	A	A	A	A	A	A	A	A	345	330	290	250	225	215	215	B	B	A	A	A	B	B	B
6	A	A	A	A	A	C	C	C	A	A	R	230	B	B	B	B	B	B	B	B	B	B	B	A
7	A	A	A	A	A	A	350	300	F	310	A	230	B	200	230	200	230	240	225	B	A	A	A	
8	A	A	A	A	A	290	A	A	A	A	245	265	245	230	255	230	250	B	B	A	A	A	A	
9	B	A	A	A	A	340	340	350	B	B	A	250	230	245	210	B	B	B	B	B	B	B	B	
10	A	B	B	B	B	B	B	B	B	R	R	B	B	B	B	B	B	B	B	B	B	B	B	
11	B	B	B	B	B	B	B	B	B	B	R	R	R	210	220	220	250	250	A	B	A	A	B	
12	A	A	A	B	B	B	A	A	310	280	B	B	240	220	200	230	B	A	A	A	A	A	A	
13	A	A	B	B	R	A	A	A	B	R	A	A	B	225	B	225	190	C	B	B	R	B	B	
14	A	A	A	A	A	A	A	A	B	A	300	290	260	245	200	225	200	250	250	E <sub>A</sub> 240	A	B	A	
15	A	A	A	A	B	B	B	A	R	B	B	R	B	B	B	B	B	250	B	R	B	A	A	
16	A	A	B	B	B	B	A	B	R	B	B	R	B	B	B	B	B	B	B	B	B	B	R	
17	B	A	A	B	B	B	B	A	A	B	250	215	210	200	230	200	B	A	A	B	B	A	A	
18	A	A	B	A	B	R	A	A	B	A	260	235	250	230	225	230	A	200	A	B	A	B	A	
19	A	A	B	A	325	A	360	310	280	R	R	B	B	B	B	B	240	225	B	B	B	B	A	
20	A	A	A	B	A	B	B	A	A	A	250	250	225	225	235	B	B	220	245	B	B	A	A	
21	B	A	A	B	A	A	B	350	325	H	290	265	220	220	240	230	240	230	B	B	B	B	B	
22	B	B	B	A	A	A	400	350	290	295	240	215	200	215	200	C	C	A	A	240	240	A	C	
23	A	A	A	A	A	B	A	A	310	A	A	330	240	225	B	B	225	250	240	A	A	A	A	
24	B	A	A	A	B	A	A	A	A	A	280	240	B	B	B	B	250	220	270	B	B	B	A	
25	A	A	A	A	B	B	B	B	B	B	R	B	B	B	B	B	270	230	225	230	255	B	A	
26	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	A	
27	A	A	A	R	B	A	B	B	A	B	B	R	B	B	B	B	B	B	B	A	B	A	B	
28	B	A	A	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	A	A	
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
31	A	A	B	A	B	B	B	B	B	B	B	R	B	B	B	B	B	B	B	B	C	C	C	
CNT					1	2	4	5	6	5	10	14	13	17	15	13	10	11	5	2			1	
MED					325	315	355	350	310	295	255	245	230	225	225	225	228	250	240	240			195	
UQ						380	350	325	310	280	250	240	230	230	230	240	252	245						
LQ						345	310	290	290	245	230	220	215	212	220	220	235	240						

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H'F (KM)

### IONOSPHERIC DATA

JUL. 1973

H<sup>+</sup>ES (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69 00.4 S.				Long. 39 35.4 E				Sweep 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	110	105	B	B	100	100	100	B	B	B	B	B	B	B	B	B	B	B	B	B	110	105	120	115
2	120	120	110	100	100	100	B	B	B	105	B	B	G	B	B	B	B	B	B	B	B	B	B	130
3	110	110	120	110	110	105	B	B	110	115	B	B	B	B	B	B	B	B	B	B	B	B	B	120
4	105	105	105	105	110	110	110	105	105	130	110	100	115	100	B	B	130	140	125	120	120	110	B	150
5	135	130	115	120	115	100	100	100	110	180	130	110	110	110	B	B	B	B	B	B	B	B	B	150
6	130	155	125	120	110	C	C	C	100	110	B	B	B	B	B	B	B	B	B	B	B	B	B	100
7	100	130	110	130	110	110	B	120	B	130	125	B	B	B	115	B	G	130	120	B	110	125	130	130
8	130	125	130	110	120	120	110	100	100	110	130	115	115	110	120	115	B	B	B	115	115	110	110	110
9	130	150	100	100	115	110	110	100	B	B	105	130	110	145	150	B	B	B	B	B	B	120	120	120
10	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	120	B	130	100	120	B	100	100	B	130
12	140	110	105	115	115	110	100	110	110	130	B	B	B	B	G	B	B	130	130	120	110	120	100	110
13	110	110	105	100	105	100	110	105	100	B	100	100	B	B	B	B	B	C	B	B	B	B	110	110
14	120	115	125	110	120	110	115	100	100	100	G	B	B	B	B	130	120	110	110	110	110	120	100	C
15	105	110	115	100	B	155	150	120	B	B	B	B	B	B	B	B	B	115	B	B	B	100	100	100
16	100	100	105	B	B	B	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	115
17	125	110	120	115	B	100	B	100	110	130	G	100	G	B	115	125	B	120	100	B	B	110	100	110
18	120	105	B	100	110	B	100	105	B	105	110	B	125	125	110	110	115	120	110	B	105	B	160	145
19	130	110	130	140	105	100	120	100	G	120	B	B	B	B	B	B	125	B	B	B	B	B	120	120
20	125	150	110	140	105	115	100	100	105	160	G	100	100	110	B	B	B	130	105	B	B	170	110	105
21	110	100	105	105	100	100	105	130	G	G	100	120	B	B	B	115	130	100	115	100	B	B	140	
22	125	110	110	110	100	100	100	125	120	B	120	135	B	105	105	C	C	125	150	115	110	100	180	115
23	140	125	115	100	115	100	100	100	100	100	125	100	G	G	B	B	100	105	150	130	125	110	100	110
24	110	100	100	115	B	110	100	100	100	100	100	100	G	B	B	B	B	B	B	B	B	B	155	150
25	110	125	100	130	B	100	100	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	170
26	105	110	110	100	110	120	B	110	100	B	B	B	B	B	B	B	B	B	110	100	170	150	100	150
27	100	100	130	B	100	100	125	140	150	B	B	B	B	B	B	B	B	B	B	110	B	105	100	B
28	100	105	100	100	120	110	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	115	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	110	120	B	100	105	B	120	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C
	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	24	24	22	23	20	20	15	15	11	10	6	7	8	5	7	13	13	10	11	16	19	24
MED	115	110	110	110	110	105	108	105	105	115	110	105	112	110	115	115	125	120	120	112	110	110	110	120
UQ	128	125	120	118	115	110	112	115	110	130	125	120	115	118	120	125	130	130	125	120	118	120	120	142
LQ	108	105	105	100	105	100	100	100	100	105	102	100	110	108	110	115	118	105	110	110	110	105	100	110

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H<sup>+</sup>ES (KM)



# IONOSPHERIC DATA

JUL. 1973

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 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	R2	R2			F1	R1	R1														R1	R3	R1	R2
2	F1	F1	R3	F1	R1	R1				R1														R1
3	R1	R3	R1	F2	R2	F1			R1	L1														F2
4	R2	R4	RF21	R2	R2	R1	R2	R2	R1	RL2	R1	L1	LL11	L1			L1	LLR11	R2	R1	F1	FF11		R2
5	R2	R1	F1	F2	R1	R1	R2	R1	R1	R1	C1	R1	R1	L1	R1			RR11	F1	F1				F1
6	F1	FF11	F1	F2	F2				F1	F1														FF11
7	FR11	F1	R1	F1	F1	F1		L1		L1	L2				L1			L1	F1		F1	F1	F1	F2
8	F1	F1	R2	F1	F1	F1	R1	L1	N1	N1	RR11	L1	LR11	R1	L1	L1			R2	R4	R4	R5	R3	
9	R1	RF11	R1	R3	R3	F2	R1	L1			R1	L1	L1	CL11	C1							F1	F1	R1
10	R1																							
11															L1		CL11	L1	FF11		F1	F1		F1
12	RR12	F2	R1	F1	RS11	R1	R1	R2	R1	R1								R1	F1	F1	FR11	F1	FR12	R3
13	R5	R3	R1	F1	R1	R2	R2	R2	R1		R1	R1											FF11	R3
14	R1	R1	RF21	R3	FR11	R2	R1	R1	R2							LL11	L1	L1	F1	F1	R1	F1	FR11	
15	R1	R4	R2	R3		FR11	FR11	R1										L1				R3	RS41	F1
16	R1	R2	R1				R1																	R1
17	L1	R1	R1	R1		R1		R1	R1	L1		L1			L1	R1		L1	F1			F1	FR11	R1
18	R1	R3		R1	F1		R1	R2		R1	R1		C1	C1	L1	L1	L2	L1	F1		F1		R1	R1
19	FF11	F1	F1	R1	R1	FR13	LL11	L2		L1							L1						R1	R1
20	R1	FR12	R2	R1	R1	R1	R1	R1	R1	HL11		L1	CH11	C1				RL11	F1			R1	F4	R2
21	R1	RS11	F1	R1	R2	R2	R3	C1			L1	C1				L1	L1	L1	F1	R1				F1
22	F1	R3	R3	R3	R3	R1	R1	C1	L1		L1	C1		L1	L1			LLS11	FF12	FF11	R2	FF11	R1	R1
23	R1	F3	F2	R2	R1	R1	R2	R3	LC11	R1	R1	L1					R1	R1	RF11	R1	R1	R2	R5	R2
24	R1	R1	R1	R2		R2	R1	R3	R1	L1	R1												F1	RR11
25	R2	R1	RR21	R1		R1	R1	R1															R3	F1
26	RS	R4	R2	R4	R2	R1		R1	R1										R1	R2	R1	RF11	FF11	NR14
27	R1	RF21	RF12		R1	R1	R1	R1	LR11											R1		R3	R1	
28	R1	R2	R2	R2	RF21	R2																R2	R2	
29																								
30																								
31	R2	R1		R1	F1		R1																	
	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																								

JUL. 1973

TYPES OF ES

### IONOSPHERIC DATA

AUG. 1973

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 5 h)

Station SYOWA STATION		Lat. 69 00.4 S, Long. 39 35.4 E		Sweep 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	A	B	B	A	A	B	B	B	B	R	B	B	B	B	B	B	B	B	R	B	B	R		
2	A	A	A	A	A	B	B	B	B	B	B	B	B	B	50	R	B	F	37	32	19	B	A	A	A	
3	A	A	A	A	A	A	A	F	J	F	B	F	A	F	F	U	F	F	F	F	B	R	R	A	R	
4	A	A	A	A	A	A	A	F	J	F	I	R	U	R	U	F	J	F	U	R	B	B	A	R	A	
5	A	A	A	A	A	F	F	F	F	F	F	F	F	J	R	F	F	40	35	30	B	B	B	A	R	
6	A	A	A	A	A	B	A	B	B	F	R	R	B	B	50	F	B	B	F	R	B	B	R	A	A	
7	A	A	A	A	A	A	A	A	A	F	R	53	53	U	R	41	35	28	U	F	B	B	R	A	A	
8	A	A	A	A	B	A	A	B	A	30	B	B	C	C	B	B	B	B	B	B	B	R	B	R	R	
9	A	A	C	H	B	B	A	A	A	B	B	B	R	C	C	F	J	F	F	S	S	S	S	S	S	
10	S	S	S	S	S	S	S	S	S	S	F	F	U	R	S	S	R	38	31	S	S	S	S	S	S	
11	S	S	S	C	S	F	S	F	F	F	F	Z	U	R	U	F	R	F	F	R	S	S	S	S	S	
12	S	S	S	A	A	F	A	A	A	F	U	F	R	55	R	U	F	F	F	A	A	A	A	A	A	
13	A	A	A	A	A	F	J	F	J	F	A	J	F	F	F	J	F	F	J	F	F	A	A	A	A	
14	B	A	A	A	B	A	R	B	B	F	F	30	33	38	45	46	R	J	R	R	B	R	A	A	A	
15	A	A	A	A	A	U	F	A	F	F	F	R	R	B	B	F	F	51	U	F	A	B	B	R	A	
16	B	A	A	A	A	A	A	F	F	F	F	F	J	U	F	U	F	F	R	C	B	R	R	R	R	
17	B	A	F	U	F	F	B	B	21	38	50	H	56	U	R	56	R	30	35	F	B	17	B	B	B	
18	A	A	F	U	F	F	U	F	F	F	J	F	F	R	J	R	51	55	J	R	B	B	R	R	R	A
19	B	B	R	A	A	A	A	F	F	F	F	F	40	46	J	F	F	J	F	F	J	F	A	A	A	
20	A	A	A	U	F	U	F	F	F	F	F	R	F	R	R	F	U	F	F	42	F	17	B	A	A	A
21	A	A	A	A	A	A	A	B	A	R	F	U	R	U	F	R	U	F	F	R	R	38	B	B	R	R
22	A	A	F	U	F	F	U	F	F	F	C	C	C	C	C	C	C	C	C	C	F	40	A	A	A	A
23	A	B	A	B	A	B	B	B	B	B	B	B	B	B	B	B	C	C	40	F	A	A	A	A	A	A
24	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	R	B	F	A	A	A	A	A	A	A
25	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R	A	A	A
26	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	F	55	42	R	B	A	A	A	A	A
27	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	F	B	R	F	A	A	A
28	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	U	F	B	B	A	A	A	A	A
29	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A
30	B	A	B	A	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	28	23	R	R	A	A
31	A	A	B	A	B	A	A	B	B	B	B	B	55	56	B	B	B	B	B	B	B	B	A	R	R	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			2	4	2	5	5	8	9	15	11	11	11	11	12	11	14	16	15	5	2	1				
MED			27	U	F	F	F	F	F	F	F	47	49	50	50	47	38	35	34	26	18	R				
UQ			U	F	F	F	F	F	F	F	40	48	54	54	52	56	43	40	36	28						
LQ			U	F	F	F	F	F	F	F	30	36	41	48	46	46	32	30	28	F						

AUG. 1973

FOF2 (0.1 MHz)

### IONOSPHERIC DATA

AUG. 1973

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION	Lat. 69° 00' 4" S.				Long. 39° 35' 4" E				Sweep	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															L									
6																								
7												L												
8																								
9																								
10																								
11																								
12												L												
13																								
14													L											
15																								
16													L		L									
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
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																								

AUG. 1973

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

AUG. 1973

FOE (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00' .4" S.		Long. 39° 35' .4" E		Sweep		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	B	B	B	B	B	B	B	B	B	B						
2							B	B	B	B	B	B	B	B	B	B	B	170	B					
3							A	U A 150	A	B	A	B	B	A	A	A	A	B	A					
4							A	B	A	A	B	U H 150	160	155	170	A	B	B	B					
5							100	95	A	100	140	A	140	A	130	130	A	120	B					
6							B	B	B	A	B	B	B	B	A	B	B	B	C					
7							B	A	A	150	R	A	S	S	B	S	S	B	B					
8							S	B	B	B	B	B	C	C	B	B	B	B	B					
9							B	A	A	B	B	B	B	B	C	C	S	S	S					
10							S	S	S	S	S	S	S	S	S	S	S	S	S					
11							S	S	S	S	S	S	S	S	S	S	S	S	S					
12							A	A	A	A	A	A	R	R	195	150	A	120	A					
13							A	130	A	A	B	A	220	205	210	A	160	A	A					
14							B	B	B	210	R	210	170	B	B	170	155	B	B					
15							A	A	A	A	B	B	B	B	B	B	135	B	B					
16							A	A	A	B	U S 170	U S 180	A	U S 200	U S 200	B	B	C	C					
17							B	B	B	B	B	B	B	B	B	B	B	B	B					
18							A	A	A	A	190	180	B	B	B	B	B	B	B					
19							A	A	A	U F 140	180	185	180	190	A	150	A	A	A					
20							A	C	A	B	B	B	U A 210	A	B	200	B	A	B	A	B			
21							A	S	B	B	B	B	B	B	B	B	B	B	B					
22							C	A	A	95	A	C	C	C	C	C	C	C	C					
23							B	B	B	B	B	B	B	B	B	C	C	150	A	C				
24							B	A	B	B	B	B	B	B	B	B	B	B	A	B				
25							B	B	B	B	B	B	B	B	B	B	B	B	B	A				125
26							B	B	B	B	B	B	B	B	B	B	B	B	B	B				
27							B	B	B	B	B	B	B	B	B	B	B	B	A	B				
28							B	B	B	B	B	B	B	B	B	B	B	B	B	B				
29							B	B	B	B	B	B	B	B	B	B	B	B	B	B				
30							B	B	B	B	B	B	B	B	B	B	B	B	B	B				
31							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							1	3	1	4	4	6	5	4	6	4	3	4		1		1		
MED							100	130	95	145	175	182	170	195	198	150	155	135		100		125		
UQ								140		180	185	210	180	202	200	160	158	160						
LQ								112		120	155	U 180	160	172	170	140	145	120						

The Radio Research Laboratories, Japan

AUG. 1973

FOE (0.01 MHz)

### IONOSPHERIC DATA

AUG. 1973

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00' 4" S.		Long. 39° 35' 4" E		Sweep		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	33	B	J X 41	82	B	50	J X 41	49	B	B	B	R	R	B	B	B	B	B	B	B	B	B	27	31			
2	J X 41	31	J X 36	41	28	B	B	B	B	B	B	R	R	B	E B 25	E B 52	B	G	E B 13	E B 15	B	32	J X 36	J X 73			
3	27	28	30	29	36	30	33	J X 31	J X 35	B	23	J X 77	E B 25	J X 49	J X 54	J X 50	J X 31	E B 14	15	B	25	22	J X 31	15			
4	20	J X 35	47	55	47	J X 74	J X 25	43	19	37	18	G	21	21	G	28	E B 20	50	B	B	R	J X 35	17	J X 21			
5	J X 31	J X 31	J X 42	J X 96	27	15	16	14	J X 72	67	19	16	21	37	82	20	17	15	E B 18	B	R	B	J X 25	18			
6	27	30	25	J X 26	J X 27	40	J X 61	B	B	28	B	B	B	B	23	E B 21	B	B	E C 21	E B 27	B	B	B	23			
7	J X 29	J X 32	36	73	24	32	38	35	21	G	31	23	F S 25	E S 25	B	E S 19	E S 22	E B 12	E B 11	B	R	B	20	45			
8	J X 40	J X 31	J X 36	42	B	J X 54	D S 95	40	D S 50	E B 25	B	R	C	C	B	B	B	B	B	B	B	B	B	B			
9	J X 30	30	J X 41	B	B	B	D S 32	J X 62	J X 54	B	R	B	B	E B 25	C	C	S	S	S	S	S	S	S	S			
10	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
11	S	S	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
12	S	S	S	J X 31	69	J X 45	J X 35	37	30	J X 34	30	23	G	J X 33	G	J X 31	27	G	11	18	J X 44	J X 34	J X 44	J X 36	J X 51		
13	J X 39	J X 41	J X 46	J X 84	J X 42	J X 32	J X 27	G	60	61	48	31	31	G	G	23	28	J X 29	J X 35	15	28	39	40	37			
14	B	45	49	37	B	40	B	B	B	G	G	G	G	E B 26	E B 26	21	17	E B 21	E B 18	22	B	D S 33	J X 23	J X 39			
15	35	J X 32	J X 36	28	J X 33	D S 38	J X 32	D S 35	J X 30	28	B	R	B	B	E B 25	E B 22	G	E B 15	E B 25	29	B	B	18	23			
16	B	J X 32	28	32	J X 33	J X 34	J X 44	J X 32	J X 28	J X 34	D S 38	D S 35	D S 30	D S 22	D S 30	E B 19	E B 18	C	C	B	B	B	B	B			
17	B	23	22	J X 23	18	D S 25	B	B	E B 17	E B 20	E B 25	R	E B 26	E B 25	E B 30	E B 21	E B 20	E B 15	E B 15	B	14	B	B	B			
18	J X 26	J X 29	J X 37	D S 45	29	29	25	23	32	J X 26	23	23	E B 26	E B 50	E B 24	E B 19	E B 16	B	B	B	B	B	B	J X 23			
19	B	B	18	J X 27	J X 51	J X 53	J X 49	J X 36	19	J X 27	G	G	24	J X 23	J X 26	22	J X 20	15	J X 17	J X 21	22	33	22	J X 25			
20	J X 64	J X 32	41	36	J X 29	J X 32	J X 57	J X 25	J X 35	40	R	28	26	27	25	E B 54	27	E B 21	J X 36	J X 32	30	33	J X 39	J X 54			
21	33	J X 44	J X 40	J X 34	32	J X 54	J X 43	B	71	E B 21	E B 35	E B 25	F B 47	E B 25	E B 28	E B 25	E B 26	E B 25	E B 21	B	B	B	19	21			
22	35	38	D S 30	31	31	25	17	11	G	21	C	C	C	C	C	C	C	C	E C 9	28	37	J X 42	43	39			
23	40	B	40	B	J X 64	B	B	B	B	B	B	R	B	B	B	C	C	17	20	D S 29	42	J X 53	J X 77	D S 60			
24	43	J X 39	J X 43	24	41	J X 78	46	B	R	R	R	R	B	B	B	E B 49	B	E B 28	32	22	43	34	38	34			
25	49	D S 45	B	B	40	B	R	B	B	R	B	R	R	B	B	B	B	B	B	B	25	J X 30	G	33	38		
26	36	30	B	R	B	B	B	B	B	R	R	B	B	B	B	B	R	E B 28	E B 27	E B 37	B	D S 36	34	J X 37	J X 46		
27	43	39	B	R	B	R	B	B	R	B	R	B	B	B	B	B	B	B	30	B	22	24	31	22			
28	30	25	47	B	B	R	B	B	B	R	B	B	B	B	B	B	B	E B 32	B	B	50	40	35	D S 45			
29	J X 84	B	B	B	R	50	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	29	36	32			
30	B	33	85	47	44	33	42	B	122	B	B	B	B	B	B	B	B	B	B	E B 23	E B 20	E B 25	17	30			
31	31	37	36	33	40	46	41	B	B	B	B	B	E B 45	E B 48	B	B	B	B	B	B	B	31	17	18			
CNT	23	24	24	22	21	22	20	15	17	16	12	12	14	15	15	17	15	17	18	13	14	18	23	25			
MED	35	32	39	35	33	40	40	35	32	28	22	23	E G 26	E G 25	E G 25	E B 22	E G 20	E B 17	E E 19	22	30	33	31	32			
UQ	40	38	42	U 51	42	J X 50	J X 45	U 40	U 57	36	32	30	F B 30	U 31	28	U 26	26	E B 27	U 25	29	U 40	40	36	39			
LQ	30	30	34	29	29	32	30	24	21	E G 21	18	F G 16	E G 21	E G 24	E B 21			15	E B 15	22	22	29	21	23			

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AUG. 1973

FOES (0.1 MHz)

# IONOSPHERIC DATA

AUG. 1973

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69 00.4 S		Long. 39 35.4 E		Sweep		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	10	B	13	20	B	15	14	38	R	B	R	R	B	B	B	B	B	B	B	B	B	B	19	9	
2	E C 10	10	10	13	16	R	B	B	B	B	B	B	B	B	25	52	B	10	13	15	B	9	9	10	
3	9	9	9	9	14	10	9	9	E C 12	B	13	25	25	15	13	14	10	14	11	B	10	12	12	9	
4	8	8	16	16	13	13	10	12	10	10	13	15	12	11	13	10	20	21	B	B	R	10	9	9	
5	E C 11	10	11	10	12	11	9	8	10	9	10	12	13	14	13	9	9	9	18	B	B	B	9	9	
6	13	9	13	10	11	22	15	B	B	10	R	R	B	B	11	21	B	B	E C 21	27	B	B	B	9	
7	9	9	9	9	9	12	13	10	12	12	15	18	E S 25	F S 25	B	E S 19	E S 22	12	11	B	B	B	9	9	
8	9	E C 11	10	10	R	13	E S 20	26	15	25	R	R	C	C	B	B	B	B	B	B	R	B	R	B	
9	E C 15	9	10	R	R	B	13	12	10	B	R	B	B	25	C	C	20	E S 17	E S 20	S	S	S	S	S	
10	S	S	S	S	S	S	S	S	S	S	E S 21	E S 34	E S 37	S	S	E S 38	E S 19	E S 21	S	S	S	S	S	S	
11	S	S	S	C	S	E S 22	S	E S 25	E S 10	E S 15	E S 24	E S 27	E S 25	E S 21	E S 21	E S 18	E S 13	E S 15	E S 17	S	S	S	S	S	
12	S	S	S	7	E C 9	6	7	7	E C 10	7	7	15	7	7	7	/	6	7	7	6	6	7	6	8	
13	7	7	7	7	7	7	7	8	7	7	17	15	15	19	19	17	11	8	8	9	7	7	7	8	
14	B	7	18	20	B	20	B	B	B	E S 12	13	16	16	26	26	E S 15	E S 15	21	18	19	B	16	8	E C 9	
15	9	11	E S 10	10	9	7	E S 11	11	8	11	B	B	B	B	25	22	E S 9	15	25	E S 12	R	B	13	15	
16	B	E S 12	8	10	9	10	9	8	8	15	14	E S 15	18	16	E S 16	19	18	C	C	B	R	B	B	B	
17	B	10	9	9	9	9	R	B	17	20	25	B	26	25	30	21	20	15	13	B	10	B	B	R	
18	9	9	9	9	9	9	9	9	E C 10	10	10	12	26	50	24	19	16	B	B	B	B	R	B	9	
19	B	B	9	9	10	E C 20	10	9	9	9	9	9	9	9	10	10	9	11	9	10	E C 19	10	11	11	
20	9	E C 10	10	9	E C 20	9	E C 11	E C 10	21	18	B	17	20	21	E C 18	54	13	21	11	11	25	9	9	9	
21	9	10	10	9	9	9	E S 18	B	30	21	35	25	47	25	28	25	26	25	21	B	R	B	15	13	
22	9	10	11	22	10	E C 18	9	9	9	11	C	C	C	C	C	C	C	C	E C 9	E C 9	E C 25	9	9	9	
23	9	B	15	R	12	R	B	B	B	B	R	B	B	B	B	C	C	10	9	E C 12	9	9	E C 13	10	
24	10	9	9	9	12	15	E S 9	B	B	B	B	R	R	B	B	49	B	28	E C 10	11	9	E C 11	9	10	
25	E S 24	20	B	B	15	B	B	B	B	B	R	R	B	B	B	B	B	B	10	E C 10	10	E S 12	10	12	
26	20	25	B	R	B	R	B	B	B	B	R	R	B	B	B	B	28	27	37	B	E S 12	9	E C 18	E S 9	
27	E S 11	10	B	R	B	R	B	B	R	B	B	R	R	B	B	B	B	B	E S 11	B	12	9	10	9	
28	9	16	9	R	B	R	B	R	R	R	B	B	B	B	B	B	B	32	B	B	9	9	9	11	
29	11	R	B	B	B	29	B	B	B	R	R	B	B	B	B	B	B	B	B	B	R	10	9	9	
30	B	10	34	14	13	19	23	B	68	B	R	B	B	B	B	R	B	B	B	B	23	20	25	9	10
31	10	12	23	12	30	14	20	B	R	B	B	R	45	48	B	B	B	B	B	B	R	10	9	10	
CNT	28	28	28	29	29	30	29	30	30	30	30	30	29	28	28	28	29	29	29	28	28	28	28	28	
MED	10	10	10	10	12	14	14	32	19	20	B	B	45	37	27	23	20	21	U 16	B	D 25	10	10	9	
UQ	U 15	14	17	22	B	29	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	R	15	11	
LQ	9	9	9	9	9	10	9	9	10	10	14	16	U 18	U 18	U 15	U 15	12	U 12	10	12	10	9	9	9	

The Radio Research Laboratories, Japan

AUG. 1973

F-MIN (0.1 MHz)

# IONOSPHERIC DATA

AUG. 1973

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00' 4" S, Long. 39° 35' 4" E		Sweep		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	A	B	B	A	A	B	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B														
2	A	A	A	A	A	B	B	B	B	B	B	B	B	B	340	R	B	320	345	310		B	A	A	A														
3	A	A	A	A	A	A	A	270	J	F	B	F	A	F	F	F	F	345	F	F	345	B	R	R	A	R													
4	A	A	A	A	A	A	A	270	F	295	325	I	R	330	335	U	R	R	F	F	355	315	B	B	R	A	R	A											
5	A	A	A	A	A	280	F	265	F	300	325	310	F	330	340	325	J	R	F	335	325	350	320	335	B	R	B	A	R										
6	A	A	A	A	A	B	A	B	B	330	F	B	B	B	B	325	320	B	B	310	F	R	B	B	B	B	A												
7	A	A	A	A	A	A	A	A	A	325	F	R	345	330	U	R	355	B	340	345	295	F	U	F	295	B	B	B	A	A									
8	A	A	A	A	B	A	A	B	A	330	P	B	C	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B										
9	A	A	320	C	R	B	B	A	A	A	B	B	B	R	C	C	340	J	F	340	F	S	S	S	S	S	S	S											
10	S	S	S	S	S	S	S	S	S	S	F	330	310	U	R	325	S	S	R	330	355	S	S	S	S	S	S	S	S										
11	S	S	S	C	S	F	S	F	320	F	330	355	335	355	R	F	R	360	F	340	R	S	S	S	S	S	S	S											
12	S	S	S	A	A	F	A	A	A	340	F	315	340	R	355	R	U	F	350	370	335	345	A	A	A	A	A	A											
13	A	A	A	A	A	F	J	F	290	J	F	290	A	F	335	F	F	J	F	340	F	J	F	325	F	A	A	A	A										
14	B	A	A	A	B	A	B	B	B	325	F	315	315	335	350	R	J	R	365	J	F	345	R	F	B	R	A	A	A										
15	A	A	A	A	A	F	A	290	F	315	300	B	R	R	B	350	340	390	U	F	345	R	A	R	B	R	A												
16	B	A	A	A	A	A	A	280	F	320	345	315	F	J	F	350	U	F	365	365	370	R	C	C	B	B	B	R	B										
17	B	A	F	F	F	F	B	B	285	355	360	R	B	320	R	340	R	345	345	365	F	F	B	A	B	B	B												
18	A	A	F	U	F	270	295	F	275	F	F	330	J	F	335	345	R	R	325	350	J	R	365	B	B	B	R	B	A										
19	B	B	R	A	A	A	A	F	F	320	F	335	335	330	J	F	335	F	J	F	315	F	F	J	F	320	F	R	A	A	A								
20	A	A	A	F	U	F	F	F	F	285	280	280	F	295	320	R	335	R	R	250	270	F	335	355	305	B	A	A	A	A									
21	A	A	A	A	A	A	A	B	A	R	F	U	R	330	F	R	F	F	R	R	350	B	B	B	R	R													
22	A	A	F	F	A	F	F	F	U	F	F	C	C	C	C	C	C	C	C	C	C	C	F	295	310	A	A	A	A	A									
23	A	B	A	B	A	B	B	B	B	B	B	R	H	B	B	B	C	C	300	285	F	A	A	A	A	A	A	A	A										
24	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A									
25	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R	A	A									
26	A	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A									
27	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	R	F	A	A	A									
28	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A									
29	A	B	R	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A									
30	B	A	B	A	A	A	A	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	310	320	320	R	A									
31	A	A	R	A	B	A	A	B	B	B	B	B	325	340	B	B	B	B	B	B	B	B	B	B	B	B	B	A	R	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			2	1	2	4	4	7	9	14	11	11	10	8	9	10	14	15	14	5	1	1																	
MED			298	U	F	278	F	280	F	278	F	290	F	315	F	328	F	330	F	335	F	330	F	348	F	340	F	352	F	335	F	340	F	310	F	320	F	320	F
UQ						F	F	288	F	285	F	292	F	320	F	330	F	335	F	340	F	350	F	365	F	342	F	345	F	310									
LQ						F	F	272	F	270	F	275	F	295	F	320	F	322	F	332	F	325	F	338	F	325	F	345	F	318	F	310	F	310					

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AUG. 1973

M(3000)F2 (0.01)

# IONOSPHERIC DATA

AUG. 1973

H<sup>1</sup>F<sub>2</sub> (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 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																L								
6																								
7													L											
8																								
9																								
10																								
11																								
12												L												
13																								
14													L											
15																								
16													L		L									
17																								
18																								
19																								
20																								
21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
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																								

AUG. 1973

H<sup>1</sup>F<sub>2</sub> (KM)



# IONOSPHERIC DATA

ALIG. 1973

H'F (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00' 4" S.		Long. 39° 35' 4" E		Sweep		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	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A			
2		A	A	A	A	B	B	B	B	B	B	B	B	B	B	225	B	B	245	240	280	B	B	A	A	A			
3		A	A	A	A	A	A	A	325	F	B	230	205	250	210	215	210	205	230	220	B	A	A	A	A				
4		A	A	A	A	A	A	A	310	330	250	225	225	220	205	210	220	220	E	B	B	B	B	A	A	A			
5		A	A	A	A	A	B	355	320	330	230	240	230	225	220	225	210	200	250	250	B	B	B	A	A				
6		A	A	A	A	A	B	A	B	B	295	B	B	B	B	240	230	B	B	C	240	B	B	B	B	A			
7		A	A	A	A	A	A	A	A	A	270	A	230	230	200	B	225	220	230	255	B	B	B	A	A	A			
8		A	A	A	A	B	A	B	B	A	B	B	B	C	C	B	B	B	B	B	B	B	B	B	B	B			
9		A	A	225	B	B	B	A	A	A	B	B	B	B	225	C	C	230	230	250	S	S	S	S	S	S			
10		S	S	S	S	S	S	S	S	S	S	S	250	250	255	S	S	250	230	250	S	S	S	S	S	S			
11		S	S	S	C	S	330	S	F	275	245	240	240	220	220	200	205	200	250	205	S	S	S	S	S	S			
12		S	S	S	A	A	A	A	A	A	230	250	240	240	B	230	230	230	250	230	210	A	A	A	A	A			
13		A	A	A	A	A	360	305	300	A	275	270	A	250	240	230	230	220	225	220	250	A	A	A	A	A			
14		B	A	B	B	B	A	B	B	B	280	250	250	230	250	215	200	215	B	250	B	B	A	A	A	A			
15		A	A	A	A	A	A	A	360	255	260	B	B	B	B	230	250	215	230	B	A	B	B	R	A	A			
16		B	A	A	A	A	A	A	330	275	230	225	225	240	210	205	220	210	C	C	B	B	B	B	B	B			
17		B	A	360	350	370	A	B	B	E	B	280	235	225	B	225	210	230	200	205	230	200	B	A	B	B	B		
18		A	A	A	A	350	350	330	340	260	245	225	230	225	E	B	250	225	220	200	B	B	B	B	B	B	A		
19		B	B	R	A	A	A	A	300	250	240	205	230	230	230	230	225	210	245	225	240	C	A	A	A	A			
20		A	A	A	A	C	350	340	A	360	240	B	240	R	250	230	B	215	230	230	295	B	A	A	A	A			
21		A	A	A	A	A	A	A	B	B	290	B	250	260	275	230	230	220	250	240	B	B	B	R	R	R	R		
22		A	A	A	B	A	C	A	320	245	235	C	C	C	C	C	C	C	C	C	250	275	A	A	A	A	A		
23		A	B	A	H	A	B	B	B	B	B	B	B	B	B	B	C	C	265	290	A	A	A	A	A	A	A		
24		A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A		
25		B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	R	A	A	A		
26		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	220	230	280	B	A	A	A	A	A		
27		A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	A	A	A	A	A		
28		A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	B	B	A	A	A	A	A	
29		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	A	
30		B	A	B	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	E	B	E	B	B	A	A	A
31		A	A	B	A	B	A	A	B	B	B	B	B	B	F	B	E	B	B	B	B	B	B	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	4	4	9	11	17	12	13	15	16	16	16	18	18	17	6	1							
MED				292	350	360	350	335	320	275	245	235	230	230	224	228	222	215	234	240	270	E	B						
UQ						355	348	330	325	275	250	240	248	242	230	230	220	250	250	288	B								
LQ						340	318	310	258	235	225	230	225	210	215	210	205	230	220	250									

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ALIG. 1973

H'F (KM)

### IONOSPHERIC DATA

AUG. 1973

H<sup>o</sup>ES (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 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	110	B	110	100	B	100	105	120	B	B	R	R	B	B	B	B	B	B	B	B	B	R	105	110	
2	110	105	110	105	120	B	B	B	B	B	R	B	R	B	B	B	B	G	B	B	B	105	105	150	
3	110	105	110	105	110	110	100	110	105	B	100	145	B	130	125	120	120	B	150	B	115	115	175	130	
4	115	110	115	100	105	110	100	120	100	125	130	G	170	130	G	130	B	110	B	B	R	100	105	130	
5	105	110	110	100	110	115	110	125	150	140	110	100	120	125	115	100	110	145	B	B	B	R	180	145	
6	115	105	120	105	100	100	100	B	R	110	R	B	B	B	110	B	B	B	C	B	B	B	R	120	
7	110	105	105	110	110	120	105	100	110	G	120	130	S	S	B	S	S	B	B	B	R	R	150	110	
8	110	105	105	105	B	100	105	100	105	B	B	B	C	C	B	B	B	B	B	B	R	R	R	B	
9	130	100	110	R	B	R	110	100	100	B	R	B	B	B	C	C	S	S	S	S	S	S	S	S	
10	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
11	S	S	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
12	S	S	S	105	100	105	160	110	115	100	100	130	G	120	G	115	180	120	115	110	115	115	115	130	
13	125	130	115	100	105	110	110	G	175	105	145	110	105	G	G	160	100	110	120	155	150	100	105	100	
14	B	100	110	105	B	100	B	B	R	G	G	G	G	B	B	165	150	B	B	150	R	105	135	100	
15	110	125	100	100	130	100	130	100	150	125	R	R	B	B	B	B	G	B	B	100	B	B	150	150	
16	B	100	105	110	105	100	100	100	100	100	110	110	110	100	100	B	B	C	C	B	R	B	B	R	
17	B	125	130	120	140	110	B	B	B	B	R	B	B	B	B	B	B	B	B	B	130	B	R	B	
18	150	140	130	110	110	110	160	150	150	110	115	140	B	B	B	B	B	B	B	B	R	R	B	150	
19	B	B	100	100	100	100	100	100	110	105	G	G	120	100	100	145	100	170	120	100	110	115	130	130	
20	150	120	110	150	130	120	130	110	170	110	B	110	125	125	145	B	130	B	145	130	135	120	120	110	
21	110	110	110	105	100	110	105	B	100	B	B	B	B	B	B	B	B	B	B	B	R	B	175	150	
22	100	110	130	175	110	110	110	110	G	130	C	C	C	C	C	C	C	C	C	C	130	125	150	100	100
23	115	B	100	R	115	B	B	B	B	R	B	B	B	B	B	C	C	140	145	105	100	100	180	100	
24	100	100	160	110	100	100	110	B	B	R	B	R	B	B	B	B	B	B	110	150	100	100	110	115	
25	115	105	B	R	105	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	110	100	G	115	115
26	105	125	B	R	B	B	B	B	R	B	B	B	B	B	B	B	B	B	B	B	B	110	110	105	100
27	110	100	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	B	110	B	140	105	100	105	
28	100	125	110	B	B	B	B	B	B	B	R	R	B	B	B	B	B	B	B	B	100	100	110	100	
29	100	B	B	R	B	110	R	B	B	R	R	R	B	B	B	B	B	B	B	B	R	115	100	110	
30	B	100	105	100	110	125	110	B	175	B	B	B	B	B	B	B	B	B	B	B	B	B	110	110	
31	115	120	125	120	100	100	100	B	B	B	R	B	B	B	B	R	B	B	B	B	B	115	110	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	23	24	24	22	21	22	20	14	15	11	8	8	6	7	6	7	7	6	8	10	13	16	23	25	
MED	110	108	110	105	110	110	108	110	110	110	112	120	120	125	112	130	120	130	120	120	115	108	110	115	
UQ	115	122	118	110	110	110	110	120	150	125	125	135	125	128	125	152	140	145	145	150	130	115	132	130	
LQ	108	102	105	100	100	100	100	100	102	105	105	110	110	110	100	118	105	110	112	105	100	100	105	105	

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AUG. 1973

H<sup>o</sup>ES (KM)

# IONOSPHERIC DATA

AUG. 1973

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69° 00' 4" S, Long. 39° 35' 4" E		Sweep 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	R3		R2	FR11		R1	R2	R1																F1	R1		
2	R3	R1	R2	R1	R1																	R3	R3	FF11			
3	R2	R3	R4	R3	R2	R3	R2	R1	R2		L1	L1		R1	L1	L1	L1		R1		R1	F1	F1	R1			
4	R1	R3	R1	R1	R1	F1	R2	L1	L1	L1	C1		H1	C1		LL1		L1			F3	F1	A1				
5	R1	R2	R2	FR11	R1	F1	LC11	C1	LL1	LL1	C1	L1	C1	L1	L1	L1	L1	C1					FF11	R1			
6									350	380					L1									R2			
7	R1	R2	R2	FR12	F1	R1	R1	R1	R1		R3	L1											R1	R3			
8	R4	R4	R3	R2		R2	L1	L1	R1																		
9	R1	R3	R1				L1	R1	R2																		
10																											
11																											
12				FR11	FR11	FF11	RL11	L1	L1	L1	L1	L1		L1		L1	RL11	L1	L1	FF11	F2	FR11	FF11	F1			
13	R2	RF31	F2	R2	R3	RF11	LR11		RR11	R1	LL11	L1	L1			R1	L1	L1	L1	R1	RF11	R6	R5	R5			
14		R1	R1	R1		R1									H1	C1			R1		F1	R1	R3	R3			
15	R5	R1	R2	R2	RF21	R2	R1	L2	R1	R1									R1			F1	F1	F1			
16		FR12	R3	R2	R3	R2	LR12	LR11	L1	L1	C1	C1	L1	L1	C1												
17		R1	R1	R1	F1	F1															F1						
18	R1	R3	R1	F2	R2	R2	L1	L1	L1	R1	R1	C1												R1			
19			R2	R2	R2	R1	R2	R2	L1	L1		L1	L1	L1	R1	L1	R1	L1	F1	F1	R4	R1	R2	R2			
20	FR14	R4	R2	RR11	FR11	AR11	R2	R1	H1	FL11		C1	L1	L1	C1		L1		R1	F1	F1	R2	R3	R3			
21	R3	R5	R3	R3	R3	RF11	R1		R1														R1	F1	F1		
22	R1	R1	F1	R1	R3	R1	L1	L1		R1										R1	R2	RR13	R2	R4			
23	R1		R1		R2													R1	R1	R3	R4	R3	R1	R1			
24	R2	R3	RR11	R5	R1	R2	R1												R2	A1	R4	R2	R3	R3			
25	R1	R1			R1															R1	R2		R1	R1			
26	R1	R1																			F3	R4	R5	R5			
27	R2	R2																	R1		R1	R2	R2	R1			
28	R2	R1	R4																		R3	R3	R3	R2			
29	R1					R1																R1	R4	R2			
30		R2	F1	R2	R2	R1	R1		H1														R1	R4			
31	R2	R2	R1	R1	F1	R1	R1															R2	R1	R1			
	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																											

AUG. 1973

TYPES OF ES

# IONOSPHERIC DATA

SEP. 1973

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69 00 .4 S				Long. 39 35 .4 E				Sweep 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	U <sub>26</sub>	F <sub>20</sub>	U <sub>28</sub>	B	B	B	F <sub>55</sub>	F	J <sub>64</sub>	F <sub>65</sub>	F	F	F <sub>53</sub>	B	F <sub>34</sub>	F <sub>25</sub>	B	B	B	
2	A	R	A	A	A	A	F	F <sub>26</sub>	F <sub>38</sub>	48	53	56	59	J <sub>60</sub>	U <sub>61</sub>	U <sub>62</sub>	F <sub>55</sub>	J <sub>54</sub>	F <sub>47</sub>	F <sub>34</sub>	F <sub>22</sub>	U <sub>20</sub>	A	A	
3	A	A	A	A	F <sub>26</sub>	F <sub>26</sub>	U <sub>26</sub>	U <sub>29</sub>	F <sub>36</sub>	46	50	56	R <sub>60</sub>	F <sub>60</sub>	F <sub>61</sub>	J <sub>60</sub>	U <sub>53</sub>	U <sub>56</sub>	F <sub>51</sub>	U <sub>42</sub>	F <sub>31</sub>	F <sub>21</sub>	A	A	
4	A	A	A	A	A	A	A	F <sub>41</sub>	F <sub>38</sub>	B	B	B	F <sub>51</sub>	F <sub>49</sub>	F <sub>57</sub>	F <sub>55</sub>	55	48	51	F <sub>32</sub>	F	A	A	B	
5	A	A	A	B	B	A	A	B	B	B	42	B	52	F <sub>56</sub>	U <sub>61</sub>	61	62	F <sub>59</sub>	B	F <sub>34</sub>	U <sub>33</sub>	A	A	A	
6	B	A	A	A	B	A	A	A	F <sub>37</sub>	F <sub>42</sub>	B	B	B	52	F <sub>50</sub>	F <sub>50</sub>	50	B	R	F <sub>35</sub>	A	A	A	A	
7	A	A	A	A	A	A	U <sub>30</sub>	A	A	F <sub>43</sub>	47	U <sub>52</sub>	U <sub>55</sub>	B	53	B	50	46	40	F <sub>39</sub>	U <sub>28</sub>	B	A	A	
8	A	A	A	A	U <sub>25</sub>	U <sub>24</sub>	F <sub>25</sub>	F <sub>30</sub>	F <sub>37</sub>	39	B	F <sub>51</sub>	F <sub>57</sub>	F	57	B	R	F <sub>51</sub>	F <sub>41</sub>	F <sub>32</sub>	A	A	A	A	
9	A	A	A	A	J <sub>24</sub>	F <sub>24</sub>	25	30	36	U <sub>43</sub>	R	F <sub>48</sub>	F <sub>51</sub>	56	F <sub>51</sub>	55	55	55	F <sub>58</sub>	F <sub>36</sub>	A	A	A	A	
10	A	A	B	A	A	A	A	F <sub>34</sub>	F <sub>39</sub>	F <sub>41</sub>	44	49	F <sub>48</sub>	50	47	F <sub>56</sub>	F <sub>50</sub>	F <sub>43</sub>	25	A	A	A	F	A	
11	C	A	F	B	B	A	A	A	A	F <sub>40</sub>	U <sub>42</sub>	F <sub>42</sub>	42	44	45	U <sub>50</sub>	54	51	F <sub>43</sub>	41	F <sub>18</sub>	U <sub>11</sub>	C	B	
12	A	B	B	A	B	H	A	F <sub>35</sub>	F <sub>40</sub>	44	48	52	57	59	59	59	F	F	F	F <sub>29</sub>	A	A	U <sub>26</sub>	F <sub>27</sub>	
13	A	A	A	F	A	F <sub>21</sub>	F <sub>25</sub>	F <sub>30</sub>	F <sub>35</sub>	41	45	F <sub>51</sub>	54	U <sub>47</sub>	60	F <sub>54</sub>	57	F <sub>60</sub>	B	U <sub>34</sub>	F <sub>27</sub>	A	A	A	
14	A	A	A	B	A	A	24	A	37	F <sub>41</sub>	F <sub>46</sub>	52	56	F <sub>57</sub>	59	F <sub>58</sub>	F <sub>64</sub>	U <sub>57</sub>	F <sub>51</sub>	F <sub>36</sub>	U <sub>26</sub>	U <sub>24</sub>	C	C	
15	B	A	A	F	A	F <sub>30</sub>	F <sub>37</sub>	F <sub>43</sub>	F <sub>49</sub>	F <sub>50</sub>	F <sub>57</sub>	F <sub>59</sub>	66	J <sub>71</sub>	F <sub>73</sub>	79	U <sub>77</sub>	64	F <sub>59</sub>	F <sub>49</sub>	A	A	A	A	
16	F	A	A	A	A	A	A	A	A	A	B	B	40	42	46	B	B	R <sub>46</sub>	42	F <sub>31</sub>	F <sub>29</sub>	U <sub>23</sub>	R	R	
17	A	A	F	U <sub>30</sub>	A	F	A	R	A	F	B	B	49	B	B	52	B	49	54	36	F <sub>30</sub>	F <sub>18</sub>	F <sub>15</sub>	A	
18	A	F	A	A	A	A	A	F <sub>36</sub>	F <sub>39</sub>	42	46	48	51	57	59	61	60	F <sub>56</sub>	F <sub>48</sub>	F	F	20	A	A	
19	A	A	A	F	F <sub>24</sub>	F <sub>22</sub>	F <sub>30</sub>	F <sub>39</sub>	F <sub>40</sub>	F <sub>45</sub>	F <sub>50</sub>	F <sub>55</sub>	61	64	71	F <sub>65</sub>	60	54	53	F <sub>39</sub>	F <sub>30</sub>	F <sub>23</sub>	A	A	
20	A	A	A	A	A	A	35	F <sub>39</sub>	F <sub>41</sub>	43	48	52	F <sub>52</sub>	F <sub>52</sub>	F <sub>49</sub>	F <sub>53</sub>	F <sub>57</sub>	54	F <sub>53</sub>	46	F	A	A	A	
21	A	B	A	A	B	B	A	F <sub>42</sub>	U <sub>44</sub>	B	49	F <sub>51</sub>	B	B	56	B	B	B	46	F <sub>40</sub>	A	A	A	A	
22	A	B	A	A	A	A	A	A	B	F <sub>48</sub>	F <sub>50</sub>	F <sub>52</sub>	53	53	55	F <sub>56</sub>	F <sub>55</sub>	U <sub>51</sub>	U <sub>50</sub>	F <sub>46</sub>	F	F	A	A	
23	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	F <sub>32</sub>	33	F <sub>31</sub>	A	A	A	A	
24	A	B	B	B	B	A	B	B	B	B	R	B	B	B	B	B	B	J <sub>33</sub>	A	A	F <sub>20</sub>	A	A	A	
25	A	B	A	R	B	B	C	C	C	C	C	C	C	C	C	C	B	B	B	B	U <sub>28</sub>	A	A	F	
26	B	A	A	A	A	C	C	B	B	B	C	C	C	C	C	C	B	F	R	F	C	A	A	C	A
27	A	A	F	F	F	C	U <sub>40</sub>	40	44	46	47	47	49	51	55	F <sub>65</sub>	71	58	F <sub>49</sub>	F <sub>31</sub>	U <sub>23</sub>	F	F <sub>20</sub>	A	
28	A	A	A	A	A	A	F <sub>39</sub>	F <sub>44</sub>	50	52	53	55	56	59	64	F <sub>62</sub>	F <sub>62</sub>	F <sub>56</sub>	F <sub>51</sub>	F <sub>48</sub>	F <sub>40</sub>	F	F <sub>26</sub>	F	
29	U <sub>32</sub>	F	F	U <sub>24</sub>	A	A	A	F <sub>49</sub>	F <sub>53</sub>	F <sub>54</sub>	56	58	60	63	70	J <sub>72</sub>	F <sub>73</sub>	J <sub>67</sub>	F <sub>59</sub>	J <sub>59</sub>	F <sub>48</sub>	U <sub>38</sub>	F <sub>33</sub>	U <sub>33</sub>	
30	F	A	A	A	A	F	U <sub>40</sub>	F <sub>48</sub>	U <sub>52</sub>	J <sub>61</sub>	U <sub>62</sub>	64	F	F <sub>81</sub>	F <sub>84</sub>	F <sub>80</sub>	U <sub>77</sub>	F <sub>81</sub>	F	U <sub>54</sub>	F <sub>50</sub>	F <sub>40</sub>	J <sub>36</sub>	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	1			2	4	7	13	17	19	21	19	21	22	22	25	21	20	24	22	25	16	11	6	2	
MED	U <sub>32</sub>			U <sub>27</sub>	F <sub>24</sub>	F <sub>24</sub>	F <sub>30</sub>	F <sub>36</sub>	F <sub>40</sub>	F <sub>43</sub>	48	F <sub>52</sub>	54	56	F <sub>59</sub>	F <sub>59</sub>	57	F <sub>54</sub>	F <sub>50</sub>	F <sub>36</sub>	F <sub>28</sub>	F <sub>21</sub>	F <sub>26</sub>	F <sub>30</sub>	
UQ					F <sub>26</sub>	F <sub>26</sub>	F <sub>37</sub>	F <sub>42</sub>	F <sub>44</sub>	F <sub>48</sub>	52	55	57	60	F <sub>61</sub>	F <sub>62</sub>	63	F <sub>58</sub>	F <sub>53</sub>	F <sub>42</sub>	F <sub>32</sub>	F <sub>24</sub>	F <sub>33</sub>		
LQ					24	F <sub>23</sub>	F <sub>25</sub>	F <sub>30</sub>	F <sub>37</sub>	F <sub>41</sub>	46	F <sub>51</sub>	51	51	53	F <sub>55</sub>	54	50	42	F <sub>34</sub>	F <sub>26</sub>	F <sub>20</sub>	F <sub>20</sub>		

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SEP. 1973

FOF2 (0.1 MHz)

### IONOSPHERIC DATA

SEP. 1973

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00' 4" S, Long. 39° 35' 4" E Sweep 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												L												
3										L				L										
4													L		L	L								
5													L	L	L									
6										330	R	B	B	B	B	L								
7													L	L	B	B								
8											B	L	L	R	B									
9													380	390	B	B		L						
10									L	330	340	350	390	390	360	340								
11												L	L		L	L								
12												L	R	L	U L 370	L								
13											360		L	360	L	U L 370								
14										L	L	370	L	L	L									
15											L	L	L	L	L	L								
16											B	R	340	L	360	B								
17										F	B	B	R	B	B									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20									L		360	360	380	L	L	L								
21									L	B	370	370	B	B	B									
22										360	380	390	390	U L 390	L	L								
23										B	B	B	B	B	B	B								
24										B	R 340	B	B	B	B	B								
25										C	C	C	C	C	C	C								
26									B	R	C	C	C	C	C	C	B	340						
27										350	370	380	400	400	400	F 390	L	L						
28										U F 360	390	410	U L 410	L	L 450	390	L	L						
29										350	360	U L 400	400	U L 410	L	410	U L 390	L	L					
30										L	U L 360	L	L	L	L	L	L							
31																								
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
CNT								2	3	8	9	9	6	6	6	2	1							
MED								355	360	365	370	380	390	395	380	365	340							
UQ									360	385	380	400	390	410	390									
LQ									355	345	360	370	360	U L 390	360									

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SEP. 1973

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

SEP. 1973

FOE (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00 .4 S , Long. 39 35 .4 E Sweep 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	B	B	B	250	250 <sup>S</sup>	B	A	B	C	B	B						
2						A	A	A	A	150	B	R	B	B	260	230	A	A	A	B	B	100				
3						A	U F	105 <sup>S</sup>	A	170	225	A	250	245	230	225	A	A	A	B						
4						B	A	A	185	200 <sup>H</sup>	R	R	B	B	240	B	B	B	B	A						
5						B	B	B	B	B	260	R	250	B	B	B	B	B	B	B						
6					B	B	B	B	A	225	R	B	B	B	B	B	B	B	B	A	B					
7					B	A	A	A	A	A	250	A	B	B	B	B	B	B	B	B	B					
8					A	A	B	B	B	B	B	A	260	240	B	B	B	B	A	A						
9					B	B	B	B	B	195	220	240	245	B	B	B	200	B	B	A	B					
10					B	B	A	240	190	200 <sup>H</sup>	210	225	220	230	A	220 <sup>H</sup>	B	A	B	A	A					
11					B	B	A	B	A	A	B	230	270	250	240	230	200	A	A	C	A					
12					B	B	B	A	210	210	230	240	245	250	270	260	A	B	B	B	A					
13					A	A	C	110	165	200	230 <sup>H</sup>	250	B	B	B	B	B	A	B	C	U F	105				
14					C	S	A	A	B	B	S	240 <sup>S</sup>	S	245	B	220 <sup>A</sup>	A	B	B	B	B					
15					A	A	A	A	H	200	220	A	240	I B	260	260	260	220	190	A	U F	150	A	A		
16					R	S	C	S	A	S	R	B	S	B	225	B	B	B	220	210	B					
17				A	A	A	A	A	A	A	R	B	R	B	B	B	B	B	B	B	B	B	B	B		
18				R	S	R	A	A	200	210	250 <sup>H</sup>	250 <sup>H</sup>	245	240	240	A	A	185	A	B	A	B				
19				A	A	A	A	145	A	220	250	250	260	245	250	230	210	190	120	A	A	A				
20				C	B	A	A	180	A	A	A	A	250	250	245	240	220	160	B	B	110	A				
21				B	B	B	A	275	235	B	B	265	B	B	B	B	B	B	B	A	C	A				
22				R	B	A	A	A	B	A	270	270	265	B	250 <sup>S</sup>	240	230	A	F	A	A	A				
23				R	A	B	B	B	B	B	R	B	R	B	B	B	B	B	A	210	A	A				
24				B	R	S	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	F	150			
25				B	R	B	B	C	C	C	C	C	C	C	C	C	B	B	B	B	B	A	A			
26				B	B	B	C	C	B	B	B	C	C	C	C	C	260 <sup>R</sup>	A	A	C	A	A	C			
27				A	A	A	C	H	H	215	230	260	270	270	A	A	230	230	200	130	200	180	170	U F	A	
28				A	A	B	A	A	A	225	225	240	260	260	280	275	270	255	240	210	180 <sup>F</sup>	B	B	B	A	A
29				A	A	A	A	B	A	A	240	230	265	270	280	280	280	275	250	A	170	B	A	A	B	A
30				A	A	A	A	A	A	200	250	265	280	275	280	280	280	260	240	220	165	125	B	B	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					1	1	2	9	12	14	14	15	17	15	14	13	11	7	8	4	4	2	2			
MED					A	A	175	200	205	215	250	250	260	250	248	230	230	190	168	205	108	160	125			
UQ								225	230	230	260	268	270	260	270	255	240	205	175	210	145					
LQ								145	188	200	230	240	250	245	240	225	205	172	140	162	107					

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SEP. 1973

FOE (0.01 MHz)



IONOSPHERIC DATA

SEP. 1973

F-MIN (0.1 MHZ)

45 E Mean Time (G. M. T. + 3 h)

Station	SYOWA STATION																								Lat.	69 00.4 S.		Long.	39 35.4 E		Sweep	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	10	9	9	10	10	10	7	E <sub>10</sub> S	B	B	B	28	22	21	28	22	21	E <sub>30</sub> C	B	15	14	B	B	B													
2	9	8	10	E <sub>18</sub> C	15	9	9	9	9	30	31	32	30	E <sub>18</sub> S	12	16	10	10	20	11	9	9	11	10													
3	9	19	10	10	9	9	9	9	9	E <sub>15</sub> C	15	15	14	17	15	12	13	12	9	10	9	9	9	10													
4	9	12	15	20	12	22	12	12	12	10	B	B	30	32	21	21	45	37	32	10	12	10	9	20													
5	13	10	12	29	24	22	18	B	B	B	24	B	22	31	31	47	49	26	B	19	19	9	9	8													
6	24	13	12	14	B	16	26	26	13	14	B	B	B	50	29	26	26	B	37	10	11	12	10	9													
7	9	10	10	E <sub>28</sub> C	11	9	9	13	13	E <sub>15</sub> C	11	18	30	B	37	B	37	26	28	22	12	22	10	10													
8	10	13	10	13	12	11	12	20	25	37	B	20	20	21	46	B	56	37	25	14	15	15	15	15													
9	14	20	20	18	21	20	21	25	26	15	15	15	16	45	32	34	18	35	23	16	21	15	14	19													
10	15	21	25	15	15	18	14	18	12	13	11	13	14	15	15	15	28	15	20	11	10	10	13	11													
11	E <sub>22</sub> C	10	10	37	B	20	13	22	E <sub>13</sub> S	20	32	13	13	13	18	16	13	12	11	E <sub>11</sub> C	10	9	E <sub>12</sub> C	13													
12	11	29	19	10	22	B	20	11	12	13	13	17	14	15	E <sub>18</sub> S	14	E <sub>18</sub> S	33	16	9	9	10	9	9													
13	9	9	10	10	9	8	E <sub>20</sub> C	10	9	E <sub>18</sub> S	15	E <sub>15</sub> S	25	24	28	27	23	E <sub>12</sub> S	B	E <sub>15</sub> C	9	8	10	E <sub>12</sub> S													
14	E <sub>10</sub> S	10	19	38	E <sub>15</sub> C	E <sub>15</sub> S	10	13	25	24	E <sub>27</sub> S	13	25	24	27	E <sub>18</sub> S	13	19	14	10	12	11	C	C													
15	B	10	E <sub>17</sub> C	10	10	9	12	12	10	12	12	13	31	23	E <sub>23</sub> S	E <sub>19</sub> S	11	16	9	10	E <sub>10</sub> S	E <sub>10</sub> S	10	E <sub>10</sub> S													
16	11	9	10	16	16	E <sub>19</sub> S	E <sub>18</sub> C	E <sub>20</sub> S	E <sub>15</sub> C	E <sub>29</sub> S	B	B	E <sub>29</sub> S	24	22	B	B	43	E <sub>19</sub> S	E <sub>10</sub> S	16	10	E <sub>15</sub> C	9													
17	9	9	E <sub>20</sub> S	10	11	10	13	10	18	15	B	B	27	B	B	26	B	46	38	28	16	12	10	8													
18	13	12	18	20	E <sub>19</sub> S	23	20	9	15	10	13	13	13	12	11	10	E <sub>18</sub> S	13	E <sub>12</sub> C	21	12	15	10	9													
19	9	E <sub>10</sub> C	10	F <sub>10</sub> C	9	9	8	9	10	9	E <sub>15</sub> S	12	13	12	13	11	12	13	10	9	8	9	10	10													
20	9	12	E <sub>13</sub> S	F <sub>15</sub> C	14	E <sub>15</sub> C	13	10	10	15	22	14	10	10	10	11	13	14	44	23	9	9	16	9													
21	8	32	13	16	B	26	13	15	10	B	30	22	B	B	45	B	B	B	25	10	E <sub>16</sub> C	19	9	E <sub>9</sub> S													
22	15	E <sub>40</sub> S	E <sub>20</sub> S	17	20	14	13	22	B	22	12	12	10	37	E <sub>22</sub> S	13	22	20	15	11	10	11	10	13													
23	14	B	B	25	10	B	B	B	B	B	B	B	B	B	B	B	B	20	13	E <sub>9</sub> S	12	9	9	12													
24	8	B	B	B	B	E <sub>27</sub> S	B	B	B	B	28	B	B	B	B	B	B	B	25	10	E <sub>10</sub> C	8	10	10													
25	15	B	17	B	B	B	C	C	C	C	C	C	C	C	C	C	B	B	B	B	16	9	9	10													
26	B	20	20	20	22	C	C	B	B	B	C	C	C	C	C	C	B	24	23	15	C	E <sub>16</sub> C	10	C	19												
27	E <sub>15</sub> C	9	9	9	9	C	10	14	18	15	14	13	15	13	17	17	17	17	10	9	10	11	10	10													
28	9	9	8	27	13	11	9	12	12	13	14	14	13	11	15	16	17	17	10	23	20	13	9	9													
29	9	10	9	10	13	21	12	10	14	14	13	15	15	14	16	22	15	16	15	22	11	13	15	11													
30	10	10	11	10	13	10	11	11	10	14	14	13	15	15	15	15	13	11	14	10	15	13	9	10													
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	28	28	29	29	29	28	28	28	28	28	29	30	30	30	29	30	30	28	29													
MED	10	10	11	15	14	U <sub>14</sub>	12	12	13	15	16	15	20	22	21	21	22	20	20	10	12	10	10	10													
UQ	14	20	18	U <sub>22</sub>	22	22	18	22	25	30	D <sub>32</sub> B	D <sub>32</sub> B	30	41	32	47	49	37	32	19	16	13	11	12													
LQ	9	10	10	10	11	10	10	10	10	14	14	13	14	14	15	14	13	14	12	10	10	9	9	9													

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F-MIN (0.1 MHZ)



IONOSPHERIC DATA

SEP. 1973

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 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	U F 270	255	U F 260	B	B	B	F 310	F	J F 325	F 315	F	F 340	B	F 330	F 340	B	R	B		
2	A	A	R	A	A	A	F	F 290	F 295	300	315	320	320	J F 315	U F 305	U F 325	325	F	F 350	F 340	F 310	F	A	A	
3	A	A	A	A	F 260	F 270	F	U F 270	F 295	325	310	320	350	R 330	345	J F 345	U F 320	U F 315	335	U F 320	F 340	310	A	A	
4	A	A	A	A	A	A	A	A	F 300	F 290	B	B	F 295	F 300	F 320	F 320	325	315	335	F 315	F	A	A	B	
5	A	A	A	B	R	A	A	B	B	B	285	B	305	F 295	U F 325	310	335	320	B	F 325	F	A	A	A	
6	B	A	A	A	B	A	A	A	F 270	F 280	B	B	B	310	F 320	F 320	300	B	R	F 250	A	A	A	A	
7	A	A	A	A	A	A	U F 265	A	A	F 300	320	U F 295	F	B	320	B	330	325	325	F 310	U F 305	B	A	A	
8	A	A	A	A	F	U F 275	F 265	F 300	305	B	R	F 295	F 315	F	300	B	R	335	F 330	F 305	A	A	A	A	
9	A	A	A	A	A	F 260	F 280	F 295	300	U R 285	R	F 270	F 260	300	345	355	305	290	310	F 305	A	A	A	A	
10	A	A	B	A	A	A	A	F 270	F 255	F 250	255	290	F 275	F 295	255	280	F 320	F 300	310	A	A	A	F	A	
11	C	A	F	B	B	A	A	A	A	F 275	U R 300	F 285	290	300	290	315	335	345	F 320	340	305	F	C	B	
12	A	B	B	A	B	B	A	F 310	F 315	295	310	290	300	320	330	340	F	F	F	F 275	A	A	F	F 295	
13	A	A	A	F	A	F 250	F 295	F 300	F 310	310	290	315	335	F	300	335	335	315	B	F	F 280	A	A	A	
14	A	A	A	B	A	A	265	A	285	295	F 300	315	315	310	F 325	335	345	F	F 350	F 335	F	F	C	C	
15	B	A	A	F	A	F 265	F 290	F 310	F 325	F 320	F 315	F 315	305	J R 310	F 315	290	F	345	F 305	F	A	A	A	A	
16	F	A	A	A	A	A	A	A	A	A	B	B	255	285	F 265	B	B	F 325	R 320	F 325	F 315	U H 285	R	R	
17	A	A	F	F	A	F	A	R	A	F	B	B	285	B	B	325	B	B	335	340	335	F 325	F 305	F	A
18	A	F	A	A	A	A	A	F 280	F 310	295	315	300	310	335	320	325	335	325	F 320	F	F	300	A	A	
19	A	A	A	F	F 250	F 275	F 305	F 310	F 320	F 300	F 300	F 295	F 320	F 305	F 325	F 340	345	355	360	335	F 325	F 305	A	A	
20	A	A	A	A	A	A	265	280	F 270	F 265	290	290	290	F 305	F 310	F 315	335	320	305	R 325	F	A	A	A	
21	A	B	A	A	B	B	A	F 270	U R 260	B	265	275	B	B	270	B	B	B	325	F 300	A	A	A	A	
22	A	B	A	A	A	A	A	A	B	F 280	F 270	F 290	285	300	295	330	325	F	F	F	F 310	F	F	A	A
23	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	F 290	305	F 310	A	A	A	A
24	A	B	B	B	B	A	B	B	B	R	B	B	B	B	B	B	B	B	J R 320	A	A	F 265	A	A	
25	A	B	A	B	B	B	C	C	C	C	C	C	C	C	C	C	B	B	B	U F 285	A	A	A	F	
26	B	A	A	A	A	C	C	B	B	B	C	C	C	C	C	B	F	R	F	C	A	A	C	A	
27	A	A	F	F	F	C	F	275	275	260	260	250	255	260	260	F 275	F 295	330	F 290	F 290	F	F	F	A	
28	A	A	A	A	A	F 280	F 295	F 275	F 270	F 270	F 280	F 280	F 280	F 290	F 315	F 310	F 340	F 315	F 330	F 325	F	F 310	F	F	
29	U 315	F	F	F	A	A	A	F 275	F 275	F 280	F 280	F 275	F 275	F 285	F 305	J F 305	F 320	J F 330	F 305	J F 330	F 315	F	F 290	F	
30	F	A	A	A	A	F	F	F 265	F 295	F 295	F	290	F	F 295	F 300	F 315	U F 325	335	F	F	F	F 325	F 335	F 335	A
31																									
CNT	1				2	7	10	17	18	20	18	21	21	21	25	21	19	20	21	22	13	7	5	1	
MED	U 315				F 255	F 270	F 272	F 280	F 295	F 292	F 295	F 290	F 295	300	F 310	F 320	325	325	F 320	F 322	F 315	F 305	F 305	F 295	
UQ					F 272	F 290	F 300	F 310	F 300	F 310	F 310	F 315	F 310	F 320	F 335	F 335	F 338	F 335	F 330	F 325	F 318	F 310			
LQ					F 262	F 265	F 270	F 275	F 278	F 270	F 285	F 280	F 295	F 295	F 315	F 320	F 315	F 310	F 305	F 305	F 292	F 290			

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M(3000)F2 (0.01)

### IONOSPHERIC DATA

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H<sup>+</sup>F<sub>2</sub> (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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												250												
3									L					L										
4													L		275	250								
5													330	295	250									
6									380	B	B	B	B	L										
7												315	325	B	275									
8										B	L		300	R	300									
9												385	430	B	250		L							
10								L	450	435	340	340	360	440	340									
11												L	L		L	L								
12											L	350	310	280	250									
13											380		275	L	290									
14									L	L	290	270	295	260										
15											L	L	L	250	L	275								
16											R	R	R	L	400	B								
17										R	R	R	370	B	B									
18									L	L	L	310	265	275										
19									L	L	L	280	L	250										
20								L	430	340	325	L	300	L										
21									L	B	410	380	B	B	380									
22									380	380	350	340	325	L	L									
23									B	B	B	B	B	B	B									
24									B	R	R	R	B	B	B									
25									C	C	C	C	C	C	C									
26									R	B	C	C	C	C	C	B	R							
27									400	440	440	460	455	425	420	330	290							
28									345	375	380	330	350	370	320	275	L							
29									360	360	L	350	350	L	300	295	280	260						
30								L	380	L	300	L	L	L	270	255	240							
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	3	7	8	12	15	12	17	7	2							
MED								370	360	380	380	345	330	298	275	275	275							
UQ								380	435	422	365	360	342	320	305									
LQ								352	378	365	320	305	275	255	262									

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H<sup>+</sup>F<sub>2</sub> (KM)

IONOSPHERIC DATA

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H'F (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 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	380	A	345	B	B	R	240	250	235	250	230	210	225 <sup>C</sup>	B	220	245		B	B	B
2	A	A	280	A	A	A	425	300	250	250 <sup>B</sup>	250 <sup>R</sup>	240 <sup>B</sup>	230	225	230	230	225	230	225	215	250	260	A	A	A
3	A	B	A	A	395	360	350	300	250	220	225	200 <sup>H</sup>	230	215	225	230	230	240	200	225	225	270	A	A	A
4	A	A	A	A	A	B	A	A	280	280	B	B	250	280 <sup>B</sup>	250	240	B	B	250 <sup>B</sup>	250	A	A	A	B	A
5	A	A	A	B	B	B	A	B	B	B	280	B	280	260 <sup>B</sup>	250	290 <sup>B</sup>	E 260 <sup>B</sup>	240	B	250	B	A	A	A	A
6	B	A	A	A	B	A	B	B	340 <sup>A</sup>	335	B	B	B	B	250	240	260	B	B	410	A	A	A	A	A
7	A	A	A	A	A	A	340	A	A	335	230	250	270	B	B	B	250 <sup>B</sup>	230	260 <sup>B</sup>	250	290	B	A	A	A
8	A	A	A	A	A	365	345	300	260 <sup>B</sup>	B	B	230	275	R	B	B	B	E 250 <sup>B</sup>	250 <sup>B</sup>	325	A	A	A	A	A
9	A	B	B	A	A	A	B	E 370 <sup>B</sup>	B 280 <sup>B</sup>	245	250	230	220	B	B	230	250	285	270	305	A	A	A	A	A
10	A	B	B	A	A	A	A	380	300	275	250	250	220	240	325	275	250	295	300 <sup>B</sup>	A	A	A	A	A	A
11	C	A	A	B	B	A	A	A	A	350	E 295 <sup>B</sup>	260	240	230	240	230	240	230	220	225	295 <sup>A</sup>	A	C	B	A
12	A	B	B	A	B	B	A	310	240	280	235	225	225	220	250	235	245	250	225	250	A	A	425 <sup>F</sup>	A	A
13	A	A	A	A	A	A	E 345 <sup>C</sup>	215	240	230	220	225	200	200	245	230	240	260	B	250	320	A	A	A	A
14	A	A	A	B	A	A	A	A	300	250	250	230	235	225	210	230 <sup>H</sup>	230	220	225	220	215	230	C	C	A
15	B	A	A	A	A	370	330	280	230	215	225	225	235	220	230	225	200	220	250	245	A	A	A	A	A
16	A	A	A	A	A	A	A	A	A	A	B	B	E 260 <sup>B</sup>	240	225	B	B	B	265	280	250	285	A	A	A
17	A	A	A	A	A	A	A	A	A	300	B	B	245	B	B	230	B	B	250 <sup>B</sup>	E 260 <sup>B</sup>	230	280	B	A	A
18	A	A	B	B	A	A	A	275	240	250	235	230	225	225	225	240	230	240	240	230	240	E 300 <sup>B</sup>	A	A	A
19	A	A	A	A	330	325	270	240	250	225	230	230	230	225	230	225	225	210	220	205	250	265	A	A	A
20	A	A	A	A	A	A	A	260	230	280	270 <sup>R</sup>	215	200	240	200	250	245	240	B	250	320	A	A	A	A
21	A	B	A	A	B	B	A	380	250	B	250	240	B	B	B	B	B	B	250	320	A	A	A	A	A
22	A	B	A	A	A	A	A	A	B	280	235	240	220	B	265	225	250	250	240	250	275	325	A	A	A
23	A	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	320	340	315	A	A	A	A	A
24	A	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	290	A	A	360	A	A	A
25	A	B	A	B	B	B	C	C	C	C	C	C	C	C	C	C	B	B	B	B	315	A	A	A	A
26	B	A	A	A	A	C	C	B	B	B	C	C	C	C	C	C	B	350	A	A	C	A	A	C	A
27	A	A	F	F	F	C	380	260	240	240	235	235	230	220	220	250	250	235	275	330	A	390	350	A	A
28	A	A	A	A	A	A	365 <sup>A</sup>	275	250 <sup>H</sup>	235	230	250	230	230	210	230	225	235	230	230	245	250	280	330	330
29	A	A	A	A	A	A	A	300	200	205	250	230	215 <sup>H</sup>	205	220	240	230	240	225	230	240	250	280	280	280
30	280	A	A	A	A	400	280	240	245	230	225	225	230	195 <sup>H</sup>	200	275	230	230	210	220	225	235	230	A	A
31																									
CNT	1		1		2	6	10	17	19	21	21	21	24	19	21	22	22	22	23	26	17	13	5	2	
MED	280		280		362	368	345	290	250	250	235	230	230	225	230	230	238	239	250	250	250	268	280	305	
UQ					380	365	305	270	280	250	240	245	238	250	240	250	250	262	280	290	300	350			
LQ					360	305	260	240	230	230	225	222	220	220	230	230	230	225	225	240	250	280			

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H'F (KM)

IONOSPHERIC DATA

SEP. 1973

H<sup>+</sup>ES (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 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	110	105	110	110	150	180	110	110	B	B	B	B	150	G	B	180	B	C	B	115	110	B	B	B	
2	145	100	110	110	110	100	100	100	100	B	B	B	B	150	140	120	125	130	B	B	G	145	150	140	
3	110	125	105	110	120	110	130	105	100	135	G	115	G	G	120	G	150	160	105	B	110	100	100	150	
4	100	100	100	110	105	120	100	100	140	130	B	B	B	B	G	B	B	B	B	150	120	125	115	100	
5	105	110	100	120	130	120	170	B	B	B	125	B	G	B	B	B	B	B	B	145	B	120	110	100	
6	100	110	125	125	B	110	125	100	105	G	B	B	B	B	B	B	B	B	B	125	125	125	115	120	
7	120	110	125	140	125	125	130	110	110	100	100	125	B	B	B	B	B	B	B	B	B	100	110	120	
8	125	100	105	125	125	120	105	B	B	B	B	125	G	145	B	B	B	B	B	130	130	125	125	130	
9	125	120	115	125	150	B	B	B	B	G	G	G	G	B	B	B	G	B	125	125	125	170	110	110	
10	105	125	105	100	110	115	115	G	G	125	G	G	G	G	115	G	B	130	B	110	120	120	140	100	
11	110	120	130	125	B	100	110	125	120	120	B	G	145	G	G	100	150	130	130	C	150	160	115	130	
12	150	105	120	100	100	B	100	105	G	G	G	G	130	G	G	G	115	B	B	B	120	115	150	110	
13	110	110	120	110	110	110	C	G	G	140	G	G	B	B	B	B	B	130	B	C	175	115	110	110	
14	115	125	100	130	100	105	105	100	B	B	S	S	S	G	B	115	120	B	B	B	B	B	C	C	
15	B	145	110	100	115	100	105	125	G	130	120	150	B	145	S	S	130	105	G	110	150	150	105	105	
16	100	100	150	125	110	105	100	100	110	125	B	B	S	150	G	B	B	B	G	G	B	140	150	160	
17	110	125	130	120	110	105	100	100	130	120	B	B	B	B	B	B	B	B	B	B	B	B	160	100	
18	120	130	100	130	120	125	100	115	G	G	G	G	G	G	G	105	130	115	110	B	140	B	130	120	
19	105	120	115	105	105	100	100	100	100	G	G	125	125	120	105	105	130	130	100	100	100	100	115	150	
20	120	120	100	110	100	105	120	150	100	105	115	100	100	G	G	G	100	G	B	B	125	115	120	100	
21	100	100	100	100	B	145	105	110	G	B	B	G	B	B	B	B	B	B	B	110	120	115	110	120	
22	150	150	125	130	120	120	115	130	B	125	G	G	G	B	G	G	G	140	G	110	130	155	105	100	
23	120	B	B	125	100	B	B	B	B	B	B	B	B	B	B	B	B	160	110	130	120	130	130	100	
24	105	B	B	B	B	120	B	B	B	B	B	B	B	B	B	B	B	B	B	105	110	B	105	110	
25	130	B	110	B	B	B	C	C	C	C	C	C	C	C	C	C	B	B	B	B	B	110	105	150	
26	B	120	110	120	105	C	C	B	B	B	C	C	C	C	C	C	B	G	125	150	C	110	110	C	125
27	130	180	145	120	125	C	G	G	100	G	G	G	110	110	110	G	G	150	G	110	145	G	120	110	
28	120	110	110	110	100	110	105	G	G	G	120	G	G	130	130	G	G	G	100	B	B	B	120	130	
29	110	130	110	105	120	110	100	115	G	125	G	G	110	G	115	G	125	125	G	B	100	135	140	130	
30	130	120	125	125	115	120	130	110	G	G	125	G	G	G	G	160	130	G	G	G	B	B	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	28	27	28	28	25	24	23	19	11	12	6	6	7	7	7	7	11	13	8	14	21	22	26	28	
MED	112	120	110	120	110	110	105	110	105	125	120	125	125	145	115	115	130	130	110	112	120	122	115	120	
UQ	125	125	125	125	120	120	118	115	115	130	125	125	138	148	125	140	130	140	128	130	130	140	130	130	
LQ	105	108	105	110	105	105	100	100	100	100	120	115	115	110	125	112	105	122	125	102	110	110	115	110	102

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H<sup>+</sup>ES (KM)

# IONOSPHERIC DATA

SEP. 1973

TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00' 4" S. Long. 39° 35' 4" E Sweep 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	R1	R2	R3	R3	RF11	HL11	R1	R1					H1			H1			L1	FF11					
2	RF11	RF31	R3	R2	R1	R3	L2	L1	L1				CL11	C1	L1	L1	CL11				R1	R1	R1		
3	R3	R1	R2	R3	R2	C1	R1	C1	L1	C1	L1			L1		R1	L1	L1		F1	F1	R5	FR12		
4	R4	R2	R1	R2	R3	R2	R2	R2	R1	R1									L1	RR11	R1	R6	R1		
5	R1	R2	R2	R1	R1	R1	HR11				R1								R1		R1	R3	R5		
6	R1	R2	R2	R2		R2	R1	R1	R1										R3	L2	R2	R3	R3		
7	R3	R4	R4	R1	R2	R4	R1	R1	RL11	R1	L1	R1									F1	R1	R2		
8	R3	R1	R2	R2	C1	L1	L1					L1		C1					R1	R1	R1	R1	R1		
9	R2	R1	R1	R2	R1														R1	R1	L1	RR11	R2	R1	
10	R1	R1	R1	R1	R1	R1	R2			C1					R2			L1		R2	RL21	R3	FR11	R1	
11	R2	R3	R1	R1		R1	R1	R1	R1	R1			C1			L1	H1	R2	R1		R1	R1	R5	R2	
12	RR11	R1	R1	R1	R1		R1	R1					C1				R1				R4	R3	R1	R3	
13	R3	R5	R5	R3	R5	R6				C1								R1			R1	RR11	R5	R1	
14	R4	R3	R1	R1	R1	R2	R2	R1							R1	R1									
15		N1	R3	R2	R2	R2	R2	R1		R1	R1	C1		C1			CL11	L1		R1	RR13	RR15	R5	R3	
16	FR21	R4	FF2	R2	LS11	L1	R1	R1	R2	R1			C1									R1	R1	RR11	
17	R5	R3	R1	R1	R3	R4	R1	L1	R1	R1													F1	R3	
18	R2	R1	R1	RR11	R1	R1	R1	L1								L2	L1	R1	L1		L1		R1	R3	
19	R6	R5	R4	R3	LR12	L1	L2	L2	L2			CL11	C1	C1	L1	L1	R1	C1	L1	L2	L4	L2	R3	R1	
20	R4	R3	RF11	L1	R2	R3	R2	C1	R1	R1	L1	R1	R2				L1				RR11	R2	F1	R2	
21	R3	F1	R1	R1		LR11	R2	R1												R2	RR11	R4	R5	R1	
22	FR12	F1	R1	R1	R1	R1	R2	R1		R1									LL11		L1	A1	R1	R2	R1
23	RR21			L1	L2													R1	R1	C1	R1	R4	A1	R1	
24	R2				L1															R2	R1		R2	R2	
25	FF11		R2																			R4	R2	FR11	
26		R1	R1	R1	R1													R1	RR12		R2	R4		R1	
27	R1	AR14	LA11	R1	R1				L1				C1	L1	L1			H1		R2	R1		R1	R3	
28	R4	RR13	R4	R1	R1	R2	R2				C1			C1	C1				L1				L1	RF21	
29	R4	R2	R2	R3	R2	R1	R2	RL21		C1			L1		R1		R1	R1			L1	L1	R1	L1	
30	R1	R5	R3	RF11	R3	R3	RR11				C1				H1	C1								R3	
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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SEP. 1973

TYPES OF ES

### IONOSPHERIC DATA

OCT. 1973

FOF2 (0.1 MHz)

45 E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION	Lat. 69 00.4 S.		Long. 39 35.4 E		Sweep	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	A	A	A	A	B	A	A	U	F	F													
2	A	A	A	A	A	A	F	F	A	B	B	B	R	F	F	F	J	R	B	F	A	A	A	A
3	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	F	B	F	A	A	A	A
4	F	A	B	B	A	B	B																	
5	A	A	A	A	A																			
6	A	A	A	A	A	A	A	A																
7	A	A	F	B	A	B																		
8	F	F	F	B	A	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
9	A	A	A	F	A																			
10	A	A	A	A	A	A	A	R	B	R	R	B	B											
11	B	B	B	B	B	A	B	B																
12	R	A	A	A	B	R	R	A	A	U	F	B	R	B	F	F	F	F	F	F	F	F	F	F
13	A	A	A	B	B	B	B	B	F	B	B													
14	B	A	A	B	B	A	A	A	F	37	37	39	40	45	46	47	49	48	45	43	43	37	34	31
15	R	A	A	P	B	B	R	F	39	40	43	44	44	45	45	47	49	48	45	43	43	37	34	31
16	F	F	F	A	A	F	F	V	45	B	B	F	F	B	B	B	F	F	B	F	A	F	A	A
17	B	A	B	F	A	B	B	B	R	B	B	B	B	B	B	B	B	F	F	F	A	A	A	B
18	A	A	B	A	A	A																		
19	F	U	F	A	A	A	F	A	R	B	B	B	H	B	B	B	B	B	B	B	A	A	A	A
20	A	A	A	A	F	F	A	B	B	A	R	B	B	B	B	B	B	B	B	B	A	A	A	A
21	B	A	A	A	F	B	R	A	B															
22	B	B	B	H	B	A	B	B	A	E	G	B	B	B	B	B	B	B	F	F	F	F	F	F
23	C	C	A																					
24	F	F	J	A	A	F	A	F	B	R	R	U	R											
25	A	A	A	A	A	F	F	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
26	A	U	F	F	A	A	A	B	A	U	F	U	F	F	F	F	F	F	F	F	F	F	F	F
27	U	F	U	F	F	F	F	F	J	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
28	A	F	F	F	A	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
29	A	F	A	A	F	A	B	R	A	B	B	B	B	B	B	B	B	B	B	B	A	A	F	B
30	A	U	F	A	U	F	B	B	B	A	B	B	B	B	B	B	B	B	B	B	F	36	35	34
31	A	B	B	H	B	B	B	B	B	B	R	H	B	B	B	B	B	B	B	B	43	40	34	34
	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	6	4	4	4	6	9	13	17	18	13	16	17	18	20	19	20	22	25	23	20	13	10	9
MED	F	U	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
UQ	F	U	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
LQ	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F

OCT. 1973

FOF2 (0.1 MHz)

IONOSPHERIC DATA

OCT. 1973

FOF1 (0.01 MHz)

145 E Mean Time (G. M. T. + 3 h)

Station	SYOWA STATION	Lat.	69 00.4 S.	Long.	39 35.4 E	Sweep	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 400	400	400	U L 420	L 420	L	L	L								
2									A	B	B	B	R	L	U R 400	400	B							
3									B	B	R	B	B	B	B	B	B	F 320						
4									L	370	B	B	R 400	R	L	L	L							
5								A 300	350	370	400	400	L U L 400	L U L 400		L								
6									350	380	B	B	B	B	B	B	L							
7									340	360	360	360	390	400	390	L	L	L						
8								A	370	370	R 400	390	400	400	390	L	L	L						
9									F 290	320	350	380	390	L 400	U L 400	U L 400	L	L	L					
10									A	B	R	R	B	B	360	360	360	350	L	L				
11									B	340	360	370	370	380	370	B	B	L 350						
12								A	A	340	B	B	B	360	370	360	340	L	L					
13									B	330	B	B	360	B	B	B	B	B	B					
14									330	340	350	360	360	370	H 380	380	360	L						
15								A	350	330	360	370	380	380	380	390	350	360	L	L				
16								A	F 320	350	360	B	B	380	F 380	B	B	B	390					
17									B	B	B	B	R	B	B	B	B	B	340	L				
18									330	340	B	B	B	B	380	B	B	B						
19									A	B	B	B	B	B	B	B	B	B	L					
20									B	B	A	B	B	B	B	B	B	B						
21									A	B	370	380	380	380	B	B	B	R						
22									B	A	350	B	R	B	B	B	B	B	B	L				
23									B	360	370	400	B	400	400	400	L B 400	L	L					
24									350	B	A	R	390	390	400	410	400	B	B					
25									A	A	360	390	390	410	420	L	L	380	L	L				
26									B	A	370	380	390	430	440	420	430	L 420	L					
27									320	350	360	380	400	400	410	430	430	L U L 410	L	L	L			
28									340	A	340	350	370	380	400	400	410	R	B	B	400	L	L	L
29										B	R	A	B	B	B	B	B	R	B	360	A			
30										B	B	A	B	B	B	B	B	B	B	B	L			
31										B	B	B	B	B	B	B	B	B	B	B	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		2	6	9	15	18	14	15	16	14	10	10	7	2						
MED				340		330	325	350	360	370	390	390	400	395	395	400	360	330						
UQ						350	350	370	380	400	405	405	400	400	400	370								
LQ						300	340	345	360	370	380	380	370	380	360	350								

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FOF1 (0.01 MHz)

## IONOSPHERIC DATA

OCT. 1973

FOE (0.01 MHZ)

45° E Mean Time (G. M. T.+ 3 h)

Hour Day	Station SYOWA STATION																							Lat. 69 00.4 S.	Long. 39 35.4 E	Sweep	MHz to	15 MHz in	30 sec	in automatic operation																						
	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	C	B	B	A	A	A	260	260	270	250	270	270	265	250	210	C	130	R	100	B	B	B																											
2	B	B	A	A	A	A	A	A	A	B	B	B	B	A	R	H	240	B	B	A	A	A	A	A	A																											
3	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	220	B	A	A	A	A	A	A																											
4	A	A	B	B	B	B	B	A	240	240	B	B	B	275	I	B	270	265	235	170	150	B	B	A	A	A																										
5	B	B	A	A	B	A	A	220	230	250	250	260	260	280	265	250	240	205	170	A	110	A	A	A	A																											
6	A	B	B	S	A	S	A	A	265	270	B	B	B	B	B	B	B	B	B	B	115	F	140	A	A	A																										
7	A	B	125	B	B	B	A	210	230	240	250	260	260	260	H	260	250	225	B	F	170	150	125	A	A	B																										
8	95	95	A	B	B	A	A	A	B	B	275	275	270	280	265	250	210	215	B	B	A	A	A	A	A																											
9	A	A	A	A	A	A	165	200	230	250	260	260	265	F	270	270	250	A	A	210	170	140	B	A	A	A																										
10	B	A	A	A	A	A	A	A	B	B	B	B	B	B	270	250	225	200	160	A	A	155	A	A	A																											
11	B	B	B	B	B	B	B	B	230	A	260	270	265	A	B	B	B	B	B	165	B	B	B	C	B	B																										
12	B	B	B	B	B	B	A	A	B	A	B	B	B	265	R	265	240	U	R	235	B	150	170	A	A	A	A																									
13	A	A	B	B	B	B	B	B	280	B	B	270	B	B	B	B	B	B	B	B	155	B	A	A	A	B																										
14	B	B	A	B	B	B	B	A	U	A	A	A	260	260	250	260	245	B	200	165	B	130	A	A	B	B																										
15	A	A	A	B	B	B	B	240	220	245	250	250	270	250	260	260	240	U	R	220	B	U	R	155	B	B	B	B																								
16	95	C	A	A	B	A	A	220	235	B	B	B	300	B	B	B	A	B	B	195	140	A	A	A	C	C																										
17	B	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	230	A	B	A	B	A	B	B																										
18	B	B	B	B	B	B	A	230	B	B	B	B	B	B	B	B	B	B	A	B	A	A	B	A	B	B																										
19	A	A	A	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	A	155	A	A	A	A																										
20	A	A	A	B	A	150	B	B	B	A	B	B	B	B	B	B	B	240	A	B	150	A	B	A	B	A																										
21	B	A	B	A	A	B	B	A	B	305	270	280	270	B	B	B	A	B	B	A	A	A	A	A	B	B																										
22	B	B	B	B	B	A	B	B	B	270	B	B	B	B	B	B	B	B	220	200	175	A	A	A	A	A																										
23	C	C	B	A	235	B	A	B	300	300	280	B	B	280	B	B	260	U	R	240	B	155	C	A	A	95																										
24	U	A	A	B	A	A	A	A	B	B	B	310	310	300	295	275	B	B	B	B	B	135	A	A	A	A																										
25	B	A	B	B	B	A	230	A	A	275	285	285	295	285	270	270	260	230	210	H	190	155	125	A	A	A																										
26	A	A	A	A	A	B	B	A	A	280	285	290	290	295	285	280	A	265	245	220	185	130	110	A	100	100																										
27	A	U	A	C	A	125	A	A	250	270	280	300	300	290	300	280	270	275	250	H	220	180	A	B	A	A																										
28	A	A	U	A	R	265	A	270	265	250	265	275	290	295	U	R	310	B	B	295	280	250	R	200	A	A	A	B	A																							
29	A	A	A	A	A	B	B	A	B	B	B	B	B	B	B	265	B	B	A	B	A	A	A	A	B	A	A																									
30	B	A	B	B	U	A	210	B	B	B	B	B	B	B	B	B	B	B	B	210	200	160	150	A	A	A																										
31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	210	175	130	125	160	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	2	2	2	2	3	3	8	13	14	13	15	15	14	15	16	14	17	15	15	13	6	1	2																												
MED	95	92	192	238	180	210	230	225	235	270	270	270	270	275	270	255	240	220	170	170	140	130	160	98																												
UQ	98				240	248	245	265	280	285	288	292	285	270	270	260	240	210	188	155	150																															
LQ	95				180	198	215	230	250	260	260	262	265	265	250	235	210	165	152	130	125																															

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FOE (0.01 MHZ)



# IONOSPHERIC DATA

OCT. 1973

FOES (0.1 MHz)

45 E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 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 33	J X 34	50	47	50	B	42	40	35	G	G	G	G	33	G	J X 32	G	24	J X 62	18	G	E B 9	E B 9	J X 30	
2	J X 36	J X 71	55	43	J X 60	J X 54	J X 51	35	55	B	B	B	34	32	G	G	E B 56	B	30	37	J X 99	J X 40	40	J X 84	
3	53	36	J X 105	J X 40	B	R	R	B	R	B	R	B	B	B	B	B	B	G	B	20	J X 34	J X 59	33	J X 34	
4	J X 62	J X 64	B	43	32	B	B	J X 37	G	G	B	R	F B 31	G	E B 27	G	G	G	23	22	B	B	J X 34	32	81
5	31	35	24	31	30	38	32	G	29	G	28	D S 29	27	G	G	G	G	G	18	29	G	25	29	J X 64	
6	60	43	70	54	J X 76	44	39	36	G	G	B	R	B	B	B	R	E B 32	E B 40	E B 40	G	22	31	28	38	
7	45	36	60	B	33	45	35	G	G	G	G	G	G	G	G	G	G	G	G	D S 20	13	12	11	E B 10	
8	G	G	J X 25	40	J X 45	41	36	32	E B 30	E B 34	35	32	G	J X 51	G	G	G	G	E B 23	E B 33	13	12	J X 33	J X 20	
9	J X 26	30	32	40	43	30	G	G	G	G	G	30	J X 83	J X 36	G	32	28	25	J X 23	G	E B 10	13	11	36	
10	72	37	J X 54	J X 40	33	32	60	34	B	36	35	B	R	E B 32	G	G	G	G	23	J X 34	20	G	30	29	
11	B	B	45	R	39	36	B	B	30	27	G	G	G	27	E B 45	E B 38	E B 25	E B 24	G	E B 34	R	E B 27	E C 20	47	
12	23	36	49	52	B	33	36	39	51	44	R	B	B	G	G	G	G	E B 23	24	J X 34	J X 55	33	28	28	
13	32	36	46	R	R	R	B	B	G	B	R	G	R	E B 38	E B 37	B	B	B	E B 26	18	E B 23	28	J X 39	B	
14	B	40	36	51	48	40	51	41	36	32	30	G	J X 93	27	G	G	E B 36	G	G	E B 22	G	30	27	23	
15	20	27	29	31	B	R	35	G	J X 64	G	G	G	G	G	G	G	G	G	E B 21	G	E B 15	E B 15	E B 11	J X 25	
16	G	J X 24	24	36	44	J X 38	28	J X 54	J X 26	B	R	30	G	B	B	B	30	E B 27	B	J X 26	22	J X 79	74	90	
17	B	J X 72	45	J X 65	J X 44	B	B	B	B	B	R	R	B	B	B	B	B	B	G	30	E B 20	35	45	33	R
18	38	40	58	46	57	47	28	G	B	B	R	R	B	E B 31	B	R	B	B	34	B	34	23	50	J X 48	60
19	J X 36	J X 65	J X 117	J X 45	35	33	38	35	B	B	R	B	B	B	B	B	B	E B 27	B	52	40	28	32	32	
20	J X 70	J X 84	34	48	44	G	44	B	B	B	B	R	B	B	B	B	B	B	G	32	E B 23	G	32	37	J X 39
21	40	46	52	J X 124	J X 78	61	35	40	B	G	G	G	G	B	B	E B 49	30	B	B	J X 38	44	43	J X 70	J X 66	
22	B	J X 128	64	R	B	B	B	B	41	G	B	R	B	B	B	B	B	B	G	G	G	G	18	29	J X 52
23	C	C	30	27	G	B	38	B	31	G	G	B	E B 31	G	E B 33	E B 44	G	G	E B 23	G	E C 19	20	J X 59	14	
24	J X 29	J X 35	35	32	30	30	J X 49	J X 45	B	40	B	G	G	G	G	G	E B 45	B	E B 49	E B 23	E B 22	20	33	35	
25	J X 41	J X 51	J X 74	40	76	J X 27	J X 34	41	J X 44	G	G	G	G	32	31	33	G	G	G	G	G	G	G	17	30
26	J X 38	34	J X 26	45	J X 53	38	B	45	41	G	G	G	G	G	G	G	J X 32	G	G	G	G	18	J X 22	12	J X 51
27	J X 18	J X 23	J X 22	18	J X 28	J X 41	32	G	G	G	G	G	G	G	G	G	G	G	G	23	G	20	23	J X 38	40
28	J X 37	J X 53	J X 60	J X 50	J X 47	39	30	G	G	G	G	G	G	R	E B 45	G	G	G	G	33	40	43	50	39	
29	J X 40	35	98	34	J X 27	43	B	31	48	B	B	R	B	B	G	B	E B 32	44	B	J X 37	39	64	R	J X 70	
30	88	87	38	J X 40	B	40	B	B	53	B	R	R	B	B	B	B	B	B	B	G	27	22	G	31	30
31	47	B	B	R	B	R	B	B	B	B	B	B	B	B	B	B	B	B	B	G	23	23	20	J X 32	25
CNT	26	28	29	26	24	23	21	22	22	21	15	16	18	19	20	19	22	24	25	30	29	31	30	29	
MED	38	36	46	42	44	39	36	35	30	G	G	G	G	E B 27	G	G	G	G	E B 22	U	20	21	27	32	36
UQ	47	J X 58	60	48	J X 52	44	42	40	44	U	30	E B 28	E B 29	31	U	30	E B 32	E B 32	24	24	34	34	37	38	52
LQ	J X 29	34	32	36	32	33	32	G	G	G	G	G	G	G	G	G	G	G	G	G	E B 13	U	14	27	29

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FOES (0.1 MHz)

### IONOSPHERIC DATA

OCT. 1973

F-MIN (0.1 MHZ)

°  
45 E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69 00.4 S.		Long. 39 35.4 E		Sweep		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	10	11	E C 23	18	B	15	19	15	14	14	13	14	13	13	12	12	11	E C 17	9	E C 9	9	9	10
2	9	18	10	10	9	11	10	10	22	B	B	R	31	21	25	19	56	B	10	10	10	9	10	10
3	10	10	10	19	B	B	B	B	B	B	R	B	B	B	B	B	B	19	B	12	9	10	10	9
4	10	9	B	37	23	B	B	17	14	19	B	B	31	22	31	15	15	13	10	B	B	9	10	11
5	14	16	10	9	20	12	11	9	12	12	12	14	18	14	14	15	12	E S 19	E S 11	E S 10	9	E S 9	E C 10	E S 10
6	10	18	20	E S 27	15	F S 35	19	15	11	10	B	R	B	B	B	B	32	40	40	10	9	9	10	11
7	12	18	10	R	19	32	18	11	15	14	13	12	E S 20	15	14	14	15	21	11	10	9	9	9	10
8	9	9	9	24	21	17	12	11	30	34	16	10	12	E C 13	11	18	15	18	23	33	11	9	9	7
9	9	9	10	12	14	11	10	10	10	10	10	12	14	10	13	E C 14	13	10	10	13	10	9	8	9
10	13	9	10	10	11	9	10	14	B	27	26	R	B	32	16	11	10	10	12	9	10	9	9	10
11	B	B	22	B	28	19	B	B	20	15	14	15	17	24	45	38	25	24	12	34	B	27	E C 20	20
12	12	13	20	21	B	20	18	14	26	17	R	R	B	21	26	20	20	23	12	10	9	14	9	9
13	9	10	22	B	B	B	B	B	20	B	R	20	B	38	37	B	B	B	26	12	23	8	9	B
14	B	20	12	28	30	20	22	13	12	18	15	14	13	11	15	20	26	15	15	22	10	9	10	13
15	10	9	10	24	B	B	20	20	12	12	12	20	15	15	15	25	19	19	21	15	15	15	11	11
16	9	E C 12	9	10	23	14	11	10	10	B	B	27	10	B	B	B	12	27	B	15	9	8	8	21
17	B	12	32	9	13	B	B	B	B	B	R	R	B	B	B	B	B	19	12	20	10	15	11	B
18	15	12	44	25	26	20	14	13	R	B	R	R	B	31	B	B	B	20	B	15	14	15	10	20
19	9	9	10	19	17	13	12	22	B	R	B	R	B	B	B	B	B	27	B	15	11	9	9	9
20	12	8	11	24	10	10	21	B	R	19	B	R	B	B	B	B	B	20	15	23	10	8	15	14
21	28	12	20	10	10	55	30	24	B	20	19	16	13	B	B	49	13	B	B	9	10	9	15	22
22	B	32	32	B	B	14	B	B	26	18	R	B	B	B	B	B	B	B	12	16	10	9	10	9
23	C	C	20	19	20	B	16	B	15	16	22	B	31	20	33	44	15	21	23	13	E C 19	9	10	9
24	8	8	15	E C 13	13	13	15	13	B	26	B	25	19	20	19	15	45	B	49	23	22	10	10	10
25	20	15	21	27	20	11	10	12	13	13	12	12	11	12	11	10	15	11	10	10	10	9	8	E C 10
26	9	10	9	13	16	18	B	19	12	10	10	10	10	10	E C 15	11	10	10	10	10	10	9	8	8
27	8	8	E C 10	9	9	12	9	9	10	10	10	11	11	11	12	13	13	10	10	10	9	16	10	10
28	11	9	15	15	10	12	E C 18	E C 10	10	10	10	10	12	25	B	45	24	23	20	12	12	10	10	12
29	9	10	10	9	11	26	B	21	31	B	B	B	B	B	21	B	32	20	B	10	17	10	B	12
30	23	9	26	10	B	32	B	B	30	B	R	R	B	B	B	B	B	B	14	14	15	10	10	12
31	18	B	B	R	B	B	B	B	B	R	B	B	B	B	B	B	B	B	14	17	10	9	9	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	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	10	10	12	19	20	20	18	17	20	19	B	27	31	24	31	24	23	20	14	13	10	9	10	10
UQ	18	16	22	27	29	D B 55	B	B	B	B	B	R	B	B	B	B	B	34	33	16	13	10	10	12
LQ	9	9	10	10	13	12	12	12	12	14	14	14	14	14	15	15	14	15	12	10	10	9	9	9

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F-MIN (0.1 MHZ)

# IONOSPHERIC DATA

OCT. 1973

M(3000)F2 (0.01)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S. Long. 39° 35.4' E Sweep 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	A	A	A	A	B	A	A	U F 265	F 280	285	300	315	300	320	260	325	335	340	340	330	F 315	F 315	F 300	
2	A	A	A	A	A	A	255	F 285	A	B	B	R	R	F 280	F 275	240	J R 240	B	290	F	A	A	A	A	
3	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	F 250	B	F 275	A	A	A	A	
4	F	A	B	B	A	B	R	255	280	280	R	R	290	305	315	315	320	F 330	320	B	B	A	A	A	
5	A	A	A	A	A	A	245	270	J F 285	F 270	F 275	280	305	310	295	310	310	J F 320	330	345	U F 305	F 315	F	A	A
6	A	A	A	A	A	A	A	275	265	250	B	B	B	B	B	B	B	335	345	335	F 325	305	A	A	A
7	A	A	270	F	B	A	B	270	270	250	275	280	285	285	295	310	315	340	345	350	330	320	F 310	F 315	F 305
8	F 295	F 295	F 250	F	B	A	A	F 260	F 275	F 275	280	280	285	285	285	305	315	F 330	F 340	F 325	J R 310	U F 325	F	A	F 265
9	A	A	A	F	A	A	275	285	C 290	F 270	U C 285	U F 310	295	315	300	305	325	345	315	355	335	F 330	U C 290	295	A
10	A	A	A	A	A	A	A	R	B	R	R	B	B	245	275	285	290	F 305	F 310	A	R	R	A	A	
11	B	B	B	B	B	A	B	B	245	255	265	260	265	R	305	310	320	335	310	R	B	310	F 295	A	
12	R	A	A	A	B	R	R	A	A	F	B	B	B	F 280	F 300	295	300	310	300	295	Z	A	A	A	A
13	A	A	A	B	B	B	B	B	F 250	B	B	275	B	280	300	B	B	B	335	335	310	A	A	B	
14	B	A	A	R	B	A	A	A	F 255	250	R	230	260	295	305	315	315	320	325	330	F 300	A	F	R	
15	R	A	A	B	B	B	R	F 230	250	280	275	295	310	290	290	320	315	330	335	325	325	325	F 295	F 310	
16	F 320	F 280	F	A	A	F 265	F 275	F 275	275	B	B	F 275	240	B	B	B	F 260	340	B	315	F 275	A	F	A	
17	B	A	B	F	A	B	B	B	B	B	B	B	B	B	B	B	B	F 295	F 315	F 300	F	A	A	A	A
18	A	A	B	A	A	A	270	275	B	B	B	B	B	B	R	B	B	B	A	B	U F 300	R	A	A	A
19	F	U F 260	A	A	A	F	A	R	B	B	B	B	B	B	B	B	B	300	B	A	295	A	A	A	A
20	A	A	A	A	F	F	A	B	B	A	B	B	B	B	B	B	B	330	R	R	F 295	A	A	A	A
21	B	A	A	A	F 270	B	R	A	B	275	F 265	245	B	B	R	R	B	B	B	A	A	A	A	A	A
22	B	B	B	B	B	A	B	B	A	G	B	B	B	B	B	B	B	B	325	F 320	F 290	F 275	A	A	A
23	C	C	A	275	300	B	A	B	240	250	270	B	260	295	290	R 310	320	325	325	F 315	F 305	F 310	F	F	F
24	F 280	F	A	A	F 295	260	A	F 260	B	R	B	R	235	275	285	F 280	290	B	U R 310	320	310	300	A	A	A
25	A	A	A	A	A	F	F	A	245	F 260	F 255	260	270	290	290	295	310	315	320	315	315	315	280	F	F
26	A	F	F	A	A	A	B	A	U F 255	F 280	F 280	275	300	305	315	320	320	F 315	F 325	F 320	F 325	F 325	F 275	J F 275	
27	F	F	F	F	F	F 260	F 270	F 255	J F 255	F 265	F 275	F 270	270	300	290	310	305	315	330	F 325	F 320	R	A	A	A
28	A	F	F 265	F 280	A	245	260	F 265	F 275	F 275	F 275	260	245	B	F 275	310	300	300	290	F	F	A	A	A	A
29	A	F	A	A	F 315	A	B	R	A	B	B	B	B	B	225	B	R	R	B	A	A	A	F	B	A
30	A	F	A	U F 275	B	B	B	B	A	B	B	B	B	B	B	B	B	B	275	F 305	300	F 295	A	F	F
31	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	300	300	F 295	F 295	J F 295	F 275	F
	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	3	4	6	9	13	17	16	12	15	17	17	20	18	20	22	24	22	20	12	7	6	
MED	F 295	F 280	F 265	F 275	F 298	260	270	F 275	F 255	F 275	278	275	270	295	300	310	318	322	322	318	310	310	F 295	F 288	
UQ	F 308	F 288	F 268	F 278	308	265	270	F 275	F 270	280	280	290	290	300	305	315	322	335	335	325	320	315	F 305	F 305	
LQ	F 288	F 270	F 258	F 275	282	245	F 260	F 260	F 250	252	272	262	260	280	288	295	300	310	310	305	F 298	F 295	F 295	F 275	

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M(3000)F2 (0.01)

### IONOSPHERIC DATA

OCT. 1973

H<sup>o</sup>F<sub>2</sub> (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69 00.4 S.		Long. 39 35.4 E		Sweep		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									420	350	340	290	280	280	L	L									
2									A	B	B	B	R	L	380	405	460								
3									B	B	B	B	B	B	B	B	B	480							
4									L	420	B	B	310	300	270	L	L								
5						400	350	375	380	350	290	290	L	285		230									
6									400	500	B	B	B	B	B	B	275								
7								420	465	400	345 <sup>H</sup>	390	375	350	300	280	260								
8									350	380	375 <sup>B</sup>	350	335	340	300	290	270	250							
9						400 <sup>C</sup>	390	400	360	320	300	290	290	270	250	245									
10								R	B	R	R	B	B	R	400	375	350	L	280						
11								B	530	445	425	460	425	R	340 <sup>E B</sup>	310	280								
12								A	A	A	B	B	B	410	350	385	330	290	300						
13								B	510	B	B	460	B	420 <sup>B</sup>	350	B	B	B							
14									460	R	R	605	505	370	345	330	L								
15							R	R	480	410	400	395	350	380	375	300	295	L	245						
16						425	380	350	405	B	B	425	480	B	B	B	350								
17							B	B	B	B	B	R	B	B	B	B	B	300							
18							420	385	B	B	B	B	B	580	B	B	B								
19								R	B	B	B	R	B	B	B	B	B	L							
20								B	B	A	B	B	B	B	B	B	B								
21								A	B	430	430	450	480	B	B	B	R								
22								B	A	G	R	B	B	B	B	B	B	B	L						
23								B	530	520	450	B	435	350	330	320	280	L							
24								450	B	A	B	R	570	420	370	360	330	B							
25								A	A	440	470	470	415	350	L	325	300	L	L						
26							B	A	450	420	370	370	395	320	310	290	L								
27						420	490	390	380	370	360	370	390	320	L	300	280	L	260						
28				400	A	A	415	350	330	370	350	440	450	B	350	280	300	L	L						
29							B	R	A	B	B	B	B	B	520	B	R	A							
30							B	B	A	B	B	B	B	B	B	B	B	B	L						
31							B	B	B	B	B	B	B	B	B	B	B	B	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		2		6	9	15	16	13	15	17	15	17	15	16	3	4					
MED				400		422	408	385	420	415	360	395	395	350	345	310	288	300	270						
UQ							420	390	472	442	425	455	450	395	370	345	330	390	290						
LQ							400	350	390	372	350	352	340	310	295	285	268	295	252						

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H<sup>o</sup>F<sub>2</sub> (KM)

### IONOSPHERIC DATA

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H'F (KM)

45 E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 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	A	A	A	A	B	A	A	250	250	225	230	225	220	225	220	220	230	220	225	205	220	230	250				
2	A					A	410	350	A	B	B	B	R	250	240	255	B	B	305	A	A	A	A	A				
3	A	A	A	A	B	B	B	B	R	B	B	R	B	B	B	B	B	B	B	280	B	325	A	A	A			
4	A	A	B	B	A	B	B	A	250	250	B	R	240	230	230	225	230	240	240	B	B	A	A	A				
5	A	A	A	A	A	A	A	A	355	275	250	230	210	275	220	205	210	225	205	230	225	250	230	350	A	A		
6	A	A	A	A	A	A	A	A	255	250	B	R	B	B	B	B	B	260	250	E B 280	255	270	A	A	A			
7	A	A	410	R	A	B	A	230	230	230	220	220	230	240	200	230	225	250	220	H 230	225	220	245	240				
8	245	280	350	B	A	A	A	430	A	B 270	B	730	220	235	225	240	240	230	240	230	250	230	225	A	A			
9	A	A	A	A	A	A	A	275	240	230	200	230	200	200	210	240	220	240	225	225	225	220	230	250	A			
10	A	A	A	A	A	A	A	A	A	B	A	A	B	B	E B 260	250	230	225	255	250	A	A	395	A	A			
11	B	B	B	B	R	A	B	B	290	245	225	230	200	H 260	B	B	B	230	235	250	E B 250	B	E B 290	E C 290	B			
12	A	A	A	A	B	A	A	A	A	280	R	B	B	B	250	250	230	235	250	270	C 280	A	A	A	A			
13	A	A	A	B	B	B	B	B	250	B	R		B	B	B	B	B	B	B		240	240	270	A	A	R		
14	B	A	A	B	B	A	A	A	250	230	200	200	225	210	H 235	225	230	225	235	250	250	A	A	A	A			
15	A	A	A	R	B	R	A	280	225	255	220	H 200	230	220	215	230	230	225	230	240	230	250	245	250				
16	245	295	A	A	A	A	A	300	230	215	B	B	240	200	B	B	B	B	B	B	250	230	B	250	370	A	A	A
17	B	A	B	A	A	B	B	B	B	R	R	B	B	B	B	B	B	B	B	250	275	280	A	A	A	B		
18	A	A	B	A	A	A	A	290	250	B	B	R	B	B	215	B	R	B	A	B	A	R	A	A	A	A		
19	A	A	A	A	A	A	A	A	A	B	R	B	R	B	B	B	B	B	B	B	260	B	260	300	A	A	A	
20	A	A	A	A	F	F	A	B	B	A	B	R	B	B	B	B	B	B	240	A	B	350	A	A	A	A		
21	B	A	A	A	370	B	B	A	B	200	200	210	210	B	B	B	A	B	B	A	A	A	A	A	A	A		
22	B	B	B	B	B	A	B	B	A	225	B	B	B	B	B	B	B	B	B	240	260	325	365	A	A	A		
23	C	C	A	A	360	330	B	A	B	275	230	250	B	240	230	250	B	B	B	220	225	240	245	260	270	270	275	
24	270	A	A	A	350	365	A	305	B	A	B	250	240	240	245	R 225	B	B	B	250	260	260	A	A	A	A		
25	A	A	A	A	A	A	A	270	A	A	220	H 210	H 220	230	230	230	230	240	235	240	250	245	245	260	380	A	A	
26	A	A	F	A	A	A	B	A	230	225	210	220	H 240	220	230	225	225	245	240	245	240	230	225	250	250	250		
27	270	260	275	300	300	340	A	240	220	230	220	220	215	215	H 230	220	240	230	240	240	250	R	A	A	A	A		
28	A	A	365	A	A	450	280	H 250	240	225	230	225	230	R 230	B	B	240	240	250	270	A	A	A	A	A	A		
29	A	A	A	A	310	A	B	R	A	B	R	B	B	B	R	B	B	B	250	A	B	A	A	280	B	A		
30	A	300	A	420	B	B	B	R	A	R	B	B	B	B	B	B	B	B	B	265	290	280	290	A	A	A		
31	A	B	B	B	B	B	B	R	R	B	B	R	B	B	B	B	B	B	B	270	270	315	290	300	355	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	4	5	4	3	5	3	8	10	16	17	14	16	17	18	16	16	19	22	23	23	20	16	9	7				
MED	258	295	358	360	330	365	295	250	250	230	220	220	230	225	232	228	230	240	240	250	255	260	248	250				
UQ	270	300	388	390	350	408	382	280	252	250	230	235	235	240	242	230	240	250	263	260	290	290	265	315				
LQ	245	280	312	330	310	352	278	240	230	225	210	215	215	215	228	225	225	230	232	240	230	230	245	250				

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H'F (KM)

## IONOSPHERIC DATA

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H'ES (KM)

45 E Mean Time (G. M. T.+ 3 h)

Station	SYOWA STATION																							
	Lat. 69 00.4 S, Long. 39 35.4 E												Sweep 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	150	110	120	120	110	B	100	100	110	G	G	G	G	125	G	100	G	100	120	100	G	B	B	100
2	130	145	100	100	100	110	110	105	115	B	B	B	140	125	G	G	B	B	130	115	115	105	145	110
3	100	100	100	110	B	B	B	B	B	B	B	B	B	B	B	B	B	G	B	150	100	120	110	115
4	100	150	B	155	120	B	B	100	G	G	B	B	B	125	B	G	G	125	150	B	B	100	115	120
5	145	145	140	110	130	115	105	G	110	G	120	120	120	G	G	G	G	G	110	105	G	110	110	150
6	100	105	110	110	110	120	110	105	G	G	B	B	B	B	B	B	B	B	B	G	140	120	125	115
7	110	125	135	B	120	125	115	G	G	G	G	G	G	G	G	G	G	G	G	105	120	130	120	B
8	G	G	105	100	110	105	110	100	B	B	130	130	G	105	G	G	G	G	B	B	130	130	110	115
9	110	115	110	115	100	110	G	G	G	G	G	110	130	105	G	120	110	105	100	G	B	145	100	110
10	100	100	100	110	100	105	125	100	B	115	130	B	B	B	G	G	G	G	150	105	150	G	100	110
11	B	B	100	B	100	100	B	B	130	120	G	G	G	125	B	B	B	B	G	B	B	B	C	120
12	110	120	105	100	B	110	120	110	100	130	B	B	B	G	G	G	G	B	155	150	105	125	105	105
13	105	110	110	B	B	B	B	B	G	B	B	G	B	B	B	B	B	B	140	B	115	100	B	
14	B	100	110	125	110	100	100	100	110	120	115	G	140	120	G	G	B	G	G	B	G	115	120	120
15	105	105	105	130	B	R	115	G	115	G	G	G	G	G	G	G	G	G	B	G	B	B	B	125
16	G	130	110	110	110	115	120	110	105	B	B	120	G	B	B	B	110	B	B	145	145	105	100	110
17	B	140	125	110	170	B	B	B	B	B	B	B	B	B	B	B	B	G	150	B	120	105	120	B
18	110	100	120	100	100	110	130	G	B	B	B	B	B	B	B	B	B	110	B	150	120	120	110	110
19	130	155	105	120	115	110	105	125	B	B	B	B	B	B	B	B	B	B	140	145	110	110	130	
20	130	150	100	105	175	G	125	B	B	105	B	B	B	B	B	B	B	G	125	B	G	110	120	110
21	125	110	115	125	170	135	125	115	B	G	G	G	G	B	B	B	110	B	B	105	110	105	160	110
22	B	175	120	B	B	120	B	B	105	G	B	B	B	B	B	B	B	B	G	G	G	140	110	110
23	C	C	125	125	G	B	120	B	115	G	G	B	B	G	B	B	G	G	B	G	C	100	160	125
24	120	120	130	110	120	130	110	120	B	125	B	G	G	G	G	G	B	B	B	B	B	145	130	130
25	115	100	120	125	150	110	130	110	110	G	G	G	120	G	120	120	G	G	G	G	G	150	110	
26	120	125	150	120	120	125	R	120	120	G	G	G	G	G	G	G	115	G	G	G	145	125	125	130
27	120	125	120	125	130	125	120	G	G	G	G	G	G	G	G	G	G	105	G	G	130	150	110	105
28	120	115	150	165	115	125	170	G	G	G	G	G	G	R	B	G	G	G	G	120	125	120	110	115
29	110	130	125	100	120	130	R	125	125	B	B	B	B	B	G	B	B	160	B	110	115	120	B	125
30	140	130	125	150	B	120	B	B	110	B	B	B	B	B	B	B	B	G	190	150	G	115	125	
31	105	B	R	R	B	R	R	R	B	B	R	R	R	B	B	B	B	B	G	165	150	135	140	120
CNT	24	27	29	26	23	22	20	15	14	6	4	4	5	7	1	3	4	6	9	16	18	25	27	28
MED	112	120	115	112	115	115	118	110	110	120	125	120	130	125	120	120	110	108	130	130	128	120	115	115
UQ	128	135	125	125	125	125	125	118	115	125	130	125	140	125	120	112	125	150	150	145	130	125	125	125
LQ	105	108	105	110	110	110	110	100	110	115	118	115	120	112	110	110	105	120	105	115	110	110	110	110

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H'ES (KM)

# IONOSPHERIC DATA

OCT. 1973

TYPES OF ES

45 E Mean Time (G. M. T. + 3 h)

Station	SYOWA STATION																								
	Lat. 69 00.4 S, Long. 39 35.4 E												Sweep 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	R1	R2	R3	R1	R1		R1	R1	R1					C1		L1		L1	L1	L1				L1	
2	R2	R1	R2	R2	R3	R2	R2	R2	R1				R1	R1					R2	R3	R1	R2	RR23	R1	
3	R1	R2	L2	R1																R1	R3	LR12	R3	R4	
4	R1	RR14		R1	R1			R1						L1				C1	R1			R3	R2	RR11	
5	RL11	RR11	R1	R4	R1	R1	R2		R1		C1	C1	C1						L1	R2		R1	R2	RR15	
6	R2	R1	R1	R1	RR11	R1	R1	R1													R1	R3	R2	R2	
7	R3	R1	R2		R1	R1	R1													L1	L1	R1	L1		
8			R2	R1	R1	R1	R2	R2			C11	C11		L1							L1	L1	R4	R1	
9	R5	R4	R3	R2	R2	R1						C1	L1	C1		L1	R1	C1	L1			R1	L1	R2	
10	R1	R4	R1	R3	R2	RL31	RL11	RR11		R1	R1								C1	R2	RR11		R3	R2	
11			R1		R1	R1			C1	R1				L1										R1	
12	R1	R2	R1	R1		R1	R1	R1	R1	RR11										R1	R1	R2	R1	R3	R2
13	R4	R3	R1																	C1		R1	R2		
14		R1	R2	R1	R1	R1	R1	RR11	R1	R1	R1		L1	C1								R3	RL11	R1	
15	R1	R2	R2	R1			R1		L1															L1	
16		L1	R1	R1	R1	R1	R1	L1	C1		R1					R1				R1	R1	R3	R2	LL11	
17		RR12	R1	R3	RR11														RR11		R3	R1	R2		
18	R1	R1	R1	R1	L1	R1	RL11											R1		RR11	R1	R1	R2	R1	
19	R4	RR13	RR12	R1	R1	R1	R1	R1												LR11	LL11	R3	R4	R2	
20	LR12	RR12	R2	R1	RR11		R1			R1										R1		R3	R1	R2	
21	R1	R1	R2	LR11	RR11	L1	R1	R1								R1				R2	R3	R5	RR11	R1	
22		R1	R1			R1			R1													R1	R1	L1	
23			R1	R1			R1		R1													LR11	LL11	R1	
24	LR11	R3	R1	R1	R2	R1	R1	R2		R1												R1	R5	R4	
25	R1	R1	R1	RL11	RR11	L1	C1	R1	R1				C1		C1	C1							R1	R1	
26	R5	R4	RL11	R2	R1	R1		LR11	R1								L1				R1	L1	R1	L1	
27	LR11	LL11	LR11	R1	R1	R1	R1											L1			RL11	R1	R1	R2	
28	RR21	R1	C1	H1	R1	R1	H1													R1	R1	R3	R1	R1	
29	R3	R1	R1	L3	C1	R1		R1	R1										H1		R2	L1	C1	RL12	
30	RR11	RL11	R1	H1		L1			L1											H1	C1		R2	R1	
31	R1																			C1	R1	R1	C2	R3	
	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																									

OCT. 1973

TYPES OF ES

## IONOSPHERIC DATA

NOV. 1973

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION	Lat. 69° 00' 4" S, Long. 39° 35' 4" E												Sweep 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	37	38	41	50	B	53	B	55	58	62	J 68	U F 64	F 66	72	72	R	47	45	F 40	A	A	
2	A	R	U F 32	37	A	F 39	47	F 52	54	54	59	60	B	B	55	55	56	57	F 52	F 50	30	A	A	A	
3	A	A	F 34	F 41	A	A	R	F 51	52	55	53	50	49	46	49	50	50	52	50	44	44	42	F 46	F 40	
4	A	A	46	A	A	R	A	F 56	F 55	Z 56	F 49	50	52	52	53	55	F 50	50	J R 50	50	F 41	A	A	A	
5	F	A	A	U F 36	U F 33	A	R	R	F 48	F 44	F 48	F 51	B	B	47	59	C	49	F 46	44	42	F 36	A	A	
6	A	F	B	A	A	A	R	R	41	43	45	43	I R 43	45	44	47	45	43	43	40	39	38	A	A	
7	A	A	A	A	A	A	A	B	A	A	R	B	B	B	B	B	45	48	F 46	F 40	F 38	F 30	A	A	
8	A	B	A	B	A	A	A	40	41	45	B	U R 48	B	B	B	B	B	44	46	44	41	F 30	F 30	U F 30	
9	A	A	A	A	B	A	A	A	F 41	45	44	B	B	47	49	46	48	B	39	F 40	B	U F 30	U F 27		
10	F 30	U H 33	32	A	A	44	45	45	B	B	B	B	B	B	F 50	50	48	47	43	44	41	F 39	F 28		
11	A	A	A	A	A	A	F 50	F 53	F 49	55	F 58	57	55	51	50	51	47	43	45	44	41	F 30	F 31	F 32	
12	F 31	F 35	F 36	40	42	44	48	F 53	57	55	56	55	54	53	52	52	48	46	46	45	46	F 41	F 42	F 41	
13	F	U F 33	A	F	A	A	R 47	F 48	F 52	F 55	F 54	54	53	55	55	50	51	48	42	R	A	A	A	R	
14	A	A	A	A	A	F 40	46	R	U F 50	F 42	U F 45	F 45	46	48	49	50	46	48	49	44	39	29	A	A	
15	A	A	A	B	A	F 39	F	F 46	F 47	55	53	54	54	53	51	54	53	52	51	45	F 46	F 41	A	A	
16	A	B	38	U F 38	A	F 44	F 43	F 49	50	F 49	U F 50	F 52	F 60	F 60	F 53	52	B	B	46	49	F 45	F 44	A	F 28	
17	A	B	A	A	F	B	B	A	A	41	44	44	50	49	48	47	45	44	43	E G 34	R	A	A	A	
18	A	A	F	F	F	B	A	A	42	45	48	B	B	B	B	B	B	46	R	39	38	35	36	A	
19	F 30	F 33	U F 36	F 41	F 46	F 54	U F 58	F 62	F 61	61	60	61	60	56	53	51	47	47	F 48	47	46	F 47	46	F 50	
20	F 33	F 36	F 43	45	45	F 47	F 54	J F 61	65	65	64	65	60	60	F 56	55	56	56	F 56	52	52	F 51	45	40	
21	U F 35	F 34	35	A	B	B	A	A	47	F 47	52	55	53	52	57	54	49	48	48	41	A	A	A	A	
22	A	A	A	A	A	A	A	R	R	44	40	E G 41	R	R	47	E G 43	45	45	F 46	45	40	43	46	F 42	
23	U F 38	F 35	R	F 39	A	52	F	F 51	F 53	F	F 66	F 60	F 56	56	F 53	F 51	F 53	F 52	48	38	F	A	F	F	
24	A	A	F	F	J F 54	F 54	F 59	F	F 77	79	71	67	U A 64	59	U A 53	54	53	50	A	A	A	F	A	A	
25	F	A	A	A	R	A	R	B	R	B	B	B	B	B	F	B	B	R	R	R	F 39	U F 41	U F 37	B	
26	B	A	A	A	B	R	B	B	B	B	R	50	C	C	F 68	74	R	B	44	44	45	40	42	F 41	
27	B	F	A	U A 38	B	A	R	46	52	55	54	58	56	55	54	52	52	50	E G 37	F 40	39	38	38	U F 36	
28	A	B	A	U F 40	B	A	F 39	48	52	55	58	56	I C 54	56	56	54	F 55	53	50	49	46	48	49	44	
29	R	R	B	U F 48	B	U F 56	F	U F 59	F	F 65	65	69	70	67	65	60	54	58	50	48	52	F 50	F	F	
30	F 39	U F 40	F 45	50	F	F	F 78	81	U R 83	F 79	F 75	71	67	65	60	58	57	58	60	61	56	F 46	42	R	
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	8	10	14	6	12	13	17	23	24	25	25	20	21	26	26	24	26	26	27	24	23	15	13	
MED	F 33	F 34	F 36	40	F 44	F 44	F 48	F 51	F 52	55	54	55	54	55	53	52	50	48	46	44	42	F 40	F 42	F 40	
UQ	F 36	F 36	F 43	F 41	F 46	F 53	F 54	F 56	F 54	56	59	60	60	59	56	55	54	52	50	48	46	F 44	F 46	F 41	
LQ	F 30	F 33	F 34	38	F 38	F 40	46	F 48	48	45	48	50	52	51	49	50	47	46	44	40	39	F 36	F 36	U F 30	

The Radio Research Laboratories, Japan

NOV. 1973

FOF2 (0.1 MHz)



# IONOSPHERIC DATA

NOV. 1973

FOF1 (0.01 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 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						300	B	B	B	B	400	440	I R	430	420	410	410	B	B	L					
2							340	350	370	390	380	410		B	B	410	410	390	U L	L	A				
3								350	R I R	370	380	400	400	400	410	390	L	L	B						
4								350	360	380	380	380	380	400	400	400	L	L	B						
5							F	F	380	360	370	380	B	B	370	380	I C	L	L	L					
6							A	A	R	370	370	380	380	400	390	380	380	L	U L	L	L				
7							A	B	R	370	370		B	B	B	B	B	370	370	L					
8							A	360	360	370		B	B	B	B	B	B	B	L	L					
9							A	A	370	370	370		R	B	B	380	390	B	B						
10						U A	320	340	350		B	B	R	R	B	B	400	390	380	L					
11						A	340	360	360	370	380	390	R	R	390	390	400	380		L	L				
12						F	330	350	360	380	380	390	400	400	400	400	U L	L	L						
13						A	A	F	370	370	380	390	390	400	F	400	400	390	380	L					
14						A	340	A	A	F	380	380	F	390	400	400	410	400	L	370	350	340	L		
15						U A	330	F	A	380	370	380	380	400	400	410	390	390	380	L					
16						A	350	F	370	370	390	390	I R	390	400	400	410	400	B	B	L	L	L		
17						B	B	A	A	370	380	380	390	400	400	400	400	400	380	360	340	F			
18						B	A	A	U A	380	380		R	B	B	B	B	B	380						
19			L	290	310	F	340	F	350	360	370	380	400	400	H	410	410	400	400	L	L				
20				250	310	350	370	380	370	390	400	400	430	420	420	420	400	U L	L	L	L				
21						B	A	A	380	390	390	390	410	420	400	420	L	L	L	360	F				
22						F	310	A	A	A	A	380	380	410	410	400	410	430	400	U L	L	L			
23						A	350	A	F	390	400	F	410	420	420	430	420	410	F	400	380	360			
24						F	380	F	390	F	380	400	400	410	400	A	420	A	400	400	380	A	A		
25						A	F	340	B	R	B	B	B	B	B	380		B	B	A	360	350	F		
26						B	B	B	B	B	B	B	B	C	C	B	B	B	B	390					
27						A	A	A	390	410	410	400	420	420	420	420	410	380	370	L					
28						A	360	370	390	400	410	410	I C	420	410	420	420	410	B	B	L	L			
29						A	F	370	400	400	410	420	R	410	430	B	B	420	420	L	L	L	L	L	
30				F	280	310	F	350	F	360	390	400	400	410	420	430	440	430	430	430	430	410	390	360	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	3	4	9	15	16	22	26	26	25	20	20	24	25	20	16	9	6					
MED			280	290	310	340	350	360	380	380	390	400	405	400	410	400	400	380	370	355					
UQ			300	330	350	365	375	390	390	400	410	420	420	415	420	410	385	380	360						
LQ			270	310	330	340	355	370	370	380	390	400	400	400	400	385	370	360	340	F					

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NOV. 1973

FOF1 (0.01 MHz)

### IONOSPHERIC DATA

NOV. 1973

FOE (0.01 MHz)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69 00.4' S, Long. 39 35.4' E Sweep 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	275	260	R	B	B	B	B	B	300	300	A	295	280	A	270	B	B	170	170	170	A	A		
2	A	A	230	A	B	A	265	250	260	270	280	305	B	B	280	275	A	250	225	A	A	210	A	A	A		
3	A	A	A	A	A	A	A	A	A	265	A	290	300	300	280	280	U R	265	240	B	B	B	150	A	A		
4	A	B	A	A	A	A	A	A	260	265	280	280	A	295	290	280	260	B	B	B	F	200	A	A	A		
5	A	A	A	A	170	B	A	A	250	270	280	U A	280	B	B	270	270	C	230	A	180	135	A	A	A		
6	A	A	B	B	A	B	A	A	A	A	280	280	280	A	270	270	255	A	245	B	150	170	150	H	A	A	
7	A	A	A	B	B	A	A	B	A	A	B	B	B	B	B	B	260	B	210	185	A	170	A	A	A		
8	A	B	B	R	B	B	A	A	U R	R	B	B	B	B	B	B	B	220	B	B	B	160	A	A	A		
9	B	A	B	A	B	B	B	A	245	260	265	B	B	B	280	A	B	B	B	A	B	A	A	U A	180		
10	A	A	A	A	A	A	275	A	B	B	B	B	B	B	B	B	260	230	205	B	B	150	A	A	A		
11	B	B	B	R	A	A	275	240	255	270	275	B	290	R	290	275	A	240	230	220	180	H	U F	U F	95		
12	A	U A	230	A	A	U A	220	230	260	265	280	A	280	A	280	265	250	240	225	190	170	130	A	A	B		
13	A	A	B	A	A	A	A	A	280	265	280	280	270	A	280	280	260	A	A	B	A	A	A	A	A		
14	A	A	A	B	A	A	A	A	295	A	295	280	290	290	290	285	260	A	210	180	140	A	A	A	A		
15	A	A	A	B	A	A	A	A	265	270	305	300	300	A	280	290	B	A	B	B	180	175	A	A	A		
16	B	B	B	U A	A	A	A	260	270	A	320	B	320	300	280	270	B	B	230	195	170	120	A	100			
17	A	B	A	280	A	B	B	A	A	A	A	A	A	305	290	270	280	270	240	270	210	A	A	A	A		
18	A	B	A	U F	U A	B	A	A	A	300	310	B	B	B	B	B	B	270	230	200	H	150	H	A	A		
19	125	170	185	160	200	195	230	250	260	270	275	285	280	280	285	280	270	260	230	210	170	165	A	A	100		
20	110	180	130	A	240	A	250	250	265	275	275	300	300	300	290	270	285	A	B	230	200	170	U A	A	A		
21	105	A	A	B	B	B	A	A	A	300	295	280	290	295	280	280	270	255	230	A	A	140	A	A	A		
22	A	A	A	A	A	A	A	A	A	U A	295	280	290	280	290	290	280	260	250	230	225	F	180	150	120	H	180
23	A	F	A	A	A	A	A	A	285	A	280	300	300	290	285	285	240	235	230	280	200	A	A	A	A	A	
24	A	A	A	A	U F	A	300	250	265	275	285	290	280	270	250	A	250	250	260	A	A	A	A	A	A	A	
25	A	B	A	A	A	A	230	B	A	B	B	B	B	B	B	B	B	A	290	280	A	A	A	A	B	B	
26	B	A	A	B	B	B	B	B	R	B	B	B	C	C	B	B	B	B	260	210	225	H	180	A	A	A	
27	B	B	B	A	B	A	A	A	A	280	280	290	300	A	300	275	265	270	250	255	200	R	A	250	A	A	
28	B	B	A	A	B	A	280	270	275	280	290	R	290	C	A	300	U A	U A	B	B	230	200	150	120	150	150	
29	B	A	B	A	B	A	A	260	275	280	300	I H	300	A	B	B	R	A	R	250	220	200	150	120	C	C	
30	125	C	A	A	U A	230	255	270	280	280	295	280	295	310	H	270	290	280	265	255	220	200	A	A	A	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	5	4	4	5	7	4	10	11	18	19	22	19	18	15	23	20	19	18	18	21	20	17	6	6			
MED	110	175	208	225	210	245	260	250	265	275	280	290	292	290	280	280	260	248	230	210	180	150	120	125			
UQ	125	220	230	275	250	270	275	265	275	280	295	300	300	298	290	280	270	260	255	225	200	170	U	130	180		
LQ	105	145	158	U	215	200	212	230	250	260	270	280	280	285	280	270	260	240	225	185	170	150	120	100			

The Radio Research Laboratories, Japan

NOV. 1973

FOE (0.01 MHz)

IONOSPHERIC DATA

NOV. 1973

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 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	32	J X 29	28	G	G	G	E B 41	B E 51	B E 33	G			32	31	37	32	27	E B 46	E B 45	G	G		32	32	
2	32	29	J X 47	44	40	38	G	G	G	G	G	G	B	B	G	G	31	28	G	34	32	34	J X 41	32	
3	52	33	J X 38	38	42	42	J X 33	34	34	G	30	G	G	G	G	G	G	E B 38	E B 38	E B 20	G		28	32	
4	32	34	93	82	53	39	46	38	G	G	G	G	33	G	G	G	E B 26	E B 47	E B 50	24	82	J X 53		60	
5	61	62	39	28	30	81	25	33	28	G	G		29	B	B	G	G	C	G	J X 30	J X 30	J X 36	20	J X 47	J X 108
6	43	J X 78	60	68	53	54	38	34	32	30	30	G	32	30		30	27	25	E B 26	G	G	G	J X 50	J X 36	
7	35	60	J X 44	57	53	46	J X 62	B	54	42	E B 32	B	B	B	B	B	G	E B 27	30	25	21	G	68	78	
8	83	B		44	40	46	45	32	G	G	E B 41	B	B	B	B	B	G	E B 23	32	21	G		26	J X 26	
9	J X 34	J X 49	51	43	B	60	40	42	J X 34	G	G	B	B	E B 44	G	28	E B 45	B	E B 27	28	B	J X 48	J X 24	J X 26	
10	31	30	30	J X 45	39	32	42	42	B	B	B	B	B	B	E B 30	E B 28	G	G	G	E B 26	E B 26	G		23	25
11	36	40	45	45	34	J X 44	32	G	G	G	G	E B 35	G	G	G	G	28	G	G	J X 37	23	22	15	15	
12	18	23	30	34	32	35	G	J X 30	33	G	J X 33	40	30	32	34	G	J X 27	G	23	17	20	17	13	E B 10	
13	J X 26	28	40	36	51	52	44	33	G	G	G	G	32	31	40	J X 29	J X 28	26	J X 24	30	34	42	37	35	
14	J X 53	42	46	45	37	34	45	40	J X 55	96	35	G	36	36	G	30	30	28	G	G	G	32	33	39	
15	44	43	40	B	40	44	29	40	G	G	G	G	32	31	G	E B 34	28	E B 27	E B 25	G	J X 30	30	35	34	
16	42	42	29	30	J X 41	43	32	G	G	35	G	E B 43	G	G	G	G	B	B	G	J X 33	75	28	34	G	
17	30	B	42	42	36	B	B	J X 55	46	34	34	35	G	G	G	G	G	G	G	G	G	31	36	35	46
18	J X 36	34	J X 34	J X 26	30	B	J X 64	55	39	34	G	B	B	B	B	B	B	G	36	G	27	17	30	35	
19	G	19	G	20	J X 26	30	G	32	G	G	G	G	32	31	70	28	30	G	J X 26	27	31	26	J X 24	16	
20	20	29	27	30	30	35	J X 78	G	G	G	G	G	J X 77	33	G	G	G	30	E B 29	G	25	19	20	28	
21	J X 22	J X 27	28	45	B	B	40	J X 45	46	G	G	G	31	35	D S 59	32	32	32	25	21	J X 39	J X 84	J X 77	45	
22	J X 54	45	33	J X 36	77	56	40	37	40	32	G	G	G	G	G	G	G	34	G	35	25	J X 28	20	J X 27	
23	27	29	32	35	49	J X 44	49	44	32	30	G	35	36	J X 42	36	33	J X 40	J X 33	G	G	32	J X 46	J X 81	J X 44	
24	J X 41	46	40	J X 29	J X 28	35	J X 45	41	33	37	37	37	J X 89	D S 65	J X 76	J X 41	J X 39	J X 57	45	44	42	J X 74	J X 96	D	
25	J X 124	D S 92	J X 43	J X 87	29	41	J X 34	B	27	B	B	B	B	B	E B 32	B	B	39	32	G	35	36	33	B	
26	B	38	43	B	B	B	B	B	B	B	B	B	E B 47	C	C	E B 44	E B 59	E B 50	B	J X 37	30	G	27	30	35
27	B	30	40	40	B	45	40	42	36	G	33	35	32	31	32	34	29	G	G	G	28	37	28	J X 35	
28	D S 70	B	36	35	B	J X 41	31	G	G	G	36	40	C	35	G	35	31	E B 43	E B 43	26	25	J X 36	J X 40	J X 31	
29	31	35	B	J X 32	B	45	30	G	G	G	32	G	G	E B 49	E B 45	G	30	28	G	28	G	J X 23	G	18	
30	G	E C 28	25	18	30	24	G	G	G	J X 32	G	G	32	G	G	G	G	32	G	G	24	35	39	40	
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	29	27	24	26	28	26	28	26	26	25	20	22	27	26	25	27	30	30	29	30	30	29	
MED	34	34	40	36	38	42	40	34	29	G	G	G	32	31	G	E G 28	28	E G 27	E G 25	U 22	25	28	33	34	
UQ	48	44	44	45	46	46	45	42	36	32	33	U 32	32	34	34	31	30	30	U 28	30	32	36	J X 41	40	
LQ	28	29	30	30	30	35	30	G	G	G	G	G	E G 30	G	G	G	G	G	G	G	G	21	17	24	26

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FOES (0.1 MHz)

# IONOSPHERIC DATA

NOV. 1973

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station Day	Station SYOWA STATION Lat. 69° 00' 4" S. Long. 39° 35' 4" E Sweep MHz to 15 MHz in 30 sec in automatic operation																								
	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	10	10	10	19	41	B	51	B	33	15	23	16	13	14	11	46	45	9	10	10	10	10	
2	10	10	10	15	32	18	15	13	E <sub>13</sub> C	12	15	13	B	B	22	25	18	14	14	12	14	9	11	9	
3	8	10	14	13	16	22	15	15	15	16	25	22	15	15	14	15	13	14	38	38	20	14	12	10	
4	10	26	17	11	22	11	15	10	11	10	13	14	19	16	14	12	E <sub>13</sub> C	26	47	30	10	11	11	9	
5	10	20	13	9	9	22	9	12	10	10	20	15	B	B	10	16	C	16	9	10	10	9	10	9	
6	11	10	44	26	20	28	20	18	14	21	15	15	14	15	13	11	14	15	26	13	12	9	9	10	
7	9	14	16	25	23	21	16	B	15	15	32	B	B	B	B	B	23	27	15	14	15	15	13	10	
8	8	B	26	B	20	27	20	13	E <sub>26</sub> C	20	B	41	B	B	B	B	B	15	23	21	15	11	10	9	
9	17	15	25	20	B	26	26	20	11	10	10	B	B	44	23	15	45	B	27	E <sub>13</sub> C	B	14	14	8	
10	9	9	11	13	22	14	10	E <sub>11</sub> C	B	B	B	B	B	B	30	28	14	10	14	26	26	13	10	10	
11	20	19	19	22	18	18	10	10	9	11	18	35	23	23	18	10	18	11	11	12	9	9	9	8	
12	8	8	10	15	10	10	9	E <sub>10</sub> C	10	10	9	10	12	10	10	10	10	11	9	9	12	10	9	10	
13	9	9	21	10	13	18	13	10	E <sub>13</sub> C	10	10	12	10	10	10	10	10	19	8	21	12	12	16	15	
14	10	14	14	21	18	10	14	15	13	10	10	10	10	10	12	14	15	15	12	9	10	9	8	10	
15	15	14	18	B	18	10	11	9	E <sub>14</sub> C	10	26	19	25	21	20	34	13	27	25	12	10	E <sub>12</sub> C	8	8	
16	17	35	22	12	14	10	10	10	10	21	E <sub>22</sub> C	43	20	14	10	9	B	B	15	14	12	10	12	9	
17	9	B	10	16	10	B	B	21	13	14	15	18	20	20	11	10	12	9	9	10	15	14	9	14	
18	15	22	12	9	10	B	18	21	13	25	22	B	B	B	B	B	B	20	20	9	9	9	10	15	
19	10	10	9	E <sub>10</sub> C	11	10	10	10	10	10	10	10	E <sub>23</sub> C	10	14	9	10	10	10	9	11	14	11	9	9
20	8	8	10	11	E <sub>16</sub> C	10	10	10	9	20	21	14	10	E <sub>13</sub> S	E <sub>12</sub> C	E <sub>13</sub> S	12	20	29	16	19	9	9	11	
21	9	13	14	25	B	B	19	E <sub>20</sub> S	13	12	10	10	11	10	9	11	13	9	9	8	9	8	9	10	
22	10	14	7	8	7	22	10	10	10	10	10	10	10	10	10	14	11	11	9	10	10	10	9	8	
23	8	10	21	13	16	13	9	9	9	9	15	13	13	11	9	10	10	9	9	11	9	10	9	9	
24	9	16	10	8	10	12	9	9	9	9	10	9	12	13	10	10	9	10	9	9	9	9	9	8	
25	9	20	10	15	21	11	10	B	15	B	B	B	B	B	32	B	B	E <sub>16</sub> S	E <sub>16</sub> S	11	10	9	10	B	
26	B	10	14	B	B	B	B	B	B	B	B	47	C	C	44	59	50	B	12	12	10	9	10	10	
27	B	22	26	15	B	20	23	14	12	15	15	E <sub>20</sub> C	11	E <sub>13</sub> C	10	10	10	15	10	13	10	8	12	11	
28	27	B	18	17	B	15	10	10	E <sub>14</sub> C	10	15	15	C	12	14	11	16	43	43	15	10	11	10	9	
29	22	15	B	14	B	15	10	9	10	10	10	20	12	49	45	27	21	22	16	12	9	9	9	E <sub>13</sub> C	
30	10	E <sub>28</sub> C	9	13	11	9	10	9	10	10	10	10	10	12	16	15	15	13	10	9	E <sub>12</sub> C	9	10	15	15
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	28	29	30	30	29	30	30	30	30	30	30	30	
MED	10	14	14	14	18	18	12	11	12	12	15	16	17	16	14	13	13	15	14	12	10	10	10	10	
UQ	15	21	21	21	23	22	19	20	14	20	25	41	B	49	23	27	21	26	25	14	14	11	11	10	
LQ	9	10	10	11	10	11	10	10	10	10	10	13	12	13	10	10	11	10	9	10	10	9	9	9	

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F-MIN (0.1 MHz)

# IONOSPHERIC DATA

NOV. 1973

M(3000)F2 (0.01)

45 E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 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	270	260	270	260		B	B	B	275	280	290	J	F	F	290	290	R	315	310	310	A	A		
2	A	R	U	F	280	A	245	270	265	265	260	260	265		B	B	265	270	270	300	310	260	285	A	A		
3	A	A	F	F	A	A	R	260	270	270	275	280	280	285	285	300	300	310	320	320	305	295	295	F	F		
4	A	A	305	A	A	R	A	270	260	260	265	R	270	285	300	290	265	300	J	R	320	315	A	A	A		
5	F	A	A	U	F	F	A	R	R	250	240	250	255	B	B	235	285	C	290	325	315	320	290	F	A		
6	A	F	B	A	A	A	R	R	250	260	260	255		R	280	255	285	310	300	295	290	315	315		A		
7	A	A	A	A	A	A	A	B	A	A	R	B	B	B	B	B	265	295	325	F	290	295	300	F	A		
8	A	B	A	B	A	A	A	230	245	265	B	U	R	B	B	B	B	B	300	315	305	310	305	310	F	F	
9	A	A	A	A	B	A	A	A	260	260	250	R	B	275	285	270	300	B	310	300	F	B	320	275	U	F	
10	F	U	H	295	A	A	285	275	250	B	B	B	R	B	B	F	290	310	315	315	325	305	330	310	F	U	
11	A	A	A	A	A	A	F	F	F	260	250	265	260	275	280	280	290	295	310	320	300	310	320	315	335	F	F
12	305	305	295	300	270	275	F	280	275	280	275	280	280	285	285	290	310	315	305	325	320	335	315	F	F	300	
13	F	F	A	F	A	A	R	290	280	275	280	265	285	280	300	280	310	295	285	R	A	A	A	A	R		
14	A	A	A	A	A	250	255	R	U	F	F	F	275	280	285	275	300	295	300	315	300	310	275	A	A		
15	A	A	A	B	A	250	F	F	250	270	265	270	285	280	280	285	295	305	290	300	305	325	F	F	A	A	
16	A	B	255	U	F	A	245	265	265	270	280	270	285	275	300	285	270		B	B	295	305	295	295	A	F	
17	A	B	A	265	F	B	B	A	A	245	250	240	280	275	290	280	280	295	265	G	R	A	A	A	A		
18	A	A	F	F	F	B	A	A	210	250	250	H	B	B	B	B	B	B	310	R	310	315	310	305	A		
19	F	F	F	F	F	U	F	F	F	260	265	265	280	285	285	300	305	300	300	315	F	320	325	320	F	F	
20	320	320	300	295	290	F	270	F	J	F	270	275	285	275	290	300	305	285	300	290	320	310	320	320	F	335	300
21	U	F	315	310	290	A	B	B	A	A	280	240	275	275	285	270	260	280	310	300	295	270	A	A	A	A	
22	A	A	A	A	A	A	A	R	R	245	210	G	R	R	275	G	270	290	305	F	310	315	300	310	285	F	
23	U	F	F	R	F	A	255	F	255	255	F	280	285	285	280	280	F	280	295	F	310	265	245	F	A	F	
24	A	A	F	F	J	F	F	F	F	F	260	265	275	265	A	220	A	285	270	240	A	A	A	F	A	A	
25	F	A	A	A	R	A	R	B	R	B	B	R	B	B	F	B	B	R	R	R	R	A	F	F	B		
26	B	A	A	B	B	B	B	B	B	B	B	B	B	255	C	C	F	260	R	B	275	320	310	325	310	F	
27	B	F	A	A	B	A	R	255	270	275	260	265	270	285	280	290	275	265	G	295	285	A	340	U	F		
28	A	B	A	U	F	B	A	225	260	265	260	270	270	I	C	260	270	275	280	F	300	320	310	305	295	315	295
29	R	R	B	U	F	B	U	F	F	F	275	275	270	265	285	285	290	300	295	330	320	290	310	305	F	F	
30	F	U	F	265	255	F	F	260	F	270	U	R	275	280	280	275	290	285	285	280	295	285	315	310	305	F	R
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	7	9	13	5	12	12	17	22	24	24	24	18	21	24	26	24	26	26	27	23	21	14	13			
MED	305	305	295	280	270	260	262	260	265	262	270	275	280	285	285	285	298	300	310	310	310	310	310	310	295		
UQ	318	315	300	290	290	270	272	270	270	275	275	280	285	285	290	295	308	300	320	318	318	315	315	300			
LQ	290	295	265	270	260	250	258	255	260	260	260	265	275	280	275	280	278	290	295	298	305	300	305	U	F	285	

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M(3000)F2 (0.01)

## IONOSPHERIC DATA

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H<sup>o</sup>F<sub>2</sub> (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69° 00.4' S.		Long. 39° 35.4' E		Sweep		MHz to 15 MHz in 30 sec in automatic operation																
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
1					440	420	B	B	B	390	355	335	320	300	325	305	300	270	L					
2						390	390	390	415	400	395	B	B	400	395	360	300	L	375					
3							425	410	380	400	380	400	425	400	325	L	315	280						
4							370	400	400	430	R	400	370	350	340	L	L	300						
5						R	R	450	505	450	430	B	B	530	340	C	330	260	L					
6						R	R	530	470	450	500	540	R	420	500	390	340	L	350	L	L			
7						A	B	B	A	R	B	B	B	B	B	430	340	270						
8						A	570	530	440	B	360	B	B	B	B	B	L	300						
9						A	A	480	430	485	B	B	B	430	380	425	E	B	B					
10						375	385	460	B	B	B	B	B	B	375	330	340	305						
11					A	400	420	405	400	370	350	350	375	360	320	320	L	L						
12						375	380	375	350	365	355	350	355	355	350	325	325	L	L					
13					A	A	375	385	390	350	375	370	370	340	380	325	350	L						
14					500	450	A	440	480	F	440	R	420	400	410	345	L	330	300	L	L			
15					480	F	450	450	370	380	370	365	375	375	340	300	350	290						
16					475	430	405	400	400	430	400	350	330	360	400	B	B	L	L	L				
17					B	B	A	A	575	500	R	400	410	380	385	400	350	430	G					
18					B	A	A	680	480	R	490	B	B	B	B	B	340							
19			L	375	380	350	350	350	370	365	370	350	345	350	330	330	350	L	290					
20				330	350	410	375	395	340	350	340	330	330	330	320	370	330	300	280	L	250			
21					B	A	A	430	570	400	375	370	415	420	365	L	L	330	450					
22				A	A	A	A	A	510	730	G	R	R	425	G	445	L	330						
23					450	A	425	460	450	380	350	350	365	370	380	420	350	340	425	545				
24					395	390	365	360	345	345	355	A	370	A	365	380	450	A	A					
25					A	R	B	R	B	B	B	B	B	B	425	B	B	R	R	R				
26					H	B	B	B	B	B	B	B	C	C	400	390	395	B	B	390				
27					A	A	E	A	480	400	375	430	380	405	370	350	375	390	420	G	L			
28					A	650	435	430	410	390	395	I	C	420	390	370	380	350	325	300		255	L	
29					E	A	390	350	375	360	390	350	360	365	340	350	320	320	L	275	L	300	L	
30				375	375	375	370	340	335	330	330	330	350	330	350	330	370	320	315	290	275			
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	3	3	12	14	18	23	25	24	22	19	21	26	26	21	17	20	5	4			
MED			375	375	375	402	390	396	405	400	395	372	365	370	375	365	350	330	300	450	265			
UQ			375	378	462	425	442	450	470	440	395	400	400	400	390	380	350	340	545	288				
LQ			352	362	374	375	375	378	375	352	350	350	350	350	350	330	325	315	280	375	252			

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H<sup>o</sup>F<sub>2</sub> (KM)

# IONOSPHERIC DATA

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H'F (KM)

45 E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69 00.4 S.		Long. 39 35.4 E		Sweep		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	390	420	305	B	B	B	B	R	240	235	I	R	230	210	230	225	225	B	B	250	245	255	A	A	
2	A	A	370	A	B	A	295	225	H	200	250	210	250	B	B	220	220	250	230	225	A	350	A	A	A			
3	A	A	310	340	A	A	A	A	A	250	240	240	225	230	230	225	230	230	B	B	260	270	270	320				
4	A	A	A	A	A	A	A	A	A	250	215	225	200	230	230	220	235	230	225	240	B	270	270	A	A	A		
5	A	A	A	360	250	A	200	220	225	200	200	270	B	B	280	250	I	C	250	250	240	250	250	280	A	A		
6	A	A	B	A	A	A	A	A	A	230	250	230	230	230	225	H	200	230	230	230	250	245	265	A	A			
7	A	A	A	A	A	A	A	B	A	240	240	R	B	B	B	B	230	240	250	250	230	H	300	A	A			
8	A	B	A	B	A	A	A	250	250	R	R	R	B	B	B	B	B	250	250	240	250	275	285	300				
9	A	A	A	A	B	A	A	A	240	220	210	B	B	B	B	B	B	230	280	B	250	275	380					
10	360	295	E	A	A	A	310	280	B	B	B	R	B	B	225	225	230	230	225	250	B	250	250	300	300			
11	A	A	A	A	A	A	330	300	215	220	220	E	R	R	250	230	225	230	220	225	230	240	235	280	245	240		
12	270	320	330	E	A	380	320	260	230	220	220	205	230	220	210	215	210	230	230	240	230	240	250	235	250			
13	300	355	A	A	A	A	A	265	210	220	225	220	H	230	200	210	210	205	240	210	A	A	A	A	A			
14	A	A	A	A	A	A	A	A	235	225	200	220	220	H	235	230	230	230	230	225	235	230	A	A	A			
15	A	A	A	B	A	A	255	A	230	210	H	235	210	250	225	230	E	B	250	220	240	230	275	250	280	A	A	
16	A	B	E	A	A	A	340	220	H	220	205	225	I	R	220	225	230	220	215	B	B	250	250	250	265	A	300	
17	A	B	A	375	A	B	B	A	A	A	270	320	250	250	210	H	220	225	240	315	265	355	A	A	A			
18	A	A	A	A	A	B	A	A	A	E	A	E	R	B	B	B	B	B	230	250	290	270	275	360	A			
19	325	330	310	290	250	240	230	230	220	210	215	210	250	215	210	205	230	215	235	240	245	250	265	270				
20	250	270	295	210	A	325	A	280	210	230	225	210	225	220	210	240	220	220	230	230	225	245	240	250	300			
21	250	290	330	A	B	B	A	A	255	H	220	H	190	210	H	205	H	225	230	235	230	230	235	250	A	A	A	A
22	A	A	A	A	340	A	A	A	A	280	270	250	225	H	210	225	230	245	240	250	250	245	255	255	290			
23	320	330	A	370	A	A	250	A	235	205	225	230	215	200	H	220	220	210	220	230	295	315	A	325	A			
24	A	A	A	270	280	280	280	225	250	230	210	220	A	270	A	A	250	250	A	A	A	A	A	A	A			
25	A	A	A	A	R	A	230	B	R	B	B	R	B	B	B	230	B	B	A	270	310	A	A	A	B			
26	B	A	A	R	B	B	B	B	B	B	B	B	B	C	C	B	B	B	B	240	250	250	260	300	300			
27	B	A	A	A	B	A	A	A	250	235	220	210	215	220	H	215	245	215	255	240	275	280	A	260	A			
28	A	B	A	A	B	A	270	240	230	225	215	210	I	C	210	205	220	225	200	B	B	240	230	225	240	275		
29	A	A	B	410	B	A	260	220	220	210	210	215	220	B	B	220	240	250	250	225	275	260	250	260				
30	250	280	365	300	240	220	230	200	H	200	225	230	225	240	225	215	H	210	220	235	220	240	240	A	A	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	8	8	10	12	8	6	15	15	20	24	26	23	20	20	24	24	24	24	24	25	26	25	19	15	13			
MED	285	308	320	335	302	275	260	230	228	224	219	225	225	222	225	221	230	232	235	250	250	260	265	300				
UQ	322	330	U	348	372	360	305	288	250	238	231	238	235	230	230	230	230	240	250	270	270	275	292	300				
LQ	250	285	310	295	250	240	240	220	218	215	210	218	220	210	218	218	220	230	230	240	245	250	250	270				

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H'F (KM)

## IONOSPHERIC DATA

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H<sup>o</sup>ES (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION		Lat. 69° 00.4' S, Long. 39° 35.4' E											Sweep MHz to 15 MHz in 30 sec in automatic operation												
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Hour Day																									
1	120	120	120	G	G	G	B	B	B	B	B	G	125	125	120	110	115	B	B	G	G	G	125	125	
2	120	125	150	125	110	120	G	G	G	G	G	G	B	B	G	G	120	150	G	125	130	125	125	110	
3	120	110	130	120	120	125	120	120	120	G	125	G	G	G	G	G	G	G	B	B	B	G	150	130	
4	130	145	150	110	110	110	120	115	G	G	G	G	110	G	G	G	G	B	B	B		140	115	105	110
5	115	105	130	130	120	115	110	115	110	G	G	110	B	B	G	G	C	G		150	140	130	140	120	110
6	105	130	115	110	105	115	120	105	105	120	125	G	110	110	G	110	110	120	B	G	G	G	110	125	
7	115	120	105	110	105	110	110	B	105	110	B	B	B	B	B	B	G	B	165	160	160	G	130	115	
8	150	B	125	B	110	110	120	120	G	G	B	B	B	B	B	B	B	G	B	125	140	G	125	145	
9	125	115	120	150	B	140	140	120	150	G	G	B	B	B	G	115	B	B	B		130	130	140	140	
10	115	115	110	110	120	120	110	105	B	B	B	B	B	B	B	B	G	G	G	B	B	G	160	150	
11	125	120	100	115	125	110	110	G	G	G	G	B	G	G	G	G	120	G	G	150	150	150	140	150	
12	135	105	145	125	110	130	G	100	110	G	105	100	100	100	100	G	100	G	105	105	155	130	130	B	
13	155	115	130	105	105	115	115	110	G	G	G	G	105	100	100	110	110	120	110	125	120	125	130	130	
14	100	110	105	120	125	120	110	100	100	150	100	G	125	120	G	125	130	120	G	G	G	120	110	120	
15	115	125	125	B	120	100	110	105	G	G	G	G	120	120	G	B	115	B	B	G	130	145	110	115	
16	130	150	130	110	120	100	110	G	G	120	G	B	G	G	G	G	B	B	G	145	155	145	110	G	
17	110	B	110	125	100	B	B	100	110	110	115	120	G	G	G	G	G	G	G	G	G	125	130	105	105
18	110	120	150	100	140	B	100	110	110	120	G	B	B	B	B	B	B	G	170	G	110	110	110	120	
19	G	120	G	120	120	120	G	110	G	G	G	G	130	125	130	100	130	G	120	130	125	120	120	120	
20	150	135	135	115	130	110	110	G	G	G	G	G	130	100	G	G	G	125	B	G	140	105	150	125	
21	125	125	125	115	B	B	110	110	115	G	G	G	120	105	105	125	120	120	105	110	125	130	105	100	
22	110	105	115	115	105	100	100	105	110	105	G	G	G	G	G	G	G	105	G	140	135	120	130	125	
23	110	125	140	130	110	110	110	105	150	100	G	125	125	120	120	120	105	105	G	G	150	120	105	105	
24	105	120	105	140	140	110	110	115	130	120	115	115	110	110	105	110	110	125	110	105	110	150	100	100	
25	100	105	100	155	100	100	100	B	100	B	B	B	B	B	B	B	B	120	145	G	110	110	110	B	
26	B	105	150	B	B	B	B	B	B	B	B	B	B	B	C	C	B	B	B	125	140	G	150	110	115
27	B	175	120	115	B	100	105	110	105	G	125	120	120	105	120	120	105	G	G	G	175	110	145	110	
28	130	B	120	120	B	100	100	G	G	G	125	120	C	105	G	105	110	B	B	130	140	130	125	120	
29	140	125	B	105	B	105	105	G	G	G	125	G	100	B	B	G	110	110	G	145	G	130	G	150	
30	G	C	115	120	170	110	G	G	G	120	G	G	125	G	G	G	G	110	G	G	150	120	130	125	
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	26	26	28	26	23	25	23	19	15	10	9	7	15	13	8	11	15	12	10	16	22	24	29	27	
MED	120	120	122	118	120	110	110	110	110	120	125	120	120	110	112	110	110	120	122	130	138	128	125	120	
UQ	130	125	132	125	122	120	112	115	118	120	125	120	125	120	120	120	120	122	150	142	150	135	130	128	
LQ	110	110	112	110	108	105	108	105	105	110	115	112	110	105	102	110	110	110	110	125	125	120	110	110	

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H<sup>o</sup>ES (KM)



# IONOSPHERIC DATA

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TYPES OF ES

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	R4	R3	R2										C1	C1	C1	L1	L1						R3	R2	
2	R2	R2	CL1	R1	L1	R1											R1	C1		R2	R1	R4	R2	R1	
3	LR12	R1	R1	PL21	R1	R1	R1	R1	R1		R1												R1	RR11	
4	R3	R1	RR11	R1	R1	R1	R1	R1					L1								R1	R2	R2	R2	
5	R1	R1	RL11	RL12	RL11	RR11	R1	R1	R1			R1							RL11	R1	C2	R2	R3	R2	
6	R1	R1	L1	R1	R1	R1	R1	R1	R1	R1	C1		P1	R1		R1	R1	R1					R2	RL31	
7	R3	R1	R1	R1	R1	R1	R1		R1	R1									H1	C1	R1		RR11	LR11	
8	RR12		R1		R1	R1	R1	R1												L1	C1		R1	R1	
9	R1	R1	R1	L1		LR11	RL11	R1	H1						L1					RL11		L1	L1	R1	
10	R2	R2	R1	R1	R1	R1	R1	R1															R1	R1	
11	R1	R1	R1	R1	R1	R1	R1										L1			C1	C1	RL11	C1	H1	
12	C1	R1	C1	R1	R2	RL11		L1	RL11		C1	L2	C1	R2	L2		L1		L2	L2	CL11	CL11	CL11		
13	R1	R1	R1	R2	R2	R1	R1	R2					C1	R1	L2	L1	C1	L1	L1	LR11	R1	R1	R2	R1	
14	R1	R2	R2	R1	R1	RL22	R1	R1	L1	LR11	R1		C1	C1		C1	C1	L1				R1	R3	R2	
15	R2	R2	R1		RL11	R2	R1	R2					C1	C1			R1					C1	R1	R4	R5
16	RL11	R1	L1	R1	R2	R2	R2			L1										C1	C1	C1	R1		
17	R4		R2	RL11	L1			R1	R2	R1	R1	R1										R1	R2	R1	R2
18	R2	L1	RR11	R1	R1		R1	R1	R2	R1									C1		L1	L1	R3	R1	
19		C1		C1	L1	C1		C1					C1	C1	L1	L1	C1		L1	C1	C1	R1	L1	L1	
20	C1	C1	R1	RL11	R1	RL21	L1						LC11	L1				L1			C1	LC21	R1	R1	
21	C1	L1	R1	R1			R1	R1	R1				C1	RC11	C1	C1	C1	C1	R1	R2	R1	R1	R1	R2	
22	LR12	R2	RL31	RL31	R2	R1	R1	R2	R2	R1									L1		C1	CL11	LC11	C1	C2
23	R3	R1	R1	RL21	R1	R1	R1	R2	H1	R2		C1	C1	C1	C1	C1	C2	C1			R2	R3	R1	R2	
24	R2	R2	R3	LL11	C1	R1	L2	L1	C1	C1	C1	C1	C2	C1	C3	C2	C3	L1	R2	R1	R1	RR12	L3	L3	
25	L4	L1	L2	RL11	L1	R1	L1		L1										R1	C1		R2	R3	R2	
26		R1	RR12																LC11	C1		R1	R5	R2	
27		R1	R1	R1		R1	R1	R1	R1		C1	C1	C1	R1	C1	C1	R1				R1	R2	C1	RR11	
28	R1		R1	R1		R1	R1				C1	C1		R1		R1	R1			C1	C1	C1	C1	C1	
29	R1	R1		LR11		R1	R1				C1		L1				L1	C1		C1		C1		R1	
30			L1	L1	R1	L1				C1			C1						C1			R1	R2	R1	R1
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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TYPES OF ES

## IONOSPHERIC DATA

DEC. 1973

FOF2 (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station **SYOWA** STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	F42	F	F	F46	F	52	U56	F62	J64	U59	60	63	66	70	70	64	F60	F57	F52	50	50	52	51	F	
2	F36	F36	F40	R	A	F49	F54	F60	J64	F64	F67	71	70	F71	71	67	62	62	F54	F57	58	F60	F55	F52	
3	F56	F52	U45	F49	U53	F58		F	J80	J76	F73	76	73	F66	67	63	57	51	51	F50	F47	40	U38	A	
4	F40	U40	F	F	F	U40	A	A	U46	F48	50	54	F60	70	68	U65	F57	F54	53	R	A	A	A	A	
5	U40	A	A	F32	F40	A	A	A	E37	G37	40	40	R	B	B	R	R	45	45	47	48	45	U39	A	C
6	F	F38	U33	A	A	R	R	R	R	45	48	B	50	45	47	48	50	55	46	46	44	44	45	39	
7	R	F	A	U35	A	A	F40	44	44	45	43	46	R	R	45	44	I45	46	44	46	43	45	44	40	
8	37	U34	F	A	A	B	A		R	46	50	48	R	43	48	48	46	46	45	45	R42	41	45	45	
9	F40	A	F38	A	A	A	A	A	B	R	B	B	57	F56	F55	F	F	48	R	A	F38	A	A	A	
10	F	A	A	A	A	U40	R	A	R	B	49	48	50	51	49	46	47	45	44	R43	45	45	47	43	
11	F38	F38	A42	B	B	R	A	R	F57	60	58	61	58	58	58	61	62	59	56	50	44	40	36	35	
12	36	F39	F	J50	R	U55	U61	59	57	50	49	58	58	60	52	53	53	51	50	50	43	47	45	44	
13	35	35	37	42	46	U52	R	F50	U50	F	U60	F	F	F53	F58	53	52	51	52	52	49	45	44	37	
14	34	F38	F45	U51	F56	65	J70	J66	U68	J65	60	56	56	57	58	58	F51	F50	50	47	40	42	A	R	
15	A	A	A	F	U41	F	A	F52	F54	F56	F60	59	62	J70	U66	F59	55	B	B	A	41	44	F45	45	
16	48	U50	42	41	R	46	46	55	62	66	67	63	60	56	56	53	51	51	50	53	53	50	45	F44	
17	35	39	46	R44	F50	F	A	R	B	B	F	C	C	C	C	C	C	54	53	52	50	49	F39	R	
18	F	A	R41	R	F51	J61	F70	71	F71	64	58	58	55	54	51	50	46	46	45	46	48	49	C	C	
19	C	48	51	F52	U54	60	F67	F67	69	72	74	74	65	62	60	54	F52	55	59	50	R	A	A	A	
20	F	F	A	F	A	A	R	A	B	R	R	46	B	B	F65	F64	68	F57	R	43	F	A	A	46	
21	A	U35	F	R	F	R	R	B	R	R	B	B	B	B	F75	50	B	R	F44	R	R	R	B	A	
22	A	A	A	R	B	B	49	52	R	B	R	B	B	B	B	B	B	R	B	R	44	46	A	41	
23	A	B	B	A	B	B	B	B	B	B	B	49	F50	53	U57	R	57	B	47	B	45	F	42	F37	
24	41	41	36	A	A	44	52	U60	U65	F65	66	67	65	59	55	53	51	50	52	48	50	46	47	51	
25	51	55	60	58	J65	J70	76	79	73	69	70	70	73	73	61	55	54	56	53	51	50	50	48	48	
26	45	45	46	F47	F55	F60	F71	79	82	82	77	77	73	71	65	64	62	58	55	52	47	U37	40	F38	
27	F40	J46	48	47	F50	F60	U60	U66	U72	F70	F64	F61	F65	65	60	54	F52	56	56	51	F51	50	49	45	
28	R	R	R	B	F	A	53	F	F56	F62	F65	F65	60	F59	55	56	52	52	53	51	47	43	R	A	
29	A	F	F	U46	R	R	R	R	A	F41	F44	45	U46	45	46	51	51	B	F50	F41	I42	39	36	F	
30	A	R	B	B	B	R	B	A	B	B	44	R	45	50	R	U	R	R	F50	F45	39	H37	A	35	
31	A	R	35	A	F	R	R	R	A	40	R	B	B	R	55	54	U57	61	48	R	R	40	40	40	
	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	17	16	14	11	15	14	16	19	22	24	23	23	25	26	25	27	24	26	25	26	25	20	19	
MED	40	F39	F42	F46	F51	F55	F58	60	F64	61	59	59	60	58	56	55	52	52	50	49	45	44	45	43	
UQ	F42	F46	46	F50	F54	F60	F70	66	F70	F66	66	65	65	66	65	63	57	56	53	51	50	49	47	45	
LQ	36	F38	38	F42	F48	48	F52	52	F55	46	49	50	54	54	52	52	50	49	47	46	43	40	40	38	

DEC. 1973

FOF2 (0.1 MHz)

### IONOSPHERIC DATA

DEC. 1973

FOF1 (0.01 MHz)

45 E Mean Time (G. M. T.+ 3 h)

Station	SYOWA STATION		Lat.	69 00.4 S.		Long.	39 35.4 E		Sweep	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	L	A	390	400	410	430	H	410	410	430	H	430	420	410	370	L	L	L				
2			270	A	A	A	380	390	390	420	H	420	430	430	430	430	410	400	L	L	L	L				
3			330	350	370	390	F	380	F	400	410	A	410	430	420	420	420	430	U	L	L	L				
4						A	A	A	390	390	400	390	420	B	B	R	390	390	370	F	A	A				
5						A	A	A	370	370	R	B	B	B	B	400	380	380	370	370	U	L	L			
6					A	A	A	A	A	360	370	B	B	B	400	400	390	390	370	L	L	L	L	L		
7					A	A	A	360	350	380	380	380	380	400	380	390	390	390	370	360	U	L	L			
8					A	B	A	A	A	380	380	400	R	400	390	390	390	380	L	L						
9					A	A	A	A	B	R	B	H	R	390	I	B	380	380	F	A	L	A	L			
10						R	A	A	B	380	390	400	400	400	400	400	400	H	390	L	L	L	L			
11					B	A	A	A	400	400	390	390	400	400	400	400	390	400	390	370	360	L				
12				L	R	F	F	350	360	380	390	390	400	400	400	410	400	410	390	H	370	360		L		
13			310	320	L	A	380	380	400	400	400	400	400	410	420	400	400	400	390	380	350		L			
14			300	330	F	350	380	380	390	400	410	410	410	420	420	410	400	400	390	350	F	L				
15				U	F	U	F	A	A	390	400	400	410	H	400	U	R	400	400	B	B	A				
16				A	A	360	370	380	400	410	410	410	430	420	420	430	410	400	390	L	L	L				
17				A	330	B	A	A	B	B	410	C	C	C	C	C	C	400	L	370	360	L	L			
18					370	370	370	380	400	400	410	420	430	430	430	430	L	L	L	U	L	L	L			
19				L	370	370	370	370	400	400	A	420	430	430	A	A	420	420	370	380	A					
20					A	A	380	F	A	B	410	400	400	B	B	410	420	I	B	410	390	A	380			
21					F	A	A	B	B	R	B	B	B	B	B	B	B	B	B	A	L	A				
22					B	B	R	380	B	B	R	R	B	B	B	B	B	B	U	R	370	B	A			
23					B	B	B	B	B	B	B	400	400	U	R	400	B	B	B	B	390	B				
24					A	A	F	380	400	400	400	420	420	420	420	430	440	430	430	L	L	L	L	L		
25			L	U	L	280	320	340	F	360	370	390	410	410	420	I	R	430	440	450	430	400	L	L	360	L
26				L	330	350	350	F	380	390	410	410	420	R	R	440	U	R	I	R	440	420	410	L	390	L
27					F	350	350	U	A	F	400	400	410	410	420	410	420	420	420	F	410	410	390	L	L	
28					A	A	A	A	380	390	400	400	400	400	410	410	410	410	400	390	R					
29					A	A	A	A	A	F	380	390	390	390	400	400	I	B	400	400	B	370	360	F	A	
30					B	330	B	B	B	B	B	380	390	380	390	B	B	380	I	B	380	390	F	L		
31					R	U	F	R	A	A	R	B	B	B	B	B	390	B	B	380	I	R	370	370	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			2	5	11	10	14	15	19	23	23	24	22	24	23	25	25	23	18	13	3					
MED			275	320	350	360	375	380	400	400	400	405	410	410	410	400	400	390	375	360	360					
UQ			330	350	370	380	390	400	410	410	420	430	425	425	420	410	400	390	370	365						
LQ			310	330	350	370	380	385	390	390	395	400	400	400	400	390	390	375	370	360	360					

The Radio Research Laboratories, Japan

DEC. 1973

FOF1 (0.01 MHz)

IONOSPHERIC DATA

DEC. 1973

FOE (0.01 MHZ)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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	A	A	A	A	A	A	260	270	285	290	290	300	295	270	A	A	U A 260	250	225	155	130	A	
2	A	A	A	A	A	A	275	270	280	280	U A 300	300	305	300	270	290	290	A	260	230	200	170	A	A	
3	A	A	A	A	A	A	A	A	280	280	295	300	A	A	A	A	A	A	250	220	200	A	A	A	
4	A	A	A	A	210	250	A	A	A	A	A	310	310	B	B	B	U R 270	250	255	A	A	A	A	A	
5	A	B	A	A	A	A	A	A	A	A	A	B	B	B	B	A	270	260	240	A	215	A	A	C	
6	A	A	A	B	A	A	A	A	A	310	310	B	B	B	R	280	260	250	240	200	200	170	140	150	
7	B	A	B	A	A	A	A	285	265	260	275	280	280	275	U A 265	275	300	250	235	225	180	I C 180	180	A	
8	A	200	A	A	A	B	A	A	A	A	280	280	295	280	U A 275	A	A	240	R	B	A	A	190	140	120
9	180	A	A	A	A	A	A	A	B	B	B	B	A	275	I B 270	270	280	265	250	R	A	195	A	A	130
10	A	A	B	A	A	A	A	A	A	B	U R 280	280	280	A	A	280	U R 270	250	240	200	190	180	H	A	130
11	120	A	A	B	B	B	A	A	280	B	B	B	280	280	280	260	270	R	U R 255	220	205	A	165	160	
12	215	220	A	230	A	A	230	250	265	270	295	300	300	300	275	A	280	H 260	245	220	200	200	160	150	
13	155	130	150	160	190	A	A	A	A	280	270	280	280	270	285	280	R	R	245	210	200	170	130	130	
14	B	120	130	150	165	210	U A 225	255	270	280	280	290	290	285	270	280	250	270	230	225	180	200	A	U A 210	
15	A	A	A	180	A	A	A	A	265	285	280	295	295	B	B	290	265	B	B	B	B	H	190	180	A
16	A	U A 150	A	A	A	A	U A 240	A	A	280	280	290	A	A	A	A	A	A	260	240	205	170	U A 150	170	
17	140	A	U A 270	A	250	B	A	A	B	B	A	C	C	C	C	C	C	A	260	230	200	180	170	A	A
18	315	A	A	B	300	A	230	250	260	A	A	300	300	300	285	290	280	270	255	225	215	180	C	C	
19	C	160	140	A	200	I C 235	A	A	U A 275	300	290	295	A	A	A	295	295	A	245	220	A	A	A	A	
20	A	A	B	A	S	A	A	B	B	A	285	295	B	B	290	280	B	A	A	220	A	A	A	A	
21	B	A	185	A	A	A	A	B	B	A	B	B	B	B	B	B	B	B	A	A	A	A	A	B	A
22	A	B	A	A	B	B	A	270	B	B	A	B	B	B	B	B	B	R	B	A	A	A	180	A	
23	A	B	B	B	B	B	B	B	B	B	B	R	310	B	B	B	B	B	R	B	U R 200	A	B	145	
24	260	R	A	A	A	A	U A 280	255	280	280	280	A	A	300	295	280	280	260	250	245	210	190	155	165	
25	A	160	I C 160	170	200	220	250	265	275	280	300	300	300	A	A	B	285	270	A	240	230	190	180	180	
26	140	135	130	170	200	220	240	280	I R 280	285	285	300	300	300	310	290	A	R	A	240	215	U R 220	B	A	130
27	F 160	U A 125	A	A	A	U A 225	A	290	275	290	290	305	310	300	310	300	300	270	U A 260	A	A	A	155	H 120	
28	A	B	B	B	A	A	A	A	270	290	300	300	300	300	285	270	280	270	265	R 250	200	170	A	B	
29	A	A	A	A	A	A	A	A	A	290	290	295	300	U A 300	290	I B 290	U R 270	B	R 250	265	B	A	A	A	
30	A	B	B	B	B	A	B	B	B	B	B	B	300	300	B	B	B	B	U B 260	250	B	150	A	250	
31	A	A	255	225	A	A	240	A	B	A	R	B	B	B	B	R	B	B	A	C	180	170	215		
	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	9	9	8	7	8	6	9	11	15	17	20	21	19	16	16	18	17	14	23	21	20	19	15	16	
MED	160	150	155	170	200	222	240	265	275	280	288	295	300	300	285	280	280	260	250	225	200	180	160	150	
UQ	215	160	220	202	230	235	250	275	280	290	295	300	300	300	292	290	280	270	260	240	212	190	175	175	
LQ	140	130	135	165	195	220	230	255	268	280	280	290	290	280	272	275	270	250	245	220	200	170	145	130	

DEC. 1973

FOE (0.01 MHZ)

## IONOSPHERIC DATA

DEC. 1973

FOES (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA	STATION																							Lat. 69 00.4 S.	Long. 39 35.4 E	Sweep	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	35	J X 78	70	J X 39	J X 45	50	J X 44	35	J G 27	G	G	G	33	G	G	G	33	40	29	27	27	25	J X 26	J X 23					
2	J X 25	27	28	30	46	45	34	J X 34	J X 46	G	J X 35	37	G	35	31	31	G	J X 29	G	46	24	21	J X 25	J X 24					
3	J X 34	27	45	31	J X 46	46	J X 42	28	G	34	46	J X 36	D S 42	42	D S 37	37	J X 42	J X 41	30	D S 66	26	36	J X 42	40					
4	J X 60	J X 57	J X 58	52	J X 26	J X 33	45	J X 45	J X 42	41	34	35	35	E B 44	E B 45	E B 37	G	30	35	45	59	J X 102	63	45					
5	34	93	43	J X 60	29	45	J X 43	44	53	45	37	B	B	B	E B 37	72	G 26	G	30	J X 52	G	36	113	C					
6	J X 60	33	J X 31	47	42	37	40	38	42	G	G	B	E B 45	E B 32	G	G	G	32	27	27	G	43	J X 29	J X 24					
7	32	J X 84	54	32	44	40	38	G	30	G	G	G	G	32	27	G	G	G	G	36	26	J X 23	J X 24	J X 25					
8	130	29	30	55	52	56	J X 43	43	37	32	G	G	32	83	J X 49	J X 30	28	27	G	E B 26	29	25	J X 35	D S 52					
9	J X 24	J X 41	J X 62	J X 89	63	50	J X 56	J X 93	B	33	B	B	33	40	E B 49	G	J X 27	J X 43	G	46	G	40	45	J X 42					
10	J X 65	53	70	45	42	27	28	43	38	B	G	35	G	35	36	G	G	G	G	24	G	J X 26	J X 30	14					
11	J X 24	29	46	B	B	40	52	39	38	E B 32	E B 37	E B 33	G	31	G	37	G	G	G	G	22	33	G	J X 52					
12	D S 57	J X 51	D S 47	J X 39	28	32	G	G	G	G	43	36	35	51	J X 85	J X 50	J X 29	G	G	G	G	G	20	G					
13	G	D S 20	D S 30	21	J X 22	29	40	J X 36	J X 45	G	G	G	G	G	39	31	G	G	G	G	G	J X 28	23	16					
14	24	18	J X 22	21	D S 22	23	29	G	G	G	G	G	J X 37	92	J X 67	37	J X 33	G	26	G	23	28	40	33					
15	42	J X 40	D S 68	26	J X 40	J X 32	48	42	G	G	G	G	G	E B 37	E B 37	G	G	B	B	48	J X 29	J X 49	J X 25	J X 30					
16	J X 26	J X 27	31	32	39	33	32	40	D S 32	G	34	34	J X 31	J X 33	J X 32	31	31	J X 44	G	G	30	J X 32	18	J X 27					
17	22	J X 33	43	35	G	E B 38	51	51	B	B	36	C	C	C	C	C	C	39	31	G	G	J X 25	27	33					
18	J X 34	J X 41	J X 40	39	G	28	29	32	33	37	32	32	G	G	G	J X 45	32	G	G	G	J X 34	25	C	C					
19	C	21	21	J X 27	J X 24	30	J X 29	J X 34	J X 27	36	D S 55	J X 40	J X 46	D S 57	J X 77	66	39	J X 35	J X 35	G	38	56	J X 51	40					
20	35	35	J X 80	J X 40	42	50	34	53	B	32	31	G	B	B	G	G	E B 52	31	43	25	J X 42	J X 51	J X 44	J X 20					
21	D S 93	36	31	34	34	40	40	B	B	34	B	B	B	B	B	B	E B 44	E B 45	B	46	36	40	40	B	J X 51				
22	J X 89	39	J X 46	37	B	B	32	G	B	B	31	B	B	B	B	B	B	G	B	34	37	37	J X 51	J X 26					
23	J X 58	B	B	42	B	B	B	B	B	B	B	G	G	E B 33	E B 49	B	E B 48	B	G	B	G	36	E B 23	G					
24	G	G	31	38	42	35	31	J X 28	G	G	G	34	32	G	30	G 28	G 26	G	G	26	28	24	24	J X 22					
25	J X 31	18	J X 33	J X 19	J X 29	J X 31	J X 27	G	J G 27	G	35	38	36	35	37	33	E B 34	34	35	G	G	G	20	G					
26	20	J X 29	26	J X 59	25	G	25	G	G	G	G	G	33	G	G	G	30	G	J X 27	G	G	G	E B 26	17					
27	21	25	J X 31	J X 41	J X 51	J X 34	J X 42	J X 43	G	G	G	J X 31	59	G	32	G	G	G	32	39	J X 39	J X 41	16	J X 31					
28	40	35	37	B	J X 53	J X 55	J X 44	42	G	67	G	G	33	32	32	77	G	28	34	J X 62	J X 49	G	37	50					
29	40	35	J X 53	J X 83	44	37	44	40	46	G	G	35	G	33	33	E B 45	G	B	33	34	35	36	32	36					
30	D S 43	36	B	B	B	31	B	75	B	B	E B 31	G	35	E B 37	E B 48	B	E B 33	E B 47	J X 54	J X 39	34	J X 28	J X 41	27					
31	45	35	64	J X 78	J X 36	32	27	J X 28	48	36	G	B	B	E B 45	E B 49	G	E B 46	B	78	31	24	G	J X 37	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	30	30	29	28	27	29	29	29	24	26	28	24	25	26	28	27	29	26	29	30	31	31	29	29					
MED	34	35	43	39	41	34	40	38	31	G	E 31	32	32	33	U 32	30	E 28	28	27	27	26	28	29	31					
UQ	58	41	56	J X 50	44	45	44	43	41	34	34	35	35	U 38	U 42	38	U 31	34	34	39	34	38	J X 41	42					
LQ	24	27	31	32	28	31	29	28	G	G	G	G	G	E 31	28	G	G	G	G	G	G	24	24	J X 23					

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DEC. 1973

FOES (0.1 MHz)

### IONOSPHERIC DATA

DEC. 1973

F-MIN (0.1 MHz)

45° E Mean Time (G. M. T. + 3 h)

Station	SYOWA STATION		Lat. 69° 00.4' S	Long. 39° 35.4' E	Sweep	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	12	20	14	10	10	16	11	10	12	10	10	10	10	10	15	15	11	15	19	20	15	E C	11	10	10		
2	10	10	11	18	15	10	E C	E C	10	10	10	11	11	10	11	10	11	12	11	10	10	9	10	8	8		
3	7	9	10	12	11	10	10	10	10	10	10	10	10	E S	12	10	10	20	10	11	12	12	10	10	9		
4	9	9	E S	10	9	10	20	19	12	11	12	17	18	44	45	37	20	12	25	16	11	10	E S	10	8		
5	9	26	10	10	10	20	14	12	10	10	20	B	B	B	37	25	20	17	19	E C	17	10	8	10	C		
6	14	12	10	26	22	13	10	E S	18	19	14	E S	13	B	45	32	15	15	13	11	14	16	12	10	11	10	
7	26	12	22	10	20	20	15	13	10	10	15	14	14	14	15	15	14	15	14	10	10	E C	21	9	10		
8	10	9	9	19	19	45	22	12	15	12	10	11	12	13	13	10	11	13	20	26	23	17	11	9			
9	9	13	10	14	11	19	14	16	B	27	B	B	26	13	49	16	10	15	18	10	10	10	19	10			
10	13	16	26	20	20	18	20	14	22	B	23	20	21	10	11	12	15	13	14	15	13	12	10	10			
11	9	E C	17	18	B	B	27	15	14	10	32	37	33	20	16	14	12	12	21	15	10	12	13	10	10		
12	9	9	E S	13	10	E S	E S	E S	10	10	9	10	10	10	10	10	E C	22	10	10	10	10	10	9	10		
13	10	9	9	9	10	10	14	12	11	10	10	12	10	10	15	20	15	20	20	14	10	10	10	9			
14	16	10	9	9	9	9	9	10	10	9	10	10	10	10	11	10	10	10	10	10	10	10	12	10	9		
15	12	9	9	9	9	10	12	9	10	10	10	10	10	10	37	37	12	14	B	B	31	22	15	11	9		
16	9	E S	E S	E S	13	E S	13	11	E S	10	9	9	11	10	15	10	E C	E C	12	E C	13	10	10	9	9	9	
17	9	8	10	10	10	38	14	15	B	B	11	C	C	C	C	C	E C	10	13	10	9	9	9	15			
18	14	15	13	26	14	10	8	9	9	10	10	12	12	12	10	E C	E C	18	10	10	E C	25	9	9	C	C	
19	C	9	9	9	9	E C	26	9	9	10	10	10	10	10	11	13	10	9	10	12	12	E S	15	10	11	10	
20	E S	13	9	20	9	E S	30	10	14	29	B	16	15	16	B	B	21	15	52	12	15	12	12	10	13	9	
21	23	10	9	14	10	12	19	B	B	22	B	B	B	B	B	44	45	B	10	11	18	15	B	12			
22	15	26	9	15	B	B	20	15	B	B	21	B	B	B	B	B	B	20	B	10	11	12	12	15			
23	16	B	B	27	B	B	B	B	B	B	B	B	B	19	20	33	49	B	48	B	20	B	16	14	23	9	
24	10	17	14	21	23	15	10	10	10	10	20	15	13	12	21	16	19	14	15	12	11	10	9	9			
25	9	7	E C	E C	9	8	9	10	10	11	15	23	20	20	20	14	34	18	15	10	E C	21	10	9	10		
26	8	10	9	9	8	8	8	E C	11	20	12	20	15	E C	11	16	24	20	21	23	20	10	8	15	26	8	
27	8	7	8	9	9	9	12	10	10	10	10	10	10	14	11	10	10	11	12	15	20	13	8	9	9		
28	15	21	21	B	7	13	14	11	9	9	10	10	10	10	10	10	10	10	10	18	11	10	8	14	23		
29	8	7	8	8	10	9	E S	E S	12	10	11	10	16	15	19	45	21	B	21	10	28	10	8	10			
30	E C	13	23	B	B	E C	16	B	B	50	B	B	31	13	19	37	48	B	33	47	26	10	22	8	8	8	
31	15	13	15	10	10	20	21	10	37	10	26	B	B	45	49	15	46	B	27	21	E C	E C	23	E C	11	9	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	30	31	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	31	31	31	31	31	30	29			
MED	10	10	10	12	10	12	14	11	11	10	12	14	14	14	16	14	14	14	15	11	12	10	10	9			
UQ	14	16	15	20	20	20	18	15	30	19	20	23	21	37	37	20	21	20	20	16	14	12	11	10			
LQ	9	9	9	10	10	10	10	10	10	10	10	10	10	10	13	10	11	10	14	10	10	10	9	9			

DEC. 1973

F-MIN (0.1 MHz)

### IONOSPHERIC DATA

DEC. 1973

M(3000)F2 (0.01)

45 E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69 00.4 S, Long. 39 35.4 E Sweep 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 260	F	F 300	F	F 245	U F 265	265	J F 280	U F 270	265	255	260	270	285	295	F 300	F 315	F 310	F 310	320	310	295	F		
2	F 290	F 290	F 260	R	A 260	F 280	F 265	J F 265	F 275	F 265	F 280	F 280	F 280	F 290	F 300	F 300	F 310	F 310	F 315	F 310	F 315	F 310	F 305		
3	F 320	F 300	F 290	F 265	F 260	F	F	J F 275	J F 275	F 280	F 275	F 290	F 285	F 285	F 305	F 310	F 315	F 315	F	F 315	F 300	U F 315	A		
4	F 270	U F 275	F	F	F 345	A	A	F	F 250	F 245	F 265	F 255	F 270	F 265	F 275	F 280	F 275	F 255	R	A	A	A	A		
5	U F 320	A	A	F 315	F 300	A	A	A	G	R	R	B	B	B	R	R	F 270	F 265	F 280	F 290	F 300	F	A	C	
6	F 270	F	F	A	A	R	R	R	R	245	270	B	280	R	265	270	280	310	290	305	305	305	300	320	
7	R	F	A	U F 285	A	A	F 265	295	250	255	R	265	R	R	R	260	R	310	295	325	305	310	310	325	
8	350	U F 310	F	A	A	B	A	285	R	255	285	290	R	245	285	290	285	290	310	310	R 325	310	310	310	
9	F 300	A	F 310	A	A	A	A	A	B	R	B	B	295	F 285	F 260	F	F	270	R	A	F 305	A	A	A	
10	F	A	A	A	A	U R 325	R	A	R	B	265	270	280	290	290	290	300	290	320	R 290	310	310	335	315	
11	F 290	F 315	F 285	A	B	B	R	A	R	F 290	270	260	290	275	F 270	265	270	290	305	305	320	F 295	A	335	325
12	F 320	F 295	F	F 315	R	U F 275	F	285	290	270	265	290	285	300	275	285	285	300	310	330	300	330	310	320	
13	345	315	295	275	285	F	R	F 255	F	F	F	F 275	F 280	F 295	290	310	305	310	325	320	325	320	305	345	
14	325	315	F 280	U F 275	F 270	290	J R 275	J F 285	F	J F 310	280	270	F 285	280	295	310	F 320	F 305	300	275	305	300	A	R	
15	A	A	A	F	F	F	A	F 265	F 285	F 280	F 265	260	270	J R 280	F	F 280	265	B	B	A	330	295	F	300	
16	295	U F 310	F 285	295	R	275	260	280	275	290	285	285	285	300	285	300	300	300	305	305	340	310	290	F	
17	315	320	285	S 290	F 265	F	A	R	B	B	F	C	C	C	C	C	C	295	285	290	300	310	F 310	R	
18	F	A	R	R	F 260	J F 265	F 270	285	F 260	280	275	290	265	295	295	300	285	305	300	305	315	305	C	C	
19	C	295	305	290	U F 275	F 265	F 285	F 270	265	265	270	285	290	305	300	280	F 300	F 285	305	280	R	A	A	A	
20	F	F	A	F	A	A	R	A	B	R	R	235	B	B	280	F 265	F 285	245	R	280	F	A	A	295	
21	A	U F 285	F	R	F	R	R	B	B	R	B	B	B	B	B	F 255	260	B	R	F 295	R	R	B	A	
22	A	A	A	R	B	B	270	270	R	B	R	R	B	B	B	B	B	B	B	R	295	325	A	290	
23	A	B	B	A	B	B	B	B	B	B	R	265	F 260	F 275	U R 280	B	285	B	270	B	310	F	310	F 285	
24	295	295	A	A	A	250	290	U F 265	U F 270	F 270	275	270	280	R	275	285	285	295	310	300	310	305	300	315	
25	295	290	295	275	J F 275	J F 265	280	280	275	260	270	265	290	300	295	290	305	300	315	300	320	315	315	295	
26	310	290	290	F 265	F 275	F 270	F 275	280	270	275	275	285	280	290	275	275	305	295	310	310	310	U F 285	325	F 315	
27	F 300	F 305	300	275	F 270	F 265	U F 255	F	F	F 275	F 275	F 270	F 275	300	300	305	F 275	290	315	295	325	F 305	325	290	
28	R	R	R	B	F	A	300	F	F 255	F 270	F 275	F 255	F 260	F 265	F 275	280	280	300	320	315	320	280	R	A	
29	A	F	F	U F 325	R	R	R	R	A	245	230	245	R	270	240	275	300	B	F 300	F 270	R	310	290	F	
30	A	R	B	B	B	R	B	A	B	B	250	R	245	260	R	B	A	A	F 280	F 245	325	F 295	A	315	
31	A	R	295	A	F	R	R	R	A	225	R	B	B	R 290	260	U F 280	295	B	290	R	R	315	305	300	

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M(3000)F2 (0.01)

	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	17	13	14	9	14	13	15	15	21	21	23	22	23	24	25	26	24	26	24	25	23	19	19
MED	300	295	290	288	275	265	275	280	270	270	270	270	280	285	282	285	288	300	305	302	310	310	310	310
UQ	320	310	295	300	275	275	280	285	278	275	275	285	285	292	292	295	300	308	310	312	320	315	315	318
LQ	F 295	F 290	F 285	F 275	F 270	F 260	F 265	F 265	F 262	F 255	F 265	F 265	F 265	F 265	F 270	F 270	F 275	F 280	F 290	F 290	F 290	F 305	F 302	F 295

### IONOSPHERIC DATA

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H<sup>o</sup>F<sub>2</sub> (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION Lat. 69° 00.4' S, Long. 39° 35.4' E Sweep 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				375	300	A	440	370	330	360	380	390	380	350	320	320	305	290	290	295				
2			430	R	A	450	380	360	355	360	360	345	350	350	330	325	310	300	L	280	270	245		
3				400	390	370	350	330	325	340	330	345	305	345	345	300	300	300	300	260				
4							A	A	A	490	475	420	410	350	380	360	390	380	420	A	370			
5						A	A	A	G	R	R	R	B	B	R	R	430	450	380	350	305			
6					A	R	A	A	A	500	425	R	B	R	450	425	400	305	L	300	L	280	280	
7					A	A	450	370	475	470	R	R	380	R	R	E	R	R	325	370	290	L	L	L
8					A	B	A	A	A	R	460	380	380	R	560	400	380	400	370	L	L			
9					A	A	A	A	B	R	B	B	350	375	465	380	350	440	L	A	L			
10							R	A	R	B	410	445	380	370	380	390	375	R	380	300	L	L	L	
11					B	A	A	R	330	350	395	350	375	380	385	365	325	300	310	285	L			
12				L	R	370	345	345	340	410	430	355	350	315	400	360	350	340	300	275			L	
13				375	355	275	R	450	A	370	350	400	390	335	370	325	325	320	295	295		L		
14				340	350	300	325	335	320	300	350	400	350	370	325	300	310	325	330	390	L			
15					F	F	A	545	370	380	375	400	375	340	325	370	400	B	B	A				
16				345	R	415	450	350	370	330	345	325	340	370	345	350	350	345	330	300	L			
17				370	375	F	A	A	B	B	350	C	C	C	C	C	C	350	L	330	300	280		
18					420	375	345	320	350	350	365	350	400	350	375	350	L	L	L	340	L			
19				L	360	350	330	350	355	360	345	330	325	325	360	350	355	300	340	R				
20					A	A	R	A	B	R	R	R	580	B	B	355	375	340	450	A	405			
21					F	A	A	B	B	R	B	R	B	B	B	380	E	B	B	A	L	A		
22					B	R	400	395	R	B	R	R	B	B	B	B	B	R	B	350				
23					B	B	B	B	B	B	R	460	470	425	400	B	B	B	430	B				
24					A	460	360	375	355	360	365	350	345	370	400	360	400	350	300	L		L	270	
25			L	290	330	330	350	310	300	325	365	350	350	330	300	330	370	350	310	L	280	320	L	
26				L	380	350	350	345	310	325	300	335	320	350	325	355	330	305	300	280	L			
27					380	380	390	350	300	340	335	390	365	330	320	320	400	325	290	L	280			
28						A	370	A	415	375	380	400	395	390	395	370	375	335	290	300				
29					A	A	A	R	A	580	560	550	U	R	440	530	410	350	B	340	470	R		
30					B	R	B	B	B	B	480	R	520	450	B	B	330	340	380	L				
31						R	R	R	A	600	R	B	B	350	B	375	315	B	350	R	R	300		
	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	8	11	12	15	17	17	22	23	23	24	24	24	26	27	24	20	19	6	4	1	1
MED			360	372	360	370	360	350	350	362	365	390	375	350	372	361	350	338	305	300	302	280	280	270
UQ				378	385	398	395	375	370	460	402	410	398	378	400	378	388	362	360	345	320	290		
LQ				342	350	350	345	335	325	350	350	350	350	338	330	330	325	308	298	288	280	262		

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H<sup>o</sup>F<sub>2</sub> (KM)



# IONOSPHERIC DATA

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H'F (KM)

45° E Mean Time (G. M. T.+ 3 h)

Station SYOWA STATION Lat. 69 00.4 S. Long. 39 35.4 E Sweep 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 A 400	330	330	A	300	A	A	H	200	230	H	210	250	240	230	265	230	200	215	225	230	240	230	250	230		
2	320	375	A	A	A	A	240	200	210	225	H	220	225	225	250	210	215	230	220	220	240	230	220	240	250		
3	250	250	E A 340	A	A	A	230	200	205	220	H	A	200	230	205	210	H	200	A	210	205	230	225	330	290	A	
4	A	390	A	A	F	245	A	A	A	250	H	A	250	250	B	B	B	240	240	A	A	A	A	A	A		
5	A	A	A	A	H	310	A	A	A	A	A	A	H	B	B	B	225	240	245	250	245	275	A	A	C		
6	A	355	310	A	A	A	A	A	A	260	255	R	B	225	240	220	H	250	225	230	245	240	245	250	250		
7	A	250	A	A	A	A	A	250	225	H	200	H	190	240	225	200	230	230	200	215	H	225	230	235	255	245	
8	250	250	F	A	A	B	A	A	A	210	195	245	200	200	230	220	240	225	220	230	H	240	240	250	275		
9	280	A	225	A	A	A	A	A	B	A	B	B	R	225	I B 230	230	230	A	230	A	275	A	A	A	A		
10	280	A	A	A	A	E R 260	R	A	A	B	200	200	230	215	220	240	220	215	230	210	230	235	245	240			
11	260	280	E A 325	H	B	A	A	A	220	H	200	R	200	240	215	H	220	230	220	230	225	250	215	A	240	E A 275	
12	280	330	A	A	275	275	R	A	220	H	200	205	220	225	210	H	200	H	220	210	210	230	220	250	225	240	
13	235	250	275	275	260	245	A	260	275	210	195	200	200	240	220	215	210	210	225	210	230	215	260	245			
14	245	245	240	250	250	240	225	200	200	210	200	200	200	220	200	215	200	195	H	225	230	225	270	A	A		
15	A	A	A	A	F	225	F	240	A	A	220	250	230	225	190	B	B	205	H	200	B	B	A	245	275	250	250
16	270	250	320	A	A	A	255	210	200	205	200	200	225	210	220	210	205	200	225	240	230	245	250	280			
17	250	275	325	A	300	B	A	A	B	B	A	225	C	C	C	C	C	C	225	225	240	230	230	295	A		
18	U F 320	A	A	A	365	240	240	225	200	200	200	200	220	205	195	H	A	205	H	200	230	250	230	230	C	C	
19	C	250	255	230	250	225	220	210	215	200	A	A	220	215	A	A	220	H	225	A	245	A	A	A	A		
20	A	A	A	A	A	A	A	A	B	210	H	200	200	B	B	230	H	I B 230	250	A	250	A	A	A	300		
21	A	A	290	A	210	A	A	B	B	A	B	R	B	B	B	B	B	B	B	A	300	A	A	B	A		
22	A	A	A	A	B	B	A	R	B	B	R	D	B	B	B	B	B	B	R	B	A	340	500	A	360		
23	A	B	B	A	B	B	B	B	B	R	H	225	200	210	B	H	B	B	240	B	225	A	275	270			
24	310	310	A	A	A	A	280	215	200	200	220	200	225	225	205	H	200	220	220	230	220	225	230	250	250		
25	265	250	250	245	235	H	220	200	215	210	200	230	200	225	R	H	200	220	B	E A 250	220	230	240	230	250		
26	250	220	250	250	230	225	225	200	200	205	230	260	225	200	220	220	U R 210	220	210	210	240	260	260	245			
27	250	245	H	260	A	A	245	A	230	205	H	200	190	190	230	210	H	210	225	200	240	250	225	A	245	250	
28	A	A	A	A	A	A	A	A	205	225	205	195	205	245	205	225	225	225	225	240	A	230	240	250	A	A	
29	A	A	A	300	A	A	275	A	A	250	220	220	200	230	H	225	I B 230	220	B	250	A	260	A	A	340	A	
30	A	A	B	B	B	280	B	B	B	B	200	250	245	H	B	B	B	240	I B 245	250	225	250	290	A	320		
31	A	A	340	A	A	A	250	R	R	A	R	R	B	B	B	H	200	B	B	290	A	255	270	E A 305	300		
	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	18	16	7	11	11	12	14	18	22	22	23	23	21	22	25	25	25	26	25	26	22	20	20			
MED	262	250	275	250	250	240	235	210	208	210	208	200	225	225	220	220	220	225	225	230	230	242	250	250			
UQ	280	330	320	275	300	245	252	225	220	225	225	225	230	230	230	228	230	230	235	245	245	270	264	278			
LQ	250	250	252	248	232	232	222	200	200	200	200	200	200	210	205	H	212	210	210	220	225	230	230	245	245		

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H'F (KM)

### IONOSPHERIC DATA

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H<sup>o</sup>ES (KM)

45° E Mean Time (G. M. T. + 3 h)

Station SYOWA STATION		Lat. 69 00.4 S. Long. 39 35.4 E										Sweep 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	125	125	105	100	180	100	100	100	100		G	G	G	100	G	G	G	100	105	110	140	125	125	125			
2	140	120	125	130	100	100	100	100	100		G	100	105	G	130	115	105	G	100	G	130	130	130	100	100		
3	100	100	130	130	120	100	100	100		G	150	120	110	100	100	100	100	100	100	140	125	125	125	110	105		
4	110	105	105	110	150	150	100	100	105	110	110	150	145	B	B	B	G	150	150	125	120	105	100	100			
5	130	105	100	105	105	125	100	100	105	110	110		B	B	B	B	120	120	G	150	105	G	105	130	C		
6	125	125	135	100	100	100	100	110	110		G	G	B	B	B	G	G	G	125	130	120	G	125	120	105		
7	140	165	100	100	110	105	110		G	100	G	G	G	G	E	G	170	110	G	G	G	G	130	125	130	110	115
8	100	125	120	100	100	115	110	100	105	105		G	G		130	100	110	100	100	120		G	B	130	125	115	115
9	115	120	140	170	100	100	105	130		B	100	B	B		120	115	B	G	150	110	G	105	G	110	125	110	
10	130	100	100	100	105	100	110	100	100		B	G		120	G	110	100	G	G	G	G	120	G	130	115	120	
11	110	130	120	B	B	110	105	100	100		B	B	B	G		125	G	115	G	G	G	G	G	145	120	G	125
12	125	110	125	100	130	110		G	G	G	G		130	130	120	110	125	100	100	G	G	G	G	G	G	130	G
13	G	125	110	130	115	110	105	100	100		G	G	G	G	G		120	115	G	G	G	G	G	G	100	150	130
14	150	130	130	125	115	120	110		G	G	G	G	G		115	150	150	110	105	G	100	G	150	150	110	155	
15	105	110	100	130	100	100	100	100		G	G	G	G	G	B	B	G	G	B	B	130	130	125	130	120		
16	115	120	120	110	100	100	100	100	100		G	120	115	100	100	100	100	100	100	G	G	120	120	120	150		
17	150	105	115	115	G	B	105	105	R	B	100	C	C	C	C	C	C	100	135	G	G	110	150	130			
18	125	105	110	150	G	100	115	115	110	105	100	100		G	G	G	115	120	G	G	G	125	115	C	C		
19	C	140	130	100	100	110	100	100	100	100	105	100	100	100	100	110	125	100	110	G	115	100	150	100			
20	120	105	105	105	120	100	100	100		B	105	125	G	B	B	G	G	B	100	110	130	110	110	105	100		
21	100	100	125	110	130	100	110		B	R	100	R	B	R	B	B	B	B	100	110	100	100	B	100			
22	125	100	105	120	B	B	110	G	R	B	100	B	B	B	B	B	B	G	B	100	115	115	150	125			
23	100	B	B	100	B	B	B	B	B	B	R	G	G	B	B	B	B	B	B	G	B	G	105	B	G		
24	G	G	110	110	110	110	100	100		G	G	G	100	100	G	110	105	110	G	G	125	150	125	110	105		
25	105	105	100	100	100	100	100	G	100	G	125	115	110	110	105	105	B	120	125	G	G	G	135	G			
26	140	130	140	130	140	G	105	G	G	G	G	G	G	110	G	G	G	110	G	110	G	G	G	B	105		
27	170	130	105	100	100	100	100	140	G	G	G	100	110	G	100	G	G	G	130	100	100	100	100	100	125		
28	125	120	125	B	125	100	100	100		G	105	G	G	110	125	110	125	G	100	140	125	135	G	115	110		
29	100	100	100	100	100	100	115	100	100		G	G	110	G	120	100	B	G	B	150	105	130	110	100	105		
30	100	110	B	B	B	100	B	150	R	B	R	G	130	B	B	B	B	B	135	100	150	100	100	150			
31	110	115	100	100	100	135	135	100	105	100		G	B	R	B	B	G	B	B	165	120	E	G	G	130	115	
	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	29	28	25	27	28	23	16	11	12	12	15	14	15	14	12	13	17	19	21	26	26	26			
MED	122	115	110	108	105	100	102	100	100	105	110	110	110	111	110	108	108	100	130	120	125	115	118	115			
UQ	130	125	125	128	120	110	110	102	105	108	122	118	120	125	112	115	120	120	140	128	152	125	150	125			
LQ	105	105	105	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	110	105	120	105	110	105			

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H<sup>o</sup>ES (KM)

IONOSPHERIC DATA

DEC. 1973 TYPES OF ES

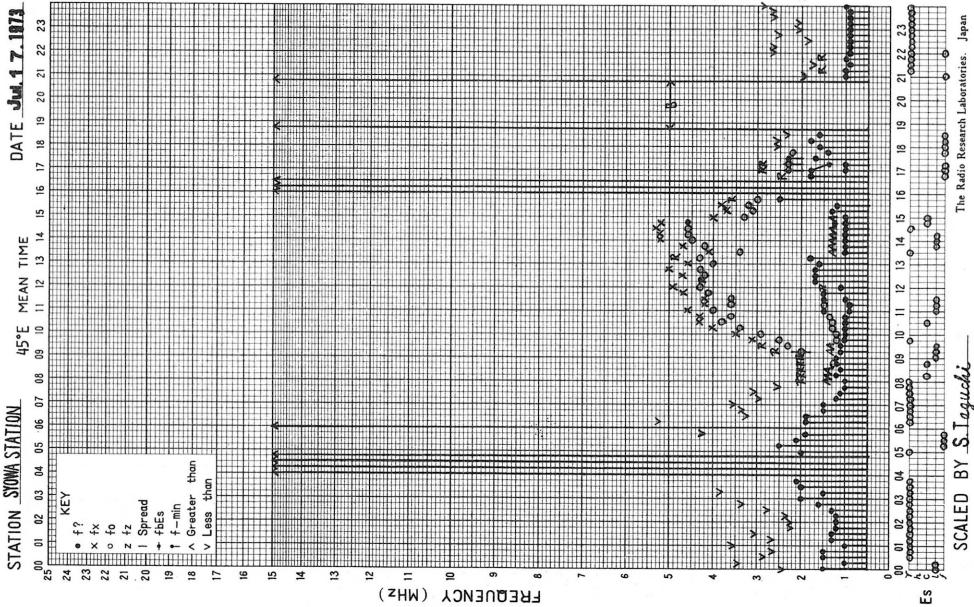
45 E Mean Time (G. M. T. + 3 h)

Station	SYOWA	STATION	Lat.	69	00.4	S.	Long.	39	35.4	E	Sweep	MHz to	15	MHz in	30	sec	in automatic	operation							
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	R2	C1	R1	R2	HR12	R1	R2	C2	L2				L1				L1	L1	L1	H1	LH11	CL11	C1	L2	
2	R1	R1	R1	R1	R1	R2	L2	C2	R1		R2	R1		C1	C1	R1		L1		L1	CL11	CL11	L2	L2	
3	L2	R1	R1	R1	R2	R2	R2	R2		H1	C2	C1	R1	R2	L2	L2	L1	L1	CL11	C1	R1	R2	R1	R2	
4	RRL12	LR13	R1	R1	C1	C1	R1	R1	R1	R1	R1	H1	C1				C1	H1	R1	R1	R2	RL21	R2		
5	R21	R1	R1	R2	R2	LL11	R1	R2	R2	LR12	R1					L1	L1		H1	L2		R3	RR12		
6	R2	R2	RR11	R1	R1	R1	R1	R1	R1									C1	C1	C1		C1	C2	L1	
7	R1	HL11	R1	R2	R1	R1	R1		L2						L1					C1	C1	L1	C1	R1	
8	LL21	C1	C1	R1	R1	L1	R1	R1	R1	R1			C1	LC11	C1	R1	R1	C1			C1	C1	C2	C3	
9	L1	R1	RL12	HR11	R1	R1	R1	RR11		L1			R1	C1			H1	R1		R1		R2	R1	R1	
10	RLL11	R1	R1	R1	R1	L1	R1	R1	R1			C1		C1	L1					C1		C1	L1	L1	
11	L1	R1	R1			R1	R1	R1	R1					C1		C1					C1	R1		C2	
12	C2	C3	L1	L1	R1	R1					C1	C1	C1	C2	LC11	L1	C1						C1		
13		L1	L1	C1	C1	R1	R1	L1	L1						C1	C1						LC11	R1	C1	
14	R1	C1	C1	C1	C1	C1	C1						C1	HC11	HC11	C1	C1		R1		C1	C1	R2	C1	
15	R2	R2	R1	R1	R1	R2	R2	R2												L1		C1	C2	C1	L2
16	L2	C1	R2	R1	R1	R2	C1	L2	L1		C1	C1	L1	R1	R1	R1	R1	L1			C1	C1	R1	C1	
17	C1	R1	R1	R1			R1	R1			R1							L1	C1			L1	R1	R1	
18	R1	R1	R2	R1		R1	C2	C1	C1	C1	R1	R1			C2	C1					LC11	C1			
19		RL11	CL11	L1	L1	C1	C2	L2	C1	L1	C2	C2	L1	L1	L2	C2	C1	C1	C2		R1	R1	RB2	R1	
20	R2	R2	R1	R1	R1	R2	R1	L1		R1	C1							R1	R1	C1	R1	R1	R1	L1	
21	L1	R1	R1	R1	RL11	L1	R1			R1									R1	R2	R1	R1		RH11	
22	LR11	R1	R1	R1			R1				R1									R1	R2	R2	H1	R1	
23	LL11			R1																		R1			
24			R1	R1	R1	R1	R1	C1				R1	R1		R1	L1	L1			C1	H1	CL11	CL21	C2	
25	C3	C2	L1	L2	L1	L1	L1		R1		C1	C1	C1	C1	L1	L1		C1	C1				C1		
26	C1	CL21	C1	CL11	CL11		C1						C1				L1		L1					C1	
27	C1	C1	L2	C2	C3	LR11	L1	CR11			C1	L1			R2				C1	R1	L2	L2	L1	C2	
28	R1	R1	R1		RR11	L1	R1	R1		L1			C1	C1	C1	L1		L1	H1	C2	CL11		R1	R1	
29	R2	R3	L2	R2	R1	R2	R1	R1	R1			C1		C1	LC11				H1	R1	R1	R1	RL31	R1	
30	L2	R1				R1		R1					C1						C1	R1	C1	L1	R3	C1	
31	R2	R1	RR11	CR11	R1	RL11	C1	L1	L1	R1									HH11	L1	H1		C2	C2	
	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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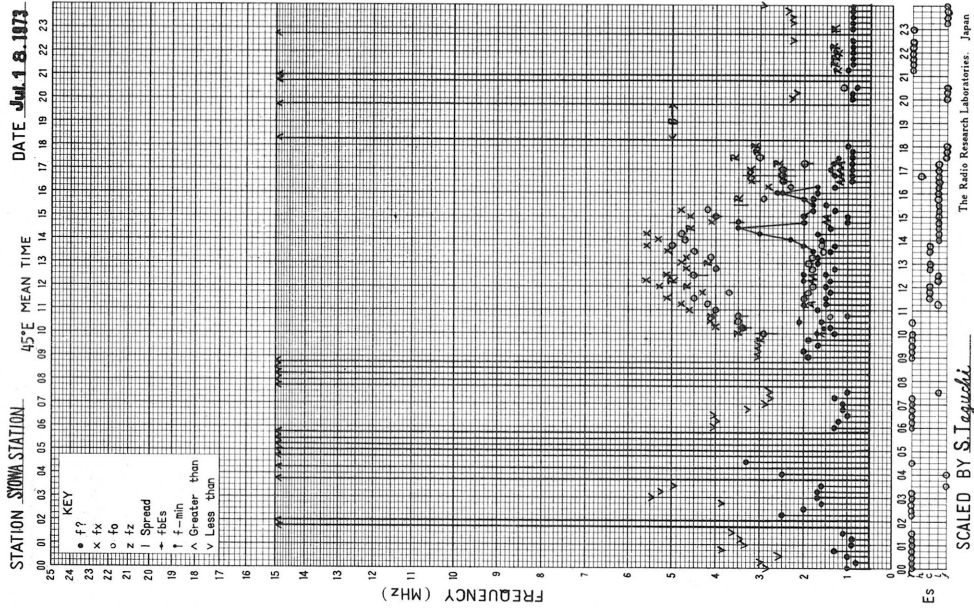
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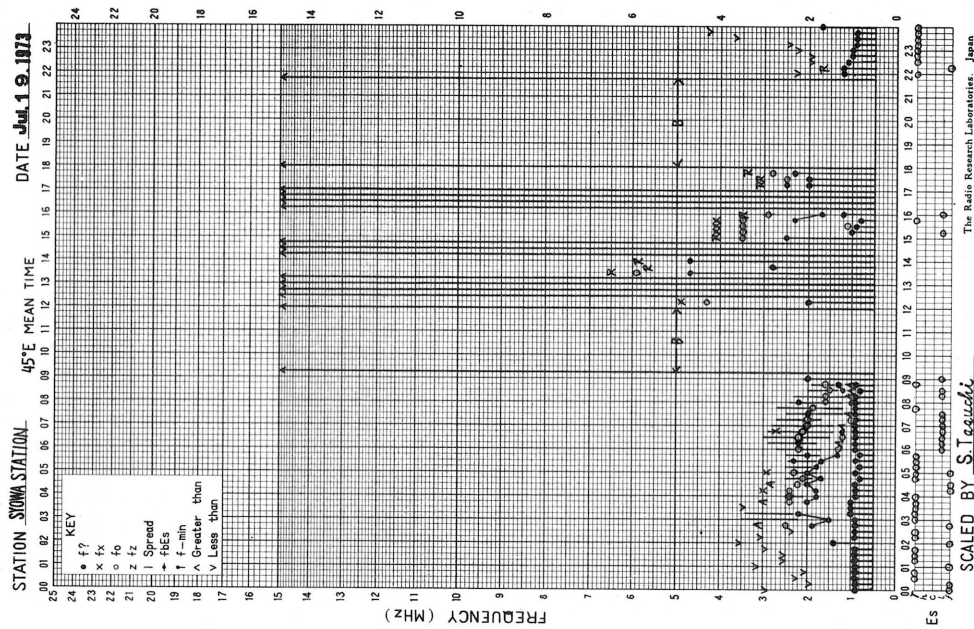
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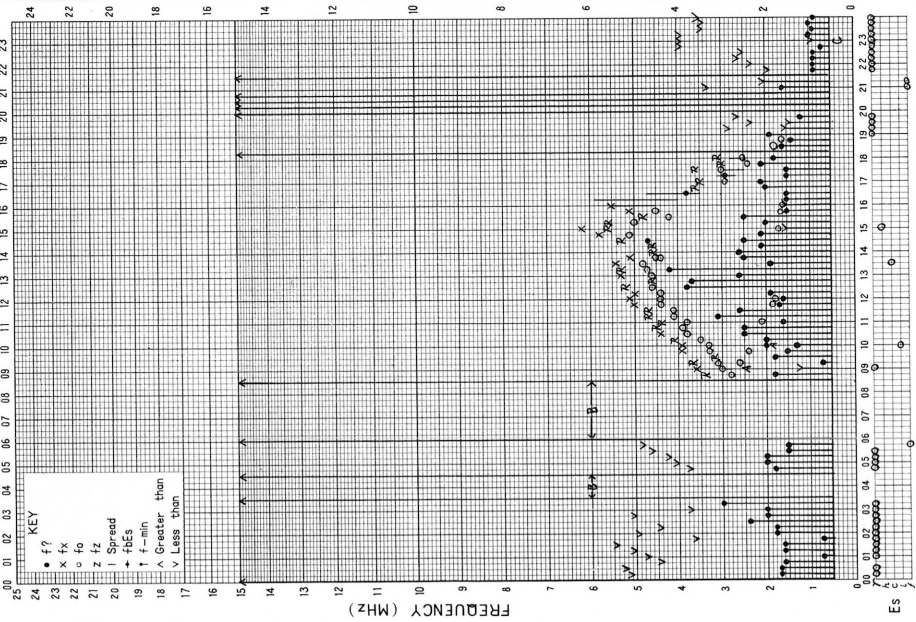
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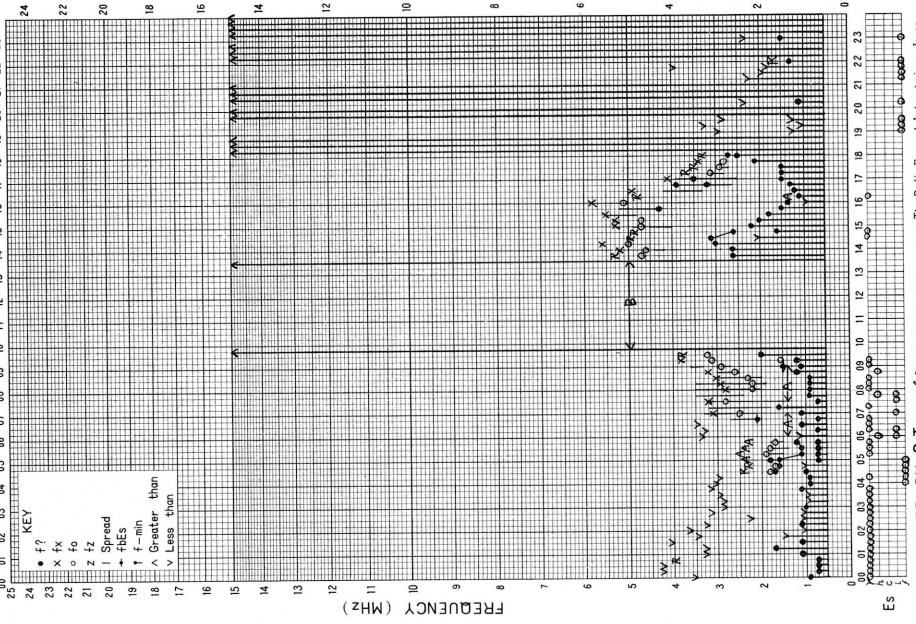
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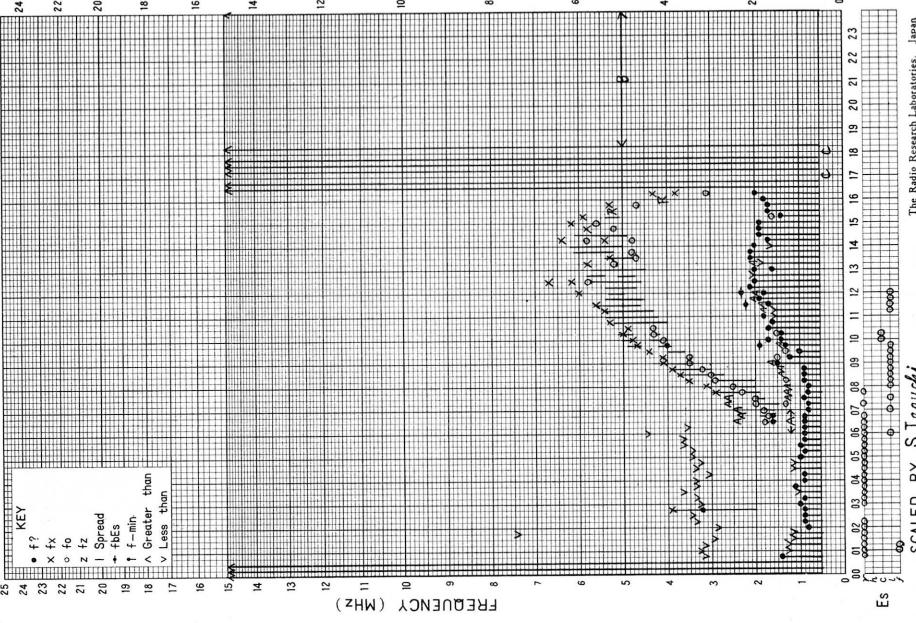
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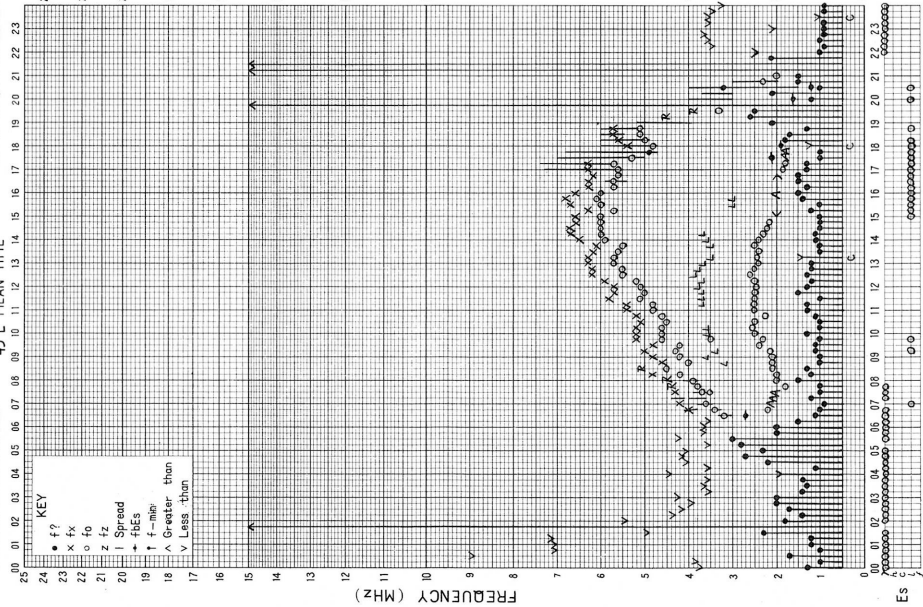
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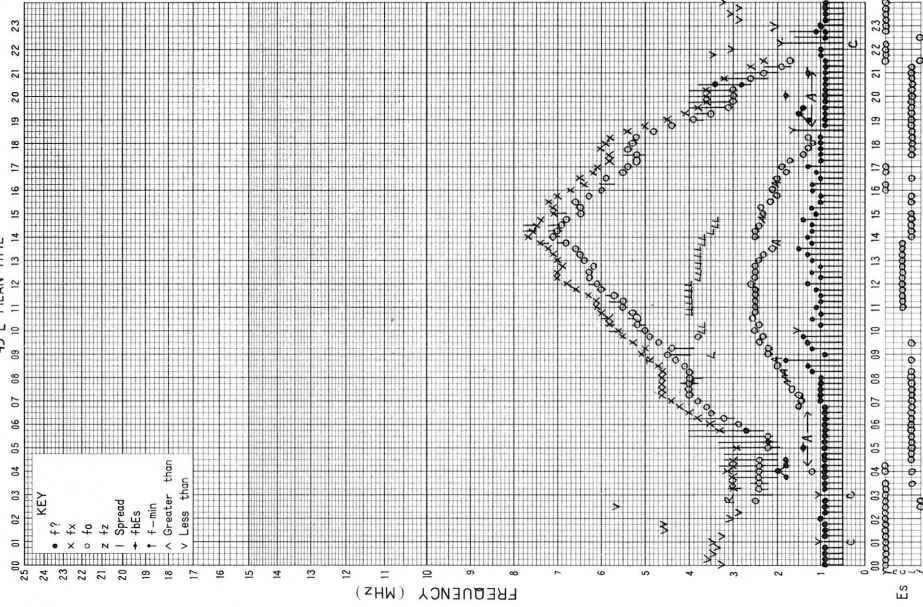
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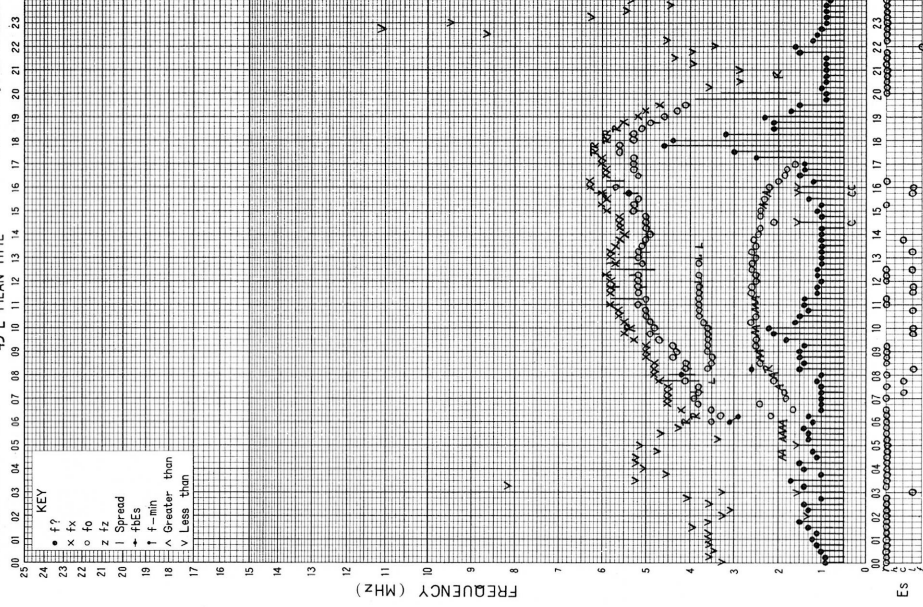
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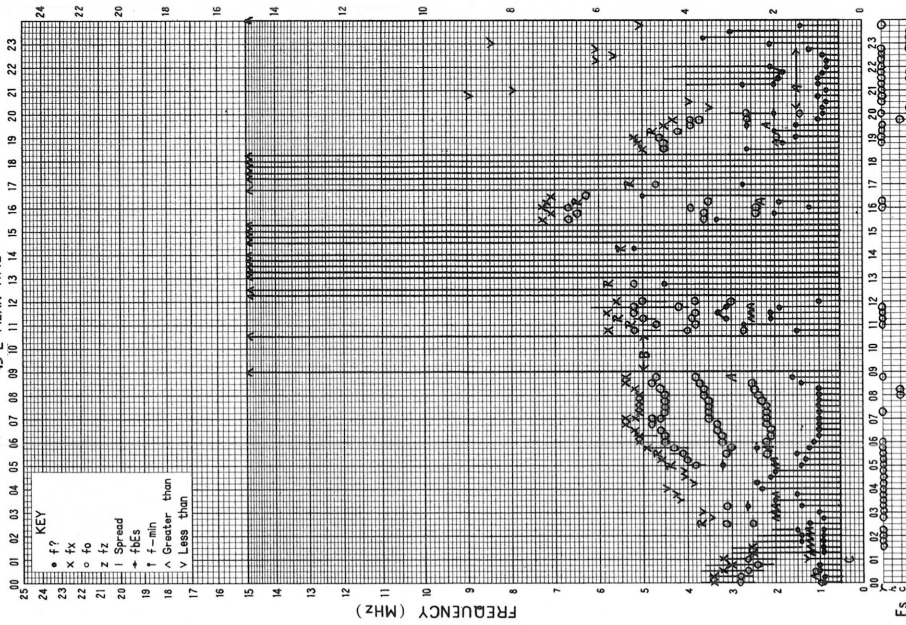
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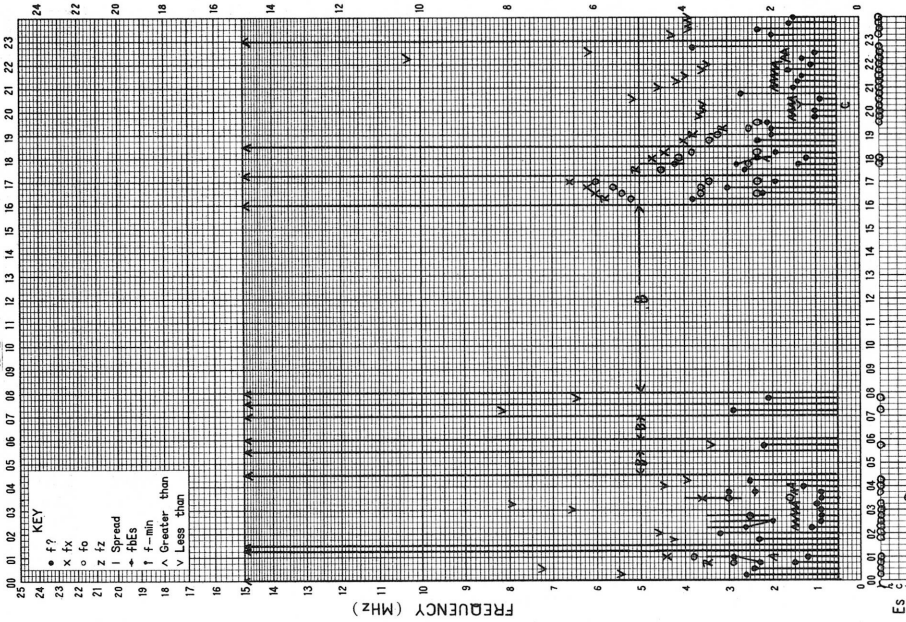


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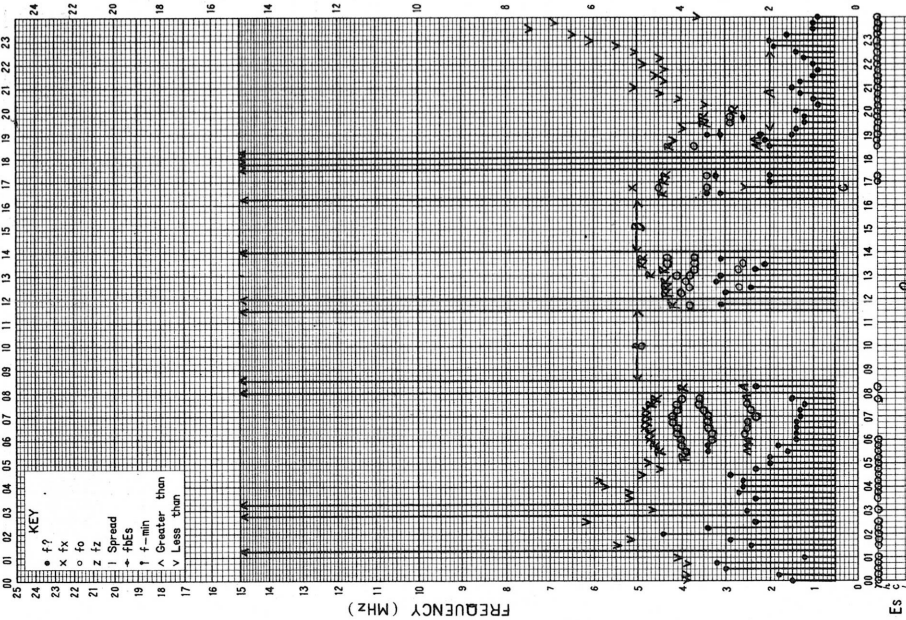


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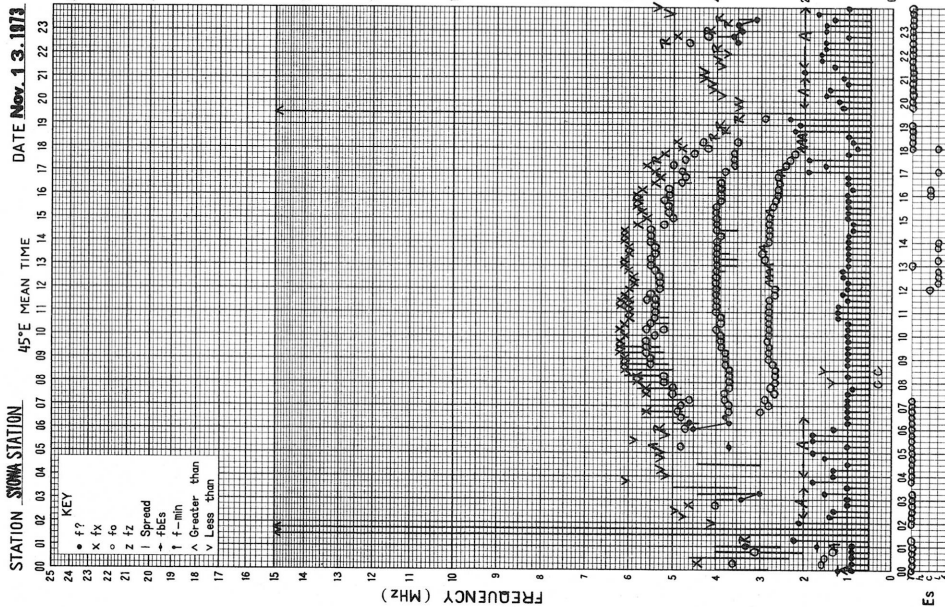
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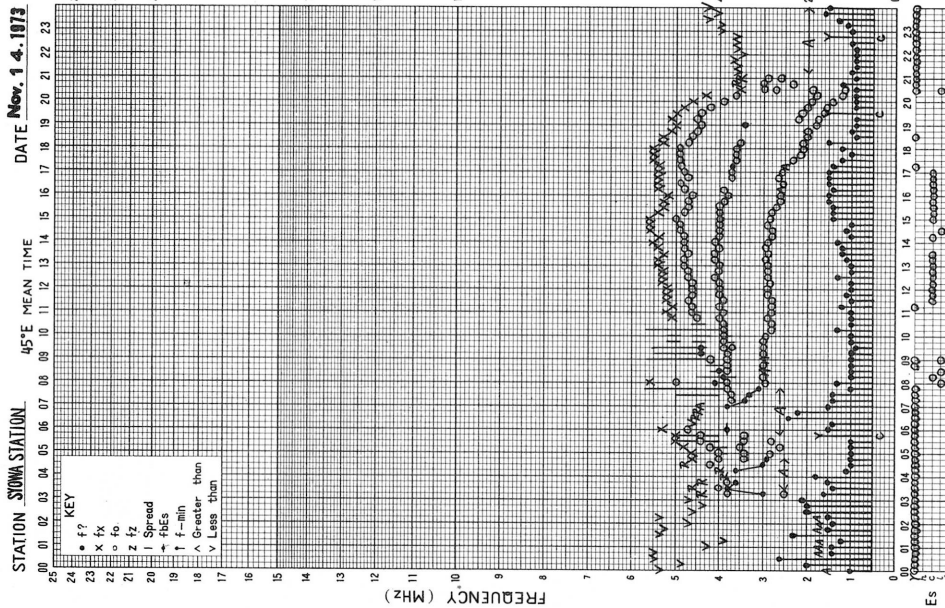
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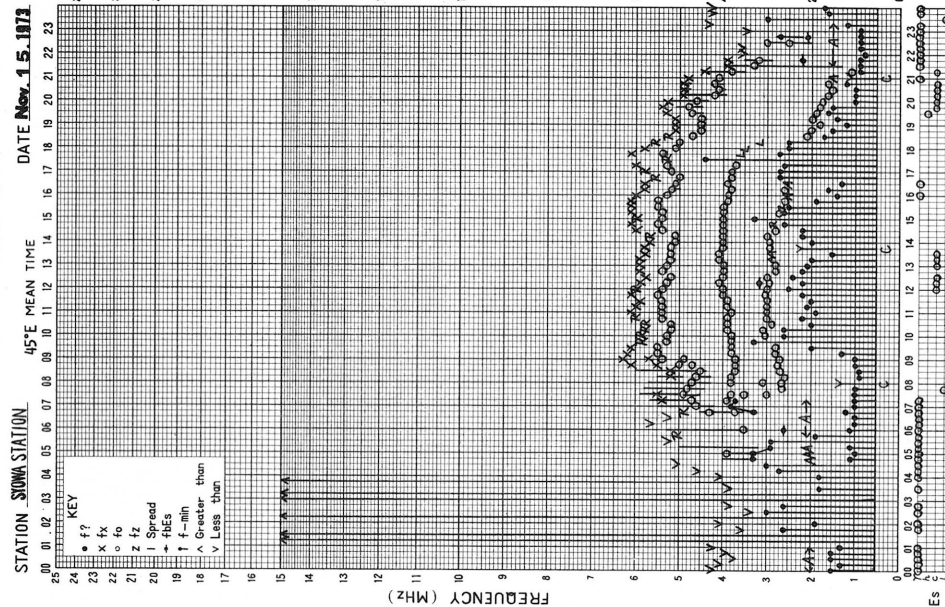
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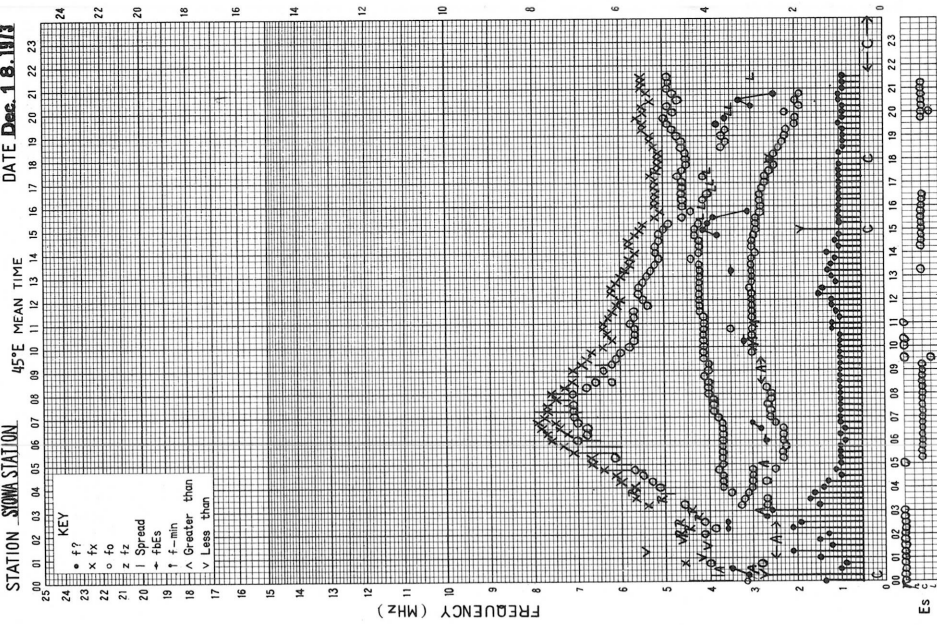
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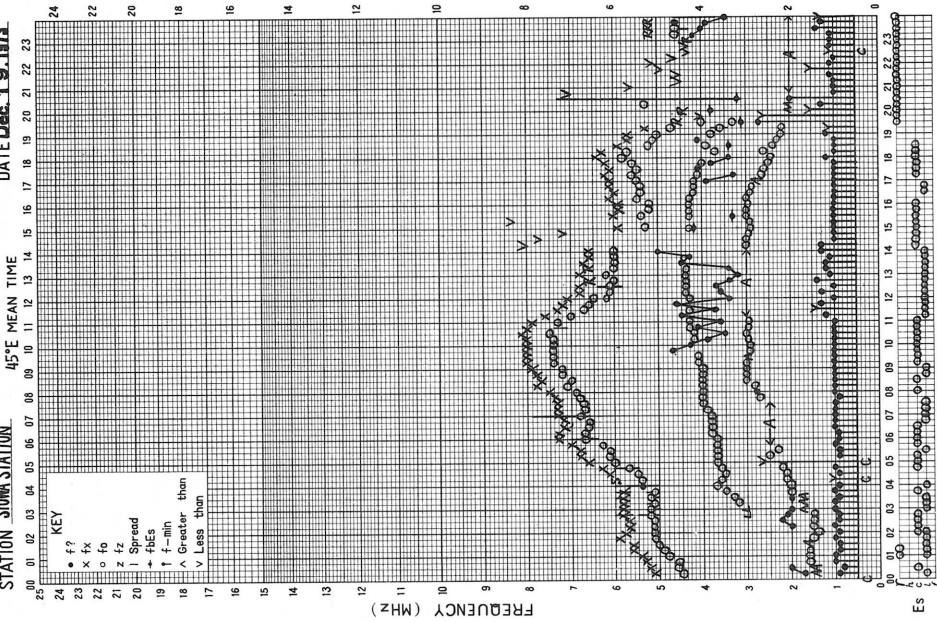
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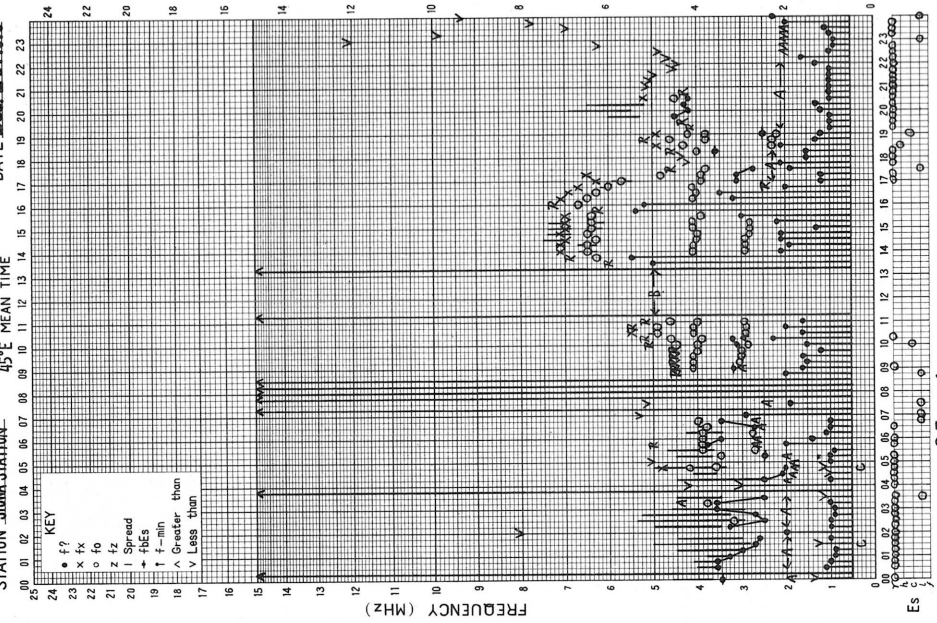
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