

July 1988 Data

Posted 1st Oct 88, 894, Rec'd 28/3/89 (slow surface mail)

In support of the Engineering Programs Branch Spectrum Management Sector, the Department of Communications operates three ionospheric stations for the purpose of making systematic soundings of the ionosphere and carrying out any special projects that are within the capabilities of the equipment.

Soundings are made using vertical incident ionosondes which produce graphs (ionograms), indicating relative layer height and penetrating frequency, recorded on 16 mm photographic film and 1/4 inch magnetic tape.

The film recorded ionograms measure 5.5 millimeters along the linear height co-ordinate and 7.5 millimeters along the frequency co-ordinate, progressing from left to right, in proportion to the logarithm of the frequency. The magnetic tape produces a video display and printed reproduction of the digitally recorded ionogram.

Ionograms are reduced to numerical values in compliance with rules prescribed by the International Scientific Radio Union (URSI). The scaled parameters are analyzed for numerical and graphical output and recorded on 1/4 inch magnetic tape and 5 1/2 inch floppy disk.

General distribution of data is in book form with limited availability of other recorded mediums to warranted organizations.

Queries and requests for unpublished data should be forwarded to:

COMMUNICATIONS CANADA  
Engineering Laboratory and Certification  
Vertical Incident Ionosphere Program  
1241 Clyde Avenue  
Ottawa, Ontario  
Canada  
K2C 1Y3

Telephone No.: (613) 990-4030  
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Facsimile No.: 613-952-1088

IONOSONDES IN USE  
SOUNDING SCHEDULE IN UNIVERSAL COORDINATED TIME (UTC)

STATION	IONOSONDE EQUIPMENT	FREQUENCY RANGE (MHz)	HEIGHT RANGE (KMS)	DURATION OF SWEEP (SEC)	PRF PRF	PULSE LENGTH (μSEC)	PEAK POWER (KW)
CHURCHILL	IPS-42	1-22.6	50-800	12	187.6	40	5
OTTAWA	IPS-42	1-22.6	50-800	12	187.6	40	5
RESOLUTE	IPS-42	1-22.6	50-800	12	187.6	40	5

STATION CO-ORDINATES

STATION	LATITUDE (°N)	LONGITUDE (°W)	GEOMAGNETIC* LATITUDE (°)	MAGNETIC # DIP (°)	STANDARD TIME EQUIVALENT
CHURCHILL	58.7	94.2	68.7	83.4	-6 HOURS
OTTAWA	45.1	76.15	56.8	75.9	-5 HOURS
RESOLUTE	74.7	94.9	83.0	89.3	-6 HOURS

\* Base on Magnetic pole location of 78.5 °N. 69.0°W.

# Corrected for change - June 1975.

## INTERPRETATION OF DATA

The first subheading (KEL 4801) appearing on each page of this report describes the type and serial number of the equipment used in value measurement and report generation. (KEL 48 is the equipment type /01 the manufacturers serial number).

Other headings described:

Characteristic represented and the decimal involved in the measured value.

Page number, month and year of the listed data.

Frequency (sweep) range of the ionosonde.

Station name, geographic coordinates and local time zone relative to Greenwich Mean Time.

Each page is divided into twenty-five vertical columns, the first column specifies the day of the month. The following twenty-four columns contain the hourly numerically measured value of the specified characteristic. The decimal notation of the values have been removed. The indicated hour represents Universal Coordinated Time (UTC).

The letters appearing above the numerical measured value are Qualifying and Descriptive Letter Symbols. These symbols are used along with, or in place of, the numerical value to indicate uncertainty in the measured value.

When the measured value does not require explanation the letters symbols are replaced with a (.).

When an accurate value cannot be measured the numerical value is replaced with a zero (0) with the appropriate descriptive letter above.

Where a value has not been determined the numerical value and letter symbols are replaced as described above.

The summaries appearing below the specified characteristic are calculated from the measured value. The abbreviations in the first column have the following meaning:

MED - Median Value  
NO - Median Count  
UQ - Upper Quartile  
LQ - Lower Quartile  
QR - Quartile Range

### CHARACTERISTICS SCALED

fmin	The lowest observed return echo appearing on the ionogram. The numerical value is tabulated from the ordinary mode trace unless otherwise described.
foE	The critical frequency of the ordinary E wave.
h'E	The minimum virtual height of the normal E layer.
Es	Periodically ionized layers in the E region. A maximum of two types are identified. When more than one type is present, the trace used in tabulations of foEs and h'Es is listed first. The second identified type is in descending order of multiple echoes appearing on the ionogram.  When particle E is present the trace is categorized as Es type R and takes precedence over all Es types present. The critical frequencies of Es and foE are scaled in accordance with conventions describing particle E.
foEs	The highest observed frequency of the ordinary Es trace.
fbEs	The blanketing frequency of an Es layer, i.e. the lowest ordinary wave frequency at which the Es layer becomes transparent.
h'Es	The minimum virtual height of the Es trace used to tabulate foEs.
foF1	The critical frequency of the ordinary F1 layer or in the absence of F2, the critical frequency of the F region.
h'F	Minimum virtual height of the ordinary wave F1 trace. Otherwise describes virtual height of F region as a whole (during periods of absence of tabulated foF1).
foF2	The critical (penetration) frequency of the ordinary F2 wave.
fxI	The highest frequency on which reflections of the F region are recorded, oblique incidence and ground back scatter are omitted.
h'F2	Minimum virtual height of the ordinary wave F2 trace. (Tabulated only during periods of ionized F2 layer.)
M(3000)F2	The maximum usable frequency factor for F2 region transmission over an oblique path of 3,000 km.
M(3000)F1	The maximum usable frequency factor for F1 region transmission over an oblique path of 3,000 km.

## QUALIFYING SYMBOLS

A letter appearing immediately following the numerical value shows that the ionogram cannot be read to the usual accuracy for the reasons indicated in the following table.

- A. Actual value smaller than numerical value. Use only with foEs.
- D. Actual value greater than numerical value.
- E. Actual value smaller than numerical value.
- I. Missing value has been replaced by an interpolated value.
- J. Ordinary component characteristic deduced from the extraordinary component.
- M. Used with descriptive letter which shows why components not distinguishable.
- O. Extraordinary-component characteristic deduced from the ordinary component.
- U. Uncertain or doubtful numerical value.
- Z. Measurement deduced from the third magneto-ionic component.

1. A letter following the numerical value but removed from the values by the qualifier (or a space) indicates:
  - a. The reason for the uncertainty indicated by the qualifying symbol.
  - b. When no qualifying symbol is present, the descriptive letter indicates that phenomenon appears on the ionogram that may, but need not, affect the accuracy of the measurement.
2. A letter replacing a numerical value indicates that a numerical value could not be obtained for one of the reasons indicated in the following table:
  - A. Numerical value doubtful or not determined due to Es layer blanketing.
  - B. Numerical value not determined due to non-deviated absorption.
  - C. Measurement influenced by, or impossible because of, any non-ionospheric reason.
  - D. Measurement influenced by, or impossible because of, the upper limit of the normal frequency range.
  - E. Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. This symbol is used in h' tabulations when the critical frequency is below the low frequency range of the equipment.
  - F. Measurement influenced by, or impossible because of, the presence of spread echoes.
  - G. Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately. (Applies when a normally higher penetrating frequency is near to or less than a lower penetrating frequency. In cases of height, where the ionization density of a lower layer conceals the virtual height of the higher less ionized layer.)
  - H. Measurement influenced by, or impossible because of, the presence of a stratification.
  - I. Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
  - K. particle E layer presence (formerly night E).
  - M. Measurement questionable because ordinary and extraordinary components are not distinguishable.

DESCRIPTIVE SYMBOLS (CONT'D)

- N. Conditions are such that the measurement cannot readily be interpreted, for example, in the presence of oblique echoes.
- Q. Range spread present.
- 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.
- T. The actual hourly value is inconsistent with the trend of the hour preceding and following.
- 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. Lacuna phenomena, severe layer tilt.
- Z. Third magneto-ionic component present.

Ottawa data too sparse to warrant analyzing.

KEL-4801 Monthly Report

fof2

in MHz\*0.1

Page 10

APR 1988

SWEEP 1.0 TO 22.6 MHz

STATION...OTTAWA, CANADA

G.M.T. + 0 hrs

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Day																									
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	83	89	85	91	90	85	85	83	92	
6	F	F	F	F		F			F	F															
7	57	31	0	28	37	29	30	37	30	29	30	37	46	42	0	0	0	0	0	0	0	0	0		
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	77	77	74	73	
10	71	67	57	53	53	45	45	40	36	31	30	44	56	63	69	70	73	73	78	73	72	73	76	72	
11	F	F	F		F	F	F	F	F	F	F				H										
12	71	0	56	55	0	0	47	38	36	28	29	49	60	66	69	71	77	82	83	83	80	80	81	79	
13	83	70	59	57	49	44	37	38	37	34	35	50	63	72	76	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63	64	66	71	0	71	72	77	83	
28	85	80	77	67	59	46	38	41	34	27	29	41	45	46	48	48	52	53	55	55	57	58	58	86	
29	72	73	58	46	41	40	31	26	0	0	28	37	39	43	42	50	54	56	58	60	62	63	63		
30	F	F	F	F	F	F	F		F	F				H	H										
	60	59	0	0	0	0	37	32	30	25	35	47	57	59	65	71	72	69	64	69	68	69	71	76	
	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
MED	71	69	58	54	49	44	37	38	35	29	30	44	56	59	65	70	72	69	73	73	72	73	75	75	
NO	7	6	5	6	5	5	7	7	6	6	7	7	7	7	7	7	7	7	8	7	8	8	8	8	
LQ	72	73	59	57	53	45	38	38	36	31	30	47	57	63	69	71	73	73	81	77	79	77	79	81	
LQ	60	59	56	46	37	29	31	32	30	27	29	37	45	43	48	50	54	56	61	60	65	66	67	69	
QR	12	14	3	11	16	16	7	6	6	4	1	10	12	20	21	21	19	17	20	17	14	11	12	12	



APR 1988

SWEEP 1.0 TO 22.6 MHz

STATION . OTTAWA, CANADA

G.M.T. + 0 hrs

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Day																									
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	215	200	190	193	200	212	221	234	256	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	234	0	0	0	0	0	0	0	0	0	0	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	196	203	212	221	231	243	
9	0	0	0	0	0	0	0	0	0	0	0	0	221	212	196	190	190	203	193	209	203	212	218	237	
10	0	0	0	0	0	0	0	0	0	0	0	237	221	209	181	203	187	193	196	209	209	218	215	250	
11	0	0	0	0	0	0	0	0	0	0	0	0	218	200	200	0	0	0	0	0	0	0	0	0	
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	H	C	C	C	0	0	0	0	0	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	209	212	203	206	0	218	225	215	240	
28	0	0	0	0	0	0	0	0	0	0	0	225	209	190	206	190	184	190	A	0	234	228	228	237	253
29	284	0	0	0	0	0	0	0	0	0	0	221	203	209	190	196	193	218	200	203	200	231	234	240	
30	0	0	0	0	0	0	0	0	0	0	0	0	209	200	196	H	178	162	171	215	203	193	212	228	234
MED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	U	U	U	U	U	U	U	U	U	
NO	1	0	0	0	0	0	0	0	0	0	0	3	6	7	7	7	7	7	7	7	7	8	8	8	
UQ	0	0	0	0	0	0	0	0	0	0	0	0	221	209	200	203	193	203	200	209	215	227	234	252	
LQ	0	0	0	0	0	0	0	0	0	0	0	0	209	200	190	190	184	190	193	203	202	215	217	239	
QR	0	0	0	0	0	0	0	0	0	0	0	0	12	9	10	13	9	13	7	6	13	12	17	13	

APR 1988

SWEEP 1.0 TO 22.6 MHz

STATION..CHURCHILL,CANADA

G.M.T. + 0 hrs

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Day	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	0	0	0	0	0	0	0	0	0	0	0	35	43	45	52	51	53	52	55	57	65	0	55	0	
2	H	F	.	F	.	.	F	B	B	A	F	B	B	B	A	A	B	F	.	.	F	F	F	F	
3	53	43	42	0	0	35	0	33	0	0	0	0	0	39	44	46	50	0	0	0	52	0	53	51	
4	F	.	F	A	A	A	B	A	B	A	B	B	R	B	B	B	B	B	B	B	B	B	G	F	
5	36	46	28	34	31	33	0	0	0	25	25	28	35	36	55	56	64	68	68	70	73	70	57	60	
6	0	35	0	0	0	44	0	0	26	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	0	0	0	34	35	0	0	0	0	28	0	0	0	0	42	51	51	54	59	58	64	66	65	65	
8	63	58	43	43	0	0	0	0	34	35	42	45	56	61	64	63	70	72	72	71	73	69	69	69	
9	71	58	0	0	0	0	0	0	0	0	0	0	35	45	52	58	58	62	61	63	64	63	64	64	
10	70	66	59	41	0	33	0	0	0	0	0	0	0	0	0	58	58	60	65	66	69	72	72	72	
11	71	51	43	0	0	35	0	42	36	0	34	35	42	52	51	51	60	0	0	0	69	71	71	71	
12	71	0	0	42	45	0	0	0	34	34	30	0	0	0	0	62	0	0	70	72	75	71	71	71	
13	71	58	34	0	0	0	0	0	0	0	36	36	0	52	52	57	60	63	63	63	66	70	71	71	
14	55	42	0	44	0	42	42	41	41	35	0	34	0	0	0	51	51	52	55	56	56	57	61	66	
15	69	59	58	45	0	0	34	0	0	35	0	0	41	52	55	0	66	70	74	74	70	71	71	77	
16	80	59	55	43	0	0	32	0	0	36	37	44	51	53	61	0	71	73	71	72	74	76	71	71	
17	71	70	71	58	0	43	35	34	0	0	32	42	56	62	71	75	80	80	86	86	88	87	85	84	
18	55	52	0	0	0	36	0	0	39	0	41	41	47	46	49	50	53	55	57	60	61	63	61	63	
19	63	63	63	55	0	0	0	0	31	0	0	0	41	45	52	54	57	59	59	60	60	62	65	71	
20	61	63	57	46	0	45	45	0	0	0	41	42	52	56	57	55	57	0	0	57	61	68	52	52	
21	0	44	44	43	37	0	0	0	27	33	37	41	45	0	47	0	50	52	52	53	53	54	55	55	
22	0	59	45	0	42	59	0	0	0	0	29	32	0	0	0	0	0	0	56	52	0	0	42	42	
23	0	0	0	0	0	0	0	0	0	0	0	36	42	52	58	64	62	66	68	71	74	74	76	76	
24	75	69	58	0	0	57	0	0	0	41	45	51	53	53	58	62	63	66	66	70	75	80	0	0	
25	0	59	59	0	0	0	51	0	0	0	0	0	0	52	54	62	56	57	57	59	58	60	65	66	
26	60	0	52	0	0	45	0	0	37	0	0	0	50	51	52	52	54	55	54	56	58	59	63	63	
27	67	67	0	0	45	0	43	44	41	0	41	0	44	53	52	52	0	0	57	0	0	0	0	0	
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	
29	51	48	40	35	0	36	34	44	28	0	35	33	36	41	44	48	49	53	53	53	53	52	53	52	
30	53	50	57	0	0	0	0	0	0	45	0	0	45	51	52	56	57	59	59	62	62	61	66	66	
MED	63	58	49	43	37	36	42	42	36	34	34	36	42	46	52	52	57	58	59	60	62	64	65	66	
NO	22	22	20	14	7	11	11	6	7	7	15	14	17	20	20	22	20	23	22	22	25	24	26	26	
UQ	71	63	58	45	42	43	44	44	39	35	36	41	44	52	55	58	63	62	66	68	70	71	71	71	
LQ	55	48	41	35	33	35	34	34	31	26	30	34	36	44	51	51	53	54	55	56	56	59	57	52	
QR	16	15	17	10	9	8	10	10	8	9	6	7	8	8	4	7	10	8	11	12	14	12	14	19	

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Day	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	278	0	0	215	253	0	0	0	231		
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	228	234	225	0	0	325		
3	271	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	196	0	0	0	0	0	215	240		
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	0	0	0	0	203	296	0		
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	221	209	212	184	196	190	0	0	0		
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212	0	221	218	0	0	0	0		
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	228	215	0	0	0	0	243	228		
8	256	278	0	0	0	0	0	0	0	0	0	0	0	206	221	206	196	190	0	0	237	215	231	221		
9	253	0	0	0	0	0	0	0	0	0	0	0	0	0	234	0	218	231	221	212	221	225	231	225		
10	262	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212	237	218	215	215	275		
11	0	0	0	0	0	0	0	0	0	0	0	0	0	246	234	0	206	0	0	0	0	0	243	237		
12	265	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	218	212	218	225		
13	253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	237	215	218	187	193	225	212	0	271		
14	231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	215	209	187	193	206	228	221	225	256		
15	0	0	0	0	0	0	0	0	0	0	0	0	256	231	215	0	0	193	181	184	228	231	215	265		
16	271	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231	212	212	0	243	0	218	237	225	218	231
17	268	0	0	0	0	0	0	0	0	0	0	0	240	215	228	209	196	209	193	196	193	196	215	234		
18	0	0	0	0	0	0	0	0	0	0	0	0	0	290	246	234	225	215	200	218	203	228	218	218	212	
19	231	0	0	0	0	0	0	0	0	0	0	0	0	228	203	206	218	200	218	0	212	209	225	234		
20	268	0	0	0	0	0	0	0	0	0	0	0	0	237	228	228	209	200	0	0	193	212	0	0		
21	0	0	0	0	0	0	0	0	0	0	0	0	0	262	234	200	212	212	196	181	206	218	212	246		
22	234	281	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	237	215	0	0	0		
23	0	0	0	0	0	0	0	0	0	0	0	0	0	228	206	212	203	200	187	221	206	221	221			
24	231	0	0	0	0	0	0	0	0	0	0	0	0	256	215	212	193	190	193	190	193	206	212	243	290	
25	268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234	193	212	209	206	218	215	218	237		
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	209	196	200	187	187	184	221	206	212	225	
27	240	246	0	246	0	0	0	0	0	0	0	0	0	0	218	212	0	0	215	0	0	0	0	0		
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
29	228	262	0	0	0	0	0	0	0	0	0	196	0	284	225	215	193	203	193	193	228	231	200	206		
30	253	259	0	0	0	0	0	0	0	0	0	0	0	0	0	234	196	196	184	203	209	212	203	253		
MED	253	262	0	0	0	0	0	0	0	0	0	0	0	256	231	225	215	209	203	200	203	220	214	218	234	
NO	17	5	1	1	0	0	0	0	0	0	0	1	4	11	15	19	21	19	21	20	22	20	21	23		
LQ	268	278	0	0	0	0	0	0	0	0	0	0	273	246	228	228	215	212	218	218	228	220	231	253		
LQ	231	246	0	0	0	0	0	0	0	0	0	0	248	215	212	206	196	193	187	193	209	211	215	225		
QR	37	32	0	0	0	0	0	0	0	0	0	0	25	31	16	22	19	19	31	25	19	9	16	28		

APR 1988

SWEEP 1.0 TO 22.6 MHz

STATION...RESOLUTE,CANADA

G.M.T. + 0 hrs

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Day	F	H	.	.	F	F	F	F	F	F	F	F	V	H	F	J	F	V	.	V	.	F	F	F
1	59	58	0	50	0	0	0	0	0	64	0	0	46	43	0	69	48	44	49	44	56	56	0	34
2	32	27	44	0	0	46	0	42	51	59	38	0	55	0	40	0	0	0	40	0	0	43	0	0
3	34	35	46	0	0	32	0	0	26	0	0	0	0	0	0	44	42	40	0	49	0	0	0	0
4	0	0	0	0	0	34	0	0	0	0	0	0	46	0	0	0	0	0	46	0	0	51	0	0
5	31	36	38	0	32	0	0	0	36	36	0	32	35	0	43	43	0	0	0	52	70	64	85	0
6	86	0	0	0	0	52	0	0	0	0	0	0	37	41	0	0	41	42	0	0	43	0	40	
7	0	0	0	28	0	0	0	0	0	0	31	0	0	49	0	0	0	74	53	0	54	0	59	
8	0	0	57	54	47	0	0	0	32	0	0	0	0	0	63	0	54	60	0	48	0	51	54	
9	51	65	0	0	0	0	0	0	50	0	50	0	0	0	0	0	46	0	0	0	51	53	49	
10	57	0	51	42	0	0	0	0	31	0	0	0	0	44	50	47	52	57	0	0	52	47	45	
11	0	47	0	0	0	0	0	0	0	0	0	0	0	0	0	54	0	46	62	0	52	48	47	
12	54	53	59	59	55	58	0	48	0	59	54	45	0	46	0	0	0	51	0	0	55	0	59	
13	62	59	59	0	46	48	47	0	47	54	46	0	52	43	55	0	0	0	0	61	58	55	60	70
14	71	54	70	59	0	56	55	54	52	50	46	53	51	47	55	54	0	55	54	55	51	59	57	54
15	55	0	51	0	46	0	0	48	0	0	0	0	58	49	0	0	0	52	0	51	55	56	65	67
16	59	55	56	0	0	52	0	0	0	54	0	55	52	0	44	42	0	53	0	0	54	50	45	
17	47	48	50	51	58	48	0	0	48	49	0	0	53	0	52	0	0	0	0	57	56	59	71	
18	0	58	59	59	59	0	54	0	0	0	0	0	0	0	47	0	0	54	0	54	54	55	52	
19	54	55	51	48	52	58	0	0	0	0	0	47	0	53	59	52	54	64	64	56	69	63	0	
20	0	56	0	52	59	0	0	58	59	57	59	61	54	59	56	55	52	49	49	0	0	54	44	
21	54	59	51	0	0	53	51	0	40	0	46	45	50	50	50	54	51	48	52	0	0	49	50	
22	50	53	52	0	70	76	0	0	0	32	46	47	0	0	0	0	0	0	0	0	0	0	0	
23	0	30	36	28	28	0	0	35	0	38	40	47	0	42	46	0	51	54	55	56	57	55	59	
24	64	56	59	63	55	55	53	50	55	52	50	46	48	54	58	56	50	49	0	55	0	59	58	
25	70	58	58	0	58	60	57	65	54	53	50	47	50	48	45	47	48	54	47	46	0	54	53	54
26	59	55	55	50	51	50	50	47	44	51	50	49	0	49	0	48	54	0	53	51	53	52	0	
27	0	49	60	55	52	56	0	48	61	0	50	47	50	51	48	50	53	0	44	0	49	47	0	
28	43	52	52	50	44	41	50	47	0	46	42	0	0	42	41	0	44	44	49	0	55	46	48	53
29	51	51	47	40	0	0	44	0	46	46	37	0	0	46	48	49	50	51	54	54	51	52	48	
30	54	51	0	51	50	48	46	44	53	0	55	0	0	54	48	52	55	53	64	0	55	55	55	57
MED	54	54	52	51	52	53	51	48	48	50	48	47	50	49	48	50	49	51	51	53	55	54	54	54
NO	22	24	22	17	18	15	12	11	15	15	16	14	19	13	20	18	15	18	22	15	15	24	22	22
UQ	59	57	59	55	58	56	54	50	53	53	53	50	52	52	53	55	52	54	54	55	56	56	59	59
LQ	50	49	50	42	46	48	47	44	40	44	44	40	47	43	44	46	47	46	46	49	54	51	50	47
QR	9	8	9	13	12	8	7	6	13	9	9	10	5	9	9	9	5	8	8	6	2	5	9	12

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Day		H												H											
1	240	250	0	0	0	0	0	0	0	234	234	218	234	240	231	228	218	206	240	240	225	228	228	0	
2	0	0	0	0	0	0	0	0	0	0	0	300	271	253	253	253	231	H	A	0	234	250	240	237	228
3	0	0	0	0	0	0	0	0	0	0	0	0	265	225	0	225	225	231	0	0	0	0	0	0	0
4	240	0	0	0	0	0	0	0	0	0	328	318	262	278	265	0	0	0	0	228	228	0	253	0	0
5	0	300	300	0	0	0	0	0	0	0	0	275	262	256	265	256	209	H	A	0	231	234	234	231	237
6	231	237	0	0	0	0	0	0	0	0	0	268	0	253	268	253	221	228	240	215	0	218	215	203	0
7	250	0	0	0	0	0	0	0	0	0	0	0	0	243	253	234	212	0	231	221	212	234	203	228	0
8	240	0	0	0	0	0	0	0	0	0	0	246	225	237	234	0	0	225	250	221	206	225	231	228	0
9	240	250	0	0	0	0	0	0	0	0	0	265	253	243	246	234	250	190	0	209	0	212	231	234	0
10	246	253	0	0	0	0	0	0	0	0	0	0	250	256	265	237	231	237	0	0	0	215	0	231	0
11	240	0	0	0	0	0	0	0	0	0	0	262	256	246	250	0	0	234	0	0	0	234	215	234	0
12	250	0	0	0	0	0	0	0	0	0	0	259	243	237	215	234	218	243	0	221	225	221	225	237	0
13	221	253	0	0	0	0	0	0	0	0	0	265	246	234	218	225	218	231	228	228	215	221	221	237	0
14	228	246	0	0	0	0	0	0	0	0	0	256	246	228	231	237	221	234	215	193	0	234	187	228	0
15	225	246	0	0	0	0	0	0	0	0	0	240	234	240	237	237	218	178	200	0	0	234	231	0	0
16	0	225	0	0	0	0	0	0	0	0	0	246	240	246	237	0	0	0	0	0	0	234	0	0	0
17	250	187	0	0	0	0	0	0	0	0	0	0	228	287	231	221	228	203	0	206	193	203	221	225	0
18	234	218	0	0	0	0	0	0	0	0	278	246	237	225	225	221	215	0	0	0	0	218	212	221	0
19	240	215	0	0	0	0	0	0	0	0	0	237	240	0	0	203	225	228	218	203	212	221	246	215	0
20	225	240	243	259	0	0	0	237	240	240	0	0	237	225	234	228	221	206	215	200	206	218	225	237	0
21	237	253	246	0	0	0	0	0	0	0	0	250	253	237	225	225	218	212	0	209	0	212	221	225	0
22	228	250	256	0	0	0	0	0	0	0	0	250	228	240	0	0	0	0	209	0	0	0	0	0	0
23	0	290	284	0	0	0	0	0	0	0	0	240	0	225	246	215	221	278	215	215	228	218	225	218	0
24	231	0	234	0	0	0	0	0	0	0	0	243	209	221	221	212	193	0	0	0	221	218	209	209	0
25	212	212	240	0	0	0	0	0	0	228	234	225	212	203	200	209	218	228	212	196	203	190	196	0	0
26	225	0	0	0	0	0	0	0	0	237	234	225	221	209	0	212	196	203	212	203	218	200	206	0	0
27	215	215	231	0	0	0	0	0	0	0	0	228	225	203	206	190	212	206	0	0	221	231	215	206	0
28	209	234	237	0	0	0	0	0	0	256	0	209	237	196	231	209	215	215	215	215	221	234	218	221	0
29	209	206	215	259	278	0	0	0	0	0	250	221	209	218	225	215	225	206	0	0	196	221	215	212	0
30	231	218	0	246	0	0	0	0	0	0	253	221	218	215	212	209	206	0	0	0	203	175	228	196	0
MED	231	240	242	0	0	0	0	0	0	0	250	246	237	237	231	225	218	220	223	215	214	221	221	225	0
NO	25	21	10	3	1	0	0	1	1	3	7	25	27	29	27	24	25	22	16	19	18	28	25	24	0
LQ	240	250	256	0	0	0	0	0	0	0	253	262	250	246	246	236	225	231	233	221	225	234	228	233	0
LQ	225	215	234	0	0	0	0	0	0	0	234	234	225	221	221	214	212	206	215	209	203	218	212	211	0
QR	15	35	22	0	0	0	0	0	0	0	19	28	25	25	25	22	13	25	18	12	22	16	16	22	0