INTMINS - August/95 Schedule

Pass	ISTOCHNIK Start Time (hh:mm:ss UTC)	Mode	ARIEL Start Time (hh:mm:ss UTC)	Mode
1.1	06:14:50	A	06:14:55	C
1.6	14.15.50	A	14:15:55	C
2.2	08:28:50	A1	08:28:55	C
3.7	15:40:50	A	15:35:55	D1
4.1	05:05:50	A	05:09:45	E
4.2	06:43:50	A	06:38:55	D1
4.3	14:44:30	A	06:38:55	E
5.1	05:49:40	A2	05:44:55	D
5.2	07:18:40	A1	07:21:45	D
5.5	12:17:50	B	12:12:35	E
5.6	13:52:40	B1	13:47:35	D2
6.1	04:55:40	B	04:50:35	D
6.2	06:29:40	B	06:24:35	D
6.3	08:00:40	B	08:35:35	E
6.5	11:23:00	B	11:17:35	D3
6.6	12:51:30	B	12:54:35	C
6.7	14:29:50	B	14:32:55	C
7.1	03:59:00	B2	04:01:45	C
7.3	07:05:00	B3	07:07:45	C
8.5	09:34:00	B4	09:27:45	D
9.7	13:20:50	B	13:23:45	C
10.1	02:52:30	B5	05:47:25	C1

Table 1. INTMINS scheduled operations for August 1995

2. INTMINS Observers

the first series of INTMINS operations was planned for the summer of 1995 even though that is not seen as a convenient time for teachers and students. The rationale was to go through the planning and execution of a plan as sson as possible so that evaluations could be done and adjustments made for later series of operations. Data was received from a total of seven observers, all of whom are veteran INSPIRE observers. Bill Taylor, in Washington DC, analyzed his own data and reports on his results elsewhere in this edition of The INSPIRE Journal. The remaining six submissions are described here.

In the approximate order of receipt of data, the INTMINS observers are described in the following format:

X. (team number) Name of observer State or Province
Team Name
Longitude: of observation site
Latitude: of observation site
Description of observation site
Receiver: description of receiver used
Recorder: description of recorder used
Antenna: antenna type and description
WWV: WWV radio used (if any)
File code: used for naming data files for storage
INTMINS Passes: passes observed are listed

1. John Lamb, Jr. Texas
East Texas State University
Longitude: 95° 53′ 59″ W
Latitude: 33° 14′ 49″ N
Farmland north of Commerce, TX; away from hum
Receiver: INSPIRE RS4
Recorder: Realistic CTR 70
Antenna: 2 m telescoping whip
WWV: Tandy Radio Shack (modified)
File Code: Lamb TX
INTMINS Passes: 9.7 10.1

2. Stephen G. Davis New York
Longitude: 73° 29′ 30″ W
Latitude: 43° 18′ 00″ N
open field; 0.3 mi. from 7600 V power line; in town of Argyle, NY
Receiver: INSPIRE RS4
Recorder: Realistic CTR-68
Antenna: 6′ telescoping whip
WWV: Realistic Model 12-148 Weather Radio
File Code: Davis NY
INTMINS Passes: 5.5 10.1

3. Don Shockey — Oklahoma

Longitude: 97^{o} 40′ 5″ W

Latitude: 35^{o} 43′ 30″ N

Wolf Creek, Oklahoma City, OK; power line 2 km away

Receiver: WR3

Recorder: RS WTG 64

Antenna: 1 meter whip

File Code: Shockey OK

INTMINS Passes: 4.2 5.1 6.1 6.2

4. Mike Aiello — New York

Longitude: 73^{o} 46′ 45″ W

Latitude: 40^{o} 18′ N

Scenic overlook by the Hudson River, on Rt 6 West just outside Peekskill, NY; acroos from Constitution Island

Receiver: INSPIRE RS4

Recorder: Marantz PMD 340 Stereo Cassette

Antenna: 6′ whip, counterpoise ground

File Code: Aiello NY

INTMINS Passes: 4.1 6.1 8.5 10.1

5. Jean-Claude Toouzin — Quebec

Longitude: 79^{o} 10′ W

Latitude: 48^{o} 55′ N

wooded area

Receiver: BB-2 "homemade"

Recorder: MTC MCR-2

Antenna: square loop 8.5′ sides, 10 turns, 340 feet total

File Code: Touzin QC

INTMINS Passes: 6.1 6.2 6.3 6.5

6. Bill Pine — California

Chaffey High School

Longitude: 117^{o} 41′ W

Latitude: 34^{o} 14′ N

open ridge top; nearst power lines about 5 km south, obscured by south rim of the ridge

	Station A	Station B
Receiver:	INSPIRE RS4	ACTIVE B-field receiver
Recorder:	Toshiba KT-4058	Realistic CTR-69
Antenna:	6′ whip	1 m square loop; 90 turns

WWV: Radio Shack Weather Radio

File Code: Chaffey CA

INTMINS Passes: 3.7 4.7 5.2 6.7 7.3 9.7

Summary of passes covered

Pass	Team:1	2	3	4	5	6
3.7						x
4.1				x		
4.2			x			
4.7						x
5.1			x			
5.2						x
5.5		x				
6.1			x	x	x	
6.2			x		x	
6.3					x	
6.5					x	
6.7						x
7.3						x
8.5				x		
9.7	x					x
10.1	x	x				
Team	1	2	3	4	5	6

3. INTMINS Data

The method used by the author to analyze the data evolved during the analysis process. The final version of the procedure consisted of the following steps:

1. Make a sound data file of the period during which ISTOCHNIK was operating.

2. Make a spectrograph of the file using a frequency range of 0-15 kHz. This view included OMEGA signal (between 10 and 14 kHz) and gives a general view of natural VLF activity.

3. Make a spectrograph of the file using a frequency range of 0 - 1200 Hz. The ISTOCHNIK signal should appear near 1000 Hz. If a signal appears to be present, adjacent portions of the data tape should be checked to see if the signal also appears when ISTOCHNIK is not operating. If the signal appears at other times, then its origin is not ISTOCHNIK.

4. Examine the data file in 30 second increments to see if there is a visible pattern of the 3 second 1000/10 Hz sequence present. Again, compare this with adjacent portions of the data tape from before and after the operation time.

Although further examination of the data is now under way, the ISTOCHNIK signal has not been detected yet. Closer investigation of the spectrographs and numerical analysis of the digital files may reveal the presence of the signal.

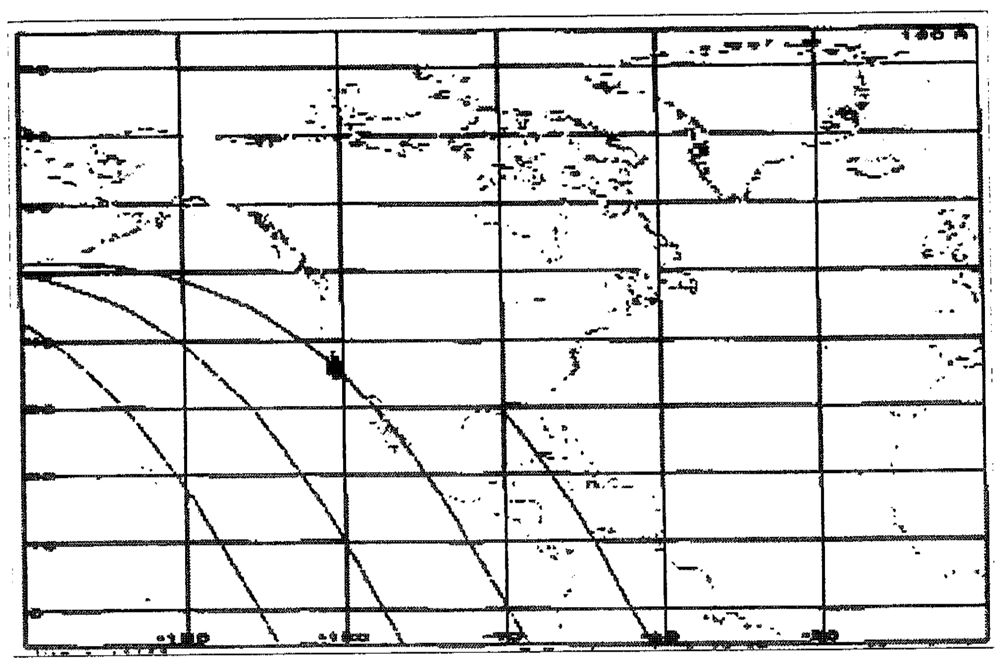
As an informal step in the analysis process, I made further spectrographs of natural radio items of interest that were included in the data file. The observers will then be able to listen to their data tapes and look at spectrographs of the signals. This turned into an exercise in whistler-hunting, tweek-hunting and investigation of the signals of passing cars and bugs hitting antennas. There were many examples of the now familiar phenomenon of natural radio research:

> You may not hear what you want, or what you expect,
> but you will almost always hear something interesting.

What follows is a presentation of the data analysis and the items of interest found on representative samples of the data submitted. Only the passes for which data was submitted are discussed; 16 of the 22 passes were observed by at least one team.

3.7

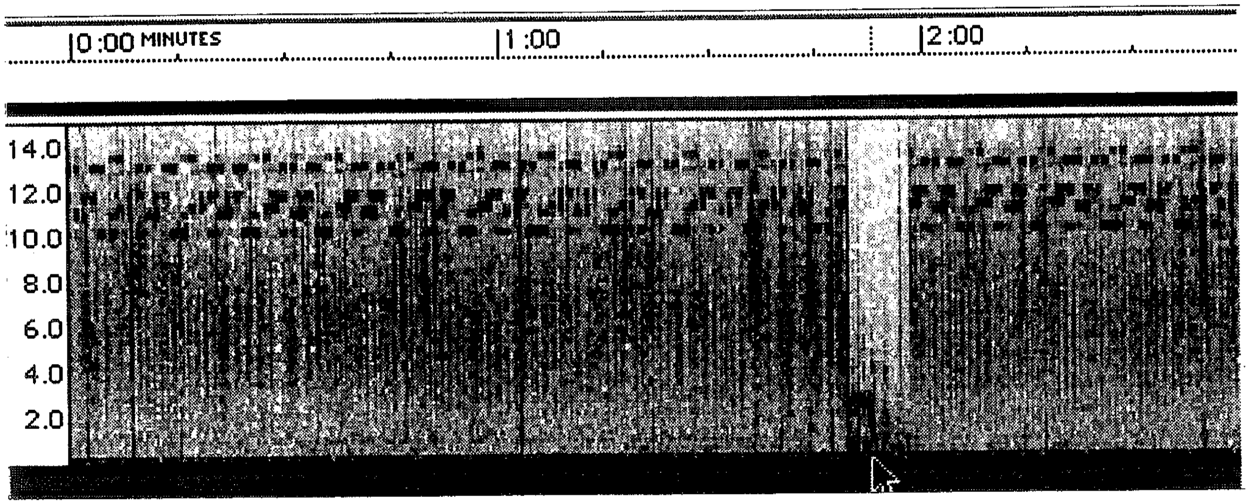
The maps for this article were generated by STSORBIT PLUS by David Ransom. Hard copy was created by doing a screen grab from the PC and then scanning the image into the Mac. The view selected is called "QUAD" view which shows the western hemisphere from the equator to a latitude of 80°. Some of the higher latitudes were trimmed off to reduce the size of the figure. In each figure, an icon reoresents MIR and the track is shown for the preceding orbit and the next two orbits. In all cases, MIR travels from left to right across the map.



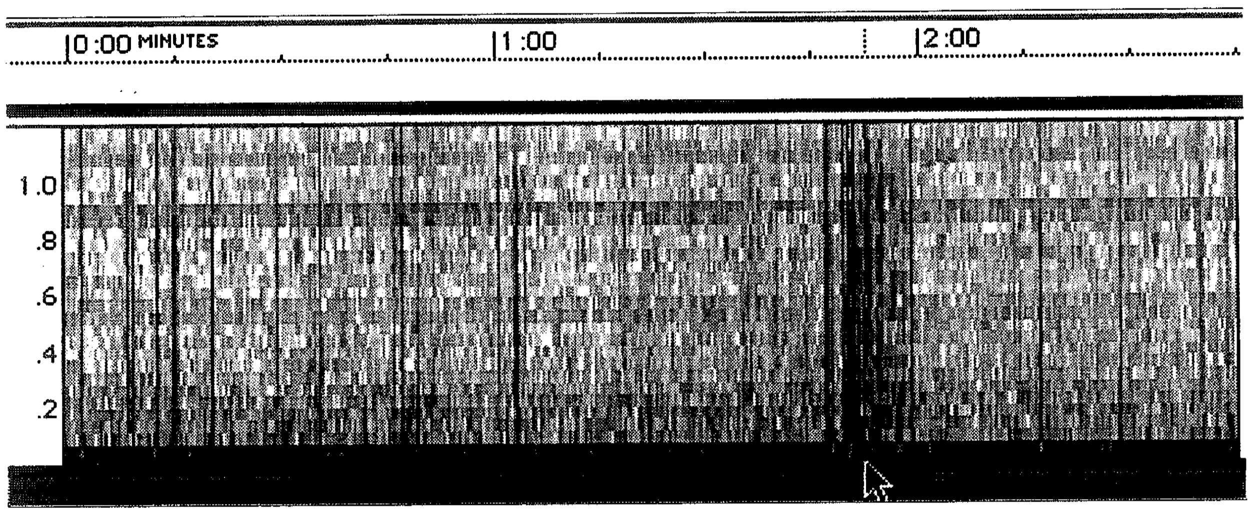
In all spectrographs in this article, the naming convention is: hh:mm:ss (M:SS)

hh:mm:ss	start time of ISTOCHNIK and spectrograph
(M:SS)	duration of ISTOCHNIK operation and spectrograph
➡	describes what the arrow is pointing to (if indicated)

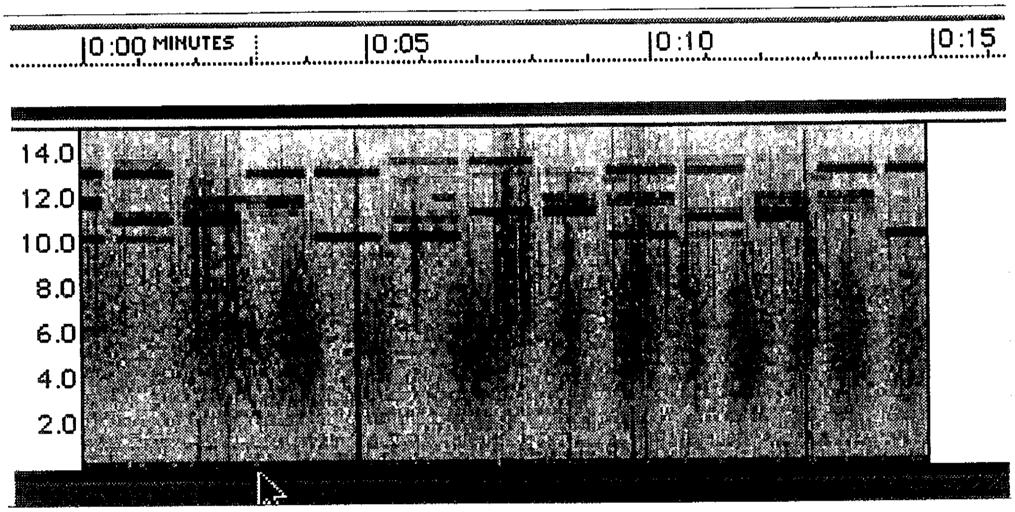
Spectrographs from Pine CA (ACTIVE B-field receiver).



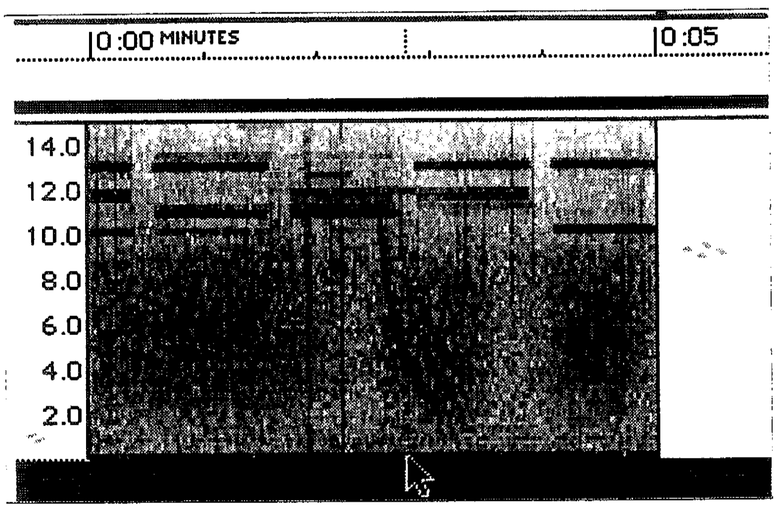
3.7A 15:40:50 (2:43) 0-15 kHz → 15:42:30 Mark
Note the strong OMEGA between 10 and 14 kHz.



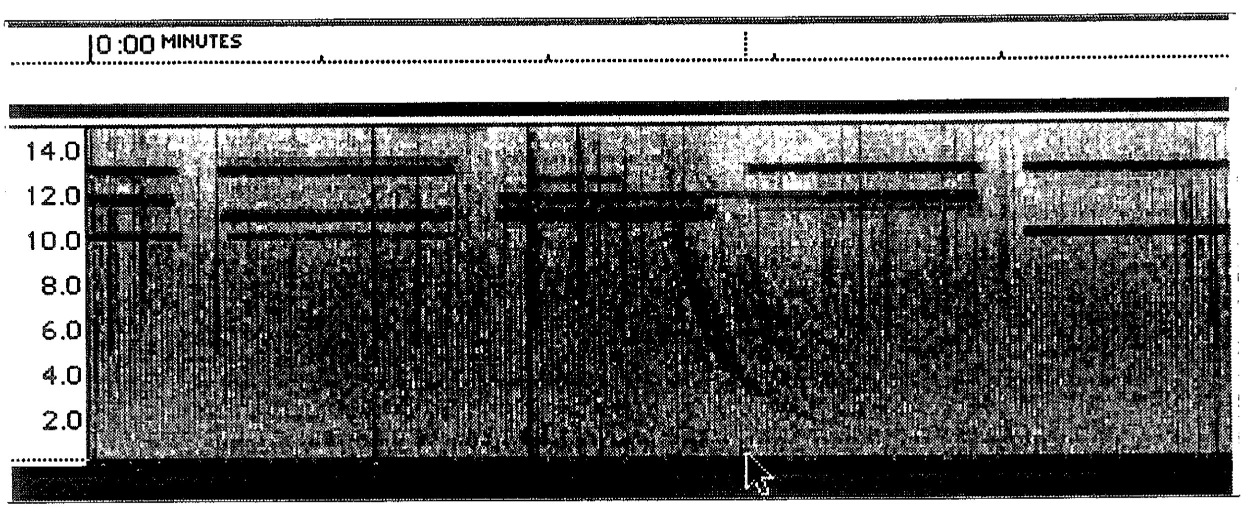
3.7B 15:40:50 (2:43) 0-1.2 kHz → 15:42:30 Mark
The band at about 900 Hz also appears at times before and after the operation. No 1 kHz signal is observed.



3.7C 15:40:50 (:15) 0-15 kHz ➜ Whistler at 15:40:52



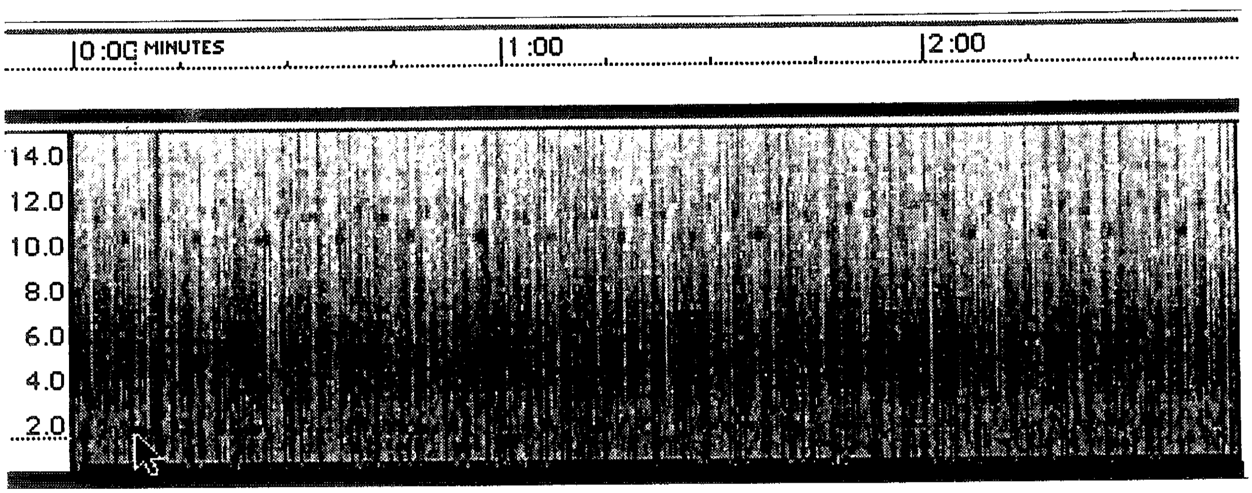
3.7D 15:40:50 (:05) 0-15kHz ➜ whistler



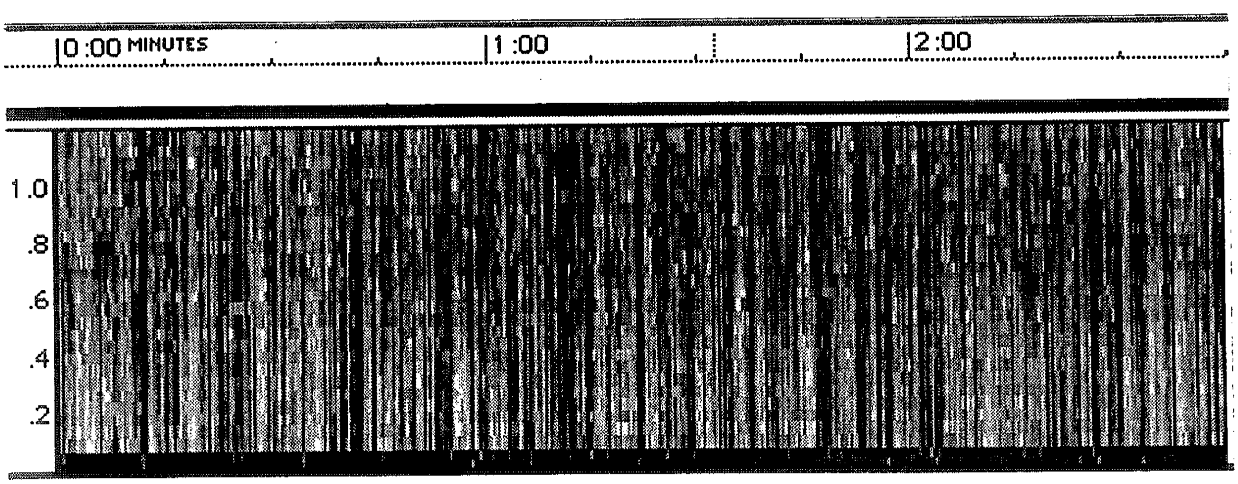
3.7E Same as 3.7D but the horizontal scale has been expanded.

4.1

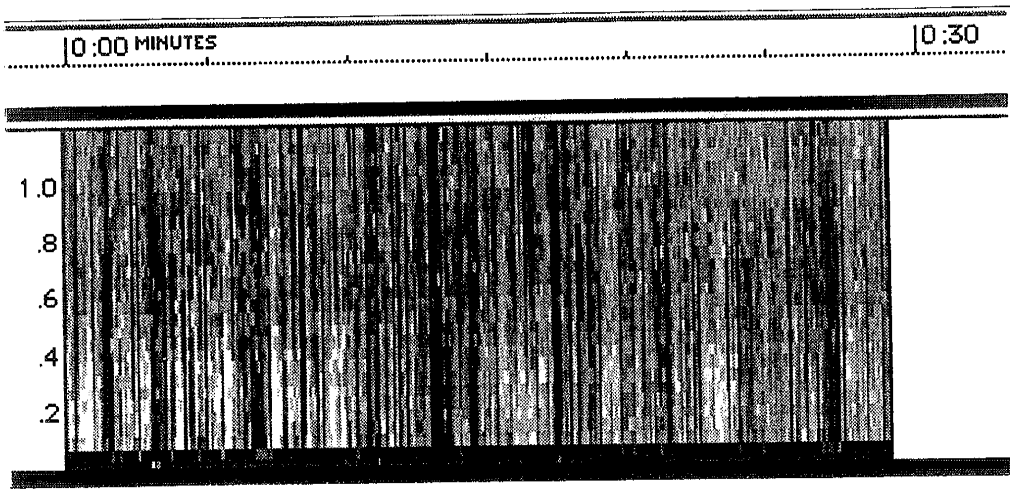
Spectrographs from Aiello NY.



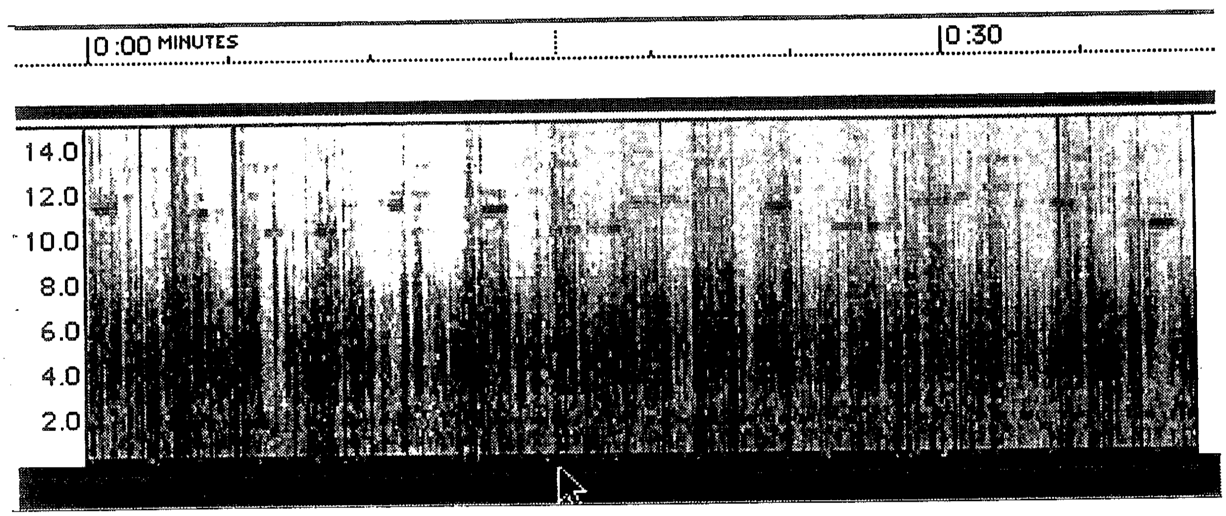
4.1A 05:06:50 (2:43) 0-15 kHz ➜ horizontal line just below 2 kHz which is the location of the feet (or hooks) on the tweeks.



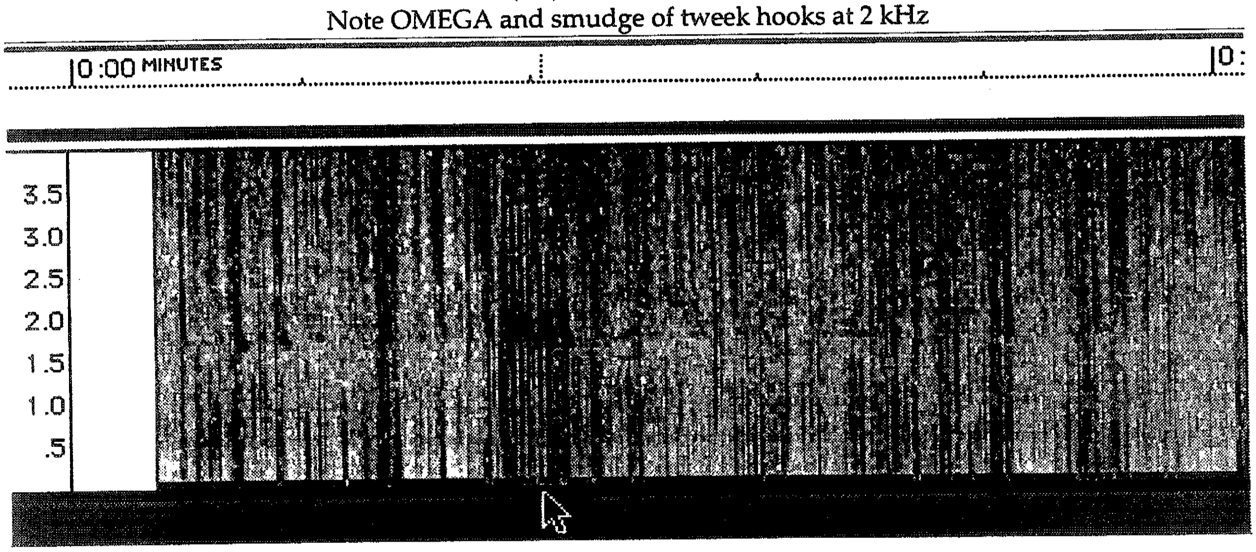
4.1B 05:00:50 (2.43) 0-1.2 kHz No 1 kHz signal observed.



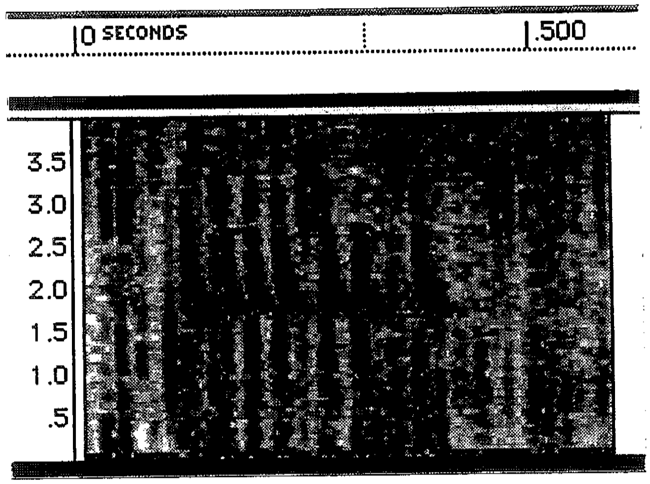
4.1C 05:03:05 (:30) 0-1.2 kHz Still no 1 kHz signal.



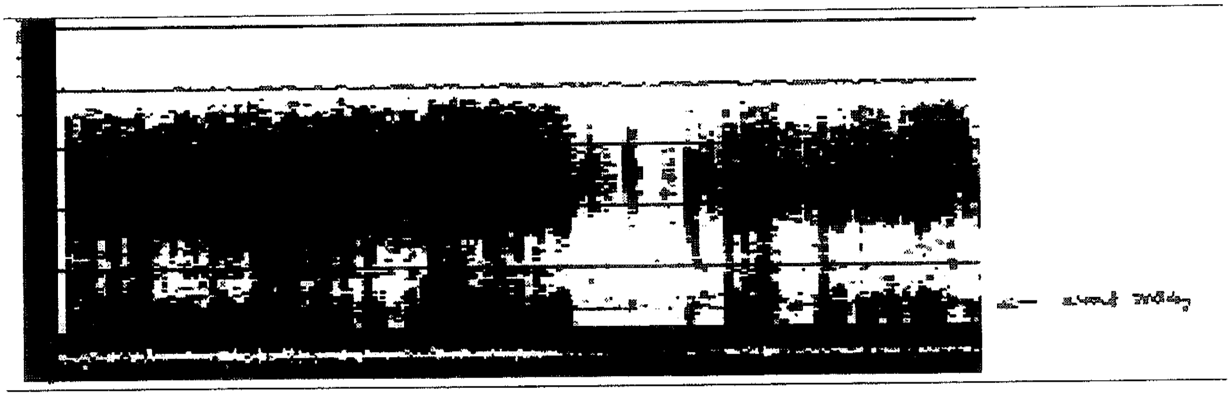
4.1D 05:17:30 (:40) 0-15 kHz ➡ burst of tweeks.
Note OMEGA and smudge of tweek hooks at 2 kHz



4.1E 5:17:42 (:05) 0-4 kHz ➡ same tweek burst

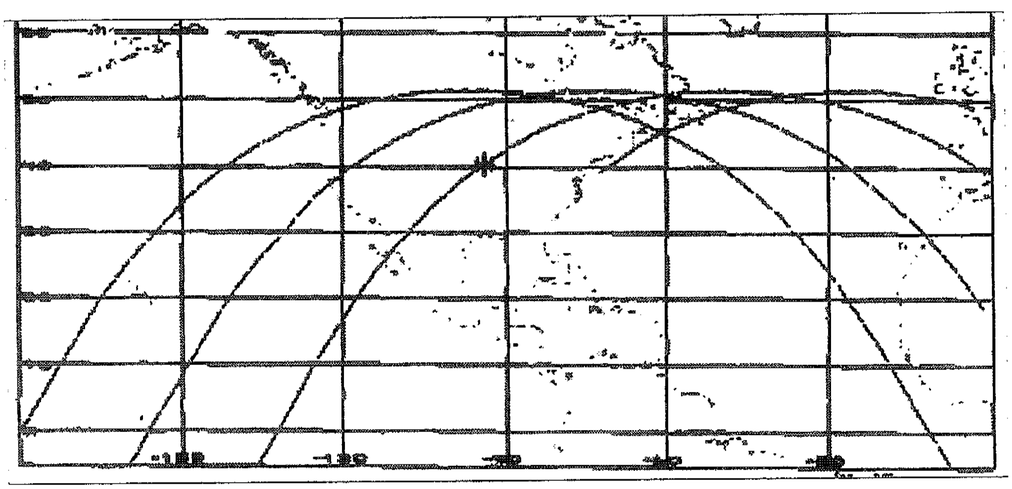


4.1F 5:17:44 (:00.5) 0-4 kHz 7 strong tweeks in less than .5 seconds

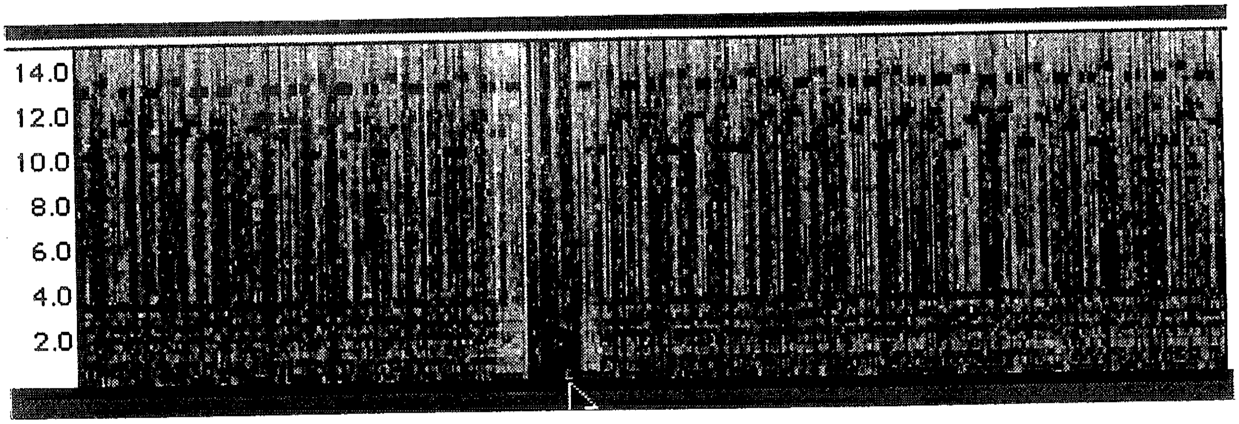


4.1G Spectrograph made by Mike Aiello. Note the horizontal line at about 750 Hz. This was not during the time of ISTOCHNIK operation, so the origin is not MIR

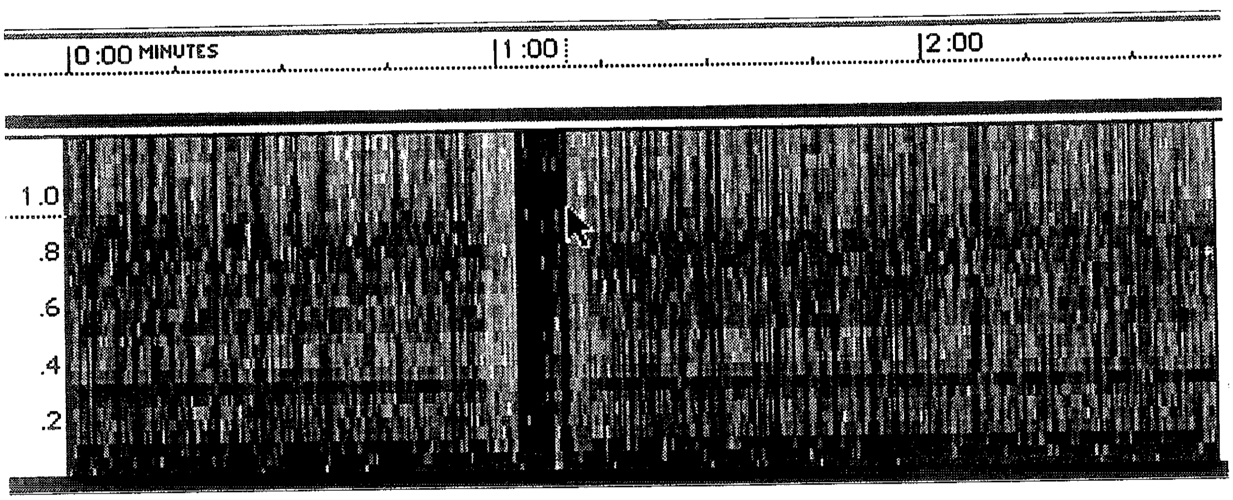
4.2



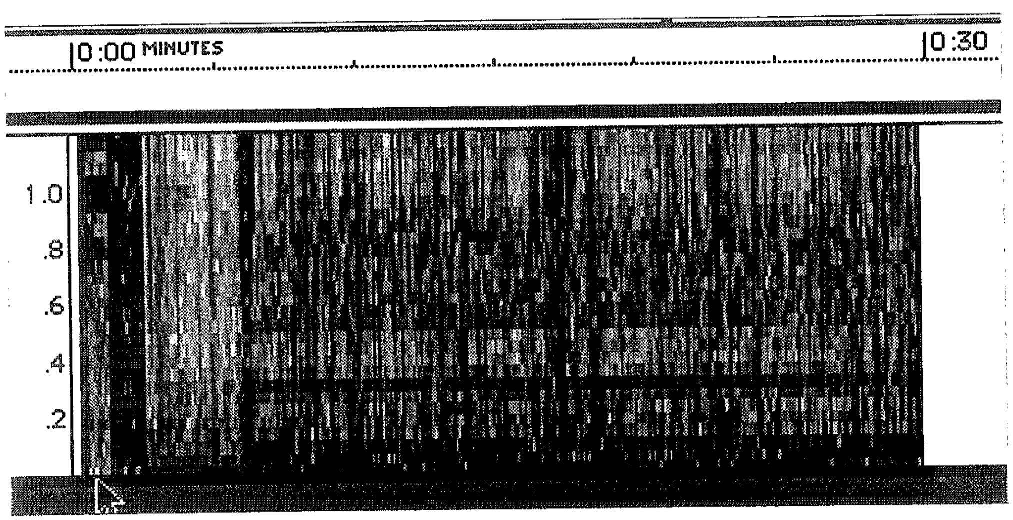
Spectrographs from Shockey OK.



4.2A 06:43:50 (2:43) 0-15 kHz → 06:45 WWV tone.
Strong OMEGA; heavy sferics due to local thunderstorm.

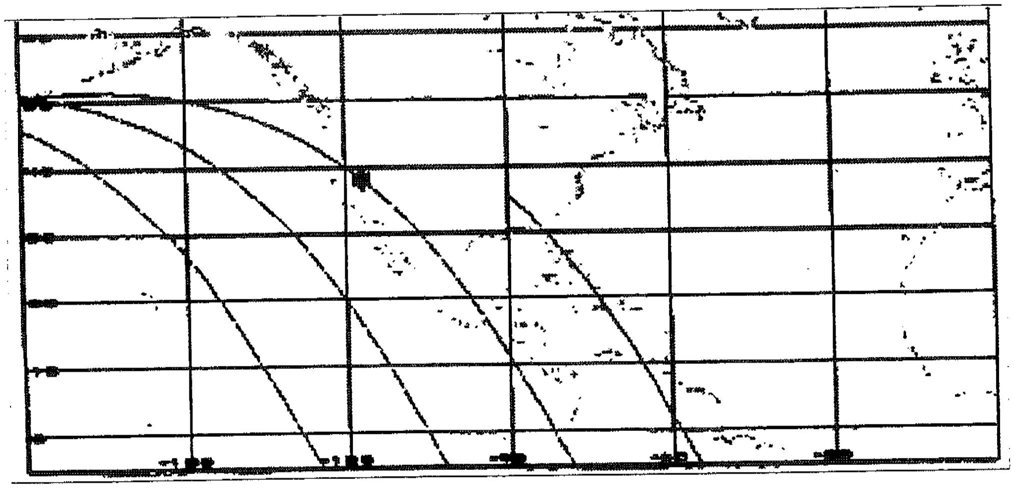


4.2B 06:43:50 (2:43) 0-1.2 kHz → 06:45 WWV tone.

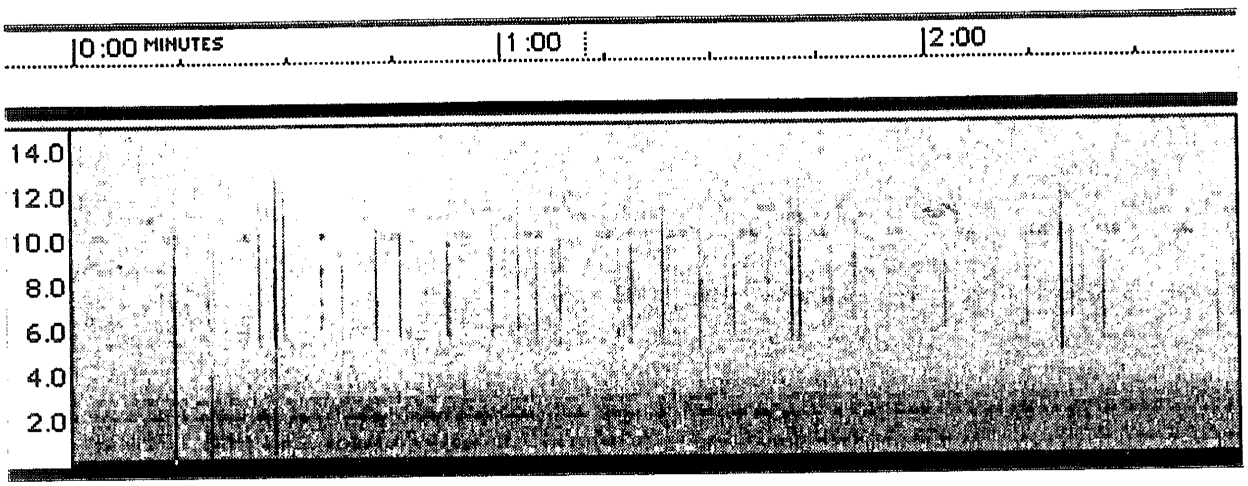


4.2C 06:45 (:30) 0-1.2 kHz → 06:45 WWV tone.
No 1 kHz signal observed.

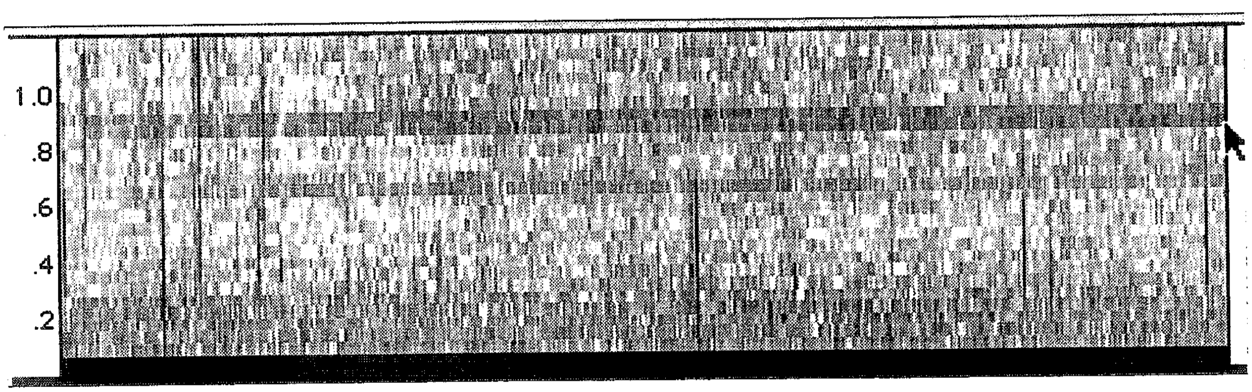
4.7



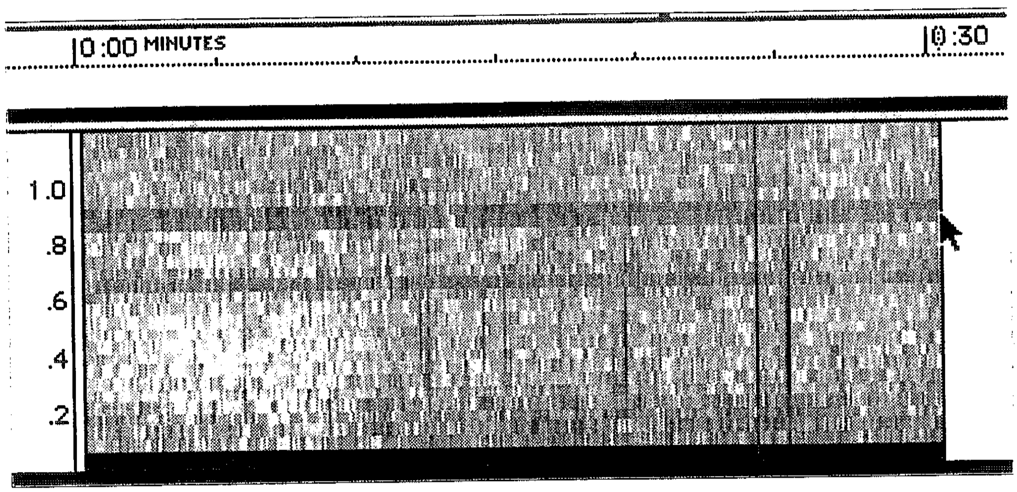
Spectrographs from Pine CA (RS4 E-field receiver).



4.7A 14:44 (2:43) 0-15 kHz Faint OMEGA, weak sferics.

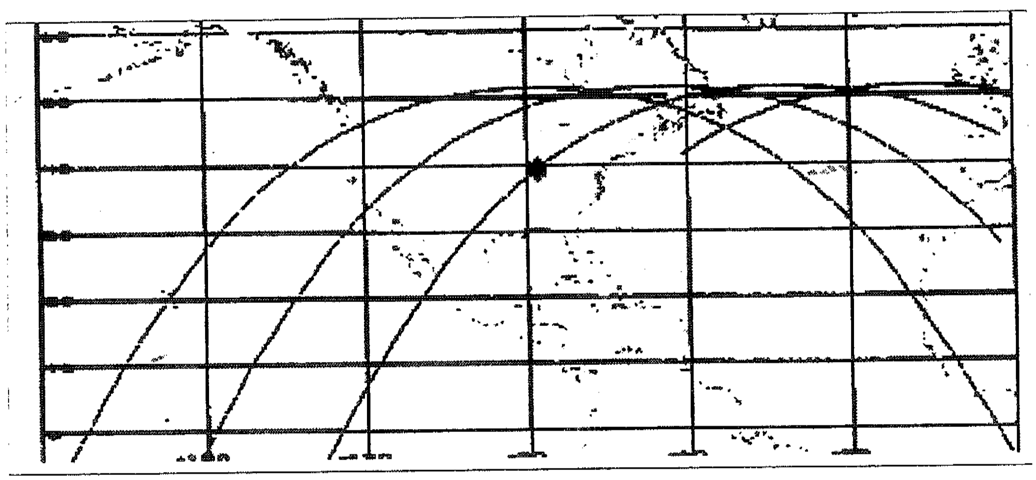


4.7B 14:44 (2:43) 0-1.2 kHz ➜ 900 Hz line that appears throughout.

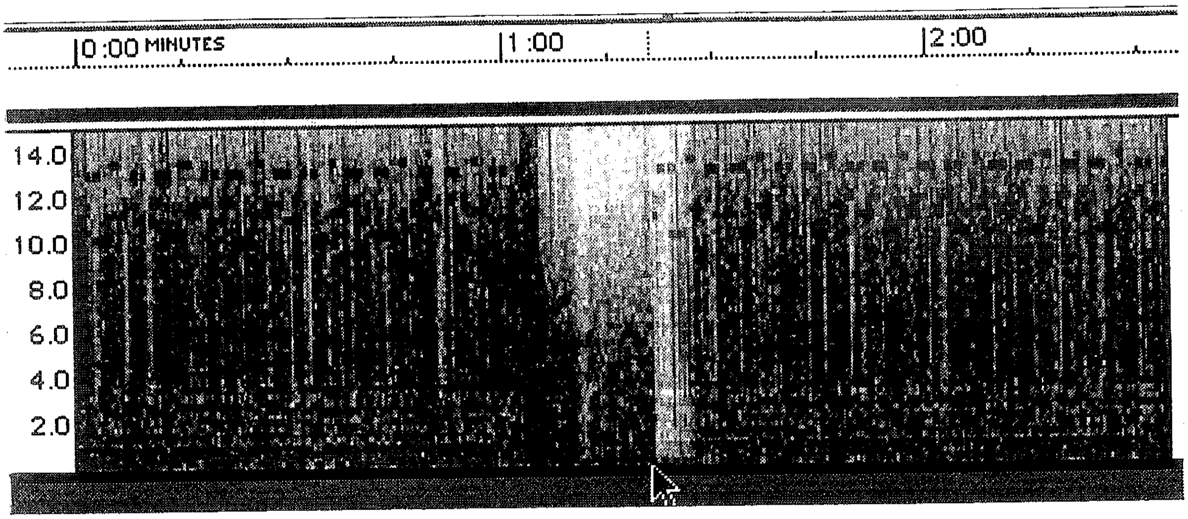


4.7C 14:44:45 (:30) 0-1.2 kHz ➜ 900 Hz line.

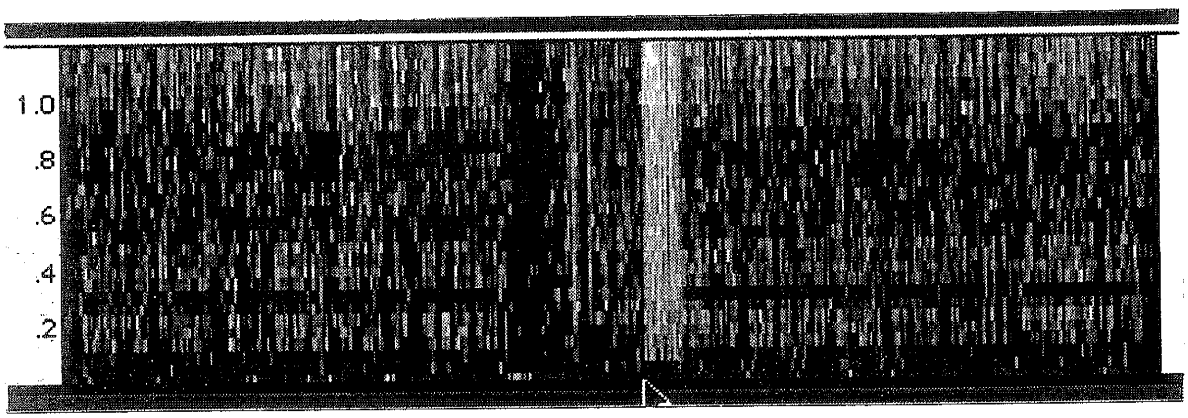
5.1



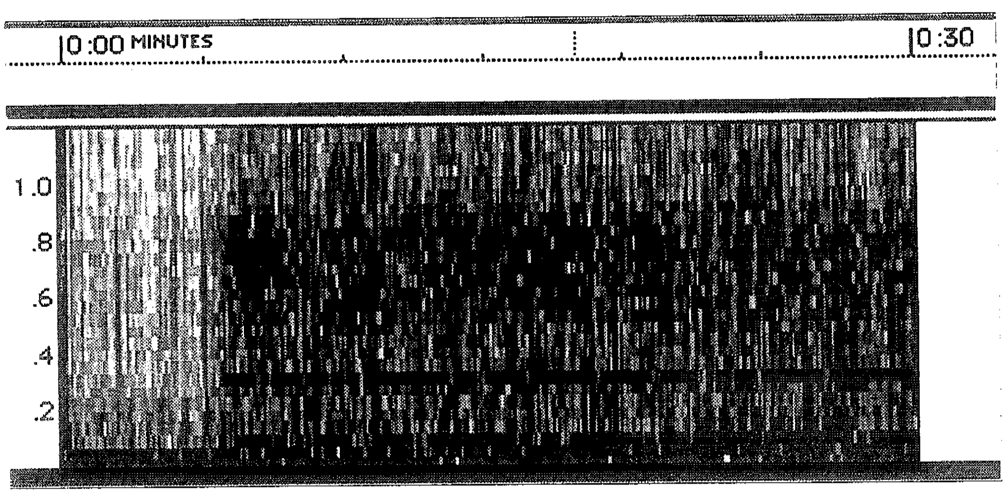
Spectrographs from Shockey OK.



5.1A 05:49:40 (2:33) 0-15 kHz ➨ 5:51 WWV tone.
Heavy sferics, strong OMEGA.

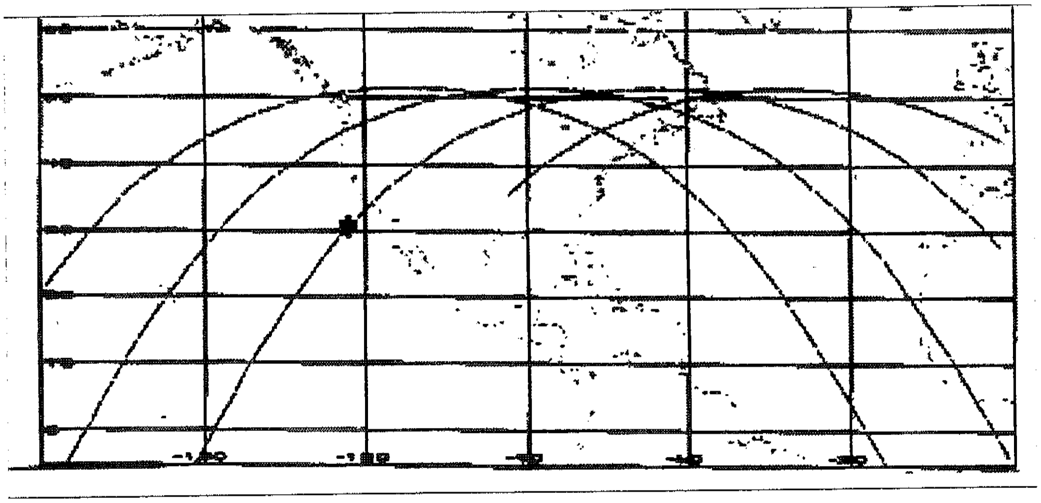


5.1B 05:49:40 (2:33) 0-1.2 kHz ➨ 5:51 WWV tone.
No 1 kHz signal detected. Note the hum below .4 kHz.

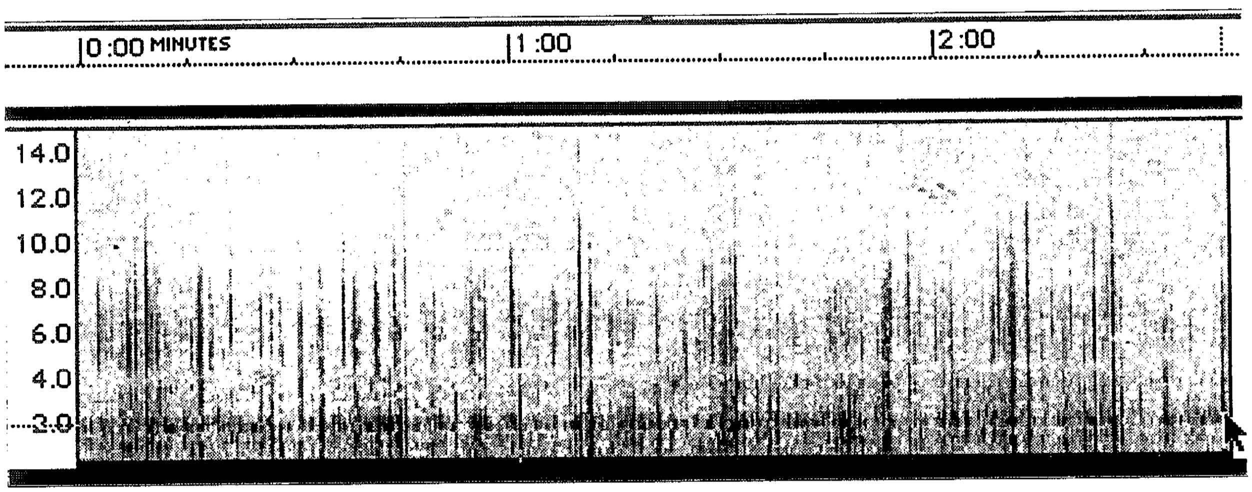


5.1C 05:51 (:30) 0-1.2 kHz No 1 kHz signal.

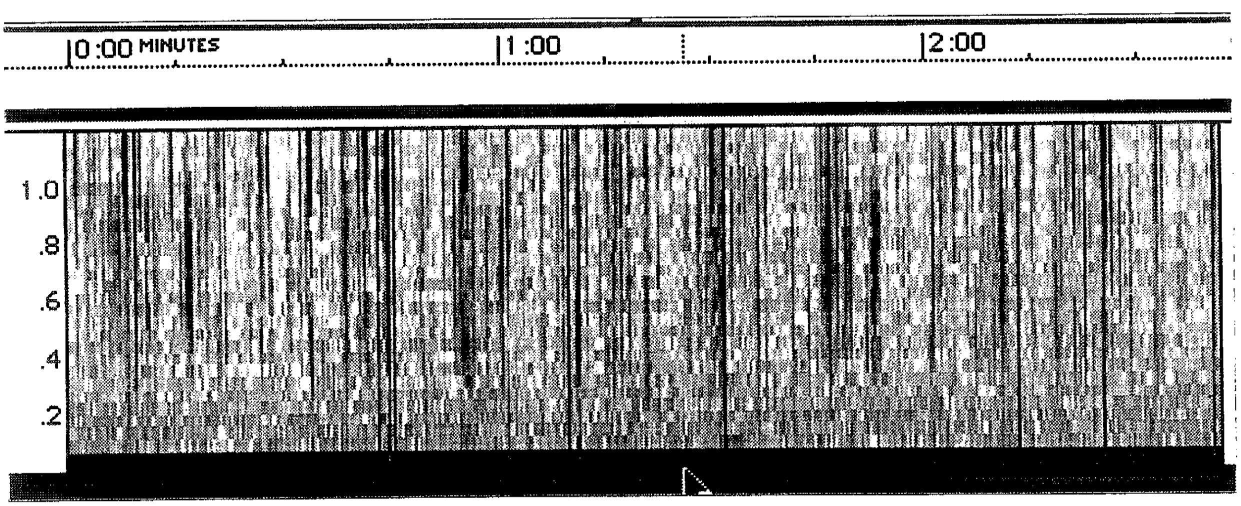
5.2



Spectrographs from Pine CA (RS4 E-field receiver).



5.2A 07:18:40 (2:40) 0-15 kHz ➨ Line of tweek hooks. No OMEGA.



5.2B 07:18:40 (2:40) 0-1.2 kHz ➨ 7:20 No 1 kHz signal seen.