

Report on Field Observations 4/2003-10/2003

By Bill Pine
Ontario, California

All INSPIRE participants are encouraged to make observations and send their data tapes and logs in for analysis. The *Journal* would like this report to reflect the activities of all observers. Any data is good data! Please send data tapes regardless of how "successful" the session turned out to be.

The guidelines for observations are:

1. Fill out a log cover sheet and data sheets for each observation.
2. Place a voice introduction on each tape indicating name, date and start time.
3. Insert a time mark every two minutes during the observations.
4. Submit the data to:

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1245 N. Euclid Avenue
Ontario, CA 91762

The observations in this report will be given in chronological order. The convention for naming files is the following:

Name 4-26-03 13UT 06CST

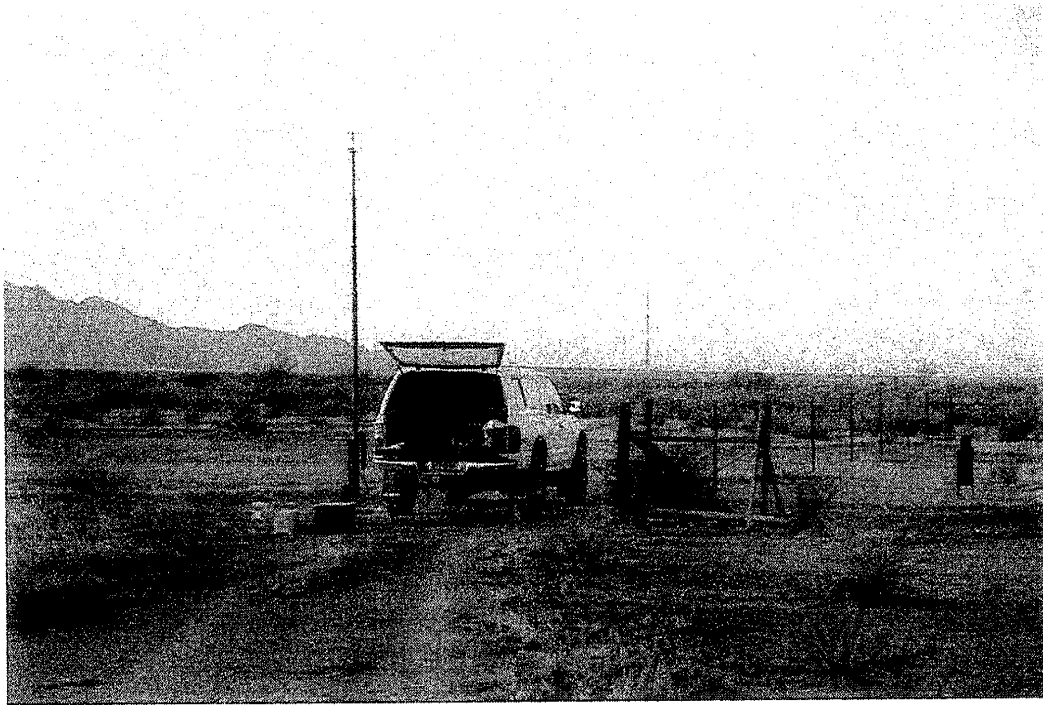
Observer Name Date Start Time UT. Start Time Local

Spectrograms made for data analysis include the first 2 minutes 0-22 kHz range; the first 2 minutes 0-11 kHz range; the first minute 0-11 kHz range and the first 30 seconds 0-11 kHz range. When circumstances dictate, other formats for spectrographic analysis may be used. Spectrograms are also made of any portions of the tape requested by the observer.

On all spectrograms, the frequency range appears at the left of the spectrogram and the time interval appears at the top of the display. The time scale always starts with "0", rather from the actual time. An arrow on a spectrogram indicates the time interval shown on the following display.

4-25-03 Robert Bennett

Las Cruces, NM



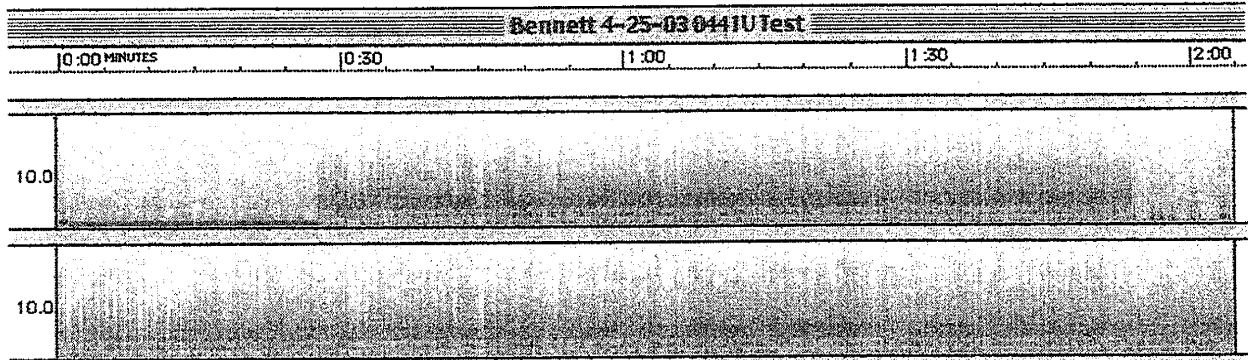
Robert's field setup. The INSPIRE antenna is on the right. The telescoping antenna on the left is for a scanner. Robert also has an antenna for his amateur transceiver for communicating with home.



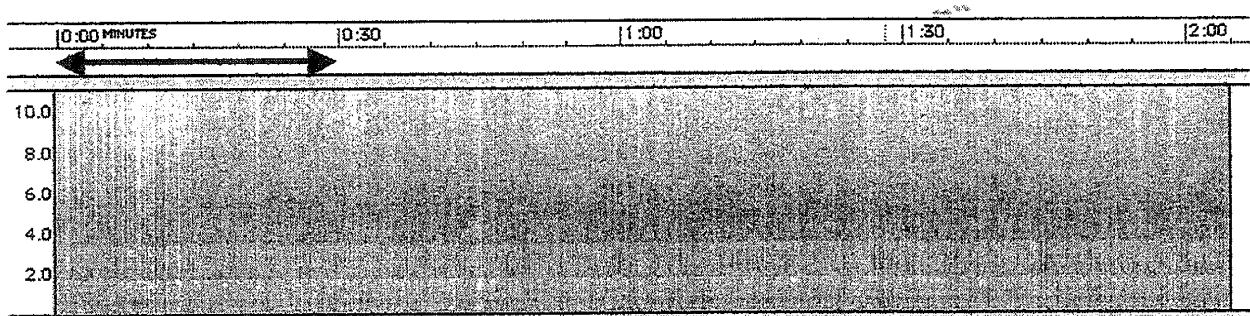
This view is through the windshield showing the receiver and recorder on a board from the dash to the passenger seat back.

Bennett

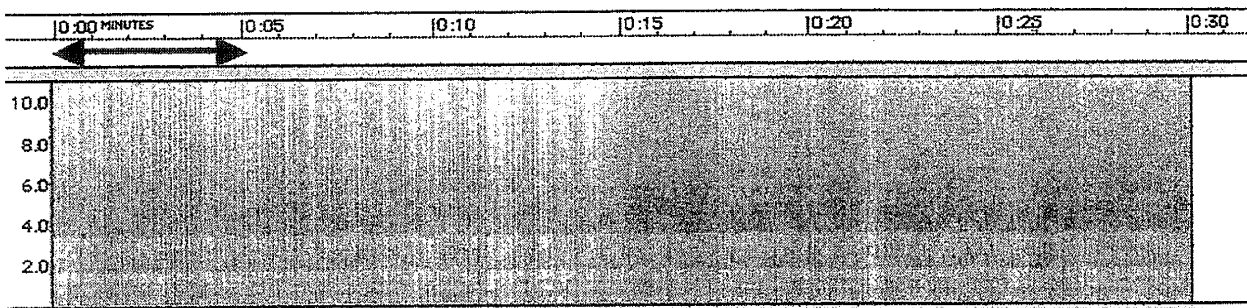
Robert's first session was an evening session. The purpose of the session was to test a repaired Marantz recorder. Most of Robert's observations are made in the morning, so this session was unusual. Evening sessions are often characterized by the presence of tweeks that appear near sunset and continue through the night. Robert's tapes show this well.



The Marantz recorder is a stereo recorder. Robert puts WWV on one track (the top one) for time marks and data on the other track. When time marks are not being taken, the top track is switched so that data appears on both tracks.

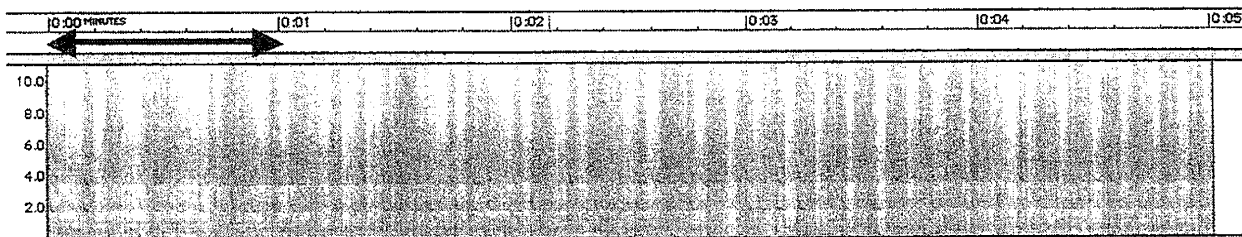


This is the data track only. The arrow indicates that the next spectrogram is of the first 30 seconds.

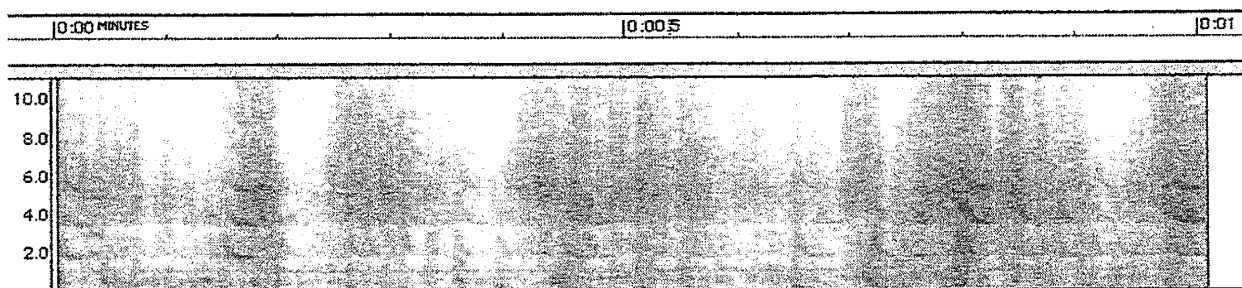


The next spectrogram is of the first 5 seconds.

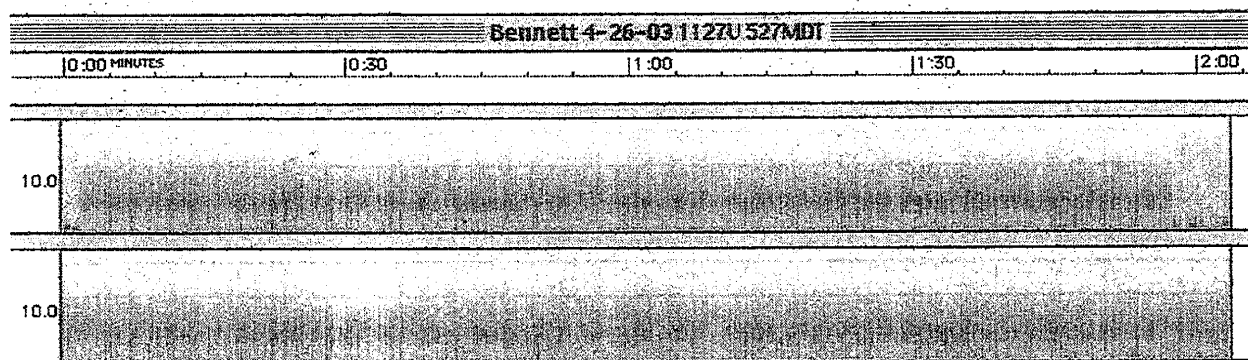
Bennett



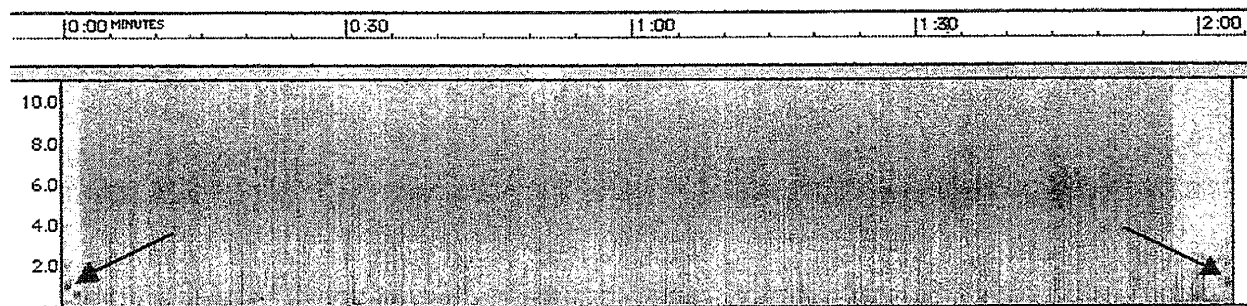
The next spectrogram is of the first 1 second to show the tweeks individually.



The strength of the tweeks is indicated qualitatively by the presence of several harmonics of the stronger tweeks. The tweek density is more than 10 tweeks per second.



The next morning, Robert was observing starting at 5:27 AM MDT (1127 UT).



The arrows above point to the 1 kHz WWV tones at 112700 UT and 112702 UT.

Bennett

Below is a sample from Robert's log for 4-26-03.

DATA COLLECTION FORM

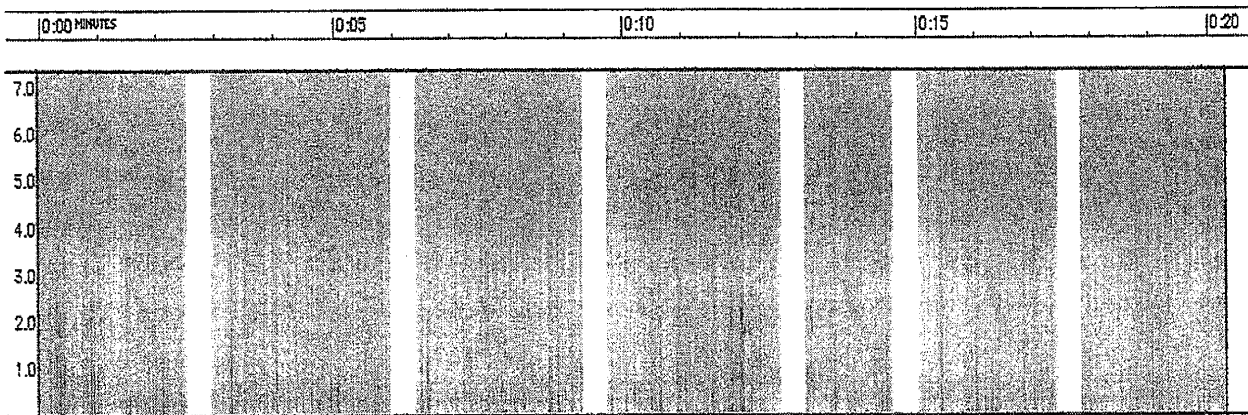
Operations: Coordinated Monitoring

Date: 26 April 03

0530 MDT
Start

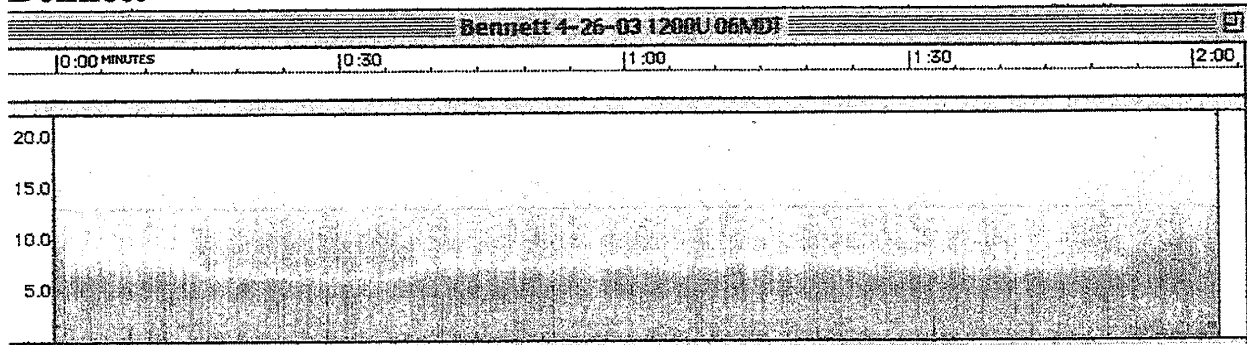
TAPE RECORDER COUNTER	TIME UT	EVENT	SFERIC LEVEL	COMMENTS
0		Voice Announcement		Antenna Filter
18	1127	WWV	7-8	is "in", too much
		many strong Twentys		Loran. Recorder.
36		Triggered Whistler		on 2, Limiter on,
52		Whistler		Natural Radio Signal
57	1129	WWV		Strong.
64		Whistler		WWV on Right
78		Strong Whistler		channel.
108	1132	WWV		
124		Weak Whistler		Very dry - I am
137		Strong Whistler		getting a lot of
140	1134	WWV		static electricity.
141		Weak Whistlers		
183	1137	WWV		Starting to get light
263		Strong Whistler		outside.

Spectrograms of some of the whistlers logged above are shown below.

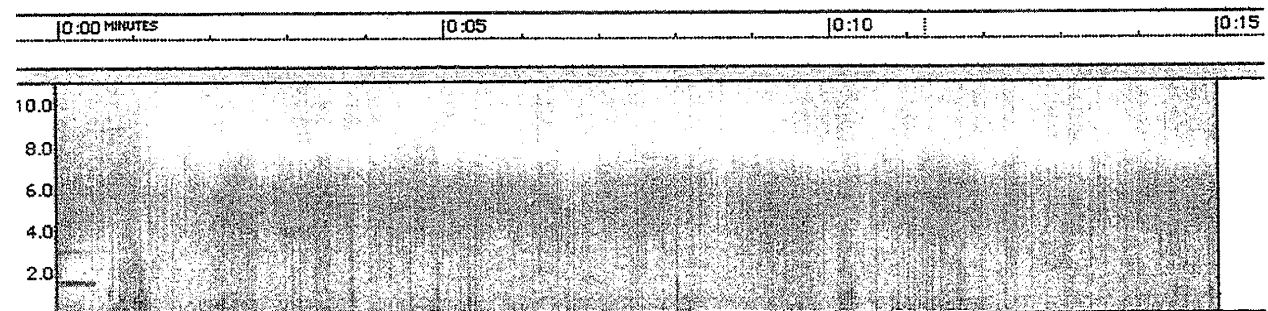
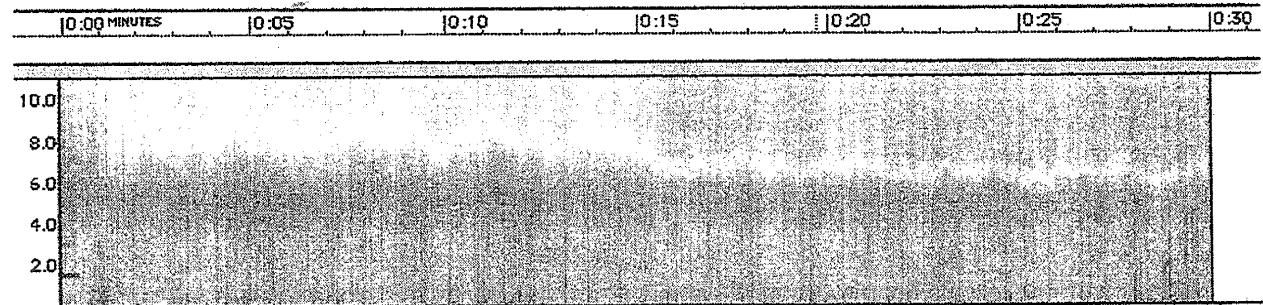
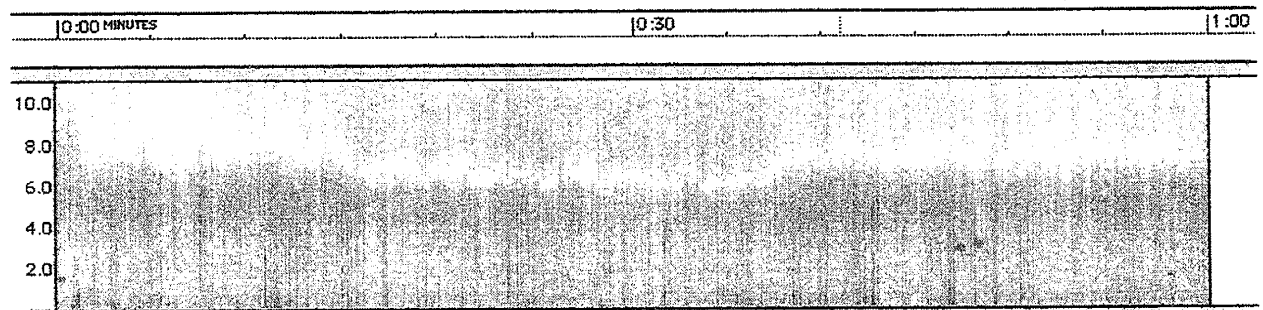


One thing that was unusual about this session is that the sferic density was high. The whistlers are easily heard on the tapes, but are harder to find in the spectrograms because of the high sferic density. Whistlers are generally more common (or easier to hear?) when the overall sferic density is lower.

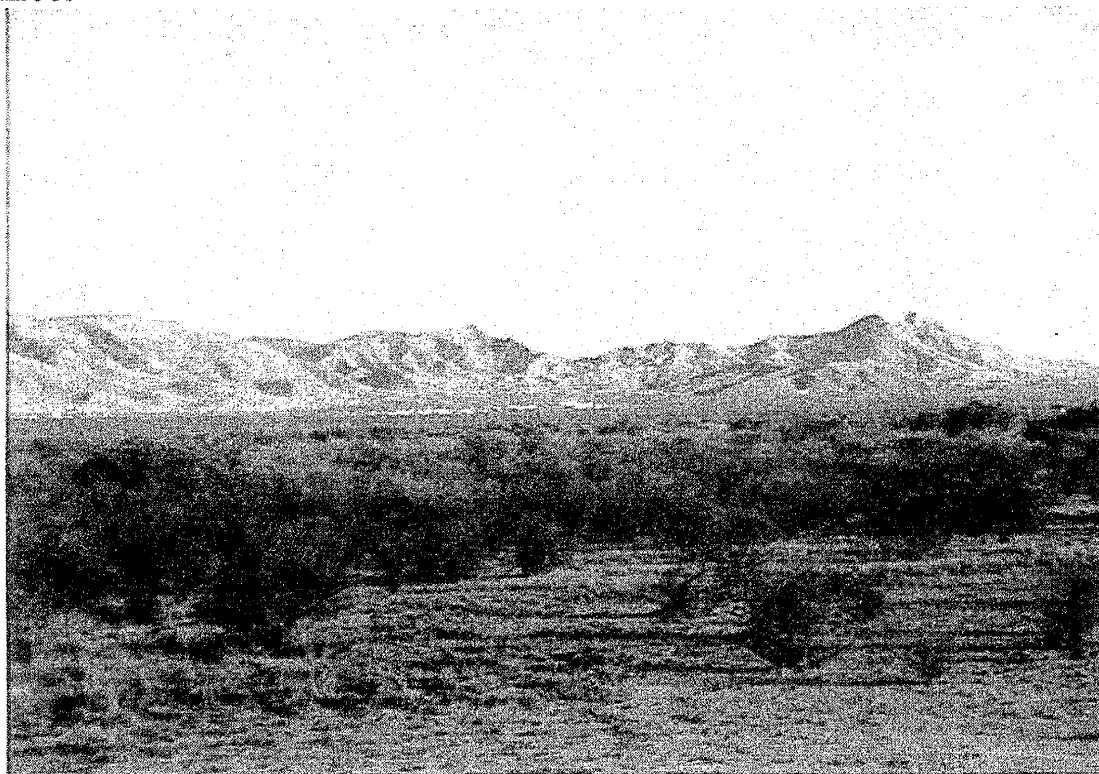
Bennett



This data is part of the coordinated observations starting at 6 AM MDT (1200 UT). The spheric density has dropped somewhat and whistlers are less common.



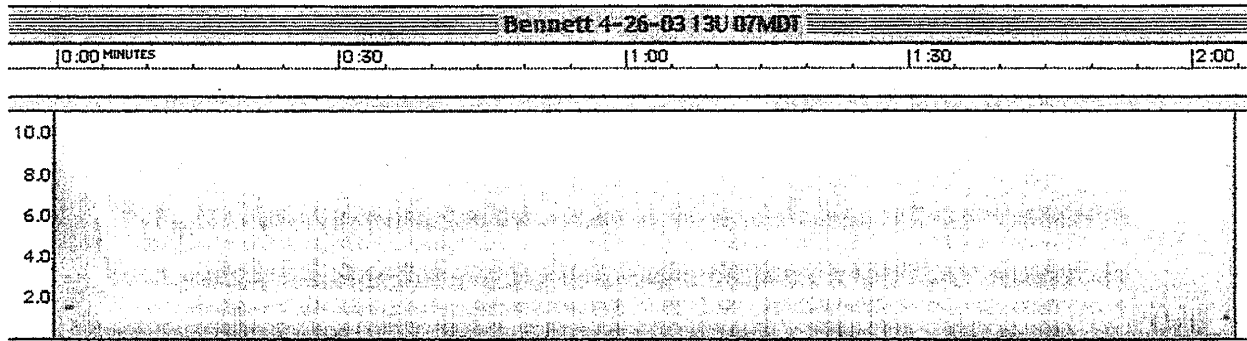
Bennett



The view from Robert's "quiet site". Buildings in the distance are the NASA TDRSS satellite communication facility.



The approach road to Robert's site. After a rain, this road is impassible, even with 4-wheel drive. It is strictly "Driver beware!"

Bennett

The log for the above session is shown below. Whistlers have stopped and sferic density has declined to "near normal daytime levels". Notice the log entry "WWV starting to fade" at 1315UT indicating the change in the ionosphere.

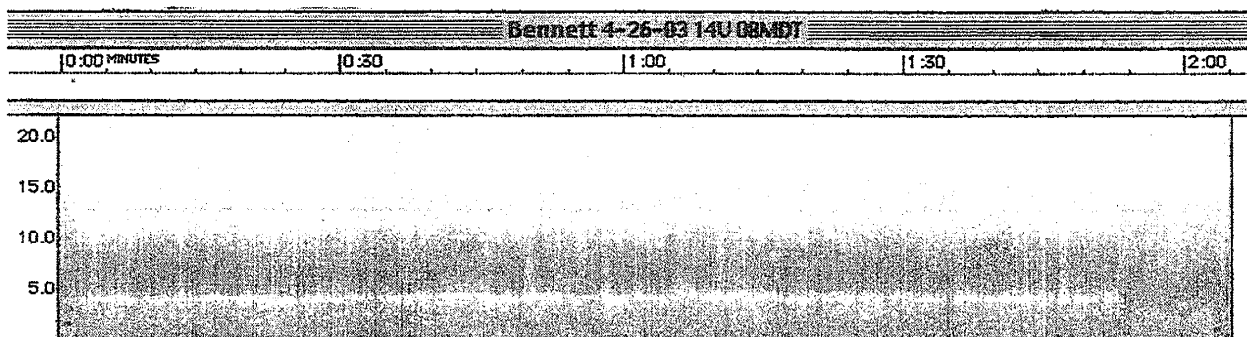
DATA COLLECTION FORM

Operation: Coordinated monitoring

0700-0715 MDT

Date: 26 Apr 03

TAPE RECORDER COUNTER	TIME UT	EVENT	SFERIC LEVEL	COMMENTS
<u>0</u>		<u>Voice Announcement</u>		
<u>11</u>	<u>1301</u>	<u>WWV</u>	<u>5-6</u>	<u>1. Ant attenuator</u>
<u>49</u>	<u>1302</u>	<u>WWV</u>		<u>"in" Recorder</u>
				<u>limiter "in"</u>
<u>58</u>		<u>Strong static caused</u>		<u>Reset level on</u>
		<u>by me moving RX.</u>		<u>4.</u>
<u>86-90</u>		<u>movement (one) noise</u>		<u>2. levels weaker</u>
<u>118</u>	<u>1306</u>	<u>WWV</u>		<u>then at 0600</u>
<u>134</u>	<u>1307</u>	<u>WWV</u>		<u>Near normal</u>
<u>164</u>	<u>1309</u>	<u>WWV</u>		<u>daytime levels</u>
<u>172</u>		<u>Whistler (3000)</u>		
<u>192</u>	<u>1311</u>	<u>WWV</u>		
<u>219</u>	<u>1313</u>	<u>WWV</u>		
<u>244</u>	<u>1315</u>	<u>WWV</u>	<u>WWV</u>	<u>starting to Fade</u>

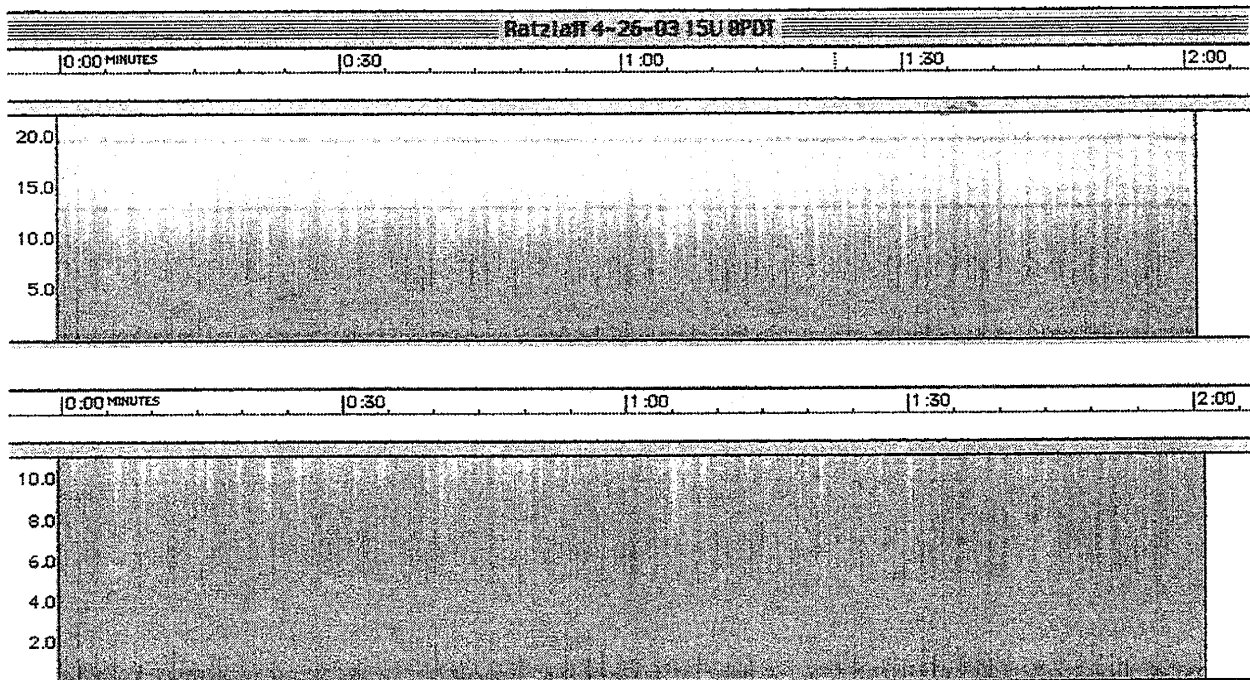


4-26-03 Steve Ratzlaff

Elgin, OR

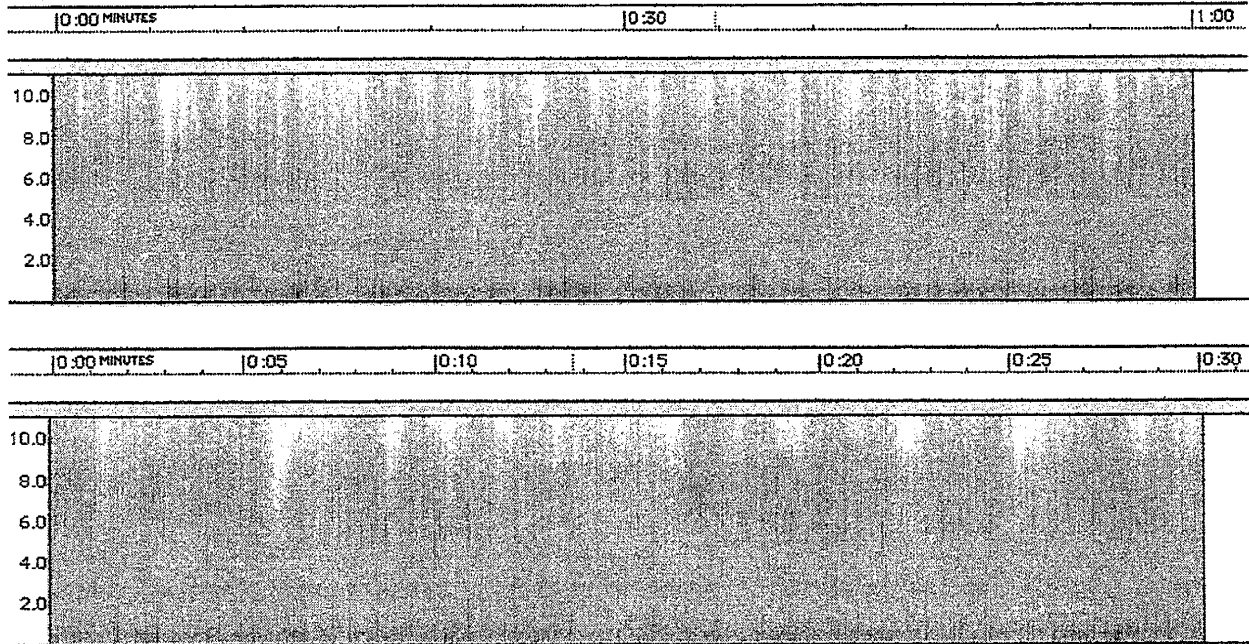
"For the Saturday session I arrived at the site about 30 minutes early. I was planning to use the loop antenna and receiver; everything was already setup and in place, all I needed to do was put an external ground rod out, attach the loop preamp and connect the remote feedline to the receiver in the vehicle where I do my monitoring, about 130 feet away from the loop. This distance is necessary to prevent recorder motor whine from being picked up by the loop. All this takes no more than 5 minutes to be set up and ready for listening. But my initial check of the loop receiver showed nothing heard, not even background noise. Quick checks of the equipment didn't find anything obviously wrong. I'd used this setup just the previous day with no problems.

Time was running out to meet the 8 a.m. session start time. I hastily set up my vertical mast, got the VLF3 set up, got the recorder set up with the VLF3. Finally I was hearing VLF in the headphones, but not using the loop receiver. And I was already 7 minutes late in the session. But I got the final 5 minutes recorded of the 8a.m. session, and was also rewarded with a weak whistler. There was no other VLF activity occurring, like chorus or frequent whistlers—just strong sferics."

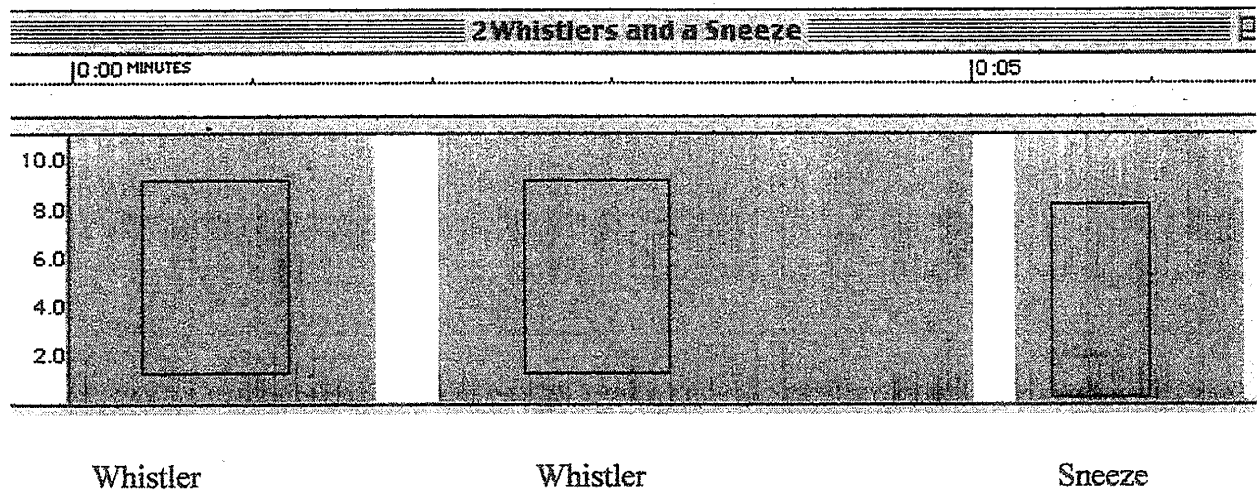


Strong, dense sferics.

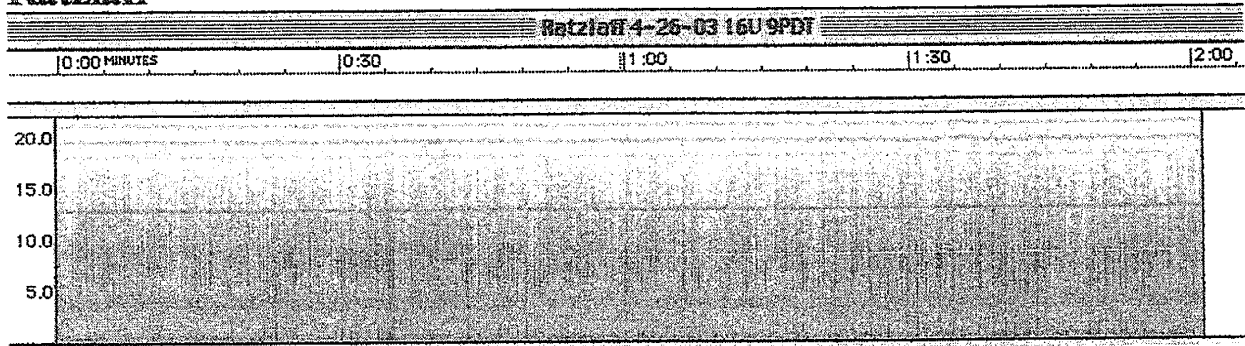
Ratzlaff



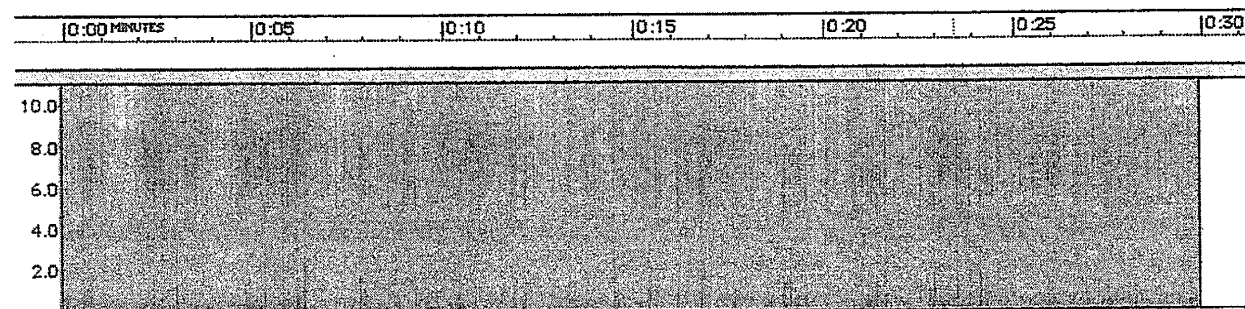
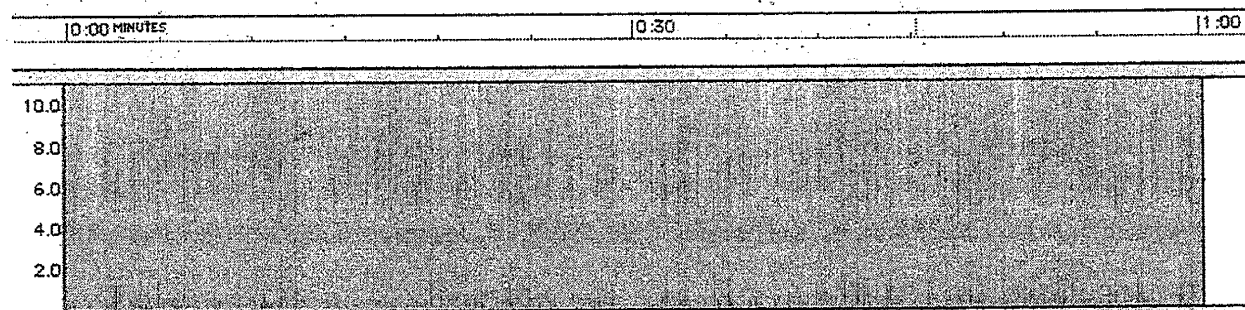
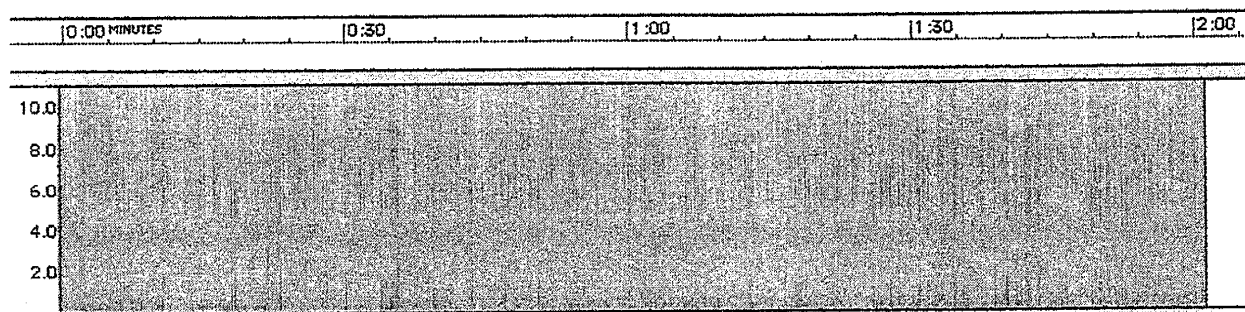
“Nine to 10 minute—10:16 I sneezed and somehow this is received and is on tape, even though no mic is attached or turned on—this is “unnatural” VLF data!”



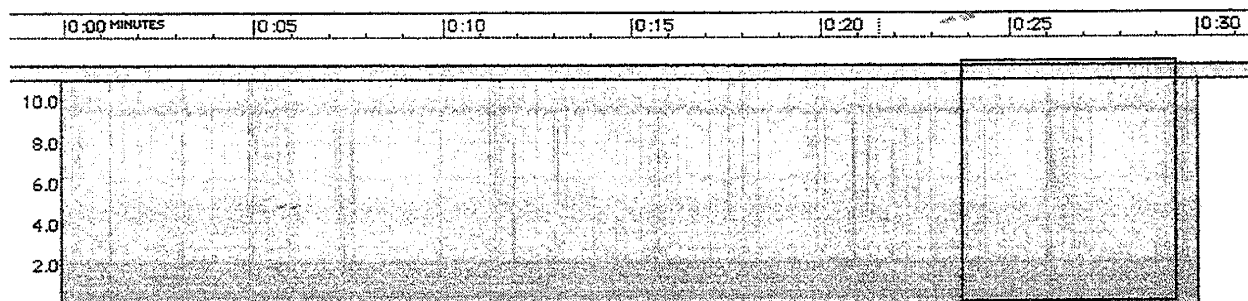
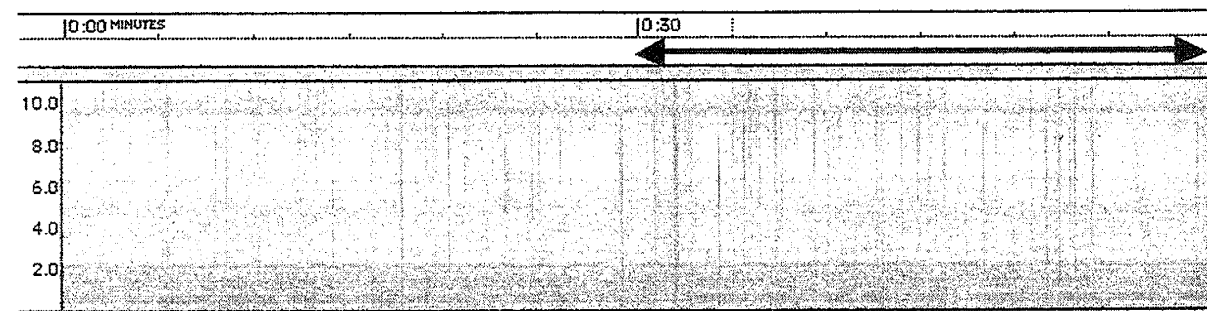
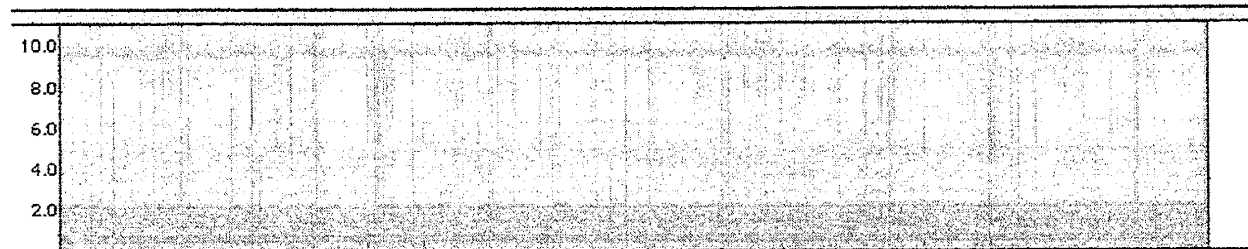
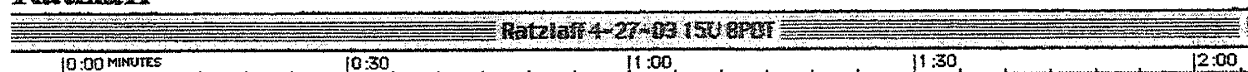
Ratzlaff



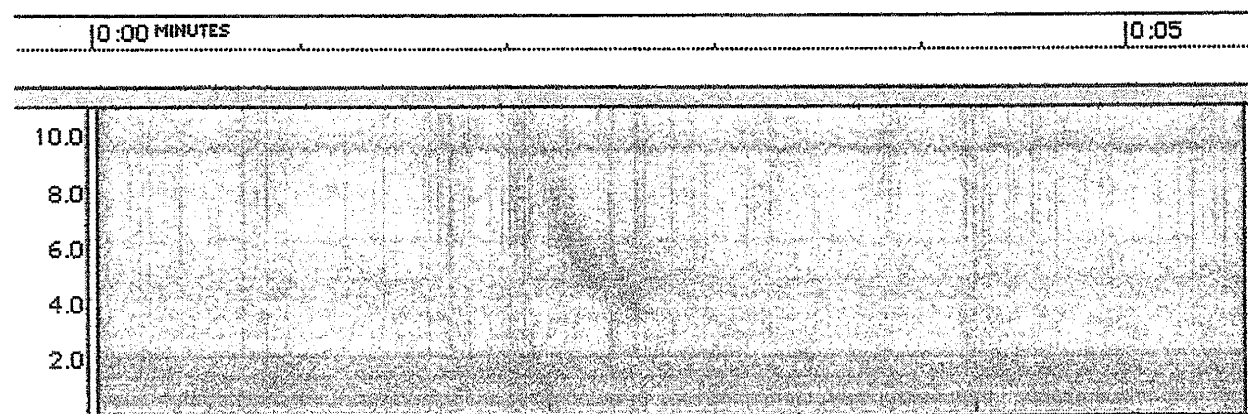
Still strong, dense sferics.



Ratzlaff

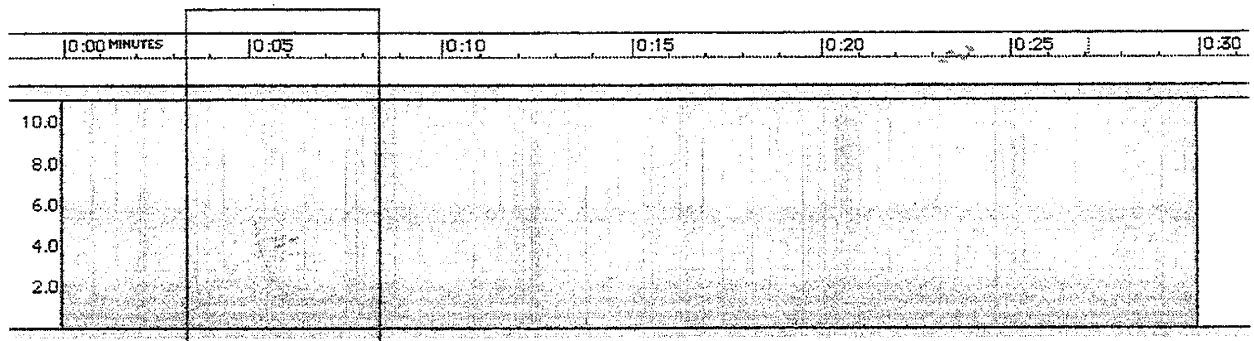
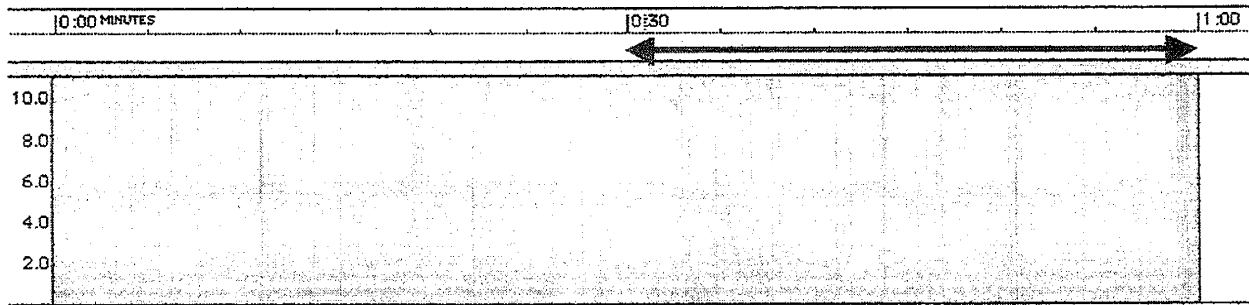
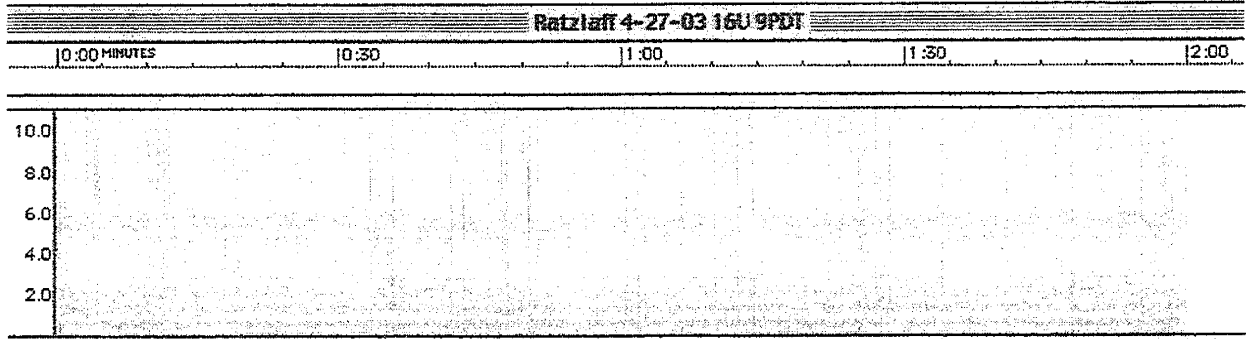


“One to two minute—1:03 high-pitched fast weak whistler. 1:46 medium level sferics crash “

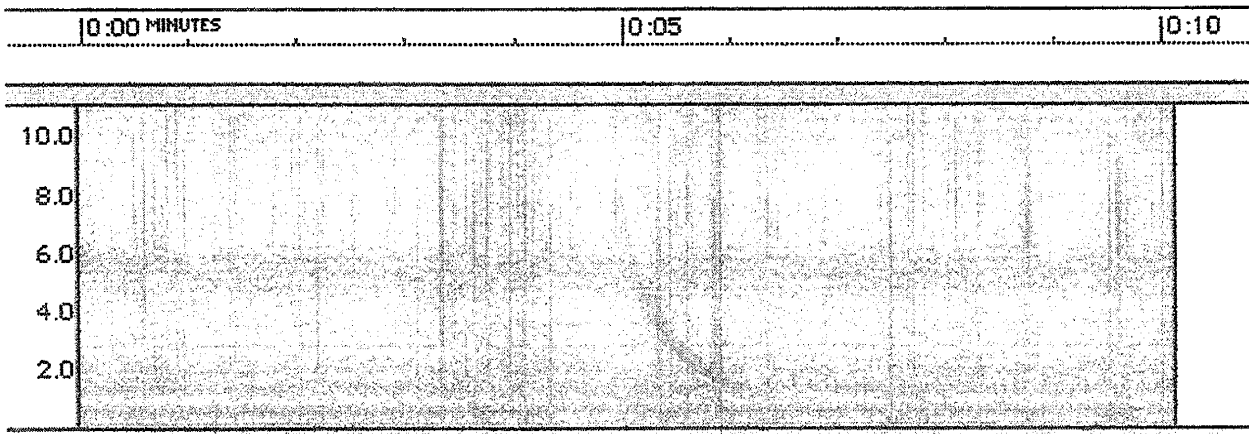


Whistler logged at 1:03 shows up at :57 seconds due to poor time sync with spectrogram.

Ratzlaff



Whistler.



Close up of whistler.

Ratzlaff

"4/27/03 Sunday

Large 130 foot circumference loop antenna and receiver used for both Sunday sessions. Hum is significantly higher as the loop is a lot more sensitive than the VLF-3 e-field receiver with 25 foot vertical antenna..

9a.m./1600UTC, 4/27/03 Sunday session; continuing to record data with the loop receiver (Tape has a 15 second blank period between end of 8a.m. session and start of 9a.m. session— data playback begins at exactly 9:00:00a.m. (There is no voice data on this tape.)

Zero to one minute--:10—faint chorus noted in the background, throughout this session, too weak to be recorded. Sounds like medium-pitched chirping.

One to two minute—1:28 sferic crashes

Two to three minute—2:12medium level high-pitched whistler lasting 1.5 seconds

Three to four minute—3:49 long weak whistler

Four to five minute—4:19 weak whistler; 4:44 long medium level whistler"

