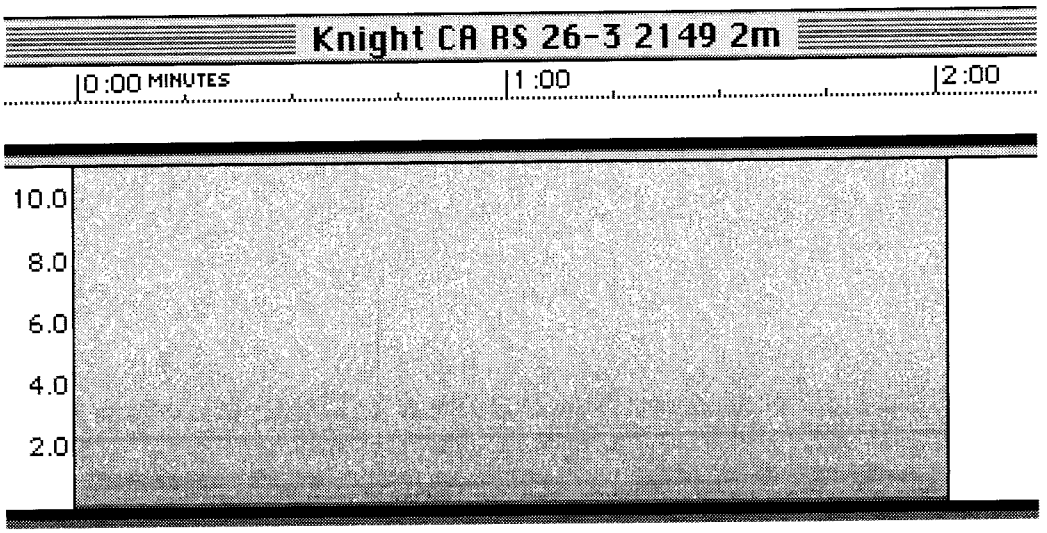
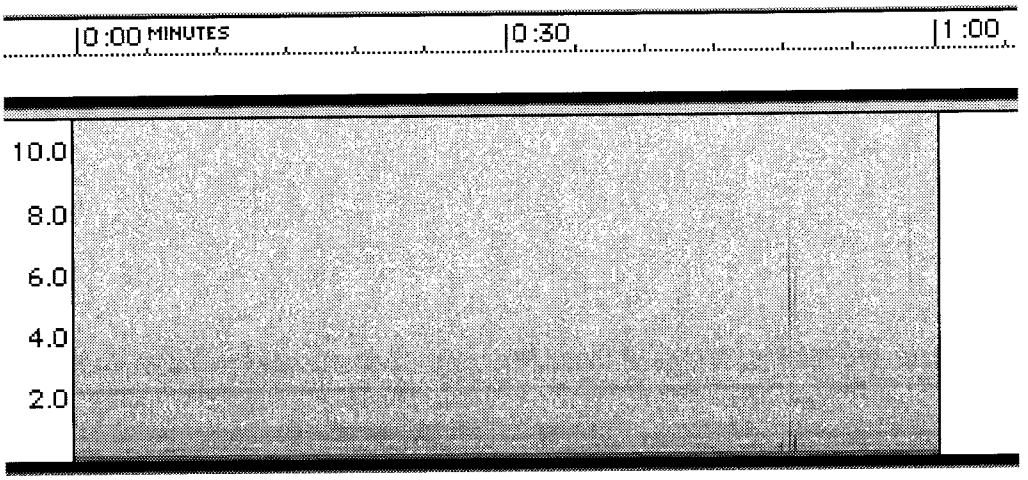
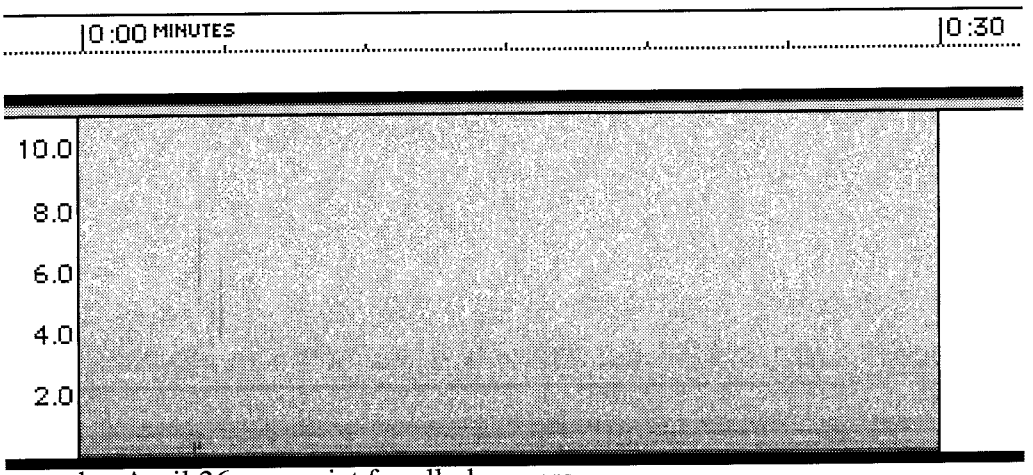
26-3



Dean Knight, Sonoma Valley High School, Sonoma, CA. Very quiet.

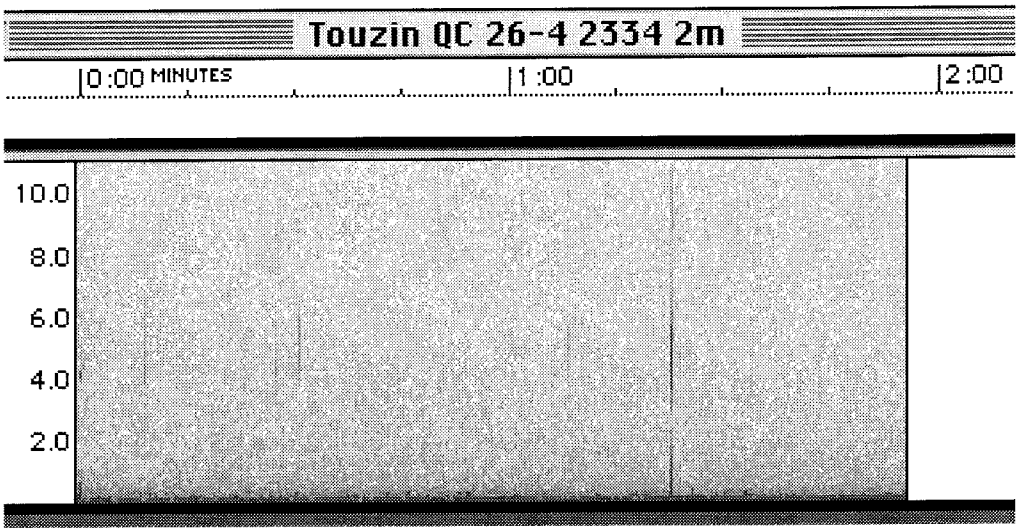


First minute.

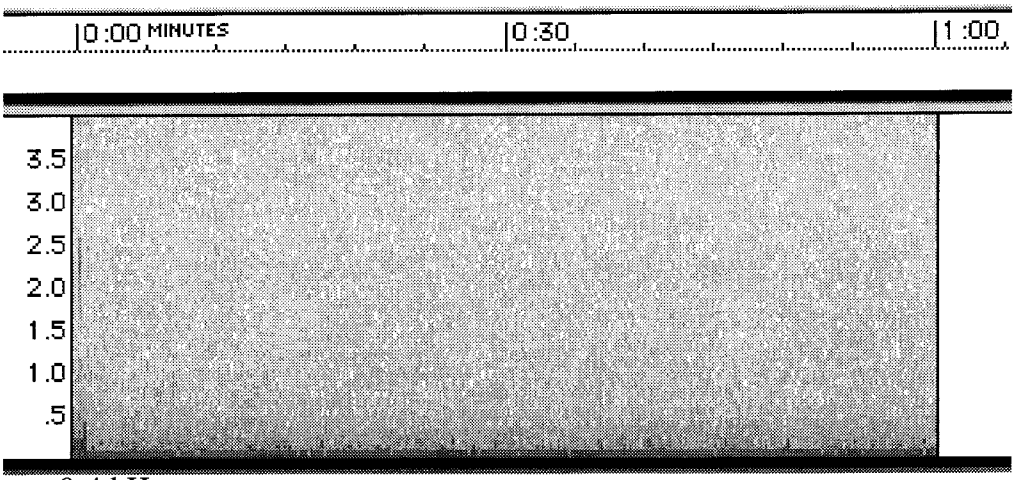


First 30 seconds. April 26 was quiet for all observers.

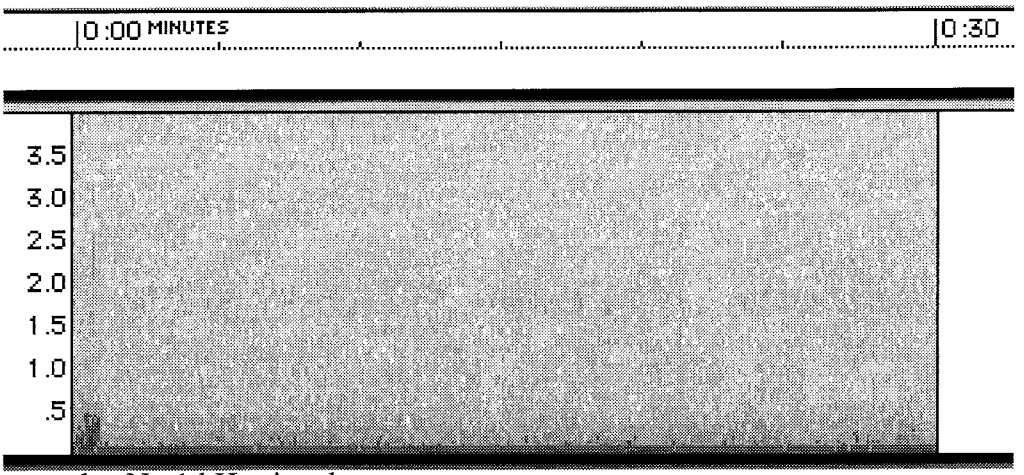
26-4



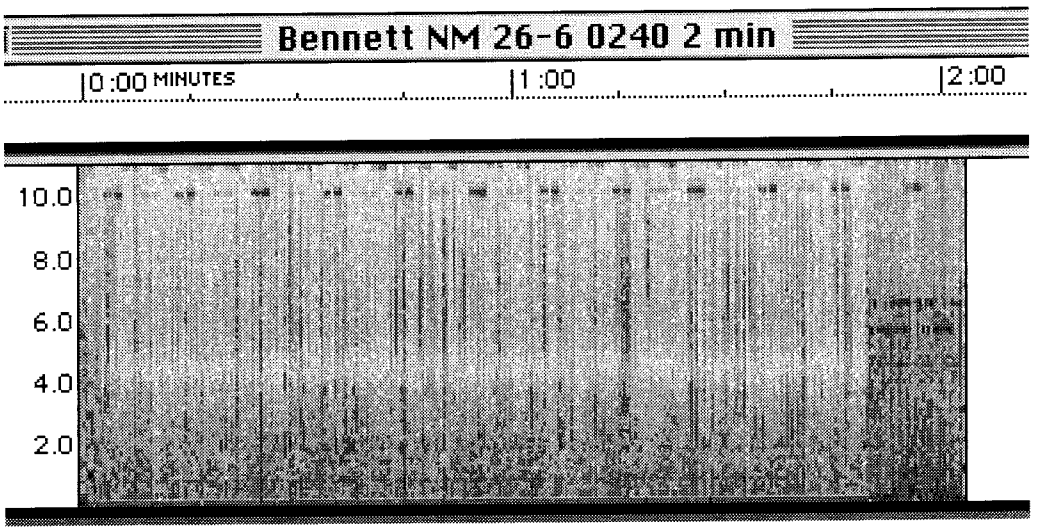
Jean-Claude Touzin, St. Vital, Quebec, Canada Very quiet conditions.



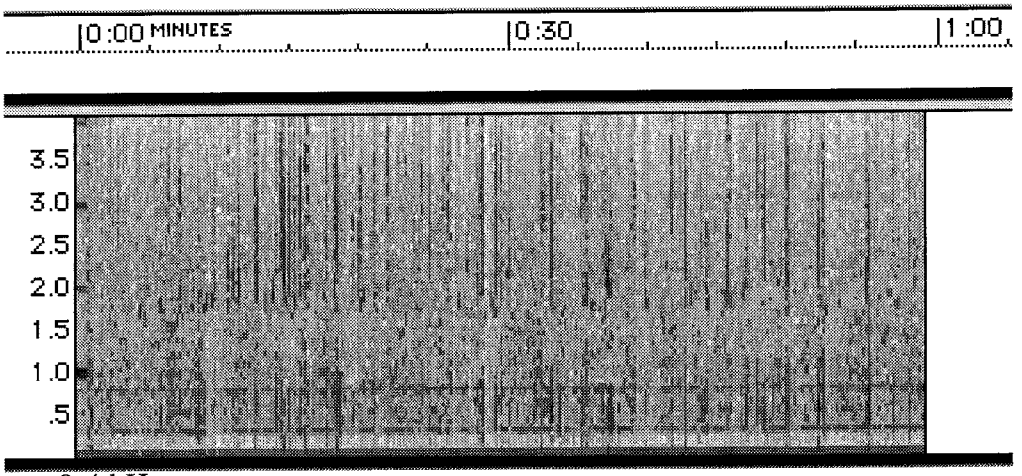
First minute, 0-4 kHz.



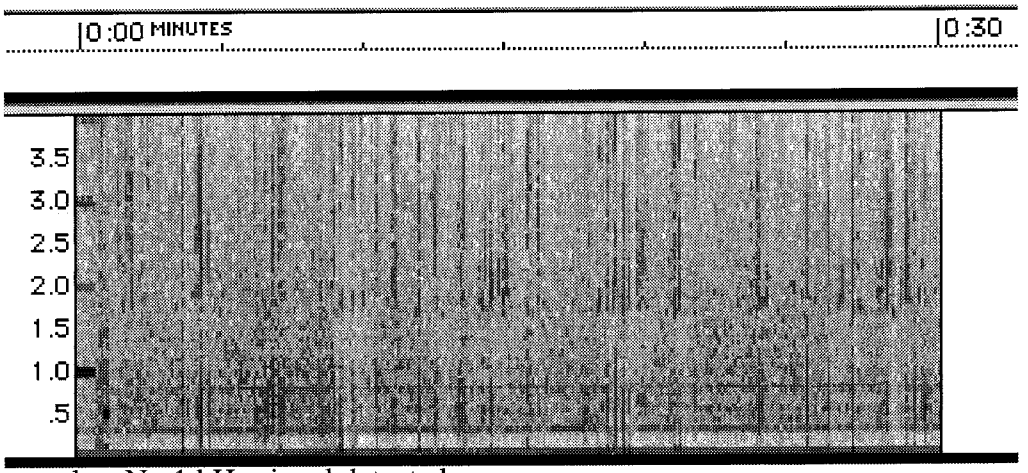
First 30 seconds. No 1 kHz signal.



Robert Bennett, Las Cruces, NM. Dense sferics, strong OMEGA - 4 stations.

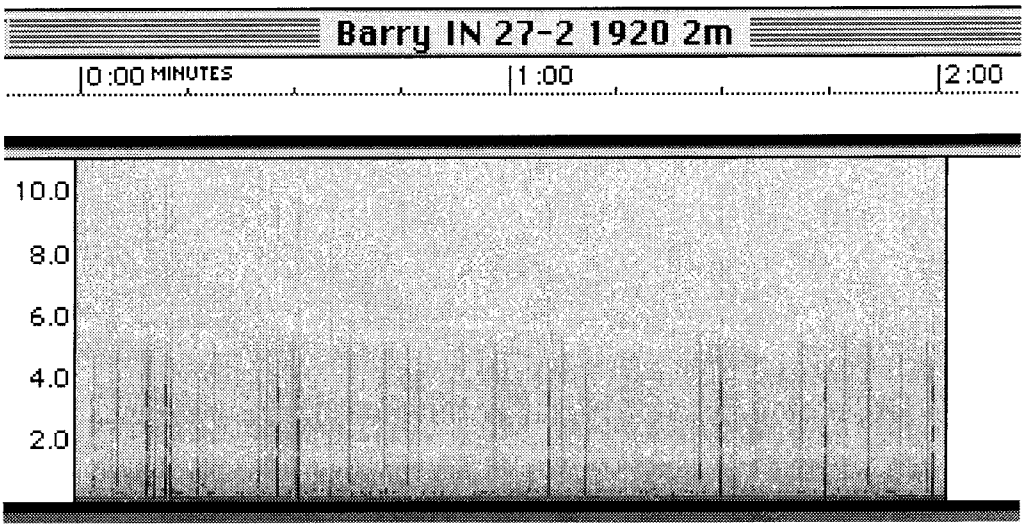


First minute, 0-4 kHz.

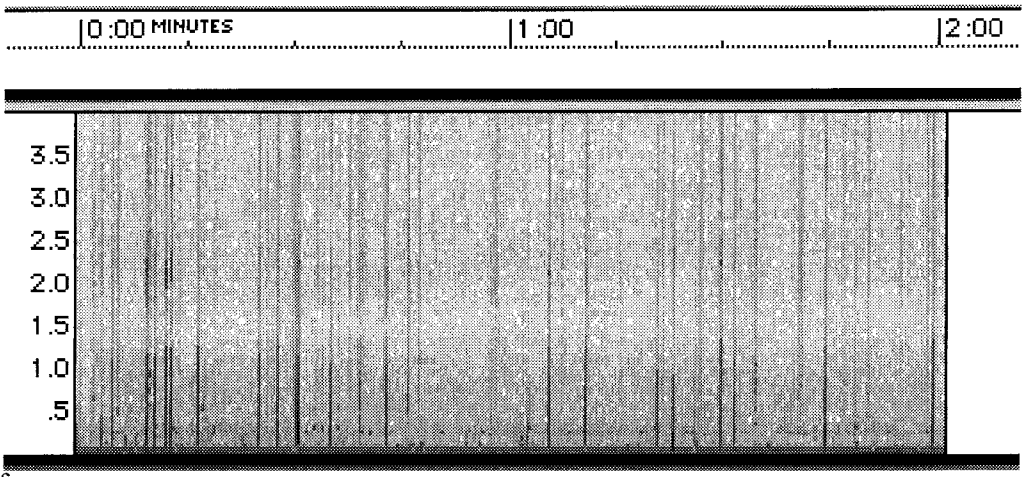


First 30 seconds. No 1 kHz signal detected.

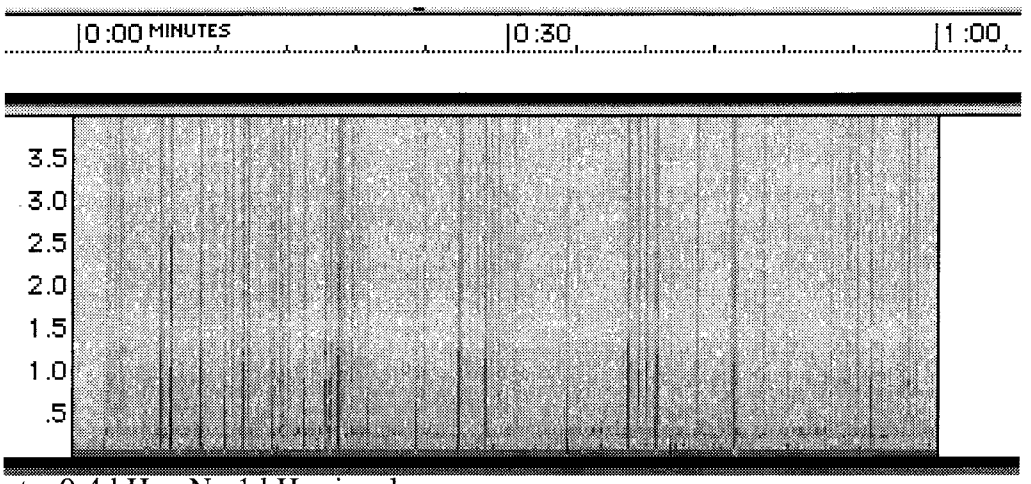
27-2



John Barry, Seeger High School, West Lebanon, IN Medium density, weak sferics.

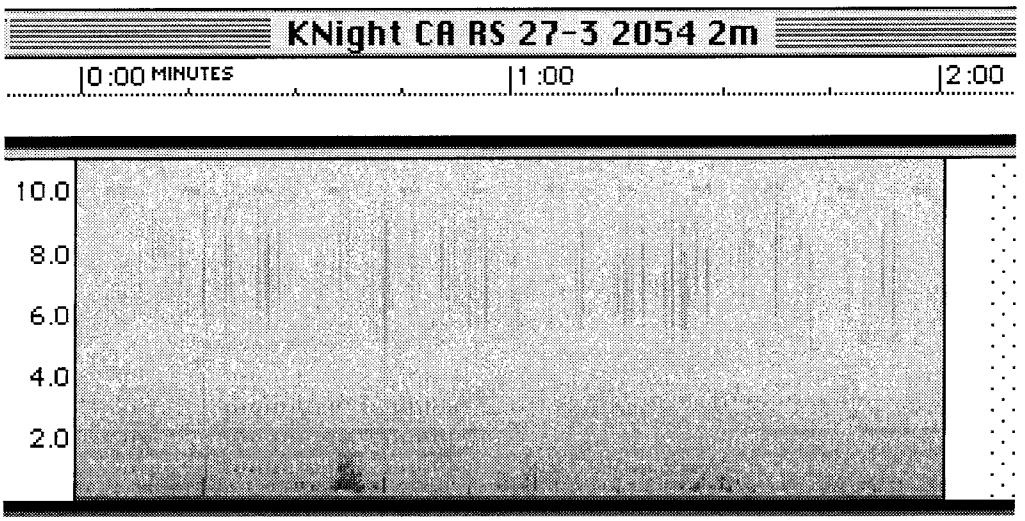


0-4 kHz frequency range.

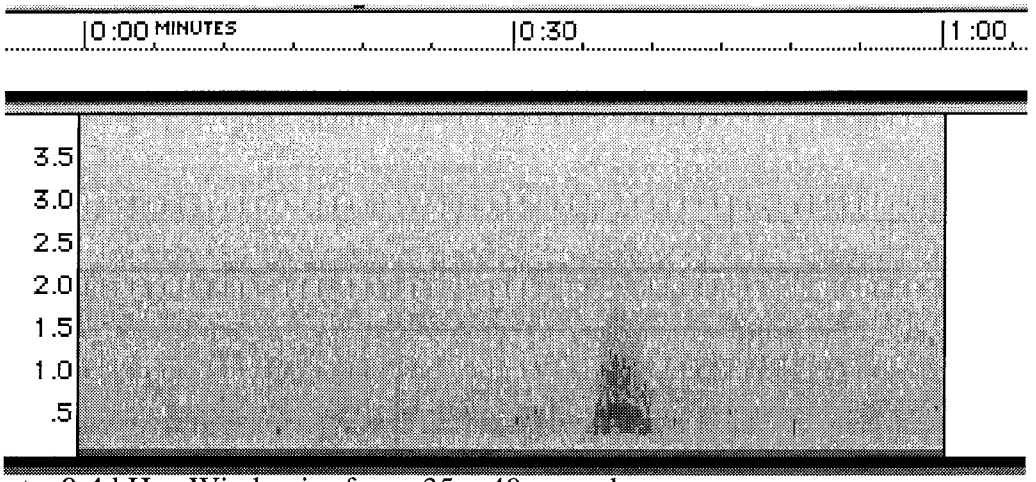


First minute, 0-4 kHz. No 1 kHz signal.

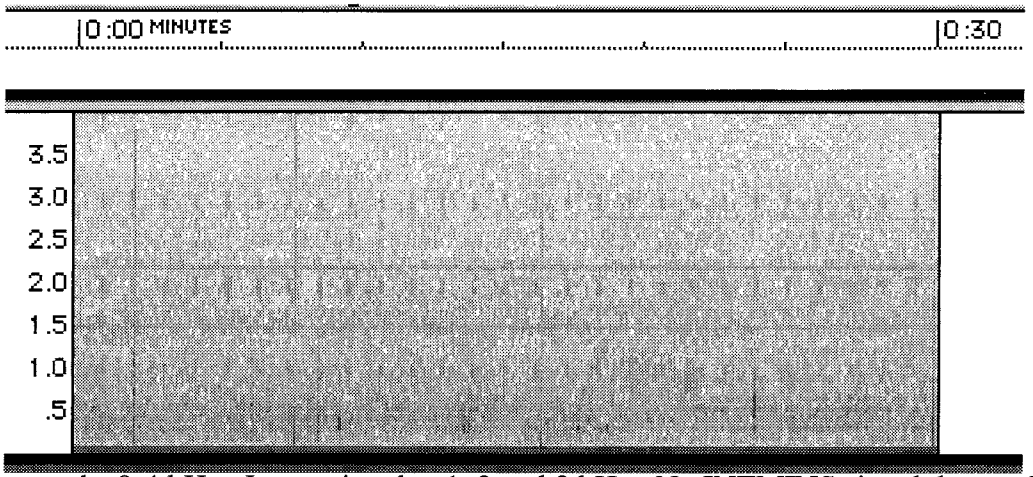
27-3



Dean Knight, Sonoma Valley High School, Sonoma, CA. Medium sferics, OMEGA.

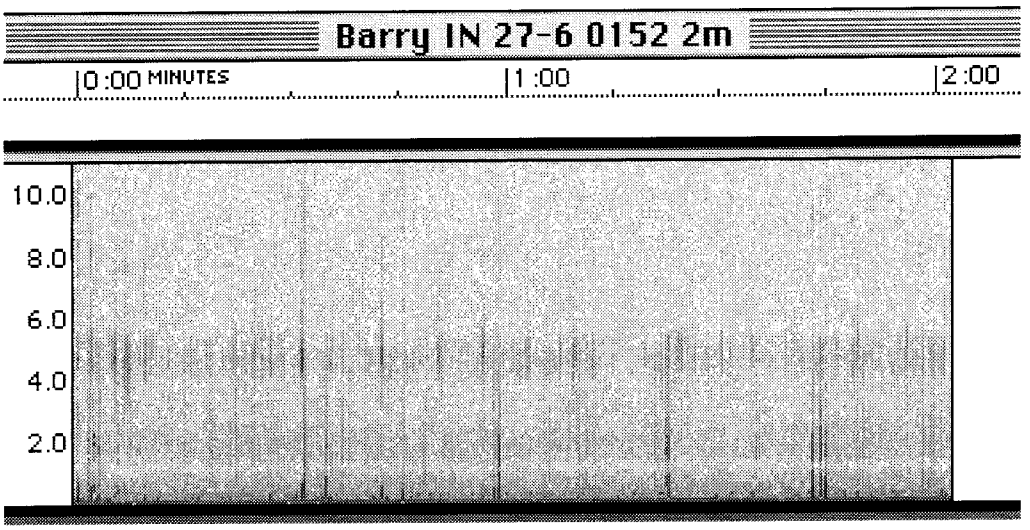


First minute, 0-4 kHz. Wind noise from :35 - :40 seconds.

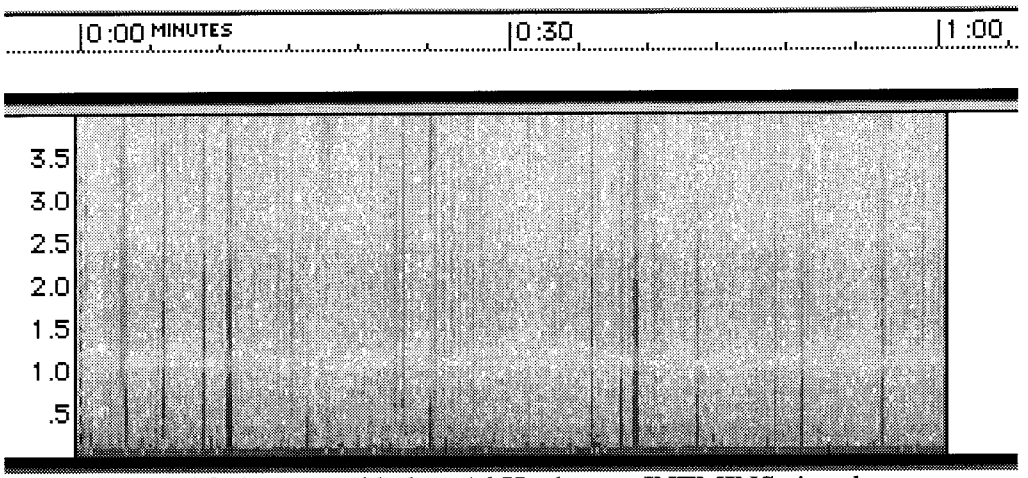


First 30 seconds, 0-4 kHz. Loran signal at 1, 2 and 3 kHz. No INTMINS signal detected.

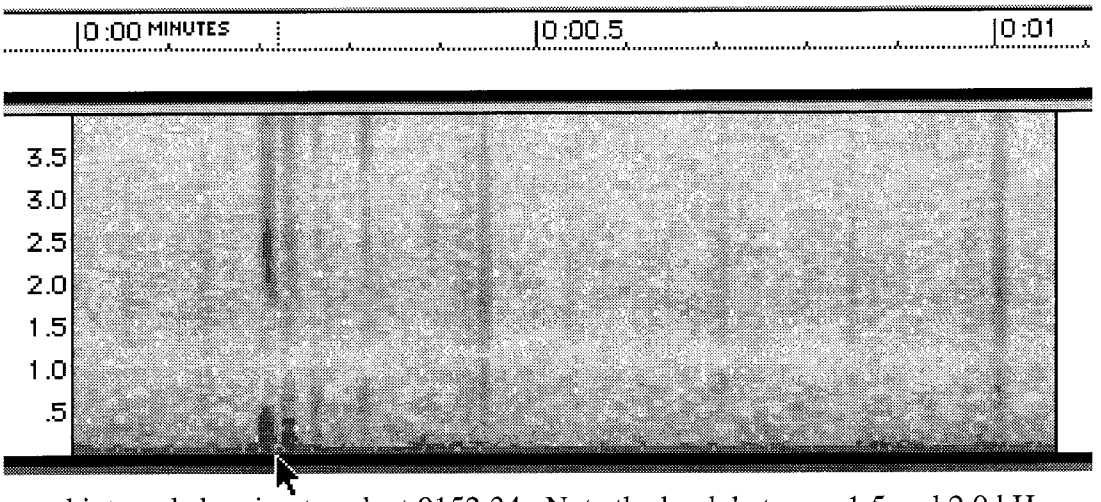
27-6



John Barry, Seeger High School, West Lebanon, IN Medium density sferics.

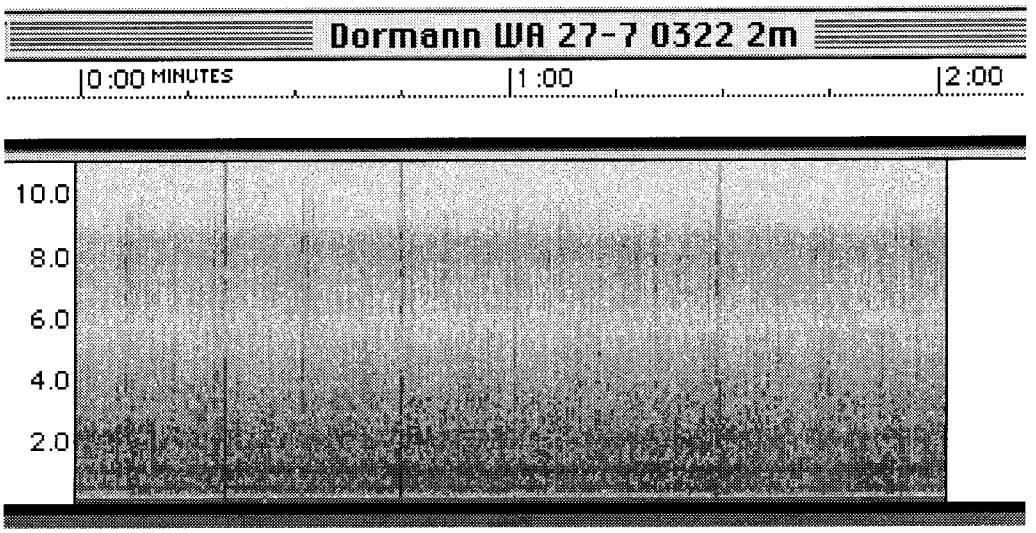


First minute, 0-4 kHz. Sferics extend below 1 kHz, but no INTMINS signal appears.

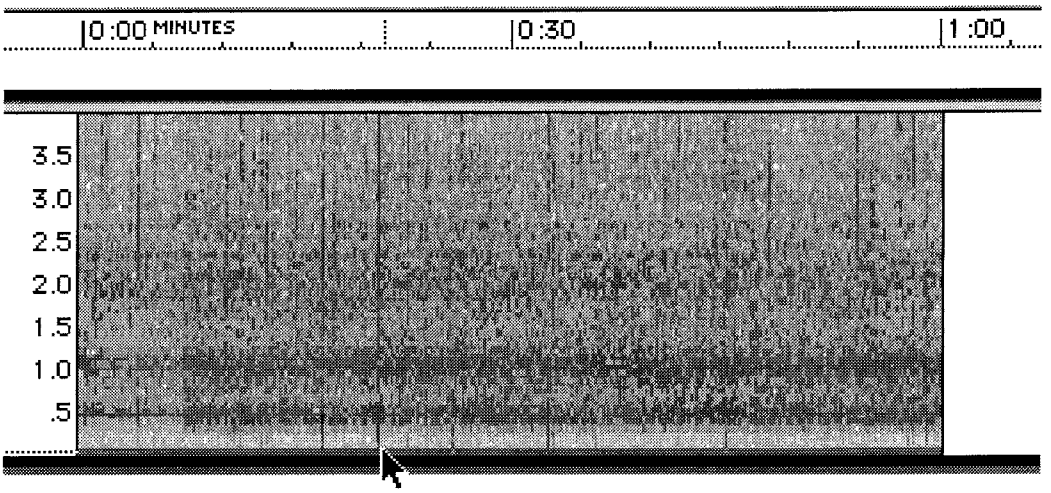


One second interval showing tweek at 0152:34. Note the hook between 1.5 and 2.0 kHz.

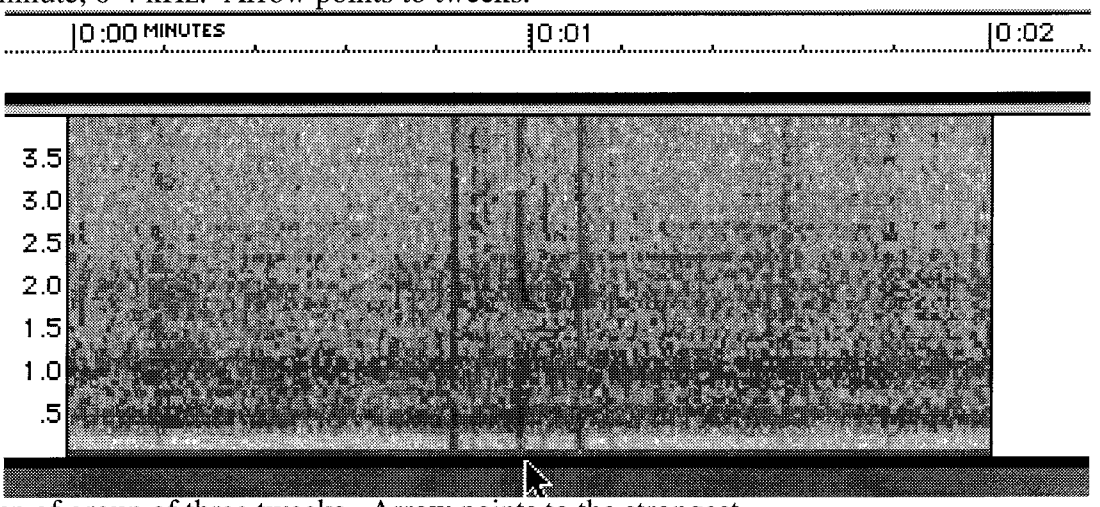
27-7



Mike dormann, Seattle, WA. Fairly dense sferics, some hum.



First minute, 0-4 kHz. Arrow points to tweeks.



Closeup of group of three tweeks. Arrow points to the strongest.

Notes From the Field

Communications from INTMINS Participants

Edited by Bill Pine
Chaffey High School
Ontario, CA

Data submissions are often accompanied by notes and messages from INTMINS participants describing various aspects of their experiences as observers. As an ongoing feature, some of these communications will be summarized in *The INSPIRE Journal*. The following summaries are in the approximate order in which the data was received by INSPIRE.

Team 11 Mark Mueller Brown Deer High School Brown Deer, WI

Mark and his students braved some harsh weather conditions to record their data. There was a steady rain with severe thunderstorms in the area. Students participating included:

Dave Ellenbecker	Lora Loke	Tumay Rojasoy
Hana Kim	Shelly Loke	Matt Weber
Mina Kim		

Mark writes:

> The students counted the seconds between the lightning bolts and the thunder to determine if we should stop taking data and take cover. At 11:50 PM local time, some very wet students had to push the instructor's car because we used the headlights during the data taking and the old battery went dead. The car started. We all went home - wet, but happy.

Team 1 Dr. Jack Lamb East Texas State University Commerce, TX

Jack is a long time and faithful observer who has recorded data for all INSPIRE events dating back to the SEPAC operations in 1992. He was accompanied in the field by his wife, Mildred. Jack writes:

> Enclosed is my tape for 19-2 and 27-2 and a map showing their locations. I wish I could have recorded 19-6 that passed right over me but it was at 1:00 AM and my quiet place seems to be populated with college beer drinkers around then, so I thought it best not to tangle with them.

It seems that all manmade interference is not the result of powerlines! Jack also reports that he is moving to central Texas in June (1996). He plans to test his equipment over the summer and will be ready to go in the fall..

Team 15 Robert Bennett Las Cruces, NM

Robert reports some hazards of data taking in dry desert conditions:

> Yesterday I managed to record three of the schedules: 19-3, 19-5 1nd 19-6. I was going to try for two more today, but it was just too windy at my monitoring site. Which is why I am writing this note.
>
> Have any other observers had a bad problem with strong winds causing the antenna and antenna lead-in wire to the RS4 to move around so much that noise is created on the tape recording? If so, do you know how they solved it?
>
> It occurred to me that using a coax line to the antenna would allow it to be rigid mounted and this would help reduce the problem. Any thoughts about putting a coax connector on the receiver? I am not sure how to do this without redesigning the receiver input for low impedance and putting the thing in a metal case.
>
> Also, two weeks ago, wind-driven sand and dust caused a static charge to build up on the antenna and when I put my hand near the receiver input terminal I drew a spark. The static discharge destroyed the input FET transistor. Good thing I had a spare receiver.
>
> I also found out it is not a good idea to wear nylon jackets within about 2 feet of the RS4 and its antenna lead-in when the humidity is low (in single digits). I observed yesterday that static charges would build up on the jacket and I could hear the jacket motion on the radio/tape any time I was within about two feet of it.
>
> Work permitting, I will try to copy at least two schedules next weekend.

[I originally used a wire taped to a 10 foot (3 m) piece of PVC pipe for an antenna. Wind noise was a problem until I moved the wire *inside* the pipe. That helped a lot. I subsequently changed to a 2 meter telescoping whip antenna for ease of transport and that antenna works well, although high winds of the type described by Robert are not common in Southern California. - ed.]

Does anyone have experience dealing with high winds or redesigning VLF receivers? If so, please send the information to me and I will pass it on to Robert and include it in the next *Journal.*

Team 12 Jon Wallace Litchfield, CT

Jon writes:

> Sferics and a few tweeks throughout. It was quite windy so the antenna wire moved about at times creating a "swooshy" noise on the tape. Some cars drove by. I analyzed using SoundEdit at school with students. No (INTMINS) signal was detected. Some 1000 hertz noise (from the tape recorder???) was detected on sonograms but it was not consistent wiht the expected signal. Some feedback was from the amplified speaker placed too close and poorly adjusted.

Team 13 Bill Combs Crawfordsville, IN

Bill was assisted by Tony Kline in some of his data gathering.

Team 8 Mike Dormann Seattle, WA

Mike has applied his considerable knowledge of electronice to several aspects of data acquisition and processing. He has built a noise canceller that removes most of the 60 hertz powerline hum and its harmonics from the recorded signal. It also removes anything else that is

periodic with a short period. This allows him to make some observations from home, although he does journey to a quiet site for most INTMINS observations.

Mike is also working on computer analysis of the data signals using a spreadsheet (EXCEL). He sent along some printouts of his work that I will include in the next *Journal* since my scanner is down with a mystery ailment. His work is promising although he does sign off with:

> This is just a drop in the bucket - signal processing for INTMINS - good luck on finding the "needle in the haystack"!

Team 5 Jean-Claude Touzin St. Vital, QC, CANADA

Jean-Claude had some log entries that said "voices?". Sure enough, on the tape, were some fragments of voices from some radio signals. As he reports, unusual radio reception seems to be a fact of life in his part of the world:

> When I tried to adjust my chronometer before leaving for my data site by listening to WWV, I had a hard time deciphering WWV from all of the other sounds and voices that were coming in at the same frequency. I call it a "wave party". This has happened a few times since I began ELF recording in 1992. This is probably why I recorded "human artifacts" above (in the log).
>
> I could not record during the day because of river flooding. Colder weather beginning at noon made the water level lower so I could cross the bridge (on my toes) in the evening.

Jean-Claude may hold the record for "most-adverse-conditions" in his INTMINS data taking!

Team 14 John Barry Seeger High School West Lebanon, IN

John and his students recorded several sessions on the second weekend of the April operations. On the first attempt there was a serious oscillation that obscured any other signal. John writes:

> We are not sure exactly what happened but we swapped tape recorders and eliminated the noise on the next recordings. We also backed off on power on the radio.

John asks for suggestions to solve the problem. I would say they did exactly the right thing and determined that the problem was the first recorder. The quality of the later tapes was much improved. When problems arise in the field, I sometimes start by disconnecting and reconnecting everything. It is amazing how often that works. A hidden poor connection is apparently often the culprit.

Operations covered include: 26-1, 26-2, 26-3, 26-4, 26-6, 27-2, 27-3, and 27-6. Seeger High School personnel for the data taking sessions included (parentheses indicate how many operations each student participated in):

Katie Bryant (4)	Brock Goodrick (4)	Matthew Lemming (3)
Angie Dillworth (4)	David Kight (2)	Brooke Swanson (4)
Mandy Foster (2)	Andy Lansinger (1)	Chris Webb (3)