

Gravity and Gravity Wave Monitoring

I have constructed a monitor device that converts gravity waves into audio waves. Due to problems with maintaining this setup, I have constructed a new detector .

As of 1/1/2001, the monitor that is shown here has been turned off. My atest detector was running for a few months. One of the recordings from the piazio film type detector is fairly close to what I am hearing in the background with this latest detector. The latest detector did not detect any interesting sounds, so it has also been turned off. The best detector that I have built is the one pictured on this page. Unfortunately, I did not know too much about how to filter the power supply then, so there is allot of 60hz in the background.

Lately, I have been working on an electrostatic generator but I hope to get back to building detectors soon.

My theory of gravity may also be useful, to those who are interested.

There are sounds where there should be no sounds. I had the detector connected to a cassette tape recorder and a sound activated switch because the interesting sounds don't occur often. Some sounds are like a sustained single tone. Sometimes a jet aircraft is near when similar sounds are heard, but my monitor is shielded from normal sounds in the air. Other sounds are like a machine is being operated, or a craft slowing, then accelerating.



Applications:

- UFO Detection
- Seismic Monitoring

No one knows exactly what these sounds are. I have run controlled experiments to eliminate possible line noise and electro-magnetic effects. I have also consulted experts in EMI testing. Weather the single frequency tones are rotating binary stars, some affect of a jet engine, or a UFO, is not known.

Suitability for use as UFO detector:

There have been many reports of the effects that UFOs have on material objects. One very common effect is that the UFO causes non-magnetic physical objects to move even though there is no wind or air currents. These reports include incidents of :

- Trees that are seen to sway as the UFO moves above them.
- Loose shingles being thrown off of a roof as a UFO flew over a house.
- Circular patterns of flattened grass under a UFO that just hovered above the grass.
- Sounds that are felt, rather than heard.

All of these involve the induced movement or vibration at a distance of material objects. This is exactly what my device is best at monitoring. There are lots of theories as to why a UFO should cause this effect on non-magnetic objects, and nearly all of them agree that some form of gravity based propulsion is being used. Any form of gravity based propulsion will necessarily cause a flow, or vibrations in gravity. A change in the flow, or a vibration of gravity will produce motion or vibration in material objects. My monitor converts very small motions of a thin brass plate into audio that is connected to your stereo so that you may listen to any vibrations in gravity that are strong enough to cause a vibration of the plate.

The machine sound was recorded (5-12-97) two days prior to a reported UFO sighting in Richmond CA (reported in UFO Roundup), I live in San Jose.

My latest version is now running and I will be tracking the dates of detections to correlate with future sightings.

Why non-magnetic? If you build a detector that is at all sensitive to magnetic vibrations, the first thing that you hear is the 60hz (or 50hz non-USA) power line hum. If you filter out the hum and amplify a bit more, you will hear radio stations and lightning strikes. Maybe there is noise from a UFO in there somewhere, but it would be difficult to separate it out of all of the man-made noise.

Suitability for use as Seismic Monitor:

My device converts very slight vibrations of a thin brass plate into audio that is connected to your stereo. Usually, the device is hung from the ceiling on a bungi cord (stretchy rope, like a rubber band) in order to minimize the vibrations that are conducted through the floor of any structure (house). If you just place my monitor on a table, you will hear very loud rumbling noise and 60hz hum if there are any nearby motors or transformers. This noise is the vibrations that are conducted through the floor or walls of your house. If you bury my monitor under-ground, you will hear all of the cars and busses that drive within a few blocks, and probably also hear 60hz hum (it is everywhere).

In order to do seismic monitoring with my device, you would need to mount it on a large stable rock or concrete slab that is away from all roads. The best place would be in an abandoned mine shaft. A device would need to be constructed in order to allow the audio to be transmitted over long distance without line noise (voltage to frequency converter). My monitor currently converts the audio into differential audio for transmission to the user's stereo and there is a small PC board that converts this differential audio back into normal audio right at the user's stereo so that line noise is minimized. This system works well for distances between the monitor and the stereo of 50 feet or so, but would not be good enough for a distance of 1000 feet.

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Gravity Wave Monitor

My gravity wave monitor converts gravity waves into audio waves. It is connected to a normal stereo for listening.

A gravity wave monitor needs to be a small, light object that is lightly suspended and closely monitored as to relative position. The reason that the object needs to be small is so that it can vibrate at high audio frequency with a small amount of applied energy.

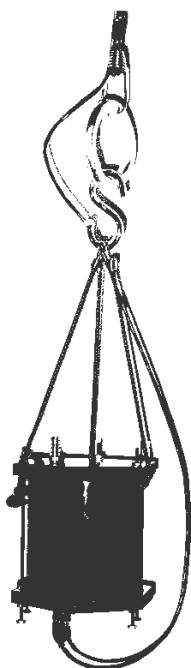
I have been building variations of this device for the past seven years.

The first one that I built used a high quality speaker with most of the cone cut away and a small weight mounted on the remaining cone. From this device, I learned how to make very high gain, low noise audio amplifiers. The problems with this device were it's sensitivity to electro-magnetic waves, and the low signal level. Even with good electrical shielding, the 60 Hz power line noise had to be filtered out, so a major portion of the audio spectrum was useless. The device was also too sensitive to normal audio waves in the air, although this problem was minimized by running the device in a vacuum chamber.

Even with all of these problems, I recorded alot of interesting sounds. I left the device running 24 hours a day while it was connected to a voice activated switch and a cassette recorder.

A few years ago I came up with a device that I could build where the signal to noise ratio was dependant on an excitation voltage. This device is nearly immune to electro-magnetic radiation (almost no hum even at high amplification). The amount of signal also depends on the exciter voltage so that less gain is required, this further reduces noise and increases stability. The first unit with PC boards has been compleated, see logbook. Through lots of trial and error (the only true method of engineering), I have reduced the per unit cost to \$620.00, although the total cost to me was between two and three thousand. I am not planning to market the units, although I did purchase extra PC boards when I had the fab done. A breif description has been added below. Due to the cost and time and lab space requirements, I have discontinued work on this type of detector. I am now using a piazo-electric film .

A large improvement was made when I hung the sensor from the ceiling on a system of bungie cords. The main bungie cord has one resonant frequency, and is attached to a metal ring. The metal ring is attached to three smaller diameter bungie cords that have a different resonant frequency. This inexpensive system prevents the rumbling noise that the sensor picks up even with more complicated (and expensive) mechanical stands.



Description of the Old Type Monitor Electronics:

One pole of an 80 volt sine wave generator at 455Khz is applied to the center movable plate. This plate is suspended between the upper and lower plate by a very weak spring arrangement. The upper and lower fixed plates are connected through resistors to the other pole of the sine wave generator, forming an RC bridge circuit. The primary of a step-up transformer (tuned to 455Khz) is placed across the middle of the bridge (so that each side of the primary is connected to a fixed plate and a resistor).

The center tap of the measurement transformer secondary is grounded (this ground is common to everything except the sine wave generator) and the other two connections of the secondary are each separately amplified, filtered by a narrow band pass filter (455Khz crystal filter), and sent to a precision rectifier and low pass filter (cutoff at 20Khz), similar to an AM radio detector. The difference between the two signals is taken and sent through another low pass filter and audio amplifier, then to an ordinary home stereo auxillary input.

The limit to the excitation voltage is the availability of a high current driver and a tuned step-up transformer for 455Khz. This frequency was chosen because of the availability of crystal filters and off-the-shelf tuned transformers (Toko, Digikey), also because no one is supposed to transmit on this frequency because it is the IF for AM radio. The disadvantage with this frequency is that the op amps become expensive. A better choice would be 60Khz because this is well above the Niquist frequency and still low enough to get good amounts of drive current for the primary of the sine wave generator.

I was not able to use 60Khz because I don't know how to wind a step-up transformer with resonance at this frequency.

The New Detector

The detector shown uses a 6 inch by 1 inch strip of piezo-electric film suspended at either end by springs. There is a small weight (#6 washer attached with double stick tape) attached to the middle of the strip.

The electronics consist of a low noise, multiple stage op amp circuit with a gain of around 750. This gain was set so that the noise from the op amps and other components is around 0.25 volts peak to peak at the output of the final stage.

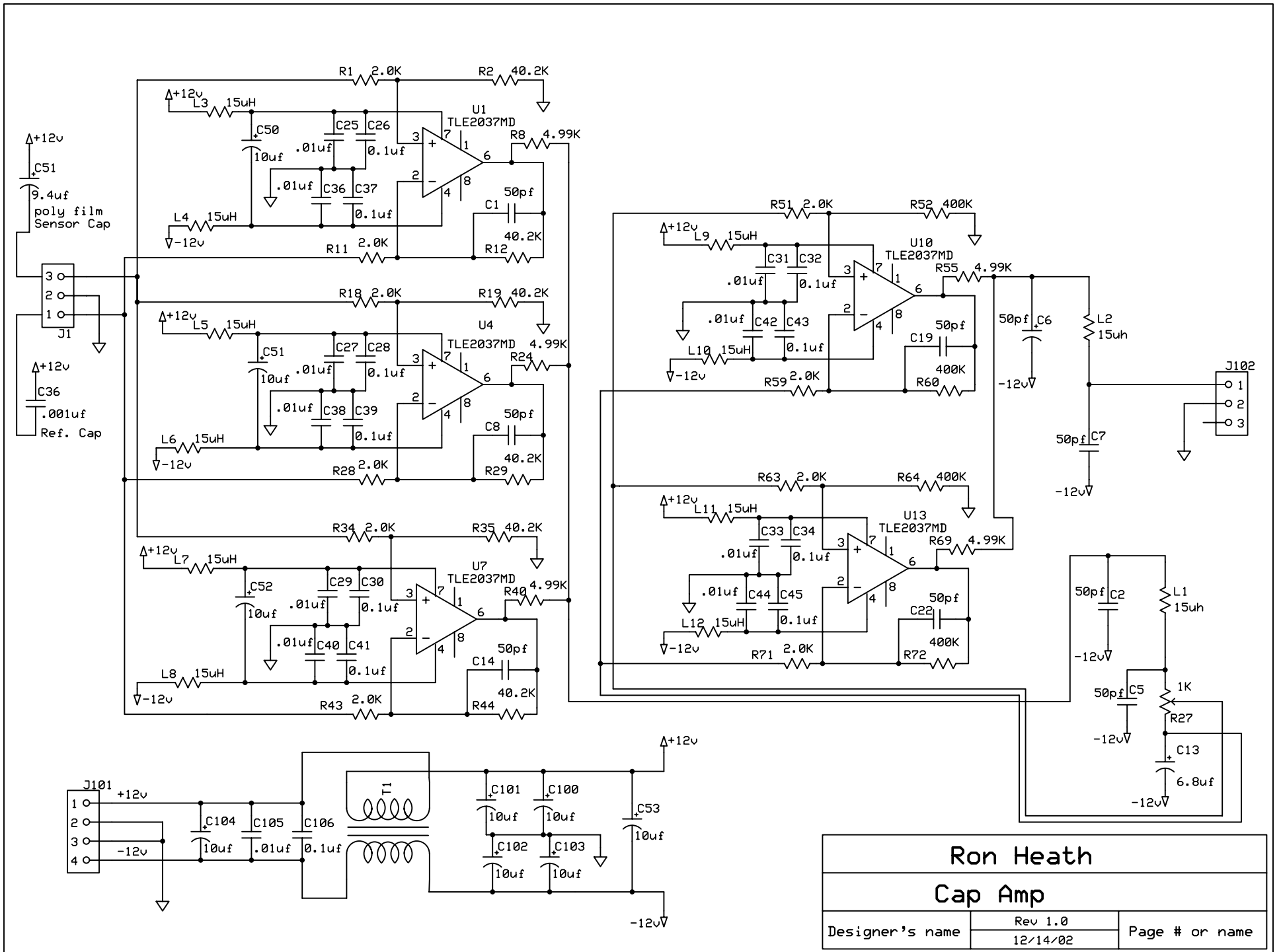
Most of the noise reduction was accomplished by using large capacitors and inductors as filters for the power supply (+-12v computer grade supply) that is located 14 feet away from the filter/amplifier box, using shielded cable. The power supply filtering components are inside of a brass box that is attached directly to the box that the gain stages are in. The components are arranged in a low pass filter configuration with three series inductors on both the + and - supply, with capacitors in between. The first two filter stages have the capacitors connected from + to - and the last stage has capacitors connected to ground. The supply is then regulated using three terminal linear regulators to regulate the voltage to +-9v and then another pair of regulators for each op amp stage to get +-5v (the positive regulator here is a LM7805) and a RC filter to reduce noise from the regulator.

This filtering design was perfected using a hand wound toroid transformer with the secondary in series with the wire from the power supply and the primary connected to my sine wave generator so that I was able to inject noise (from 1hz to 2mhz) onto the power supply line and observe the effect of the filtering components. One linear regulator gives a 100 to 1 amplitude reduction in power supply noise. Multiple LC low pass filter stages are much more effective than just a large cap.

The noise is further reduced by driving two wires differentially and then running these wires through shielded cable to a small circuit board that is close to the stereo amp (Yamaha RX-V293) the small circuit board converts the differential signal back to a mono signal that is connected to one channel of the VCR audio input.

A single FET amplifier is placed in the vacuum chamber along with the piezo film and shielded within a brass box. The brass box is twice suspended by a mechanical filter (rubber bands). The vacuum chamber is a length of 4 inch diameter plastic pipe. The pipe is suspended by a mechanical filter like my previous detectors. The preamp is attached to the top of the pipe. While not shown in the picture, the pipe is covered with a special audio reducing foam (courtesy of Mark, who won't talk to me because I forgot his name once in an email).

I used a home built method of monitoring this detector.

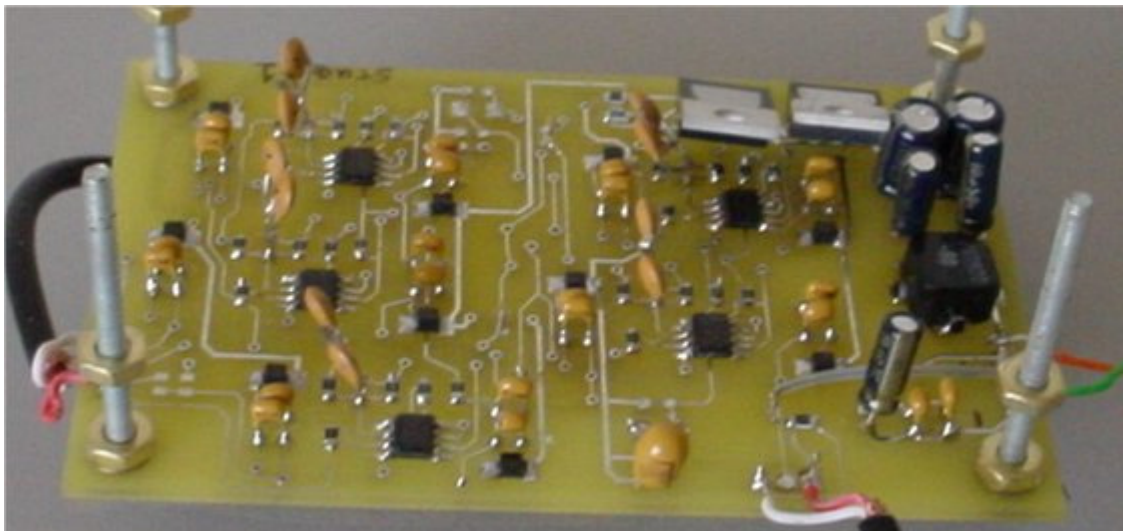


My latest Monitor

My present monitor is based on the work of Gregory Hadowanec (<http://www.rexresearch.com/hodo2/noise.htm>)

This is a picture of the amplifier circuit board and covered unit with power supply filter.

The board with the sensor on it is not shown.



I am monitoring the audio with a Mac laptop. I never used to think that the mac was useful for anything, but since they converted to the UNIX operating system, my views have changed. Add to this the free downloads for the complete development software with example files, and the mac becomes pretty useful. After downloading everything, I thought I would do a quick web search just to see what else was out there. I found a program that does everything that I need, called Audiocorder.

This, combined with the Griffin iMic USB audio interface, is all that I need to monitor and automatically record events with full CD quality. These things just installed and ran the first time without any messing around.

I have been monitoring this sensor using the Mac laptop that runs 24 hours a day since 2/1/03.

Another person who is working on interesting detectors is Tom Schum (<http://www.electronmajority.com/pages/526055/index.htm>).

Monitoring

After a long time building analog type sound activated switches, I have changed to digital type circuits.

The main problem of the sound activated switch is to set the threshold. In the analog circuits that I use to build, an integrator stored the average level of the noise and this level was compared to the present audio level. These analog circuits would drift and eventually leave the recorder turned on, or miss events.

The most complicated switch that I made was with a FFT program that I downloaded and modified so that the threshold was set for each frequency "bucket" individually.

The setting was a one time setting because there was no processor time left for doing averaging of the levels in the "buckets", so, as the noise level drifted, this switch developed the same problem as the analog circuits. The computer was a 80486 - 100 and I could re-compile it on my pentium compatible (I bought a K6-2 300mhz) but I would need to leave my main computer on all of the time. Also, win98 is not good for real time things because it goes away and does housekeeping (sometimes for 100s of milliseconds), this could cause events to be missed.

My present switch uses an A/D convertor that I made using a ramp generator (op amp constant current source connected to a mylar cap). An 8051 compatible micro controller is connected so that it can reset the ramp and determine the amount of time from the start of the ramp until the ramp intersects the audio level.

This micro controller (AT89C2051) contains a serial link that is used to send the present audio level to an 80286 laptop that is left on all of the time. The laptop samples the audio level periodically (2 or 3 times a second) and averages these samples together (this way I don't need to do floating point math in assembly language, but can use Borland C++). An adjustable constant is added to the average level and this number is sent to the micro controller.

The micro controller uses this number as the threshold. These continuous threshold level updates from the laptop compensate for the drift in the noise level and for changes in the components due to temperature. When the audio level is greater than the threshold, the micro controller activates a relay that is wired across the record switch in my cassette recorder (Kenwood KX-W6020), the relay is held on for 0.25 seconds.

A signal is also sent over the serial port to the laptop. The laptop logs the time and date of the event and waits for an adjustable time (20 seconds) before telling the micro controller to press the stop button on the cassette recorder. The laptop also keeps track of the total record time so that the position of the recorded event can be matched with the log entry.

Log Book for PC board version of Gravity Wave Monitor

1/1/01 decided to end this experiment. My monitor is now turned off.

11/18/99,9:50AM recorder triggered and then recorded this sound. This is with a new first stage amp that reduces response to the lower frequencies.

9/9/99 I made some recordings directly from the amplifier with my AWE64 sound card. While I was listening these sounds I found an interesting noise. This occurred between 8:24 and 8:30pm. My recorder would never trip on a sound of such low volume as this, maybe someday I will get some better detection equipment. This sound was posted in the original 44khz sample rate mono because Mindspring bought Netcom and increased my free web page space from 1Mb to 5Mb so there is room for it.

9/8/99 Tonight there was a thunder storm and many lightning bolts were visible. My detector remained quiet during the lightning, but the thunder drove my amplifier into clipping. This gives me a bit more confidence that my shielding against electro-magnetic waves is fairly good.

8/28/99 Completed my new pre-amp using the LT1167 instrumentation amp. Also built a separate power supply from the main amplifier. Due to a lot of filtering on the supply and some noise reduction methods that I have come up with for amplifier design, the sensitivity is now very great. It is now time to work on better mechanical filtering because nearby footsteps and door closings cause sounds so loud that the amplifier clips the waveform to nearly a square wave.

6/19/99,7:50PM someone is broadcasting ! I recorded the last word of a mechanical voice that sounds like the word project. I really wish that I had an audio delay so that I could have recorded the first couple of seconds of the message. If anyone has any information about the source, please email me.

3/5/99 Completed the chamber. The new sensor is now running in a 25" Hg vacuum.

2/28/99 finally got a vacuum pump (GAST DOA-P104-AA). I have another sensor built, but need to finish the chamber to put it in.

2/23/99,2:23AM recorded interesting sound, don't think it's an aircraft .

1/1/99 completed digital sound activated switch. My new piezo-electric detector is now being monitored.

10/?/98 acquired a 80286 laptop for data logging and control of sound activated switch.

8/?/98 completed new piezo-electric detector and dis-assembled the old detector.

6/?/98 Shut down monitoring for the detector when I bought my new computer. There is no available slot for the modified board to control the buttons on the tape recorder, and I don't want to leave this machine on all of the time. Started working on new piezo-electric sensor.

3/4/98 recorded the same 120 hz tone again, this time it was a shorter duration, around 3 seconds.

2/15/98 recorded a 120 hz tone last night or early this morning. Not too interesting because this is 2x power line frequency so it is probably something man made.

12/14/97,1:52PM an increase in the background noise with a larger increase (about 10db) near 15khz. Duration was about two minutes. The recording just sounds like white noise, so I'm not going to post it. This event would have been discarded except that I was watching the spectrum analyzer (program for my PC) as it happened. The program turns on the recorder a few times per day, so if I am not watching and if the tape sounds like white noise, I record over it again.

10/7/97 (or late 10/6) a pulse at around 18hz lasting about 0.96 seconds. The next detection (the next time that the computer turned on the recorder) there was a beep and another pulse of around 18hz for about 0.8 seconds. Due to

lack of space (1Mb max from Netcom) I will only post the second sound.

10/6/97 sound like a series of pops (7 pops) that ocured at a rate of around 28hz.

9/2/97 recorded a sound (sometime before 6:00PM) that sounded like blowing across the top of a bottle.

8/27/97 New sensor failed to detect test tone. When I took it apart, I found that the lower noise was due to design flaw. Went back to monitoring sensor that requires a vacuum.

8/25/97 Connected new type of experimental sensor that does not require a vacuum, but may be less sensitive

8/14/97 Recorded an interesting sound last night. A two part sound. First there is a ringing type noise and then another one that tapers off quickly.

8/10/97 Slowed leak and jury-rigged vacuum pump. Recorded first sound with new monitor, but it is probably just room noise The sound happened late 8-9-97, or early today.

8/4/97 New, more sensitive monitor is running. Problems with vacuum pump and new chamber leaks, so it is not running 24hrs. New monitor uses only 3 boards instead of 5, with modification to one of the boards. The vacuum chamber is larger, but the increased signal to noise ratio and reduced component cost is worth it.

7/18/97 The last entry was added to this page on 6-24-97. A couple of weeks later I found out about a UFO that was spotted on the same date and at 9:30PM, nearly one hour from when I heard these sounds. For the full article, see UFO Roundup (<http://www.digiserve.com/ufoinfo/roundup/>) (select June 29 issue).

6/23/97,10:32PM two sounds. Like a burst of wind that increased and then decreased one took about 2 seconds to increase and decrease and the other about three seconds. The recorder turned on, but on playing the tape, the sounds wern't there (not too suprising, using a Kenwood KX-W6020 with Dolby C. Response really drops off above 16Khz).

6/20/97 Converted to transformer coupling from bridge circuit. Increased sensitivity.

6/8/97 First event recorded. Very weak signal at 9.1Khz. Recorder turning on and off woke me up at 4:30am so I could take readings off of the spectrum analyser: peak was -45dBm, normally the white noise is -50dBm at this frequency.

6/6/97 Found that sensitivity problem was caused by ordering the wrong part number for the transformer causing exciter voltage to be 30v instead of normal 90v. Solved by taking the transformer out of the wire wrap prototype. Connected the monitor to the automated recording equipment.

6/1/97 Completed mechanical assembly of vacuume chamber and sensor assembly. Mounted all boards.

5/27/97 Completed assembly of all 5 boards. Functional test revealed sensitivity problem. Pot on differential audio to normal audio conversion board in backwards, no other errors found.

What Is Gravity ?

Gravity was defined by Newton. It is the name for the acceleration between any object that has mass and all other objects that have mass.

There are a lot of names for what must be between two massive objects in order for them to attract each other. It has been called space-time, the ether, gravitational force, and other things. Some people seem to think that there is really nothing in between the objects, but then those people need to resort to a mystical fourth dimensional force to explain gravity, of course, there is no real answer when you need to explain how there can be both a "mystical force" and "nothing" between the two objects at the same time.

Let's face it, there really must be something between two objects in order for one object to affect the other one. I really like Einstein's name for it the best: "space-time".

There have been many experiments done that will allow space-time to be better defined. The best one is what happens when a particle of mass is accelerated to a speed that approaches the propagation speed in the space-time. When this is done, the particle begins to take on mass.

Where does the mass come from? according to Einstein, the energy is converted into mass. Great - now we need to define energy before we can further define space-time. Ok, let's keep it simple. Energy is what causes mass to move. That is all of the definition that is needed. Energy can be converted into a motion or a compression of mass.

If causing a mass to move (near light speed) makes the mass become more massive, then whatever the mass is moving through must also be mass.

The particle must be made of the same stuff as what it is moving through, or you will really get lost in trying to explain it. $E=MC^2$ pretty much says this, and I think that Einstein knew, but didn't write it down.

One single type of stuff makes up both the particle and what it is traveling through (whether the stuff is composed of particles or one substance doesn't matter).

Ok, now we have this stuff called space-time that looks like ordinary mass when it is compressed. The particle - wave duality is solved because, in order for a compressed zone of mass to be stable, it must be in constant motion.

Einstein's famous equation $E=MC^2$ is satisfied for atoms because the center mass of an atom accelerates to near light speed before bouncing back on itself, thus sustaining the constant motion required to maintain a zone of space-time that is more dense than the ambient space time. Energy of motion is maintained as a stable oscillation of the mass. The propagation speed is in Einstein's formula because that determines where the bounce-back occurs (and this determines how much energy a certain amount of mass needs to maintain a stable oscillation). The sphere expands and contracts with a period of oscillation that depends on the amount of mass in the sphere and the density of the ambient medium.

When the sphere is expanding and the rate of expansion approaches light speed, the sphere bounces back toward its center. A shock wave, or shell is also created. This shell consists of the ambient medium that was displaced by the expanding sphere.

Shells are formed that are at different energy levels for each atom (because of the oscillation frequency and the diameter). These different densities determine what frequencies of light will be absorbed by the atom - the density of the crest of the light must be close to the density of the outer shell of the atom in order to be absorbed. Photons will be emitted when the center mass of the atom is not able to sustain the density of the outer shell. Personally, I like this allot better than trying to count electrons that you are not supposed to know the location and speed at the same time.

The atom allows something else to be added to our definition of space-time. Time can be defined as the relative motion of objects. We choose a certain type of object (a cesium atom) and count the oscillations of the atom. The problem is that the frequency of the atom depends on the ambient density of

the surrounding space-time. I know you really think I've lost it now, but this has been verified by experiment. If you have two atomic clocks, one on earth's surface and the other in synchronous orbit, the clocks will run at different speeds. This was put forth by Einstein. As the density of space-time increases, time slows down because if the amount of energy stays the same and the ambient mass becomes greater, the motion slows down. You don't get energy from no-where and no mass magically pops into existence, if more energy is required to move at the same rate and there is no extra energy applied, the rate will slow down.

So now we have enough information about the space-time to be useful. Any mass will produce a higher density in the surrounding space-time as it loses energy, and all of the density gradients will combine to produce acceleration of the objects towards each other. Particles travel through the space-time as oscillating spherical compression waves, and some types of particles travel as a motion that is a sustained high density zone (like the wake of a boat sometimes produces a hump that stays a hump as long as the speed is maintained). Matter begins as a compressed zone and anti-matter begins as a rarefied zone.

Unlike other theories, this one has no elaborate "proof", but it describes a method of constructing a computer model of a single substance by describing the properties of each voxel (small area in space) and how the voxels inter-relate. It is a premise of this theory that by modeling this single substance, all of the complex atoms and particles may be viewed by inserting a stimulus (a compressed zone of the same substance that is being modeled). As the model is allowed to progress into time, the compressed zone(s) will behave similar to real world photons, electrons, atoms and all other observable particles and "fields".

Is this theory good for anything ?

The theory needs to be made into a computer model. If this is ever done (it will take a bit more than a pentium), the theory could be incredibly useful. In the electronics industry, it would be nice to watch the electrons moving from atom to atom in a three dimensional simulation. the Heisenberg principle will not apply inside of a computer model.

While the theory does not explain how anti-gravity could be done, it does explain how space-time could be used as reaction mass. A gravity engine that is similar to a jet engine could be built. Instead of forcing against the air, this engine would force against the space-time, creating an actual flow of space-time.

One strange thing about the gravity engine is that it could also be used to create a zone where the density of space-time is increased or decreased (if you point a number of engines at the same spot, the density at that spot will be high). Density of space-time corresponds to time rate, so that things inside of a high density zone would experience a slower time rate. The dependance of time rate on space-time density was predicted by Einstein and has been verified by experiment. What is new here is the idea that we could create a zone here on earth that would have a controlled density (like a stasis chamber).

Since gravity is due to a gradient in space-time density, the above experiment would be dangerous for living things. With a number of engines pointed at the same spot, the gradients would cause the person inside to be pulled in a number of directions at the same time. Vibrations of the engines (no engine anyone has ever made runs without any vibration) would be translated into heat and tearing effects at the atomic level. These effects could cause normal materials to become radio-active as some of the atoms are torn apart by the stress. Some frequencies would also loosen the bonds between atoms as they are forced to vibrate at frequencies different than their natural resonance frequency. If the structural bonds become weak, two structures could merge together.

So, if you were at the center focus of a number of crudely built engines, your body parts would be being pulled in all directions. There would be no up or down. The time rate would be different for different parts of your body (you try to move your hand and it may take a while for it to actually move). Parts of your body would be too hot and some too cold. And, worst of all, you could probably move your hand into solid objects.

Weird things:

Has anyone got any information on a piece of straw being stuck part-way through a glass window pane, during a tornado ? This relates to rumors of the Philadelphia experiment. Something strange happens when a vortex is created. There are also rumors that the vortex has been used to provide thrust, perhaps creating a flow of space-time. Experiments along these lines are being done (check out INE <http://www.padrak.com/ine/>).

The Heisenberg principle:

All he said was that photons have size, so if you try to see something smaller than a photon, un-expected things will happen.

This has been twisted into all kinds of weird mystical chants that are usually uttered when a single electron goes through two slits and interferes with itself. A particle is a complicated thing, it needs to maintain a stable oscillation or motion in order to exist. It would be best to make the computer model and watch this happen.