



## WE HAVE A HOME

We have a field operating facility up and working at 205 South Main Street. Radios and antennas are being installed and computers programmed. Our 2m antenna and preamp arrived from **Don Jacobs** (WB5EKU), and sold us his satellite system including antennas, interfaces,

preamps, Az/EI rotors, and booms. We also are looking to acquire his tower, should shipping costs be reasonable. These are the essential components as we get ready to complete the satellite portion of the program.



Mentioned in the last newsletter was our growing need for electric power. **Jess Miley** (KOTAA) in Florence suggested I inquire of a

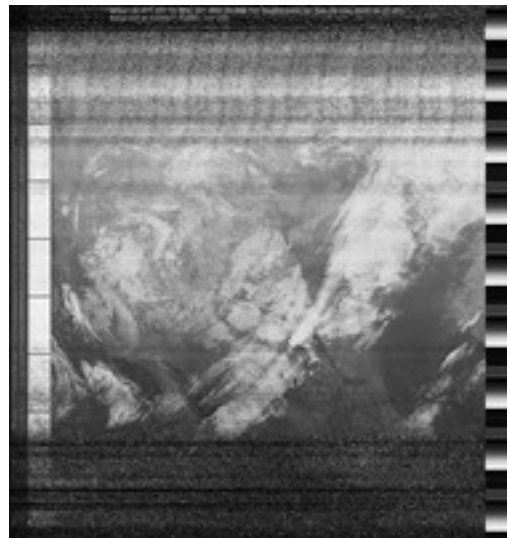
Ham operator he knew, so I met with **Bill James** (KC0FGJ) from La Junta. He agreed to scope out the electric service and will calculate the cost of the installation of 100 amp service. I hope soon have an estimate to set a goal for reaching.



Unfortunately, we have a continuing issue with beacon reception. We use **Faros** from [DX Atlas](#) and I set it to monitor

one frequency (21.150Mhz as of this time) of the five beacon frequencies. Due to the lack of reception, I changed from the omni Discone to a modified dipole antenna and will see what we get for readings.

Reception also seems to be a problem for the weather system, APTDecoder. Even though I have an APT-2CP antenna at 30ft dedicated to weather fax reception, at the AOS and LOS reception is still poor. A [Double-Cross-Antenna \(DCA\)](#) designed by **Jerry Martes** (KD6JDJ) of Los Angeles, CA, designed especially for APT is on its way,



**APTDECODER** thanks to **Patrik Tast**, [APTDecoder](#) software developer. Along with a new [Hamtronics R-139 receiver](#) from **Jeff Kelly** it should help quite a bit.

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## MAGNETOMETER PROJECT

Speaking of MOUs, we are at a very delicate stage in our plan to establish the UCLA magnetometer site. We may soon have access to some rural land that will be ideal for our requirements. The main drawback right now is identifying specific conditions of use, ownership, and in establishing reliable power and internet connectivity. Everyone is anxious about this as it has been several months in the planning and the wait is difficult for everyone involved. The cable and sensor will require professional installation and it is going to take time to coordinate all the individual parts of the project.

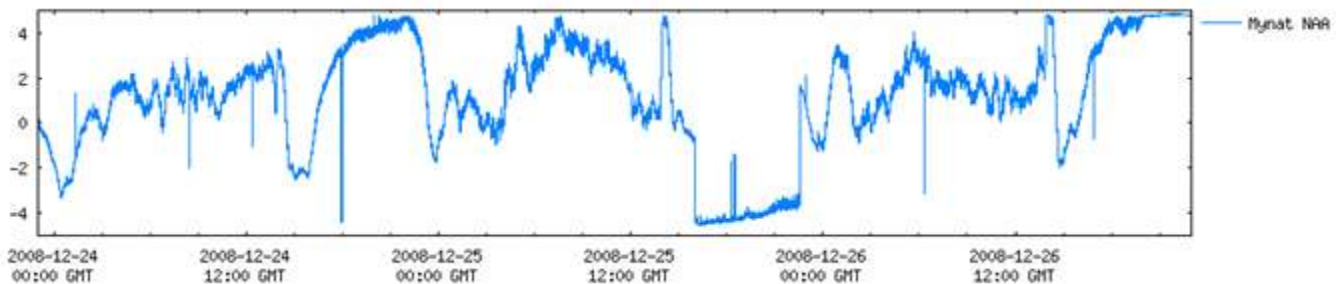
## ALL-SKY METEOR CAMERA

Special thanks and shout out to **Dr Peter Chi** at UCLA as we await this final piece in the installation plan. I regret that the Nature

Center didn't work out as hoped.

## SID DATA

Our SID Receiver has been operational now for about two months and we have a pretty good noise/magnetic/gravitational pattern developing. Our web page provides a detailed description of the equipment and process and we can say we see pretty much the same pattern as other stations report. Our recent and typical plot looks like this:



As has been mentioned, this data is important. The study of the changes in the earth's ionosphere caused by x-rays and high energy particles emanating from solar flares (as well as other nighttime causes) helps us understand their affect on our environment. For instance, CMEs are responsible for the auroral behavior we see at the Earth's poles, amongst other effects. This study goes hand-in-hand with our beaconing work and that too is being tracked and recorded. The graph (above) is representative of our data stream but needs analysis to understand the irregularities.

## RADIO JOVE

Installation and construction of our Radio JOVE antenna and receiver is pretty much completed, even though the antenna design has changed three times. As reported earlier, the original antenna design wasn't possible due to space constraints. I redesigned the support structure it to make it easier to fabricate and deploy by one person, but again it proved

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too big for space allowed and would interfere with parking the dump truck. The final design looks like a one-pole pro football goal post with a seat. As soon as I can get a picture it'll be easier to understand. Our site is still a poor location due to surrounding metallic structures but perhaps a good design with precise orientation and physical stability will help. The big issue as I see it will be the ability to isolate interference. We hopefully should have a remote location outside town sometime early next year that is both physically isolated and yet electronically close. Thanks to **Dr Jim Thieman** of Greenbelt NASA for his patience as I sort thru this problem.

## MMSSTV Ver 1.11G

*March 17, 2005*

**SSTV is FUN** Without a doubt the ability to receive cross country SSTV (using MMSSTV v1.11g) has been a fun activity to show the school kids. I gave a briefing and tour of the facility to some folks in from Chicago and they enjoyed hearing the sounds and [seeing the pictures](#) as we received images from around the country. Although we receive images from Louisiana and Mexico as well as Michigan and Ohio, the clearest images come from Georgia and California which seems consistent with our antenna broadside and current 20m propagation characteristics. This small tour group brings to 10 the number of people touring the facility this year. Not a lot but a good start.

**PCSAT AND ARISS TELEMETRY** is also ongoing. I dedicated a PC running WINXP with SatPC32, UI-View, AGWPE, Earthmate GPS software with hardware, and PCISS Decoding telemetry software. The radio is monitoring 145.825 and is using a home-brew no-gain vertical antenna with a large ground plane mounted on top of the metal roof of the facility. So far no signal but the antenna may need to be relocated or reset. **Bob Bruninga** (WB4APR) recommends a simple 19.5" antenna with a big square ground plane and a short coax run, probably RG-8x for best loss characteristics. We also are monitoring DO-64, thanks to specialized software from the Delfi-C3 group and **Wouter Jan Ubbels** (PE4WJ).



**HOW TO MOUNT AN ANTENNA** There are as many ways to mount a dish antenna but dishes take special attention. I acquired a small Ford F600 dump truck (see image, above) to transport the facility and towers and also act as a base and support for the large dish antenna. The dump weighs about 17,000 lbs. and thus should be able to support and stabilize a good-sized dish and rotor system. However, the dish antenna donated by Pueblo Community College does not have a rotor system and that's a problem. We have [several antennas](#) mounted now and others to be mounted soon but we're still looking for a tower and large dish. And in that regard...

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... as commercial television stations convert in to digital transmission in 2009 several large dishes may become available. My hope is that we will be able to acquire one in early 2009 and mount it on the dump. The S-Band antenna will enable us to fully participate in the various amateur satellite launches that transmit in the S-Band and the truck will be large enough to carry it safely.



**PROJECTS STATUS** By way of a recap, here is a list of our projects including some new ones and their status.

Web site/TeamSpeak Server/Openfire Server/FTP Server Working

1. SID (Measures radio propagation and solar interference)

Working

2. Magnetometer (Measures earth magnetic flux) ..... Pending site selection

3. WEFAX APTDecoder (Receives satellite weather fax data) .... Working (new ant)

4. All Sky Camera Network (Monitors local meteor activity) ..... Pending site selection

5. Faros (Monitors beacons) ..... Working

6. APRS Tier II Server (APRS server) ..... Working

7. Radio JOVE (Jupiter and solar activity monitoring) ..... Pending site selection

8. Solar Sensor Array (Solar temp & conditions monitoring) ..... In progress

9. ASMO/ESMO/COSGC Satellite Antenna/Ground Station ..... Pending install

10. Geiger Muller Sensor Array (Cosmic Ray monitor) ..... In design

11. SSTV Station ..... Working

12. New. Possible web radio station for broadcasting special events or classes



## APRS TIER II EMAIL SERVER AVAILABLE

The APRS server software was recently updated by the author and we have modified our server operating system from JAVA-based to NET-based. This change is transparent to the users but adds some additional overhead and burden to the processors. Actual up-and-down load speed will not be affected. Additionally, this month I added the **javAPRSEmail** service. For regular users of the APRS system this is not a new APRS function but it does add a nice adjunct to our Pueblo Tier II APRS. Use UI-View to watch real-time spatial information and data exchange and look for us with your friendly web browser at <http://pueblo.aprs2.net:14501/>. We typically run between 40 and 90 users and have an uptime of almost 98%. APRS is available on 144.390 MHz. Thanks to **Dick** (KB7ZVA), **Phil** (AD6NH), **Keith** (VE7GDH), **Pete** (AE5PL), and **Gerhart** (F5VAG) for their permission and technical help along the way.



**THE WEB STORE IS OPEN** and we're selling t-shirts and \$25/year memberships. I invite folks to visit the site and [do some shopping and support their favorite](#)

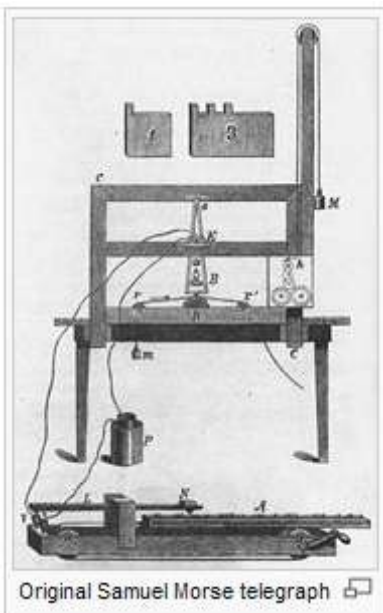


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[project](#) by donating directly o that fund. T-shirt sales support not only CSC but local business too. The t-shirts are from Hank, owner of **Color Copy** on Union Street, Pueblo. I also placed a [PayPal link](#) on the site for those wishing to use that option. You will also see a **Cricket Wireless** button on the opening page. I started an **AFFILIATE PROGRAM WITH CRICKET** to help the CSC bottom line. I hope you will use our link for your cell phone purchase or air time recharging.

## Flash Points...

- **Jess Miley** (K0TAA) provided an IC-471A radio set.
- **Doug Faunt** (N6TQS) provided an IC-271H and 471A radio both with CAT interface.
- **Don Jacobs** (WB5EKU) has an 18' Rohm tower and is shipping it to us in a few weeks. Still waiting on 70cm M-Squared antenna.
- I installed a 30/40m dipole for CW work.
- **Bill James** (KC0FGJ) is providing an electrical pole at the facility for interface to Blackhills power.
- **Patrik Tast** is sending us a DCA antenna for the APTDecoder project.
- **Jeff Kelly** is providing the R-139 radio.
- The Worm Farm is doing great; they are for the most part very quiet and don't party much. By popular vote the Worm City Mayor is **Big Frank Furter** (KA0SWT-02).



January 6: General Interest 1838 Morse demonstrates telegraph

On this day in 1838, Samuel Morse's telegraph system is demonstrated for the first time at the Speedwell Iron Works in Morristown, New Jersey. The telegraph, a device which used electric impulses to transmit encoded messages over a wire, would eventually revolutionize long-distance communication, reaching the height of its popularity in the 1920s and 1930s.

Samuel Finley Breese Morse was born April 27, 1791, in Charlestown, Massachusetts. He attended Yale University, where he was interested in art, as well as electricity, still in its infancy at the time. After college, Morse became a painter. In 1832, while sailing home from Europe, he heard about the newly discovered electromagnet and came up with an idea for an electric telegraph. He had no idea that other inventors were already at work on the concept.

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Morse spent the next several years developing a prototype and took on two partners, Leonard Gale and Alfred Vail, to help him. In 1838, he demonstrated his invention using Morse code, in which dots and dashes represented letters and numbers, and in 1843, Morse finally convinced a skeptical Congress to fund the construction of the first telegraph line in the United States, from Washington, D.C., to Baltimore. In May 1844, Morse sent the first official telegram over the line, with the message: "What hath God wrought!"

Over the next few years, private companies, using Morse's patent, set up telegraph lines around the Northeast. In 1851, the New York and Mississippi Valley Printing Telegraph Company was founded; it would later change its name to Western Union. In 1861, Western Union finished the first transcontinental line across the United States. Five years later, the first successful permanent line across the Atlantic Ocean was constructed and by the end of the century telegraph systems were in place in Africa, Asia and Australia.



Portrait of Samuel F. B. Morse taken by Mathew Brady, in 1866

Because telegraph companies typically charged by the word, telegrams became known for their succinct prose--whether they contained happy or sad news. The word "stop," which was free, was used in place of a period, for which there was a charge. In 1933, Western Union introduced singing telegrams. During World War II, Americans came to dread the sight of Western Union couriers because the military used telegrams to inform families about soldiers' deaths.



Over the course of the 20th century, telegraph messages were largely replaced by cheap long-distance phone service, faxes and email. Western Union delivered its final telegram in January 2006. Samuel Morse died wealthy and famous in New York City on April 2, 1872, at age 80.