

Mtg Fri 6:30P Feb 28 at the MCL Cafeteria in Kettering

Feb 2014

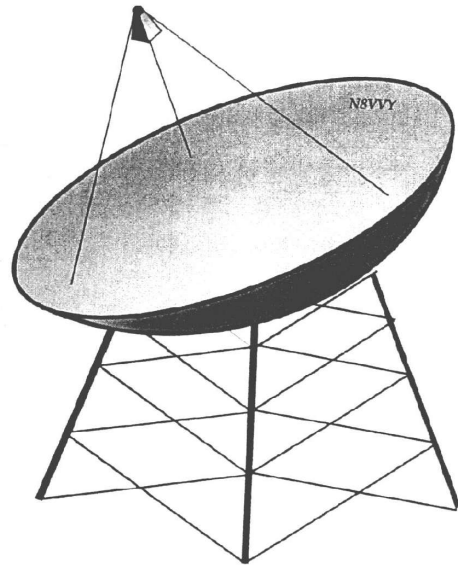
ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

Editors:

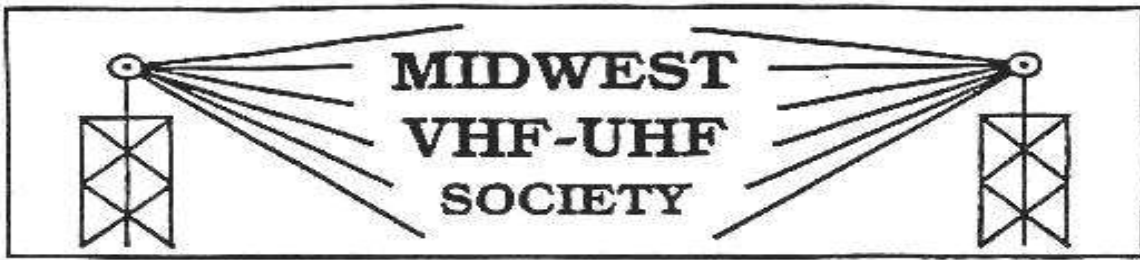
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Annual Society membership is \$ 12.00. Please
make checks payable to Gerd Schrick



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Beacons: 1296.079 **W8KSE** *) EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

Listen for the **10GHz Beacon** at EM79qk, tower of **K9AYA**, 2W @ 10,368.000 Mhz

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SVHFS Conference 25/26 Apr. in Atlanta

www.svhfs.org Presentation: K4CS0@ARRL.net

Hamvention 16/17/18 May, Dayton, Ohio

Our Booth as usual #332

Pres. Tom Holmes, N8ZM
 Vice Pres. Bob Mathews, K8TKQ
 Secretary, Steve Coy, K8UD
 Treasurer, Gerd Schrick, WB8IFM

*) off the air, pwr-supply needs repair, stand by. Mike, W8RKO
 Missing the January Newsletter? Let me know!
 After weeks, a copy w/o label was returned to me. It's possible the label came off or a label wasn't on there to begin with.

Noise sources available in two frequency ranges: 50 MHz to 3 GHz, and 3 GHz to 11 GHz. Fully assembled and tested with ENR data provided. The lower frequency version \$50 including shipping in the USA. The 11 GHz version is \$95, but delivery is about 8 weeks ARO. Contact N8ZM at n8zm@mvus.org for more details.

DE N8ZM. It seems like a contradiction but I think I can safely call this the Winter from Hell. It doesn't seem to have mattered where you lived in the 50 states, it was colder than usual for extended periods. Here in the Dayton area it finally made it above freezing for what seems like the first time in months. (Yes, I know we had a couple of warmer days in there but they didn't last long). This morning we even had a brief thunderstorm and rain! Crazy stuff going on. Has some major government or megalomaniac bent on controlling the world finally mastered weather control? And if so, why couldn't it have used their power to create warm weather?!

Oh, yeah, I forgot that this is a ham radio newsletter. Sorry!

With the alleged coming of Spring, there is also an FMT coming. Mike, W8RKO, tells me that there is a different scheme being developed for this one, as always intended to keep things interesting. Mike will have more details soon, when he gets them from the organizers.

I have been fortunate so far in getting speakers for the VHF/Microwave forum at Hamvention, with 7 very well qualified speakers. The theme of the show this year is Makers, and the speakers are all prolific examples of the breed in the ham radio world. The list of speakers and topics will be posted on the Hamvention.org web site soon, so please check it out. And mark 3:15 to 5:00 on Saturday May 17th on your calendar to be at the forum! Room 5.

The balloon launch is planned to occur shortly following the Balloon Forum on Friday afternoon. The launch will take place as in the past from the back of HARA Arena.

A related event is being planned for Saturday involving a competition between Mylar birthday balloons carrying a tracker payload to see which group's package will stay aloft the longest and which one travels the furthest. I'll need a few volunteers to help with staging the launch as we are planning for up to 6 groups. The launch will be from the same area of the Flea Market that we usually use for the weather balloon launch, although the winds may change that. Again, keep an eye on the Hamvention web site for details, and I'll be posting more here as the event draws closer.

In this issue of Anom Prop you will find an article on a solid state 432 half-KW amplifier built by Randy, WB8ART, from a design by W6PQL. Randy has done a beautiful job with this project and has written a great article on the project. Check it out.

That's all for now; see you on the 28th!

De Tom, N8ZM.

News from Lloyd, NE8i

Been a very busy year. 2 strokes in July. Died twice. Operation. Variety of problems. Prayer works. Missed several contests. Still in the rehab mode. Ways to go. However, lots of time to think about things. Make plans. **Got in the January VHF contest. Just 6 M. Not much activity. Mostly cold and snow. K8RAY got his 10 GHz beacon on. 10,368.908 +/- EN72xj. Chelsea Michigan.** A few snow scatter reports of it to go with all the snow. I will have to get my 24 GHz beacon going. 150mw 33CM dish. Also 1296.300 1W. Short looper. Location TBD. Reminder: with beacon reports, to include valuable related info. EG Weather. Anything of interest. Gotten many notes from various area microwavers. EG Passing of K8MD. I have been rethinking my own contest plans. Basically, Not many above 1296. Need to improve the bread and butter 6 and 2M band performance to max. Then get more stations on, somehow. For me, the most activity is from along Lake Michigan. Across the lake into 9 land. And Southern Ohio. That is my philosophy this year, plus more from home in EN73mv. ...

Spring Sprints, I plan to be on. From home? If rover, from Lenon 4 corners or St Johns US127 and M21. EN72rx EN73ra. Problem will be 6 digit locator. Cannot do that plus drive. 73 de NE8i/r EN73

PS for those who have asked, I am working on a new photo QSL card. 2-18-14

This and That 2-14

Spam Still Alive. At popular restaurants in South Korea, customers are digging their chopsticks into “budaejjidae”, which is Spam mixed with Kimchi, the traditional spicy pickled cabbage dish.

[D.L. Stewart]

Engineers ... are not mere technicians and should not approve or lend their name to any project that does not promise to be beneficent to man and the advancement of civilization . [John Fowler]

Italian Joke. A poor man goes to church every day and prays before a statue of a great saint, begging, “Dear saint—please, please, please...give me the grace to win the lottery.” This lament goes on for months. Finally the exasperated statue comes to life, looks down at the begging man and says in weary disgust, “My son---please, please, please...buy a ticket.” [Elizabeth Gilbert in “Eat Pray Love”]

Wild West. The Invisible World of Software Backdoors and Bounty Hunters. It's increasingly clear that the online world is, for both government surveillance types and corporate sellers, a new Wild West where anything goes. [Pratap Chatterjee]

Playthings. A 2010 Kaiser Foundation survey revealed that kids 8 to 18 years old spend an average of 7.6 hours a day using non school related “entertainment media” .

When Does Life Begin? “Life begins when a person first realizes how soon it will end.” [Marcalene Cox]

Proton. Two experiments have come up with two wildly different values for the proton's radius. What's going on? “You would be forgiven for assuming that we understand the proton. It is, after all, the main constituent of matter in the observable universe, the fuel of stellar furnaces.” [Jan C. Bernauer and Randolf Pohl in an article: The Proton Radius Puzzle in the Scientific American]

Tragedy or Comedy? “Life is a tragedy when seen in close-up, but a comedy in long shot.” [Charly Chaplin]

Smart Phones. It is still possible to make phone calls with a “smart phone” but the typical user does mostly other things, like texting, playing, Twitter, Facebook , WiFi-Internet or taking “selfies”. Of course, every manufacturer has his own brand. Here is a selection of their names: I-pad, Galaxy, Blackberry, Radar, Nitro, Vivid, Infuse, Atrix, I-phone, Lumina, Titan, Fus and more...[Gerd, WB8IFM]

Intuitiv. The 1889 Paris World Fair showed a globe at the scale one to a million to illustrate the size of the Earth. This globe was 40 feet in diameter. [Scientific American]

Fast Talkers. If you tell me slowly, I can understand you quickly! [Balinese Saying]

Valentines Day. “Gravity cannot be held responsible for people falling in love.” [Albert Einstein]

What Happened? Here is a note I found dating from 1992: “Airforce needs A/D converters operating at X-band (8.2-12.4 GHz).” A quick look gave me 250M S/s (samples/second) as the present limit! That would indicate we could start digitizing the entire shortwave range now. That would be nice! However, I still see ham equipment out there using the PC's sound card with maybe 150 khz clock frequency! [Gerd, WB8IFM]

My 432 MHz 500 watt SSPA (solid state power amplifier) project. 2-2014

By Randy Midkiff, WB8ART

Background: Since I got back on the air I started to look for an amplifier for 2 meters. While not yet running a real competitive system for weak signal work, I felt that I could at least do some meteor scatter using the JT65 modes as I had been doing so on six meters. I had temporary access to N8ZM's contest equipment and after fixing a few problems with the 8877 2m tube ampl. there was still an issue with an intermittent of the tube filament. So I was looking at the tube replacement costs. I was in for a little bit of sticker shock. A new tube would run \$1200 + and even pull-outs were ~ \$ 600. That's when it occurred to me to look what was available in solid state and what the costs might be.

Web searches: I started by using Google, and this lead to many articles on LD (lateral diffused) MOSFET devices for running up to a kW. I was really not that aware of these devices as I had been off the air for too long. These seemed to be pretty durable and even better, cost competitive to the tube options. Nice and more quiet as well compared to the tube amplifier. Further investigations led me to **Jim, W6PQL's** website and his many projects on amplifiers. He offers most of the required parts for the various VHF or UHF bands and power ranges, typically ½ or 1 kW. This includes accessory parts, such as a controller board, FET power on/off switch, that turn the amplifiers on and off quickly, input attenuation pads, LPF (low pass filter), power detectors (fwd refl pwr), LED bar graph boards and antenna relays. I spent a lot of time looking at the various websites and the implementations of these FET ampl modules, I thought Jim's was the most complete and well thought out approach. This is when I decided to get my feet wet with a solid state amplifier project using Jim's parts. The block diagram should give you the idea what is involved.

Decisions: At that point, Bob K8TQK told me his amplifier on 432 had failed again. So I told him about my plans for a new 2m **solid state amp** and recommended to go this route with design and parts from W6PQL. He agreed, but with the proviso that I build it. This provided the kick-start I probably needed to finally actually build one of these amplifiers. I quickly got the cost estimates and with Bob's approval, proceeded with the construction.

My Achilles heal, however, is the metal work, like the cabinet etc, how to get the holes and especially any squares or D holes for coax connectors into it. Then there is the finish and labeling of the panels. It seems (for me) the packaging is always tougher than the electrical work. So, back to Google I go.

Cabinet etc. I found a local company in Middletown, DMS Engineering, and as I found out, they make the cabinets for Palstar. Their website even suggested that they welcomed hobbyist levels of work. Now let me say that for one cabinet, the price looked a little steep, as they have a setup charge for programming the machine for producing it. However I was anticipating building three amps for myself, and possibly one more for Bob later. This made me consider that spreading the cost between a few more cabinets would make it more than justifiable. I also thought as others became aware of it, that maybe we could sell a few more to further amortize the initial developmental costs. After considering the way Jim W6PQL and Joe K9MRI (another web

source) have gone, using Front Panel Express and sourcing a local vendor to bend and make the rest of the cabinet, I think my choice of DMS Engineering looks quite ok!

Reflexions: I probably spent more than I would have needed to get it done. But such is usually the case with a new project. Live and learn! However the good news is that the end result is a professionally built powder coated and silk screened cabinet. The cover is U shaped and is easy to take off, then the front and back panels can be removed allowing complete access to the RF deck. I used a Molex plug to the front panel to allow for this. So far I have opted for not using a meter on the amp as that would not be useful to Bob (who is blind), and I likewise felt I could keep the cost down by putting the amp meter in the power supply so it could be used for other amplifiers yet to be built. The meter can be wired so it measures the actual ampl. FET current, which then permits to adjust the bias.

Power Supply. Depending on the power and band of operation the current can be up to 30+A @ 50V. So a substantial power supply is needed. Many hams are using an HP blade supply (surplus from upgraded server platforms) that seems readily available for \$20 plus shipping on E-Bay. These have a 220 VAC input and are capable of 57A at 50 V. I have separated one of these into three pieces and put into a desktop cabinet with a 50A meter. Joe K9MRI had done that, and it convinced me that it was a good idea.

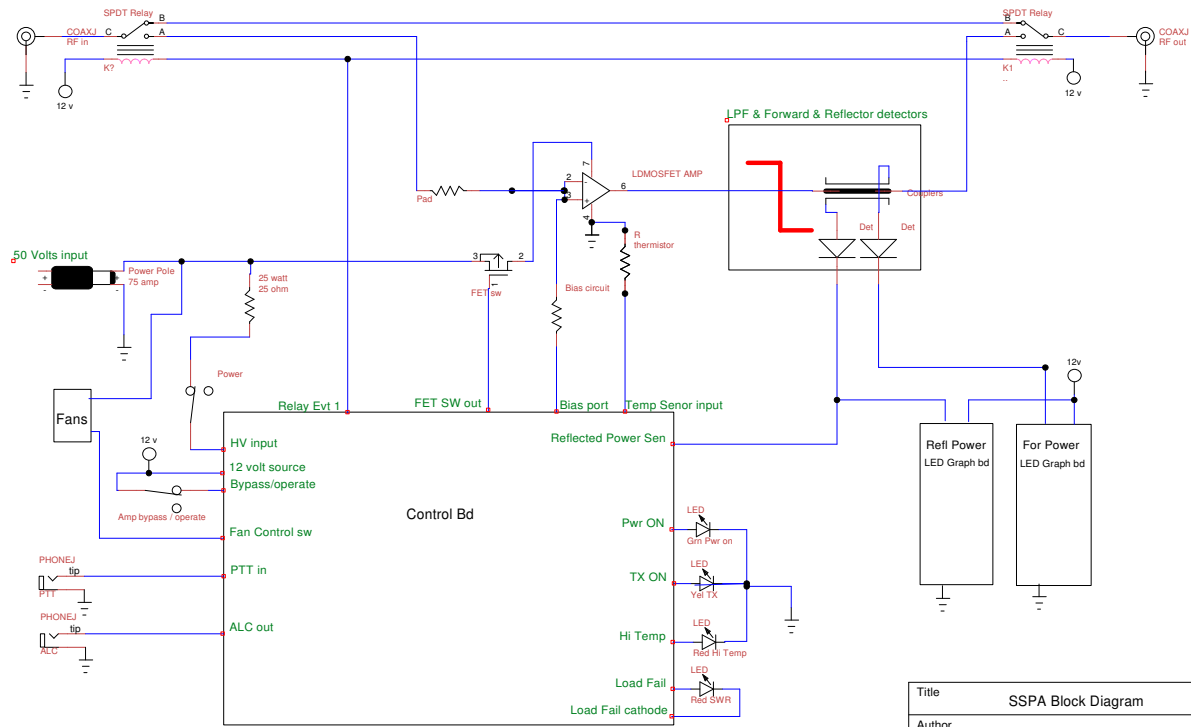
Performance. Per Jim's articles these amps run near 70% efficiencies except the 432MHz one, which is slightly above 50%. Our 435/ 500W amplifier, delivered 470W out with 2.8W in. This represents a gain of 22db. So, strange as it might seem, you often need a pad, (power attenuator) on the input of the amplifier. At this time we are looking for a break in the weather to get some antenna work done for Bob, after which we are ready for the "on the air" Test.

Finally. For anyone considering building one of these amps I would say jump in! I felt this turned out to be much easier than I anticipated and I really enjoyed the project. As for costs I can tell you that the ½ kW 432 ran just about \$1000 not including the relays and pad which Bob supplied. This seems quite reasonable and I think you could build any of these amplifiers for less than \$1500. Of course that might mean you have to scrounge around for good prices etc. but that's always the case with hams. Please consider using the same cabinet we developed, as I would like to keep the manufacturer involved, they are happy to do some ham business. Expect to be doing a lot of drilling and tapping of holes on aluminum as well. I have included a few pictures although I found it hard to get good pictures of electronics.

If you have any questions feel free to contact me and I will be happy to share the information I have with you for your project.

Randy, wb8art@gmail.com 1-937-388-9998

SSPA Block Diagram



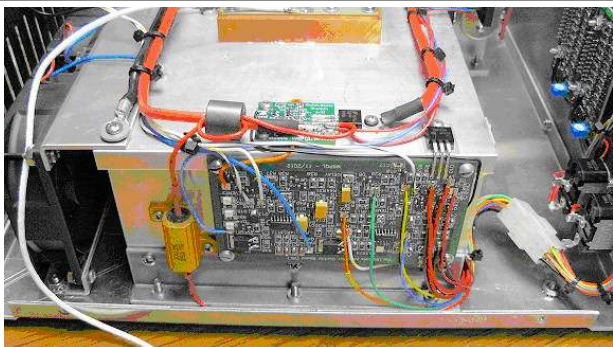
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Author		Randy Midkiff	
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Revision	1.0	Date	2/15/14
		Sheets 1 of 1	



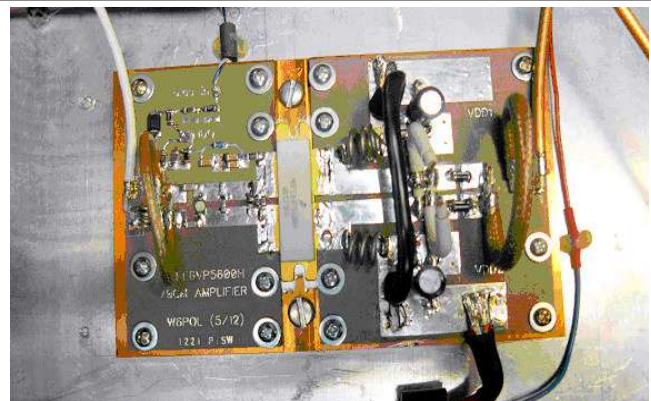
SSA: Front Panel



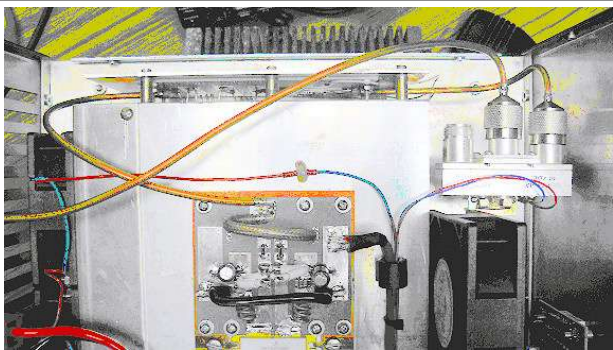
SSA: Back Panel



SSA: Control Board



SSA; Amplifier Board



**SSA: Top of Chassis,
Amplifier Input, One Antenna Relay**

435 Solid State PA, 500W

Specifications

Max Output: 500W

Input: 2-3 W

Amplification: 22dB

Efficiency: ~ 50%

DC Power: 50V @ 20A

Device

Freescale (ex Motorola) MRFE 6VP560H

Cost ~ \$175

LED runs on Gravity 1-2-13

By Jeffrey Bausch

Martin Riddiford and Jim Reeves, a pair of designers from London, recently grabbed headlines when they published their concept device, GravityLight, to web-based funding site Indiegogo. The reason why the two got so much attention is because of the novel approach they took to developing a safe, affordable product: simply put, it's an LED lamp that runs off of nothing but gravity.

The lamp is considerably simple to operate — a cable hangs from a gear holding a plastic bag filled with dirt or rocks and the energy produced from the bag being pulled down is enough to power an LED bulb for a while.

There are more than a billion and a half people with no access to electricity. When it gets dark, the most popular form of light comes from kerosene lamps. The fumes generated are not good for their health, and kerosene may cost a family 10 to 20% of their income.

Condensed version of the article! Picture omitted.

Comment.

This is certainly a very good idea to the point that I would be inclined to install a few of those myself. When I found out an LED that shines like a 40W bulb uses just 6W, I even installed one by the door and let it burn all night just so the news paper boy has a better chance to get the paper closer to the door. This efficiency of the LED is not even mentioned in the article, and the industry does not a good job making this clear to the public!

Gravity has been used for a long time to power small devices, just think about clocks: There are grandfather clocks, cuckoo clocks, and tower clocks. Those are all powered by (slowly) falling weights.

Tower clocks first appeared on church steeples, but eventually appeared on other towers or buildings.

As a student (1954), unable to do much hamming from my small rented room, I spotted a housing development that had what you might call a decorative tower which had just one room containing a mechanical clock driven by a hefty weight, that needed to be pulled up through the center of the staircase once a week. There was no electricity. The tower extended 85 feet above the two story apartments. The whole complex belonged to the city.

So I went to city hall and asked for the man in charge of the complex. Surprisingly, he was in and before I knew it, I was glowingly explaining ham radio, my dismal position at my quarters and the importance of height for the radio waves. Well, he listened patiently and then said that he principally was not in a position to help me. So I thanked him and, disappointed, was on my way out, when he called me back. He said, "obviously you do not know what it means "principally". "Well" I answered, it means, it can't be done." "No, no!" he said " it means "exceptions can be made!" That is how I got my first lesson in lawyer talk.

Soon a contract was drawn up, when I offered to wind up the clock as my contribution, he said "we already have a man for that! [Ed]

What is a Magnetic Loop Antenna?

By "Wi Mo" (German Antenna manufacturer)

"Magnetic" because they take the magnetic component of a electromagnetic field, in contrast to the normal standard antennas (e.g. Dipole, Yagi, Vertical-antenna), which are in resonance only on the electric component.

Magnetic antennas can be created very compactly. Ideal in areas of limited space or where mobility is required e.g. boats. No radials are required. The radiation is always the same, irrespective of the distance to the ground.

The capacitance can be varied by a motor and can be adjusted to the best SWR via a control unit in your shack. In spite of their compact size, the antennas are resonant in a wide frequency-range - do you know of any antenna which has a diameter of just one meter (ca. 38 inch) but a frequency range of 40m ... 10m without gap?? Take this one...

The antennas provide a small bandwidth on their resonance frequency. They have the advantage of less harmonics, and the effect of an additional preselector, focusing on just the required signal, ignoring non-required signals and intermodulation.

JANUARY 2014 VHF CONTEST OBSERVATIONS

By Bob, K8TQK, EM89 Bainbridge, Ohio

I began the contest at the start of 2:00 p.m. on Sat 21 and ran until midnight. I started again at 6:00 a.m. and ran until 1:00 p.m., and took a break, then picked it up at 6:30 p.m. to the end of the test at 11:00 p.m. The wx was a big factor for the lack of activity on all bands. Conts were down for me in all directions until Sun. night when I had some tropo to the West and North West. I think because of the bad wx many stations gave up and never got back on for the end of the test. Even my work horse band 2m QSO's were down. Here is a band by band break down of QSO's and grid:

6M: 60 Q's 30 GRIDS... 2M: 109 Q's 47 GRIDS... 222 36 Q's 25GRIDS ... 432 44 Q's 26 GRIDS...902 10 Q's 8 GRIDS... 1296 10 Q's 7 GRIDS... *1296 count was half of its normal QSO's.*

There were many nearby grids never worked because of the bad wx. EM98 97 96 FM09 08 07 06 FM18 17 16 FN11 01 21 EN72 73 74 EM65 67 EN62 63 Only 1 station was worked in EM50's, and only 1 each was worked in the EM40's AND EN40's . I had many grids on 432, 902, and 1296 that could not be worked because of the wx. Sunday morning scatter on 6m was very poor. I only worked 2 stations on scatter. It would be great if you could contact your local contesters and work them. Call them up [>>], make a sked, get on the calling frequency and make some noise, even on FM. I checked the 3830 score page and found all scores in the country were down.

I am looking for better conditions in the Spring Sprints and the June test. 73, and good hunting! Bob, K8TQK