

Vol. 20 No. 1

www.mvus.org

January, 2006

Club Memorial Call W8KSE 10 & 3.4 GHz Beacon, presently in Repair.

Meeting at the Old Country Buffet ! near SR 725 and Yankee Rd. in Centerville

January Meeting on Fri 27 Jan. 7:30 PM

MVUS Sunday Net

Our Sunday MVUS net is held every **Sunday at 14:30 GMT** (we stay on GMT year-round, so currently the net is at **9:30 AM** local time). The net frequencies are primarily **144.280 Mc and 28.960 Mc**.

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Upcoming Events!

Hamvention.....19,20,21 May, 2006

Microwave Update **2006**, 27-29 Oct in Dayton, Ohio (Details Coming Soon)

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Progress is coming right along on the 903 beacon from EN82. Hopefully in a month or three. Ne8i

De N8ZM

We had our initial meeting of the MUD '06 committee last Monday, and a lot was accomplished. Having these meetings separately from the regular meetings is the right way to go, we all agreed. I want to thank the guys who were able to make it over to Steve Coy's office on very short notice, and we promise to do better next time. Actually, we The next meeting will be on Wed. 15 Feb. same place. Bruce Raymond agreed to be the recording Secretary for the meetings and we plan to publish those in the newsletter and on the web site. We really do need the participation of many more of you in order to make less work for all of us. We especially need help with prizes, and the program; the two things the MUD conferences are best known for. Anyone who is willing to help with these can contact me at the address or phone number on the web site. We need both ideas and help with contacting potential presenters, and someone to generally coordinate the presentation schedule and getting the papers organized to be published in the proceedings book. Most of the publishing work is done by the ARRL; we just need to sign up the folks to write the papers. Anyway, lots to do, and time to get it done is dwindling quickly.

Another interesting item is that Gerd has now obtained the hardware to build his long planned linear translator. Built with modules from DB6NT, it is a very compact package. Gerd, John Human, and Steve Coy are working on getting it completed, with plans to initially set it upon the roof of Steve's business. Inputs are on 70 cm and 1.2 GHz, and the output is on 2.4 GHz. Because it is a linear translator with a fairly wide passband, it doesn't really care if you run CW, SSB, RTTY, Video, or any digital modes. Like any other chunk of spectrum, you just need to remember to share the space with your fellow hams.

OK, my ten minutes are up. I'll see all of you this Friday, the 27th, at the Olde Country Buffet. 73, Tom, N8ZM.

Minutes for MUD meeting – 16 January 2006 (recorded by Bruce, ND8i)

1. Gerd got \$2000 check seed money from N6RMJ (2005 MUD).
2. MUD has its own web site – Steve will get codes. (As webmaster for <http://www.microwaveupdate.org>, you will need to make changes to the website as events happen, the website MUST be current as everyone worldwide needs to know what is happening. Webmaster for MUD 2006 needs to contact Dave (wa6cgr@ham-radio.com) to gain access to the microwaveupdate.org website.
3. Calendar –
 - a. Thursday evening – tours, registration, hospitality suite
 - b. Friday – talks, flea market (evening), hospitality suite
 - c. Saturday – talks, banquet, hospitality suite
 - d. Sunday – antenna measurement
4. Schedule – Friday 9:00-12:00, 1:00-6:00, Saturday 8:30-12:00, 1:00-3:00
5. Flea market in conference room.
6. Need to change reservation for Hospitality room to 12:00 Sunday.
7. Red is organizing the Hospitality suite.
8. Publicity – QST, mailing list, need list of all big VHF/UHF/microwave groups, Hamvention, CentralStates.
9. Try to get a double booth for Hamvention with other VHF/UHF/microwave groups.
10. Bob/K8TQK volunteered for anything.
11. Steve and Gerd to update web site.
12. Nancy Makley KC8GYW for YL program.
13. John Human to help set up flea market.
14. Bruce/ND8I is secretary and will help with registration.
15. Gerd is treasurer and will help with registration.
16. Donor list. Red is looking FT-817. Possible raffle.

This and That 1-06

- **Plan Ahead.** The 2006 Microwave Update Conference will be held October 27 through 29th in Dayton. The place chosen is the Holiday Inn North at Wagner Ford Road just north of downtown Dayton on Interstate 75.
- **Absolute Stunning Numbers.** Each second the sun transforms 700 million tons of hydrogen gas into 695 million tons of Helium gas through nuclear reactions. The remaining 5 million tons of matter (about 600 times the weight of water flowing over Niagara Falls in one second) escape as pure energy.
[Time-Life Book]
- **Some Food.** ...families in wooden cabins wash dinner dishes of gumbo and jambalaya and crawfish and shrimp and cracklin's and potlikker and sweet 'taters and catfish and red beans and rice and black, black coffee.
[From "The Day Huey Long was Shot" by David Zinman]
- **Adventurous Hams.** Some hams are not satisfied talking to people in far away places they want to see for themselves and along the way get a feel for the distance. Walter, DJ1DC, told me about his trip (with family) by train from Aachen in DL, where he lives, to Shanghai in Southern China. Going back they took an airplane, however! Then I talked to Helmut who was at Cape Verde, Africa. He was with the xyl on a 40' two mast sailboat on a tour around the world. They had started from the Mediterranean in July and plan to continue in the New Year to Dominica in the Caribbean, then through the Panama Canal to the Pacific and via New Zealand and Australia back to Africa and the Mediterranean.
[Gerd, WB8IFM]
- **The Pope's Laundry.** What if you were the pope? "You'll be relieved to know that you will appoint five nuns who will do your wash, clean your apartment, help with your correspondence and rustle you up whatever you'd like to eat. [From Piers Marchant: How to Be Pope, reported by Nancy Haught]
- **Do You Like Living in Baltimore?** To this question one fellow answered: "Sure, good football team, good baseball team. What more can you ask?" He mentioned not seafood, not climate, not proximity to great cities. Not historic roots or family ties. Not the people...
[Dayton Paper Editorial]
- **PC Crash.** Mother: "I don't believe it. It crashed again! I just bought this computer 2 years ago."
Grimm: "One dog year is like seven to a PC."
[Mike Peters]
- **Working Things Out.** "Sometimes a scientist needs to work out all the theory down to the very last bit of math, but other times the most efficient way to get the job done is to sit in the laboratory and do the experiment over and over until you make it work."
[Prof. W F G Swann]
 - **Everything Bigger.** "Americans seem to work very well, only they obviously insist on making everything as big as possible."
[German physicist Franz Simon upon a visit to the US in 1932]
- **Tourist Question.** "Which direction is North in Australia?" (USA) A: Face south, and then turn 180 degrees. Contact us when you get here and we'll send the rest of the directions.
- **Time.** Time is among the most familiar yet least understood concepts that humanity has ever encountered. We say that it flies; we say that it's money, we try to save it, and we get annoyed when we waste it. But what is time? ...
[From Brian Green "The Fabric of the Cosmos."]
- **About Beer.** "Beer is living proof that God loves us and wants us to be happy."
[Ben Franklin, *1706]

New MVUS UL/S Transponder.

By Gerd, WB8IFM

“Was lange waeahrt wird endlich gut.” (What takes a while, finally turns out well.)

It was a nice Christmas present to receive! Just before the holidays a large envelope brought a photo and schematics of our new transponder and two weeks later the actual hardware arrived.

To recap, this is an experimental ground operated transponder with two inputs: on 70cm and on 23cm and a single output on 13cm. The idea is to have this combination, which has been used on several phase 3 satellites, on the ground to give satellite operators a chance to exercise their equipment, provide a test bed to try new modes and quite possibly convince other operators to think about changing their “repeater oriented” mode to transponder mode with its advantage of more bandwidth, any type modulation, full duplex and multiple operators. All these advantages should make a transponder especially useful for emergency purposes. To that end I call for the development of a simple walky talky type transceiver: as a starting point one could use a two band radio use the 70cm as the transmitter und an external converter for 13cm and the 2m part as a receiver. We hope to have something like that available at Hamvention time.

Transponder

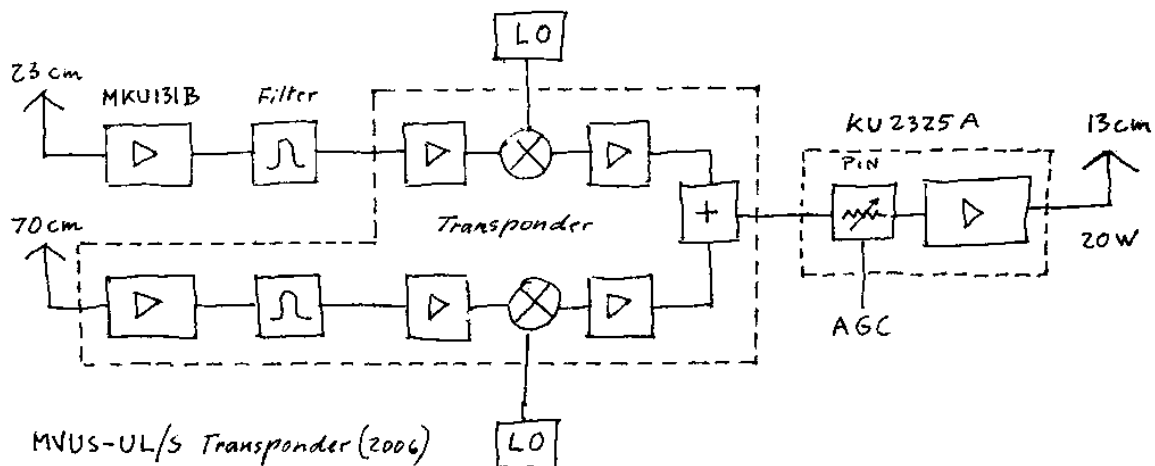
What we got in the mail were four of the seven modules, not counting the power supply, control box and meters. The three missing modules are local oscillators, which Mike, WB8GXB, is working on right now! Michael Kuhne, DB6NT, supplied the four main modules, two of which are from his regular product line: a 23cm preamp MKU 131 B and a 13 cm power amp KU 2527 A. The other modules are a 1269 four pole input filter and the “transponder Module,” a 70 preamp, two mixers and two 13 cm “IF” amplifiers followed by a three db coupler, which combines the outputs. The (simplified) block diagram below should illuminate this description.

Antennas.

Last not least we have decided on using omnidirectional, horizontally polarized antennas. These would attenuate the predominantly vertical polarized repeater signals. To get a good signal into the transponder you have to hold the HT horizontally and aim it in the right direction. Mike, KB8ABR, is building a “bigwheel” type antenna for our 1296 beacon and it should be easy to fabricate a duplicate. However, other types might be tried. Suggestions are welcome.

Location.

As this is an experimental set-up, we need a location that is easily accessible and after some deliberation we decided to put the transponder on Steves, K8UD’s business building. He has a two story building right on the south eastern edge of Dayton with fairly good view and coverage for a start. The building has a flat roof and we imagine a tripod type installation.



Transponder Oscillator

By Mike Suhar, WB8GXB

The club is in possession of a transponder as Gerd has described elsewhere in the newsletter. The transponder is complete except for the oscillators. I have signed on to the project to design and build the oscillators. The oscillators are based off of a design I have for a couple of other projects. I am presently refining the design based on one breadboard and Spice simulation. I will soon have the printed circuit board layout finished.

SPICE for Circuit Simulation

I have used various programs for circuit simulation over the years. I have found that simulating a circuit you find in a ham publication provides a few advantages to just firing up the soldering iron. First, you can understand how the circuit works. Sometimes the theory behind the circuit is a little light in the publication. The second reason is you can modify component values based on what is available in your junk box. You may find some components can be changed with little effect on the circuit while others result in total failure. The third reason is you may find errors in the schematic. How many times have you found a circuit in a publication only to see a correction appear in a later edition? With simulation this error might show up immediately. You might not be able to determine there is an error but if the circuit does not work in simulation there is a very good chance it will not work on the bench as a breadboard.

This month's QEX ran an article on a PSpice program (LTspice) available from Linear Technology (www.linear.com/software). The package was intended to be used with their switching power supply products. It appears to be a full featured package but maybe a little light in the component libraries. There are various Spice libraries on the web and you can pick and enter your own; so this should not be a problem. Best of all the download is FREE.

Spice does require that you know what you want to measure based on voltages and current. You have to form the plot functions in those terms. A little review of Thevenin's Theorem might be in order. There is a Yahoo group devoted to LTspice if you need help.

I will try to run a few examples and post them to my web site. Details to appear in a later edition of this newsletter. ***

January 06 Microwave Activity Day report from EN82. Saturday, had K8MD, KB8U, VE3TFU, NQ2O EN82, 71, 92 and FN13 check in, and we tried out several bands. UHF beacons normal. Dead band conditions. We had freezing rain. 5.7 10 and 24 GHz might have been good for scatter, but us rovers stayed home. The TV news reported 250 traffic accidents that morning. Good reason to stay home.

Monday night had activity, for the first time. N9EA, K8MD, and W8VO EN71, 82. Tried out some microwave bands. Again, conditions were dead band. All beacons normal. One problem: I was not aware of. at 8PM there is a 2M SSB net on 144.250, NC in Sandusky Ohio. Might have to change the frequency. 144.270 or 432.120.

Intermittent or Last Item to Check

By Gerd, WB8IFM

An intermittent problem is the hardest to fix. When you start looking for it, it goes away. So what do you do? If you can live with it, the best way is just ignore it and go on.

Such was the case with a power supply of mine that I had built for my Drake L4B amplifier many years ago. Initially I had a number of defects mostly burned out diodes, but replacing the bad diodes and other parts it had gotten to the point where it was one of my most dependable pieces of gear. So I was wondering what was going on. I am using the two main switches on the L4 to first turn on the filament transformer then the high voltage transformer. What happened was that the indicator light started flickering and rattling noises came from inside the linear. After a few seconds, however, all quieted down and I could operate without any further ado. The next day the same sequence would play out and so forth. I figured I let it go at that for a while before I got inside the linear and/or power supply to take a look. You see the advantage of power equipment going bad is that if something blows it creates heat and smoke and the faulty part is easy to locate!

On day, the situation must have festered for at least a month or two, the flickering and rattling commenced during a qso and got so bad I had to turn the linear off and continue without.

Further checking got me to the point where I couldn't turn it on at all, so I took the bottom cover off and started checking, my main suspect being the two power switches. Well, they turned out to be ok. I looked very hard at the wiring and connections. Absolutely nothing visible! Tightening all the screw connections to the filament transformer I found them actually ok. Then I repeated the same inspection and tightened screws in the HV power supply. There we had the same situation, no visible damage and no loose screws. Now we were at the power cord level, all looked ok, but I opened the plug and tightened the screws they took a quarter turn but there was no indication of any problem.

Hello! We were now finally checking the wall outlet and lo and behold there was no voltage across and only 115 V from one pole to ground. Now a quick trip across the basement to the fuse box, taking the lid off and checking the coupled circuit breaker found one half with no voltage! So finally we found the culprit! Removing the breaker from the panel I marked the bad part with a pencil. However, this was not really necessary, as by closer inspection I detected clear burn marks on the outside. I plan to take it apart and I am sure there will be a mess inside. For sure these breakers are built that they contain any abuse or damage so you would expect not to see too much from the outside.

A pleasant surprise came when I checked my "electricity" drawer and found a circuit breaker pair that I had taken out and replaced for our clothes dryer. There the problem had been that it was popping all the time because of high current and I had it replaced with higher rated breakers. For the linear they were plenty ok! So no trip (and expense) to the electric supply house.

ROCKET TO PLUTO: Thirty-five years ago, Apollo astronauts took 3 days to reach the moon. Yesterday (1-19-06), New Horizons did it in 9 hours, becoming the fastest spacecraft ever launched from Earth. New Horizons needs all the speed it can get: destination Pluto is six billion miles away.

After zipping past the moon's orbit, New Horizons heads for Jupiter, a 13 month trip. The spacecraft will slingshot around the giant planet, boosting its speed even more, from 36,000 mph to 47,000 mph.

All that speed, and it will still take New Horizons 9 years to reach Pluto. What will it find when it gets there? No one knows, because no spacecraft has ever visited Pluto. *Stay tuned for updates ... in 2015.*

[Space News]

Consolidated E-Mail List by Last Name MVUS (1-23-06)

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Ralph <W4NDH@ATT.net>,

MVUS Roster (sorted by Suffix) present Mailing List (1-23-06)

CALL	FNAME	LNAME	STREET	CITY	STA	ZIP	PHONE	DUES
WDOBWQ	David E.	Brandon	301 S. Hackett Rd.	Waterloo	IA	50701-	319-292-8724	5/1/2004
W0EKZ	Robert	Maxton	1262 E.90th Ave N.	Belle Plaine	KS	67013	316-488-3801	12/1/2006
KCOMIA	John	Rhein	420 E-79th Ter	Kansas city	MO	64131	816-333-1913	12/1/2003
N0UU	Lawrence	Stoskopf	4408 E Country	Salina	KS	67401	785-823-9498	10/1/2005
W0VZK	William G	Buckner	PO Box 721	Marshall	MO	65340	660-886-3408	6/1/2006
WA1MKE/9	Dave	Doiron	7001 W Co Rd	Gaston	IN	47342	765-358-3280	5/1/2006
KB1SF	Keith	Baker	3560 Pine Grove Av.	Port Huron	MI	48060	937-545-3292	12/1/2004
N3BYN	Gary	Johney	1885 Poplar Ridge	Pasadene	MD	21122	410-437-4285	6/1/2005
W3HMS	John A	Jaminet	912 Robert St.	Mechanicsburg	PA	17055-	717-697-3633	6/1/2007
W3HYM	David	Newman Jr	PO Box 956	Indian Head	MD	20640	301-743-6711	8/1/2006
KP4AQI	Al	Torres	4850 Hollywreath	Dayton	OH	45424	937-236-2534	2/1/2006
AB4CR	Jack	Nyiri	909 Riverbend Rd	Nashville	TN	37221-	606-245-4162	12/1/2005
K4EFD	Brad	Totten	10400 Broad Run	Louisville	KY	40299-	502-239-6486	12/1/2004
N4EQT	Jerry	Shouse	1050 Hickory Hill	Lawrenceburg	KY	40342	502-839-4041	7/1/2004
W4KUZ	Wendell	Booth	P.O.Box 216	Beattyville	KY	41311	606-464-3197	1/1/2004
K4RF	Steve	Adams	P.O.Box 1255	Cornelia	GA	30531	404-869-0565	10/1/2005
KA4VCA	Michael	Spanos	116 Port South Lane	Alabaster	AL	35007	205-663-4457	12/1/2005
WA5LBQ	Bill	Koch	307 Brookhaven Ln.	Pittsburg	PA	15241	412-257-3885	8/1/2006
DB6NT	Michael	Kuhne	Birkenweg 15	D-95119	GERM	---	9288-8232	6/1/2004
KI6SZ	Don	Kessler	3872 Rexford Rd	Beavercreek	OH	45430	937-429-8857	8/1/2006
W3/DJ7LC	Horst	Zodrow	530 Fairhill Dr.	Churchville	PA	18966-	215-355-2458	9/1/2006
WR8A	Ed	Garner	3100 Oakmont	Kettering	OH	45429	937-293-2876	3/1/2006
KA8ABR	Michael P	Murphy	8300 Schoolgate Dr	Dayton	OH	45424	937-235-1820	
KB8BKW	Bill	Weaner	2305 Wrenside Ln.	Kettering	OH	45440	937-433-6174	6/1/2005
WD8BPC	Ed	Shaffer	268 Crocker St	Amherst	OH	44001-		8/1/2006
KI8CA	Peter	Morris	11096 Congress Run	Glouster	OH	45732-	740-767-3629	12/1/2006
KC8CCD	Steve G	Suess	721 W.Pekin Rd.	Lebanon	OH	45036		7/1/2004
WB8DNO	Joe	Hopster	3706 Glendale	Cincinnati	OH	45241	513-733-1590	10/1/2005
WD8DPA	Mark	Travaglini	52272 Nine Mile	Northville	MI	48167		12/1/2007
KA8EDE	Bruce	Lundy	1156 St.Rt.380	Xenia	OH	45385	937-376-5716	12/1/2008
KC8EVW		McCartney	3078 St.Rt. 212 NE	Mineral City	OH	44656	330-602-7633	6/1/2006
WX8F	Jim	Nies	2227 Emerson Av.	Dayton	OH	45406	937-275-9614	1/1/2003
WB8GZX	Mark	Sykes	9425 Adams Rd.	Huber Heights	OH	45424		12/1/2005
K8HHP	Bob	Schank	35 Clarence St.	Belleville	MI	48111	734-697-7057	6/1/2006
WA8HOD	Fred	Steiner	1457 Granada Blvd	Ann Arbor	MI	48103	626-290-9857	1/6/2006
W8HU	Joe	Hausmann	1035 Firewood Dr.	Dayton	OH	45430	937-426-1303	12/1/2003
KA8HUZ	Tom	Reed	743 Deer Run Tr.	Lebanon	OH	45036	513-933-0471	6/1/2005
NE8I	Lloyd	Ellsworth	P.O.Box 0338	Birmingham	MI	48012-	313-292-5308	2/1/2005
W8JAQ	John	Schwall	163 Lee Dr.	Monroe	OH	45050	513-539-7675	12/1/2007
KC8KHR	Larry	Weaver	1711 E.Third St.	Dayton	OH	45403-	937-219-8250	5/1/2006
W8LLY	Fred	Stone	4170 Beechwood Dr.	Bellbrook	OH	45305	937-848-4112	4/1/2004
W8MM	Michael	Valentine	10280 Alliance Rd	Cincinnati	OH	45242	513-984-8900	4/1/2007
W8NJR	Terry	Netzley	5920 Horseshoe	Ludlow Falls	OH	45339	937-698-6426	
K8OCL	John	Champa	2491 Itsell Rd.	Howell	MI	48843	734-657-1000	6/1/2004
WA8OGS	Joseph	Burke	9168 Brehm Rd.	Cincinnati	OH	45252	513-385-4198	12/1/2005
N8OU	John	Berker	Box 125/43 E.Front	New Holland	OH	43145	740-495-5200	5/1/2006
AA8Q	Jack	Mitchell	495 N.	New Carlisle	OH	45344-	937-845-3664	3/1/2005
N8QHV	Michael	Schulsinger	1002 Woodlawn Av.	Springfield	OH	45504	937-323-9769	12/1/2005
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W8RUT	Ken G	Morris	3181 Gerbert Rd.	Columbus	OH	43224	614-209-1763	8/1/2006
KF8SB	Fred	Ralston	2316 Davue Cir.	Dayton	OH	45406	937-274-8915	5/1/2003
KD8SI	Leo	Schaaf	2648 Aragon Av N.	Kettering	OH	45420	937-294-8425	12/1/2005
KB8SRQ	Jon	Thuermer	1976 Burnham Ln.	Kettering	OH	45429	937-298-3199	10/1/2004
K8TKQ	Bob	Mathews	73 Landrum Rd.	Bainbridge	OH	45612		9/1/2005
KE8TQ	Fred	Peerenboom	424 1/2 Norcale Av.	Dayton	OH	45420-	937-416-5295	4/1/2007
KB8U	Russell	Dwarshuis	427 Barber Av	Ann Arbor	MI	48103-		8/1/2006
W8ULC	Red	Dakin	4519 N Rt 123	Franklin	OH	45005	937-704-0835	12/1/2005
N8UVM	Robert	Peoples Jr.	66460 Sam Russel	Dundas	OH	45634	614-596-2364	7/1/2006
KB8VAO	Stephen M	Gocala Jr.	4232 Tippecanoe	Youngstown	OH	44511	330-783-6390	5/1/2004
KC8VEB	Bruce	Lerner	734 Suntree Dr	Westerville	OH	43081	614-985-4818	1/6/2006
N8VES	Sam	Anderson	2143 Otello Ave	Dayton	OH	45414-	937-278-1029	12/1/2005
WA8WZG	Tom	Whitted EN81OM	4641 Port Clinton E	Port Clinton	OH	43452-	419-732-2168	3/1/2004
N8XKZ	Michael F.	Radwick	7576 Kingsbridge	Canton	OH	48187	734-453-3066	5/1/2003
K8YMI	Bob	Halley	114 Red Bird Lane	Terrace Park	OH	45174		8/1/2006
WB8YOB	Alan L	Smith	6303 King Arthur	Swartz Creek	MI	48473		6/1/2006
N8YWG	Mark F	Feller	8471 Hartman Rd.	Wadsworth	OH	44281		5/1/2006

KC8YZW	Glenn Ward	7646 Burlingame Hills	Cincinnati	OH	45244	513-232-1085	1/1/2006
KB8ZR	Mark Tessner	2970 Indian Ripple	Beavercreek	OH	45440-	937-426-1355	3/1/2006
KA8ZSB	John Hepner	9500 Huffman Rd.	Farmersville	OH	45325-	937-835-3149	12/1/2008
KB9AVO	Paul Van Dyke	13697 N 560 E	Syracuse	IN	46567-	574-457-5432	12/1/2003
K9AYA	Bill Eaton	1955 Old Oxford Rd.	Hamilton	OH	45013-	513-893-0933	8/1/2007
W9DF	David Filmer	1419 Ravinia Rd.	West Lafayette	IN	47906	765-463-6618	5/1/2003
K9EA	Dan Michnay	9406 Notestine Rd	Ft Wayne	IN	46835-		12/1/2006
K9EK	Edward Krome	10891 W Grandview	Columbus	IN	47201	812-379-9433	12/1/2003
WG9F	Rod Owen	13809 Schwipps Rd	Milan	IN	47031	812-623-3072	5/1/2007
W9FT	Ron Henselman	1409 N.11th Ave	Melrose Park	IL	60160-	708-345-6981	8/1/2006
W9LCE	Merle Rummel	P.O. Box 14	Boston	IN	47324	765-935-3891	12/1/2005
W9NBS	Tom Stauffer	961 Silvercreek Dr.	Centerville	OH	45458	937-435-1870	12/1/2005
W9OER	Frederick B Haines	609 W5th St.	Vermont	IL	61484	309-784-2706	5/1/2003
WB9SNR	Jim Mitzlaff	1727 N.Chestnut	Arlington Hgts	IL	60004-	847-506-0805	12/1/2005
W9XA	Kermit Carlson	1150 McKee	Batavia	IL	60510	630-879-0983	6/1/2007
N9XRO	Jack R Huebschen	N51 W15819 Fair	Menomonee	WI	53051-	262-781-3631	6/1/2003

Present Mailing List MVUS by suffix

Excludes members that signed up for e-mail.

Please report discrepancies to Gerd Schrick, WB8IFM, 4741 Harlou Dr, Dayton OH 45432-1618, e-mail WB8IFM@AMSAT.org

Also Looking for ideas (paper) to present or included in the book for the upcoming (in October) Microwave Update Conference in Dayton!

Send to Gerd also, we help you with it!