



THE MONITOR



ECARS Web Page www.qsl.net/ecars

The official publication of the East Coast Amateur Radio Service, Inc.

My Last Amplifier

by Robert J. Traister WB4KTC, Front Royal, VA

After having built numerous linear amplifiers for my amateur radio hobby, I have finally built and completed what is destined to be my “last” amplifier. Every amplifier that I have ever purchased has served me well, but each had minor faults. In an effort to overcome any operational problems, whatsoever, I elected to build amplifiers. However, my search for the perfect amp was never realized, because all of my home-brew projects also had minor faults. There is no perfect amplifier.

In my previous amplifier article for the Monitor, I spoke, generally, of linear amplifiers for amateur radio use, with special emphasis on “true” power output. At that time, I stressed the fact that most manufacturers and owners of linear amplifiers exaggerate output power. Part of this is due to the general inaccuracies of wattmeters for ham use and also to the tremendous inaccuracies that are induced into almost every wattmeter (yes, including the Bird 43) when

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My Elmer

By Mary Popella N3YL, Tidioute, PA

Being a proud graduate of the N300 (ex-WA3CXW) home school of amateur radio training, I’d like to talk a little about elders. They are probably one of the most crucial elements of amateur radio. As far as I’m concerned, we had the best. When I say “we” I’m talking about my two sons (Bob Jr. – KA3S, and Mike – KS3V) and me.

When I was first licensed as a novice back in 1974, believe me, it took a lot of patience to teach a YL about ham radio. Not only the theory, but CW also. When I first heard CW at 5 wpm, I thought, “There’s no way I’m ever going to learn this”. But my Elmer proved me wrong. I was happy as a clam when I opened up that FCC envelope upon receiving my first ticket. I still remember the pride in my Elmer’s

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Which State Will be Next?

by Harold Curry WA1YLN, South Kingston, RI

As many of you know, Char (WA1YLO) and I enjoy traveling with our travel trailer. On the road we always monitor and check into ECARS. Some stretches of highway can be rather boring, and ECARS helps to pass the time. It also helps us keep in touch with home because our harmonic, Shaun (WA1YLP), knows how to get a message to us. Fortunately this service was only needed once and it wasn’t a matter of urgency.

Perhaps you have seen RVs with US maps attached, indicating which states the folks have been in. I’m looking for an ECARS map that would indicate from which states we’ve checked into ECARS. Now we realize that the professional drivers such as VBD, GP, IEJ, and the others have us beaten, but we’re happy to have checked into ECARS from 21 states and the Province of New Brunswick.

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SWR is not absolutely perfect. We've all heard someone say something to the effect of, "The manufacturer says my amp will do a maximum of 750 watts, but I can get 1200 out of it." I don't think so. If a manufacturer claims a certain power output level, then you can often reduce it by 25% and accurately figure what you'll really get. (There are noted exceptions to this.) Rarely will an amp actually produce significantly more output than the manufacturer claims, at least at operational levels that won't fry tubes after a few minutes of use.

Generally, amplifiers running a pair of 3CX800A triodes (or 4CX800A tetrodes), a 4CX1600, the 3CX1200A7, or the 3CX1500A7 will put out the legal limit with 100 watts or less drive, providing that the power supply is up to the job. In fact, many of these will do well over legal maximum. On the other side of the coin are amps running a pair of 3-500Zs, four 572Bs, and other glass-tube combinations. These, generally, will not do the legal limit with most 100-watt exciters. In the 3-500Z category, you can squeeze 1500 watts out of a pair of them, but only if you run 3000 or more volts on the plates and can drive such an amp with 120 to 135 watts. In my travels, I have never seen an amp running a pair of 3-500Zs that would output a true 1500 watts on 80-10 meters while being driven with a maximum of 100 watts, regardless of the plate voltage. If you've been able to do it, then good for you. However, I'd still want to verify that on a CALIBRATED commercial wattmeter.

In my last article, I stressed something that I have found to apply in almost every instance. If you want to make certain that the amp you buy or build will output the power level that you want (and assuming an exciter with 100 watts output), then make certain that the plate dissipation rating of the tube(s) used is about the same as that of the desired final output power. Applied to a pair of 3-500Zs (total plate dissipation of 1000 watts), you could expect such an amplifier to reliably deliver 1000 watts output on 160-10 meters. Certainly, you may get more than this on the top bands, but efficiency will drop off as you approach ten meters.

I have taken my own advice from this article and gone a bit farther. My "last" amplifier uses the massive 3CX3000A7 triode. This tube is often found in FM broadcast transmitters, is rated at 4000 watts plate dissipation (continuous), and requires 5000 VDC maximum on the plate. This tube is specifically intended for grounded-grid operation and is the same tube that Henry uses in their 8K Ultra amplifier. In broadcast service, the tube is capable

of outputting somewhere in the neighborhood of 6500 watts, over four times the legal amateur limit. However, my homebrew amp that uses this tube is certainly not capable of such power levels, even if anyone would be so brazen as to give it a try.

My "last" amplifier was not actually a ground-up building project. More accurately, it was a ground-up project five years ago, when it was constructed as a legal limit, grounded grid amplifier, using the venerable 4-1000A tetrode in triode configuration (i.e. control-and screen-grids tied together and grounded). The bypass and blocking capacitors are rated at 12KV minimum, since the 4-1000A requires about 6KV on the plate to operate within the ideal parameters of its efficiency curve. The plate choke is rated at 800 ma. maximum plate current, and the tank circuit is an old B&W 850A. For those of you who have built amps, you will know from this description that I built a very standard grounded-grid 4-1000A, single-tube linear amp, which, when run with nearly 6000 volts on the plate and 100 watts drive, will produce (just barely) the legal limit of 1500 watts output.

Now, all I did to construct my "last" amplifier was to remove the 4-1000A socket and replace it with the rather elaborate (and expensive) socket for the coaxial-based 3CX3000A7. Next, the original 7.5-Volt, 21-ampere filament transformer was removed and replaced with another 7.5-volt unit but rated at 52 amperes for the "greedier" filament of the 3CX3000A7. Last, the original 30-amp filament choke was exchanged for a strap-wound, 60-amp version.

The 3CX3000A7 tube was mounted in its socket, mated with its chimney, and my "last" amplifier was **TOTALLY COMPLETE!!!** I did nothing else! Total conversion time was about four hours.

Yes! I was surprised, too! Surely, something more than the simple replacements outlined above would be required. However, that's all I did. The input matching network for 80-10 meters that was tuned to present a low SWR when driving the filament of the 4-1000A exhibited the same low-SWR characteristics with the 3CX3000A7, without any readjustment whatsoever. The taps on the B&W 850A were just fine for all bands. Nothing arced, no further adjustments were necessary. I was incredulous!

So, what did I gain? I replaced a 4-1000A glass-envelope tube, rated at 1000-watts plate dissipation, with a 3CX3000A7 ceramic-insulated, external anode triode, rated at 4000-watts plate dissipation. However, what does all that extra dissipation get me, since I'm still running at only the legal limit? That is a good question, and I have a good answer.

Using the 4-1000A, the drive requirements were quite high if I wanted to run the legal limit. As I mentioned earlier, 100 watts from my Yaesu FT-1000MP barely drove it to 1500-watts output, and then only on the lower frequencies. Part of this high-drive requirement was caused by using a tetrode in a triode configuration by connecting

Roll Call

Don't forget to tune to 7.255 MHz at 11:00 AM on the second Saturday of the month for ECARS roll call. All members are encouraged to check in and show your support for ECARS.

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the control and screen grids together. This lowers the MU (amplification factor of the tube to around 100-125, as a guess). However, the 3CX3000A7 is designed specifically for grounded-grid operation. It exhibits a MU of over 200. This is very significant. Using my "last" amp, I have found that an input level of only 65 watts or so is enough to drive the amp to the maximum legal limit of 1500 watts output. Since I operate a lot of RTTY, the lower drive level is very advantageous in working my expensive transceiver as little as possible. I have to be careful though, because the amp can be very easily driven to more than the legal limit, especially on 80-20 meters. To prevent any possibility of this, I have accessed my FT-1000MP's power menu and set the maximum output power level at 50 watts instead of 100. Now, I can run the transceiver's power up as far as it will go and still be well within the 1500-watt maximum limit.

The high-MU characteristics of this fine tube make it really want to make the output meter jump, even with a small amount of drive. This is quite different from the 4-1000A configuration, which required a lot of "fiddling" to get it to such levels.

In addition to an easier tune-up and lower drive, I have also accomplished something else equally as valuable with this amplifier. It is (almost) impervious to mistakes. Think about it: A tube with a 4000-watt plate dissipation rating is actually dissipating a maximum of about 1000-1200 watts at 1500-watts output. This provides a safety margin of more than 2500 watts before the tube's safe ratings are exceeded. Now, let's imagine that I'm running at the legal limit and, suddenly, my coax gets cut by the kid mowing my grass. What happens to the amplifier? If the amp is outputting 1500 watts, with an input of approximately 2800 watts (total tube dissipation of 1300 watts [2800-1500]), then all 2800 watts of power are suddenly being dissipated by the tube. So what! The 3CX3000A7 is rated at 4000 watts plate dissipation. We're still 1200-watts within the safety margin of this rating. The tube could run all day at this rate and never be hurt.

Of course, if your coax were suddenly cut, the plate tuning would go haywire and you might draw a lot more (or a lot less) current. However, the plate choke would probably open at a little over an ampere, and the primary circuit breakers would activate when input power exceeded 3500 watts. There is just no conventional way that you could damage the tube in such an amplifier.

This conversion was possible, because I always try to

over-design my amplifiers. The original 4-1000A configuration had an oversized blower, which was plenty adequate for the 3CX3000A7 as well. Also, the amp had enough extra room to mount a much larger filament choke. I could have mounted the larger filament transformer in the same area as the original one. However, this would have placed it uncomfortably close to the tank circuit. Instead, I elected to mount it on a separate panel, which also controls the primary power to the amp. The 3CX3000A7 tube is no larger than a 4-1000A (although, much heavier), so mounting space was not a problem. The amplifier, primary-control panel, and 5000-volt power supply are all mounted in a 4-foot rack cabinet with casters. My "last" amp is SIGNIFICANTLY heavy!

My total cost for this most-worthwhile upgrade was \$295.00. I bought the 3CX3000A7 socket and filament transformer on eBay for \$200.00 and I had purchased the strap-wound filament choke years ago for \$25.00. The chimney set me back \$70.00. What about the 3CX3000A7? I acquired it in a trade with another broadcast engineer. He wasn't sure if it was good, but the filament continuity checked OK, so I traded him some "junk" for it. However, it should be noted that the retail price of a new 3CX3000A7 is less than the retail price of a new 3CX1500A7, also known as an 8877, the tube that is used in many commercial amateur amplifiers today.

I am certainly not suggesting that everyone immediately run out and build an amp of this "magnitude." Most of you who know me are aware of the fact that I rarely run an amplifier on the air. In my years as ECARS net controller, I only used an amp three or four times, and on those occasions, I was simply testing new designs. I find the 100 watts from my transceiver to be adequate for 95% of my hamming activities, especially given my two, three-element beams at 70 feet. When in RTTY mode, I run a maximum output power of 500 watts. Using CW, I have never run more than 100 watts. On SSB, I'll occasionally run 1200-watts output when trying to break a pile-up. My need for a legal-limit amplifier is, admittedly, not very great. Besides, I take very seriously the regulation that REQUIRES radio amateurs to use the MINIMUM amount of power necessary to establish and maintain a contact. If we all used the minimum amount of power necessary, world-wide QRM would be cut drastically.

Then, why build amps that will easily go the full limit? That's a good question. Here's the answer. First: I like to build amplifiers, period; Second: I like to build amps that will operate in a manner that suits my personal preferences and requirements; Third: I want the full-legal-limit capability, should I ever decide that I need it; and Fourth: I like the protection found in an amplifier that has components rated much higher than required for my normal operating needs. (This is a holdover from my broadcast engineering days.)

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Missing Monitors


If any ECARS members do not get the Monitor, please contact ECARS Secretary Charlie Stampf N2CJ for a copy. Also, new ECARS members must obtain their copies from the Charlie.

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When I tell fellow hams about my amplifier, I'm often asked if I'm ever tempted to crank that amp way up above the maximum limit and see what happens. My answer is always a definitive "NO!" Think about it for a moment. If I did modify some support components (chokes, tank circuit, internal wiring, etc.) to be able to produce an output of 6000 watts, what would that get me? The answer is: A 6 dB gain, when compared with the 1500-watt legal limit. This equates to a signal increase on the receive end of only one S-Unit. Of course to run at such power levels, I would have to get new antennas, because the traps in my current models are rated at 1500-watts, maximum. I'd also have to purchase coaxial cable that would handle that large amount of power. I figure that for an additional \$7500 or so, I could beef up my amplifier and station to handle 6000 watts of power. (Oops, I'd have to get an intermediate amplifier to drive the main amp with 250-300 watts or so. Add another \$600.) In the end, all of the trouble and all of the expense would net me a grand total of one S-unit (6dB) improvement in my signal at the receive end. (Oops, let's add another five to ten thousand dollars in fines when I get busted by Riley Hollingsworth, who doesn't tolerate these types of activities.) This kind of wasteful spending is like buying a solid gold toilet paper fixture for your bathroom. The gain in signal strength does not justify the cost. Most important, such activities would be highly illegal!

In testing this amp, I was able to put approximately 2300 watts into my commercial dummy load on 80 meters at a full 100 watts drive from the exciter. This is approaching the absolute maximum limit of the plate choke and other support components. However, it is pleasing to note that the power rose in a linear fashion from the 1500-watt level as the drive was increased. Very little actual retuning of the amp was required. This amp wants to perform.

This is my "last" amplifier, because it gives me everything that I require: Full legal-limit capability with less than 100-watts drive, continuous-duty ratings, an enormous safety-factor in preventing tube damage due to open or shorted transmission lines, and it's very impressive to look at. I will never need more capability than this amplifier provides, and this is why it's *absolutely* the "last" one that I will ever build..... Of course, it would be nice to add 160 meter capability and, maybe, some self-tuning or broadband characteristics. Also, I'd like to incorporate a Hypersil transformer to lighten the weight and, maybe, shrink the amp's size so that it would fit comfortably on the desktop. Furthermore, the blower is a little noisy, so maybe a low-speed, high-volume model could be substituted. Better yet, maybe I could build a solid-state amplifier or maybe ... maybe maybe.

Well, this is the "last" amplifier that I'm going to build this month.... probably. 

My Elmer from page one

eyes. I was perfectly happy doing what I was doing, working the novice bands into the wee hours of the morning on 80-meters CW. I did this for a couple of years until one day, our youngest son, Mike, at the age of eight came over to the radio desk and asked if he could learn "that" too. I told him if I can learn it, anyone can. Naturally, when one son wanted to, the other did to— he was nine.

So began the enormous task for our Elmer, to begin all over again. Of course, kids absorb things better than adults, and in no time there were three novices in the house all battling for "air" time. I could see that I was going to have a dilemma on my hands because the kids were anxious to upgrade. So like the saying goes, "If you can't beat'em, join'em".

Hours and hours were spent listening to CW records. I can't say for sure, but I think even our dog understood it. In order to pass the 13 wpm test, we had to copy 15 wpm. And later, for the 20 wpm test, we had to copy 25 wpm. Our oldest son (KA3S) asked our Elmer, "Dad, why do we have to do it like this?" And the answer was because it's the right way. The ARRL License Manual was our bible. Just picture two little boys AND A YL learning about voltages, inductance, impedance, zener diodes, etc. Again, the question – "Dad, why do we have to do it like this?" And the same response, "Because it's the right way". Our Elmer didn't cut us any slack either. We were going to know it by the book or we didn't even think about upgrading.

Our Elmer traveled many miles for us to upgrade. We all didn't progress at the same pace either, but even if one of us was ready to upgrade, we all went. For about three years we went to exam centers from Monroeville, PA to Dayton, OH, with the last trip to Buffalo, NY where Mike and I passed our extra exams. We didn't have VE's but had to go in front of the FCC. To me, this was like sitting in front of God. I was the only YL in the group and Mike was the only child – he was now 11 years old. Needless to say, the return trip home from Buffalo was full of pride for our Elmer. He now had three extra class licensees under his wing.

Hamfests were always fun for us too. Mike usually took home the prize for the youngest ham. Hats and name tags were worn with pride. But no one was ever more proud of us than our Elmer.

Bob Jr. is now 30 years old and an avid CW Dxr with over 280 countries confirmed. He blames his lack of progress on six years of college. Unfortunately, Mike isn't

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into ham radio at this time but he still remembers his code. He uses it now to talk to me when he doesn't want his XYL to know what he is saying – she doesn't like it but we get a kick out of it. It especially comes in handy for him at Christmas time when he doesn't want her to know what he bought her.

Now the kids are married and gone but the awards, of which there are many, still hang in their frames on the wall of the shack along with QSL cards from all over the world. There's no doubt in my mind that someday, Bob Jr. will hear the words, "Dad, why do we have to do it like that?"

As for me, I still to this day learn something new from my Elmer about ham radio just by listening to him. I wish everyone in the world of ham radio could have had an Elmer like mine.

I'm sure there are a lot of stories out there about elders – this is mine. 🙌

Which State from page one

We run a very modest set up in the pickup. It helps to get in from places such as the Grand Ole Opry in Tennessee. If you know the net control operators schedule, you can check in with Phil (KG4GP) from southern South Carolina to Tennessee. We can usually work Richard WB3FWL from all the New England states. Ken's (Not 2 Ambitious) helps us when we're in the southern states. In good conditions, we can work most of the control operators and in poor conditions, there's always the cell phone.

I won't bore you by listing the states, but I think Illinois, Indiana, or Michigan will be next if we're lucky enough to get a net controller operating out of Ohio on our next trip to the West Coast.

A quick check of the log tells us that Richard WB3FWL is the controller we have contacted from the most states. We've checked in with Richard from fourteen states.

If you haven't tried mobiling, or if it's been years since you've had the rig in the vehicle, you might want to consider joining the mobile gang. Hey, you can sing, "On the road again". Just don't do it over the airways.

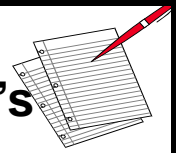
Char and I will be back at the Ocean City gathering for our third year, and hope to meet more members. By the way, we're going to bring the trailer and spend the rest of the week at the Assateague National Seashore. Come on downnnn. 🙌

In what year was the USA "W" call sign prefix first introduced?

From QRZ Trivia

ECARS Secretary/Treasurer's Report

by Charlie Stampf, N2CJ

**Quarterly Report of ECARS Secretary/Treasurer**

Hello again fellow ECARS members. I trust a good summer was had by all. Now we are beginning to look forward to a wonderful fall season. Let's hope that the bands improve this autumn. From my perspective, this summer's conditions were poor. I thought this year was supposed to be the peak of the sunspot cycle. Hmnnnn.

As I write this report, ECARS has grown to 581 paid members. We experienced exceptional growth coincidentally with the new licensing regulations. I would like to take this opportunity to welcome all new ECARS members.

For the first time in many years, ECARS has found it necessary to raise its membership dues. At the time the dues level was established by the Board of Director's, the figure of \$5.00 was enough to cover the organization's expenses. Unfortunately, as we all know, costs have increased in all our expense categories. Processing a member's new or renewal application costs more than \$5.00. Please review the chart on the next page for a graphic example. As you can see, e-mailing the Monitor to members will save us substantial money. Please consider receiving your copy via e-mail.

Many costs are sure to rise in the near future. We will have to re-order those beautiful decals when our current supply is exhausted. Office supplies, corporation fees, postage, web expenses and the annual Ocean City gathering are all recurring expenses.

Fortunately, the Executive Committee projects that the new membership dues of \$7.50 should be sufficient for the next several years. The increase will be implemented in January 2001.

Thanks for all your support during the past year and I promise to work hard and diligently for you during fiscal 2001. Please make your voice heard, be sure to cast your ballot for the year 2001 slate of Officers.

ECARS Swap and Shop Net

Don't forget to tune to 7.255 MHz on Wednesday

**Cash Flow Report
6-1-00 through 9-16-00**

Inflows	
New Members	485.00
Renewal	160.00
ECARS Pins	8.00
Misc. Income	10.00
Total Inflows	663.00
Outflows	
Office Supplies	20.36
Stamps, Mailing	64.59
Monitor (includes one time charge - Constitution and By-Laws)	668.98
Total Outflows	753.93
Overall Total	-90.93

Basic Yearly Costs of ECARS Membership

Monitor Cost (7-2000)	\$590.90
Issues Printed	500
Cost per issue	\$1.18
Cost per member (4 issues)	\$4.73
Postage for membership renewal	\$0.33
Postage for new memberships	\$0.55
Total Cost for renewal membership	\$5.06
Total cost for renewal membership	\$5.28

dentistry of Eastcars it would have been a lot easier pulling teeth than trying to get members to run for office.

Now that we have a great selection of candidates willing to run for office, it is up to each and everyone of us to at least cast our ballot. In the past only 20% to 25% of our members have even taken the time to vote. Maybe as a member of ECARS you should lean back and consider why you ever became a member. Its time some of our younger members stepped up to the podium and let the old timers slack off from carrying the load. We understand that a lot of our members, due to some restraint or another, are unable to help out as either a net control operator, running for office or what have you, but what's wrong with voting for the candidate of your choice? Let's all do whatever we are able to do to support E.C.A.R.S. It's your net.

The Nominating Committee

Should have been a Dentist

After weeks of hard work, pleading, begging and threatening, the nominating committee has finally come up with what we consider an excellent slate of candidates running for the E.C.A.R.S. Executive Committee for the year 2001.

If the nominating committee had been appointed as

ECARS Official Ballot 2000

For your convenience we have printed this membership renewal form. When complete, please return it to the Secretary/Treasurer. Dues are \$7.50 per year. Multiple years are encouraged. The three-year renewal cards are laminated at no charge. Please put your Call and ECARS number or New if joining, on the check.

Here's my check for ECARS in the amount of \$_____

Name: _____ Call: _____ ECARS #: _____

Address: _____ Zip: _____

Detach and use a separate envelop if you wish a secret ballot.

In accordance with our **Constitution and By-Laws**, the Nominating Committee, comprised of W2ZZJ, George Sadlon, (Chairman); WA4SOF, Jerry Wohlgemuth; W3KMN, Jim Olsen, has submitted the following candidates for elected office for 2001. Please vote for only one person for each office (circle the appropriate X)

President
W2LKS – John Calise **X**
KB3DNK – Bob Andrew **X**
WA4SOF – Jerry Wohlgemuth **X**

Vice President
K2PSI – Joe Sherman **X**
W3GCG – Willy Worth **X**
K3RRK – Roy Moyer **X**

Secretary/Treasurer
N2CJ – Charlie Stampf **X**

**Director – 2 years –
Vote for ONE**
AC1Y – Sandy Gerli **X**
WB2RJO – Henry Poval **X**
AA2T – Jerry Rogich **X**
WA3GIN – Dave Jordan **X**

PC Based DSP Filtering

by Jerry Rogich AA2T, Leominster MA

While you're net control, on those tough days where there's a lot of QRM on the band, you may need a way to get decent filtering, quickly and cheaply. If so, you should try out: <http://www.geocities.com/hambuc/F.html> and give it a shot.

This filtering system works just fine on my 200 MHz notebook computer. You can tailor the audio response to whatever level you find to be pleasing, for those hours on ECARS. There is a nice audio frequency equalizer slide bar with a few memory positions. I just ran my audio output from the rig into the notebook "mic in". I use my regular headset on the computer's audio output. Make sure that you don't overdrive the microphone input on your PC, and follow the tidbits on the following web page for hooking your PC and rig together. <http://www.qsl.net/wm2u/interface.html>

There is a bit of a time delay, when processing the audio, but it should not effect net operations. It's also good to 200 Hz bandwidth for those who are CW fans.

Have Fun

You be the Judge

by Alan Carney W4CAR, Corryton, TN

Those of you who may remember Ham Radio in the early 60s and before, remember the big challenge of getting your ticket. For example, you had to draw diagrams of electronic circuits and explain how they worked. Morse code was a big part of the exams too.

Now it seems like slowly but surely, the method of getting that license is deteriorating. While making it easier to get the license, the code is being left out except for 5-wpm. And somewhere along the way, no doubt code will be dropped completely. We need a pole to find out where hams stand on this issue.

Let's keep Amateur Radio for all to enjoy and not let it turn out to be like CB radio. You see what happened there.

Receiving WX Satellite Images

by Gary Teed N2GAR, Green, NY

Iam sure that everyone knows something about weather satellites and their purpose. All the maps we see on the weather at news time are obtained from weather satellites. There are several satellites circling the Earth, sending images of the clouds and the ground. The signals that these satellites transmit contain infrared and visible pictures. People believe that getting images from satellites requires expensive gear. Nothing could be further from the truth. You can spend a lot of money buying receiving equipment, but it is not necessary to spend much money.

There are two types of satellites. Polar-orbiting and geostationary (GOES). To receive signals from the GOES satellites requires more expensive equipment. A down-converter is necessary to drop the freq. from 1600 MHz to 137 MHz. To get a taste of weather satellites, the polar-orbiters are the ones to try. It is very easy to get set up to receive signals from the polar-orbiting satellites. Much of the gear can be found for free (*hear that Freddy - editor*) or built with easily obtained materials. The polar-orbiters are NOAA 12, NOAA 14, NOAA 15, as well as the Meteor series Russian satellites, Resurs 01-N4, and Siche. False-color images can be created from the NOAA satellites that look very realistic. There will soon be a new satellite; NOAA 16, which is set to be launched in September.

The most important piece of equipment is the receiver. It must be capable of receiving FM with a bandwidth of 40-80 kHz. I use an Icom PCR1000, which has a bandwidth of 50 kHz. It works very well. Many scanners can be modified to widen the bandwidth too. I have run across mods for scanners on the Internet on various weather satellite sites. You can use an omni vertical, a crossed dipole or turnstile, or what is called a QHA antenna. The QHA or quadrafilar-helix works the best, and can be built from plans found on the Internet. Plans for the crossed dipole can also be found on the Internet. It is advisable to have a pre-amp tuned to 137 MHz. I use a Hamtronics pre-amp mounted at the antenna that works very well. It pays to use low-loss coax like 9913. The audio from the receiver is fed into my computer soundcard. It should be Sound blaster compatible, but others may work as well. Use the line -in input on the card. The software is free on the Internet. I've found WxSat to be the best program. You will want to mount the antenna where you have an unobstructed view of the horizon. Anything in the path will block the signal and degrade the image. The satellites transmit continuously so you will start receiving them when they come above the horizon. The best passes are about 13 minutes in duration and you can pick any of them up four to six times a day. The best passes are those that come closest to being directly over your QTH.

You will need is a satellite tracking program to know when a particular satellite will be visible to your antenna. There are quite a few programs available on the Internet for free. I use one called STS Plus. You will also need to update Kepelarian element files so you are always up to date tracking the satellites. They are updated about every week.

I find receiving live weather images from satellites very fascinating. In the winter you can even see snow cover on the ground. One year, I watched the ice slowly melt from Hudson Bay, as spring drew closer. Below are some links that I use for the software and antenna plans. More can be found by doing a search, or by checking at some of the weather satellite sites.

I hope you will give it a try and have as much fun with it as I do.

QHA antenna plans:

Satellite Images Continued on next page

Satellite Images from page 7

- <http://www.hshaarlem.nl/~ruud/scherm7e.html>
- <http://www.pilotltd.net/qha.htm>
- http://www.hffax.de/WX_Satellite/wxsatellite.html
- Crossed Dipole and others:
- http://www.amsat.org/amsat/articles/w6shp/ant_tips.html
- http://www.hffax.de/WX_Satellite/wxsatellite.html
- WxSat software:
- http://www.hffax.de/WX_Satellite/wxsatellite.html
- Satellite tracker STS Plus: <http://www.dransom.com/>
- Hamtronics (pre-amps & receivers) :<http://www.hamtronics.com/> 

Dxing

by Ken Chasteen N1EWR, Ledyard, CT

Most ECARS members are aware that on the ECARS web site, our Webmaster has installed under my call sign, a display of QSL cards that I have collected over the past 12 years. I chose some of the ones that I felt are unique and not too easy to come by. I hope that the membership will enjoy them as I have. To access the display, log on to www.qsl.net/ecars/n1ewr/n1ewr.htm. When the display comes up, click on to any of the small pictures to enlarge them. Enjoy!!

The CW bands have been very open and active during the summer and we expect more of the same in the near future. Keep an eye/ear on 10 and 12-meters, especially during the daylight hours. Some of the more exotic Dxers like to use those bands as well as 17 and 30-meters. Of course they will also use the regular bands at all times. For those who enjoy phone band operation, check out 14.247 and 14.252 MHz. Both are very active DX nets.

It gives me great pleasure to report that after a visit to the ARRL DX section, I have been credited with 294 mixed confirmed DX locations and I now have on hand a card for Chesterfield Island and am awaiting cards from YJO/Vanuatu, 4W/E.Timor, KH5/Palmyra Island, and EP/Iran. I am hoping that when the Planyra Dxpediton goes to KH5K/Kingman Reef in October, that one (if contact is made) will bring me to the magic number, 300.

I am on ECARS quite often. Anyone wishing to discuss DX and how I work and succeed on DX, it will be my pleasure to QWSY from 7.255 and rag-chew about Dxing.

David Kennedy, K2VPW - SK

ECARS member, David Kennedy K2VPW of Little Field, NJ recently passed away. Dave was a police officer, a 30-year member of the volunteer fire department and the local first aid squadron, serving as emergency management director and borough historian. Dave served as a radioman in the Navy during the Korean War. He was a member of numerous organizations and the vice president of the US International Police Association Radio Club. Our sincere sympathy goes to Dave's family.

New E2 Energizer Battery Better?

Recently the new Energizer E2 batteries started appearing on store shelves. This AA is billed as a new super battery with claims that it's more powerful and longer lasting than the standard alkaline Energizer. But check the spec sheets. Both the old and the new E2 are rated at 2850 mAh. <http://www.energizer-e2.com>

Only in America

Only in America.....do drugstores make the sick walk all the way to the back of the store to get their prescriptions while healthy people can buy cigarettes at the front.



Use More Than One Antenna

by Vaughn Worth W3GCG, Selma, NC

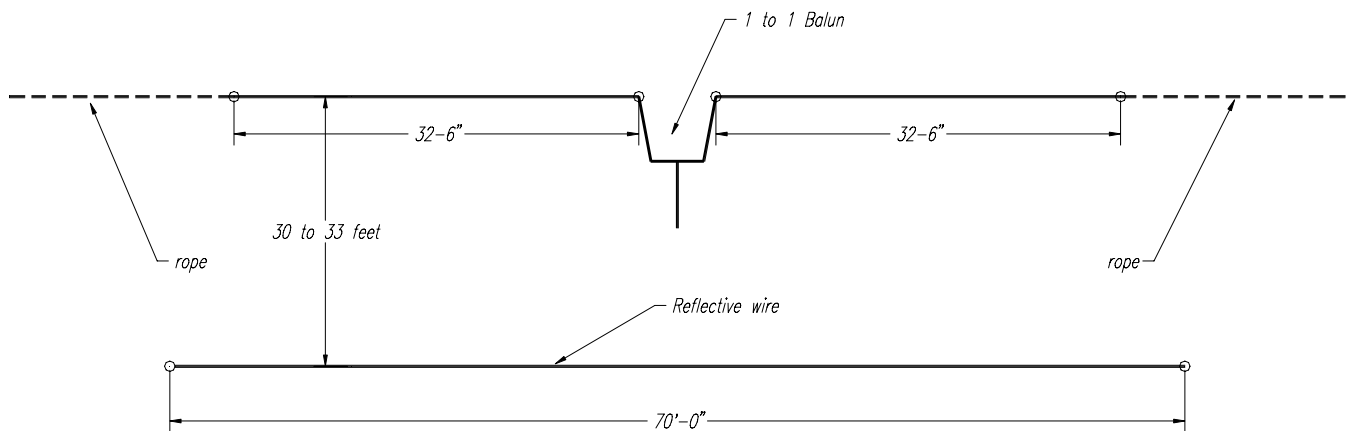
I use several different antennas to transmit and receive. It is almost imperative for net controllers in today's society to be able to switch between several antennas to try to optimize their receivers.

The main transmit antenna for local use (within 1,500 miles) on 40-meters is a dipole at 50 feet with a 70 foot reflector wire 30 to 33 feet directly underneath it. It is essentially a two-element beam, pointing straight up for high angle propagation.

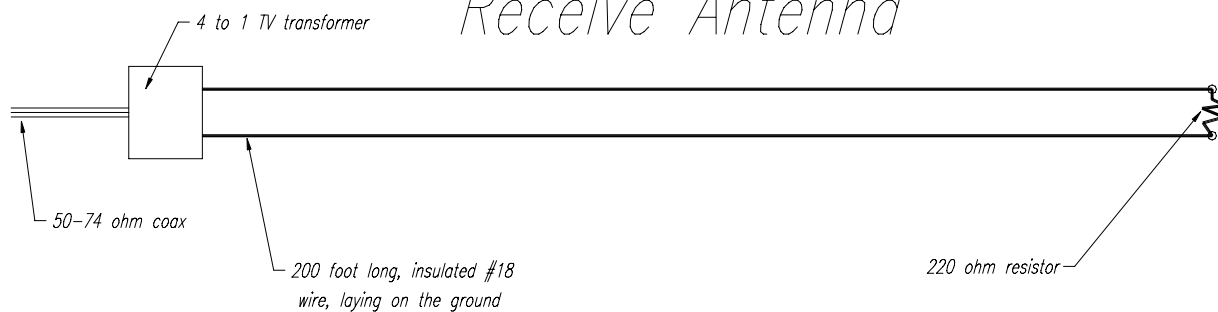
I use a three-element quad for the low angle signals (typically more than 1,500 miles). I also use several types of low-noise receive antennas. One is a two wire 18 gauge about 200 feet long, laying on the ground with a 220 ohm resistor (non-inductive) between the two wires at the opposite of the receive end. I use a little TV 4:1 transformer at the feed end to 50 or 75-ohm coax.

I have several other low noise antennas and beverage antennas for the low bands that I plan to use.

Two-Element Beam (40-meters)



Receive Antenna



Thanks

Thanks to all of the ECARS members who contributed to this issue. I'm sure everyone will appreciate reading the articles written by our club members.

The following ECARS members contributed to this issue of the Monitor. Alan Carney W4CAR, Ken Chasteen N1EWR, Harold Curry WA1YLN, Mary Popella N3YL, Jerry Rogich AA2T, Charlie Stampf N2CJ, Gary Teed N2GAR, Robert J. Traister WB4KTC, and Vaughn Worth W3GCG.

Your efforts are greatly appreciated. *Mike Stone N1VE - Monitor Editor*

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