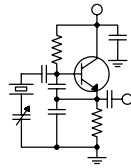


# The Local Oscillator



## *The Newsletter of Crawford Broadcasting Company Corporate Engineering*

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### **Antenna Modeling**

I purchased my first commercial antenna modeling software package in 1995. It was actually a collection of DOS applications that were written in PASCAL by a very smart electrical engineer. The learning curve was steep, and program operation was clunky, based really on the “punch card” data entry system of the UNIVAX era (punch cards were not, of course, used, but the next best thing was – keyboard entry and text files). It took me a good while to get acquainted with the software, but it yielded credible results – credible, that is, because they roughly corresponded with the yield of conventional calculations based on sinusoidal current distribution.

The author/provider of that package recommended an assumed velocity factor of 92.5% in steel, and that seemed to work pretty well. Self-impedances of towers that I modeled measured very close to the modeled impedances using that value.

So with some indication that this new technique just might work, I rolled the dice and put the program to the test when we constructed the 50 kW-D/1.4 kW-N four-tower KLTT-670 array in the fall/winter of 1995-1996.

Those unfamiliar with antenna modeling might well wonder what modeling can do for the broadcast engineer. Amateur radio folks have been using antenna modeling since the early 1980s to experiment with different designs, but their approach and the data they glean from the model runs is different from what broadcast engineers need. The hams are primarily looking for an impedance match to the feedline (usually 50 or 75 ohms), and they experiment to see what kind of azimuth pattern they can get.

Broadcast engineers come at the problem from a different direction. We know the directional antenna azimuth and elevation pattern that we need. We don't care about impedance so much (that's what

matching networks are for), but knowing the driving point impedances is helpful for phasing and coupling system design. What we need is to know how to produce the proper pattern, how to drive the array elements with currents (or voltages) at a certain phase relationship that will result in the pattern specified on the license or construction permit. That is certainly something we can derive from a moment-method model with a little work.

The keys here are determining the current moment on each tower (the sum of the driven current on each tower plus the induced current from all the other array elements) and determining the source voltages and phases that will result in the desired loop current ratios and phases. This early software package did all of that, and it then provided me with driving point impedances, phases, currents and the power in each array element.

As I said, I rolled the dice back in January of 1996 and rather than starting the pattern tune-up with theoretical phases and ratios as I would normally have done, I set them to the model-indicated parameters. The results: we had both day and night patterns nailed within hours. In fact, quite a few of those hours were spent chasing local problems that had nothing to do with the patterns themselves. And the driving point impedances were very close to the model-predicted values, so very little was required in the way of iteration to achieve a match at each ATU input, and from the very start we had a great-sounding broadband antenna system.

From that moment on, I was sold on moment method antenna modeling as a valuable tool in directional array adjustment. While we didn't eliminate all the error vectors, we certainly narrowed the range. Since then, I have modeled many arrays to good effect. Most of the time this has produced good results. The times it has not, reradiators have been at fault.

Last month, I attended the NAB AM Antenna Computer Modeling Seminar in Washington. This consisted of two full days of lecture and hands-on, taught by the brain trust of AM antenna modeling, Ben Dawson, Ron Rackley and Jerry Westberg. My purpose in attending this seminar was to learn how to model AM arrays “the FCC way” (Ben and Ron had just recently spent several days at the FCC teaching the Media Bureau engineers there how to model using the very program that I now use).

I didn’t really expect to learn a great deal more about modeling per se; I thought instead I would pick up some procedural tips that would insure what I file would be acceptable to the FCC. But I was pleasantly surprised. I learned a great deal about modeling, gleaned from the extensive modeling experiences of Messrs. Dawson and Rackley. I learned how to “calibrate” a model to real-world conditions and what parameters it is permissible to adjust in the model to make the model match the empirical situation. I also learned about calibrating a sample system, something I thought I could write a book on. Mr. Rackley taught me a whole new approach to this using a network analyzer, something I very much look forward to putting into practice in the coming year.

So what does this mean for our facilities? The new FCC rules that permit method moment modeling for AM performance verification will go into effect in February, so after that we will be able to re-license many of our AM arrays under those new rules.

In the coming year, I will make a list of our arrays that I intend to re-license, based on benefit, ease of modeling and available resources. Those arrays that would quickly benefit from relicensing will go to the top of the list. I will then work with our chief engineers to get some detailed impedance measurements made, of conditions at the base of each tower and of the impedance matrix. We will also carefully calibrate and certify the sample system to insure it is not “lying” to us. I will then produce the model and we will dial in the new parameters. Our engineers will have a few reference field strength measurements to make (three per lobe and null radial), and we can then file the model with a Form 302-AM for a new license. Bye-bye monitor points!

Antenna modeling will usher in a new era in AM broadcast antenna work, one that I believe will result in better maintained patterns and less interference on the AM band. I’m very much looking forward to it.

### **The Crunch**

I’m not sure you could live in a cave in the mountains and not know that there is an economic crunch going on worldwide. If you’re at all like me, you find yourself avoiding newspapers and other news media because the news seems to be all bad. It’s almost like it was with Job, with one messenger coming on the heels of another with news of another disaster.

Radio has not been untouched by the economic downturn. The trade press is full of accounts of cuts at the big groups, many of them at the very top. Those that remain have to do more with less. It’s a time of belt tightening, a time of tabling capital projects and deferring all but essential maintenance.

Crawford Broadcasting Company is in a good position during this time because we are already lean and efficient. Our facilities, every one upgraded over the past few years, are in excellent condition. We don’t have anything that’s about to fall apart or that’s demanding immediate and costly attention.

But that doesn’t mean that we’re immune. We’re going to have to control costs and watch every penny. In the past, we might have replaced an item whereas now we will make every effort to fix it. We’re going to have to pay attention to things like transmitter site visits, consolidating them whenever possible to save on mileage reimbursements. We’re going to look at operating schedules and consider shutting down some facilities in the overnight hours with unsold inventory. And we’re even going to raise the thermostat a few degrees in our transmitter buildings.

We’ll get through this crunch. Radio has weathered every economic downturn since its inception in the 1920s, and it has grown in the process. We’ll do so again and come out the other side leaner and stronger. But each of us must do our part and adjust our thinking to the new, leaner environment.

### **Retirement**

It is with some sadness that we announce that Portland market chief engineer John White will leave our full-time employment at the end of this month. John has served us well through these past nine years. The good news is that he will be staying around in a reduced capacity as contract engineer. Our Portland operation will still benefit from his care and attention.

We wish John the very best going forward into this next phase of his life. You can stay in touch with John by email at [jdwhite@teleport.com](mailto:jdwhite@teleport.com).

**The New York Minutes**  
**By**  
**Brian Cunningham, CBRE**  
**Chief Engineer, CBC – Western New York**

Hello to all from Western New York!  
Whatever happened to the big HD-R receiver rollout at Wal-Mart? On Monday March 5, 2007 *Gizmodo*, the gadget blog, announced that Wal-Mart had agreed to start selling HD Radio receivers in over 2,000 of their 3,500 stores. Peter Ferrara, president of the HD Digital Radio Alliance, followed this announcement up a week later with announcements in USA Today and The Wall Street Journal that the HD-R rollout had begun, and by a major retailer such as Wal-Mart agreeing to stock and sell HD receivers, that would help solidify HD Radio. This rollout has not happened in Western New York, and chances are, not in your market either. I have yet to see the first HD receiver offered for sale in any Western New York Wal-Mart store. In fact, recently while Christmas shopping with my wife, I stopped in several national chain electronics retailers inquiring about HD-R receivers. Of the three I checked, Circuit City, Best Buy and Radio Shack, only one had an HD receiver in stock, and it was not even displayed along with all of the other receivers offered for sale. The salesperson knew nothing about HD-R when questioned, but did offer to get his supervisor involved to answer my questions. After a lengthy wait, the department manager reluctantly tried to answer my questions. He openly stated that he knew very little about HD-R, and that their sales training classes did not include HD receivers.

Currently, Ibiqity states that there are 1,797 stations on the air in HD, and of that number, 945 are offering multiple channels. Many of these stations have been on the air in HD for at least three years, so when will the national retailers finally recognize that HD-R is here to stay? First off, I think that Ibiqity has done a poor job of educating the public on this medium. In just about all of the nationally distributed magazines, you will find advertisements for Sirius/XM radio subscriptions on a

continuing basis, but none for HD-R. How can the public make an educated decision to buy into this medium if they know nothing about it, except for the misrepresentations they hear on the street? Someone has to pick up the ball and get the public educated and interested in HD-R, or 1,797 stations have made a very poor investment into the future of radio.



**Congratulations**

Those of you that have been around for a number of years may remember Milt Ellis, who was with WDCX for over 40 years. This weekend, Milt will be inducted into the Buffalo Sabres Hall of Fame in a pre-game ceremony at HSBC arena. Milt was the public address announcer for all Buffalo Sabres home games for 26 seasons, along with calling games for the Buffalo Bisons of the American Hockey League. Milt will be the 35<sup>th</sup> person inducted into the Hall. Congratulations, Milt!

**From Humble Beginnings**

I was recently thumbing through some earlier editions of *The Local Oscillator*, i.e. November 2002, and noticed how much this publication has grown in the past six years. Back in 2002, it was barely six pages in length, with Cris highlighting events and occurrences in our various markets and a market report from Ed Dulaney. Now, with all major market chiefs contributing on a monthly basis, it has grown to 20+ pages in length. I'm sure that it is no picnic to get each month's publication edited and put together, and a big thank you goes out to Cris for getting this accomplished. I know I have learned a lot from reading how other market chiefs have handled certain situations, and I hope *The Local Oscillator* continues for years to come.

**WDCX-FM – Buffalo**

Operations have been running smoothly this

past month at WDCX, with no major events to report on. I recently performed some HD audio comparisons between our station and other HD-R stations in the Buffalo market. Currently, according to [www.HDRadio.com](http://www.HDRadio.com), there are 13 stations broadcasting in HD in Buffalo. Of those 13, six have reported multi-channel broadcasting. Out of the 13, I found (3) HD-1 carriers to be off during my comparison along with (1) HD-2 channel. Nine of the 13 stations were broadcasting PAD data on their HD-1 channel, but only three offered PAD data on the HD-2 channel. I found no major problems with the blending from analog to digital in any of the stations monitored. However, there were numerous stations that had at least a -10dB difference between the HD-1 and HD-2 channels. Audio levels were pretty consistent comparing analog audio to the HD-1 channels' audio. All in all, I think the Buffalo market has done well in implementing and maintaining the HD signals.

#### **WDCX-AM / WLGZ-FM – Rochester**

Last month, I reported on some STL audio dropouts on the WDCX-AM signal. Don Boye of Western Tower Service had replaced a bad pigtail on the STL transmit antenna, and all worked perfectly for almost a month. On Monday the 17<sup>th</sup>, the board operator called and reported that the dropouts were occurring again. I checked the transmit end of the STL, and all was good there. On the receive end, I removed the receiver from the line, and installed a spare transmitter with an in-line wattmeter attached,

to look at the integrity of the line. I saw a little over 6 watts forward power and 2 ½ watts reflected. There was definitely a problem on the receive end. On Wednesday the 19<sup>th</sup>, Don came out to the AM site to try and determine the cause of the problem. We decided to remove the 7/8" line from the isocoupler at the base of the tower and check the line from the receiver's input to the output of the isocoupler. When the rubber jacket was cut off of the "N" male connector of the 7/8" foam dielectric, the connector fell off of the coax and water poured out of the line. Judging from the amount of water that came out, I have no idea as to how this receive antenna passed any RF at all!

To make a long story short, we will have to replace all 290 feet of 7/8" foam dielectric along with the isocoupler. In order to keep us on the air, I installed our old Hotline at the transmitter site to provide mono audio to the transmitter. The replacement coax and isocoupler have been ordered through RF Specialties, and we hope that delivery will be just after Thanksgiving. Winter time is certainly not the best time to hang coax on a tower, and Don and I are hoping that the snow will hold off a few days longer so we can get this work completed.

That about wraps up another month here in the great northeast, and until we meet again here in the pages of *The Local Oscillator*, be well and Merry Christmas!

### The Motown Update

By  
**Tom Gardull, CBRE**  
Chief Engineer, CBC–Detroit

The WRDT daytime site tower light assemblies got changed this month to LEDs. Great Lakes Tower started on tower 3. They worked their way upward changing the sidelights over to the Dialight LED fixtures. When they got to the top of the 414-foot radiator, we had our first problem. The new beacon assembly did not fit in place of the incandescent fixture, but our Cortana static dissipator spikes are held in place by four rods bolted to the plate holding the lights. The “halo” support rods would not clear the new, wider beacon. They thought about taking up a drill and making new bolt holes in the tower, but had a new idea the next day.

They moved the mounting holes outward by installing foot-long flat bar stock as extenders. The flat bars were bolted in place of the rods to the tower, and the halo rods were bolted into the flat bar. The rods cleared the lights, we had no new holes in the tower structure, and the rods remained the same length.

Our other problem was caused by a dropped wrench while installing the LED beacon at top of tower 2. The wrench scored a direct hit on a lower sidelight, cracking the covering lens. Like incandescent tower lights, the LED illuminator color is white, and the glass lens is red. So we needed a replacement. For the moment, we took one off an assembly scheduled to be installed on the FM tower next month. A \$100 replacement lens was ordered and the tower company said they would reimburse us.

We discovered our Monroe towers did not need the Dialight Beacon mounting adapter kit. All the assemblies fit perfectly on top of the existing conduit boxes. Sidelights come mounted in a base, with pipe extensions that needed a size adapter to mount to our existing conduit box, so they would extend out from the tower.

All the LED assemblies are 120 volt and were wire-nut connected to the existing wires. I know of some other LED tower installations which use a DC system, which require extensive retrofit. Our WRDT installation was almost “plug-n-play.”

The second day of the project ended just at sunset as they finished all tower 4 lights. From the vantage point of our parking lot, it was easy to view new LEDs on tower 4 and the unyet changed incandescent bulbs on tower 1 and make a comparison. My first reaction was that the old incandescent bulbs were brighter, not by much but noticeable. On my way home after dark, I looked over to see the tower array from several miles afar. This observation gave a different outlook. All the

lights, LED or incandescent, were similar in intensity.

The next day it rained, so everything stayed the same. I took another look from the parking lot and discovered what was different. These new lights do not project as much light downward to the ground as the incandescent fixtures. This is good for airplanes, but harder to inspect tower lights as one gets closer to the base of the tower. The tower company finished all LED switchover work on Friday.

For remote control observation, we have been using amplified current-sensing relays on the electric feed, which pull in when the lights and Austin transformer start to pull current. I had to make a slight sensitivity adjustment on two of the relays for LED operation. Our status lights show when the lights are on.

With the leaves gone from the trees, I can see the nice bright LEDs from many locations. Since I know which direction to look, I can pick out our crisp beacons flashing near the horizon from far away.



### News From The South

By  
**Stephen Poole, CBRE, CBNT, AMD**  
Chief Engineer, CBC–Alabama

#### The Election

The election is over and America has spoken: Barack Obama will be the next president. While I didn't vote for him, I'm not as worried about it as some of my friends seem to be. Part of it, of course, is that there is great satisfaction in seeing this nation elect its first African-American president. Nor do I believe that he is as evil as he has been portrayed by the far right. (If anything, since the election, he has been alarming many of his followers by veering toward the center!) Personally, I wish him well and pray that God gives him the wisdom to govern this country. I want him to succeed.

And what of our nation? I've had a growing conviction for some time (long before the election, in fact) that we Christians have forgotten our primary mission. The Great Commission doesn't say, "Go into all the world and ensure that laws are passed that honor the Judeo-Christian ethic and tradition of this country." It doesn't say, "Go into all the world and support candidates who will appoint pro-life judges." What it does say is, "Go into all the world and *preach the Gospel.*"

Now, I'm certainly pro-life, pro-family and a conservative Christian. Of course I will support those candidates who are closest to my world view. But we're not going to change this nation through legislation or court action. People, this nation has heart disease... and only God can change a heart.

To take just one example, if you're worried about the abortion rate in this country, ask yourself: what if we evangelized our neighborhoods, our cities and our states, one person at a time? What if we, the people of God, did as King Solomon instructed many years ago; what if we truly humbled ourselves and cried out to God for a revival? The change would be lasting and dramatic.

#### Everything Always Takes Longer and Costs More

You'd think I'd learn to accept this, but it still sneaks up and whacks me on the head. We recently had to bring our old Starguide receivers out of the closet for some new programs on WYDE. We had a brand new 3.8 meter dish on hand that we'd purchased for the studio move, but when we changed formats, it went into storage, unassembled. Out came the dish and we got to work.

The ground at our studios consists of a few inches of hard clay over solid rock.

The quotes that I obtained for something as simple as a hole for a pipe were unbelievable, so I decided to be creative: I ordered a non-penetrating Az/El mount from Patriot. Todd, Jimmy and I put it in the parking lot behind the studios and weighted it down. (This also helps with any possible disputes with the city: technically, it's a movable dish, not a permanently-mounted antenna, which might require permission. Heh.)

However, building that dish took a long time. I'm so used to working with small dishes now, I had forgotten how BIG 3.8 meters is. (And how heavy!) We built it in place on the mount, but even doing that, we were sweating and straining. It didn't help that the holes wouldn't line up properly; when we were inserting the panels into the ribs, we had to use alignment punches to forcibly honk each and every fastener into place. What should have taken a day or two ended up taking a week.

The final joy came after we got the dish finished. We aligned it using our new spectrum analyzer, and I was getting a textbook image – clean as a whistle and well-defined. But the Starguides wouldn't lock up. We were sure that we were on the correct satellite. We then learned that ABC had changed the frequency and data rate from the figures published in the troubleshooting guide at their Website; when we entered the new values, everything







**Todd Dixon and Jimmy Parker assemble the 3.8-meter Patriot antenna**

locked right up and we had an Eb/No value of over 13db. Sweet!

Because of all the fun that we've had with satellite dishes in the past, I asked Cris (begged him) (okay, he agreed after I promised to quit whining and chewing his ankles) for a BirDOG analyzer (see [www.birdog.tv](http://www.birdog.tv) for more info). This is a portable unit that powers the LNB right at the dish and provides signal strength, signal quality and a spectrum display. Best of all, it can identify the satellite for you; it actually decodes selected digital signals from the bird to make sure that you're pointed at the correct one. With 2-degree spacing, it's extremely easy to miss. For example, here in Birmingham, the difference in dish elevation between AMC-8 and the bird next to it is only about 1.5 degrees(!).

Any of our engineers who will be aligning a satellite dish in the near future should contact me and I'll be glad to loan out that BirDOG. I'm hoping that it will make satellite headaches a thing of the past. You may be fortunate enough to live at a lat/long where there are several degrees of dish angle between birds, but if not, you'll call that little BirDOG your best friend, believe me!

### **Server Moves, Inadequate Documentation**

When I first came to work with CBC in December of 1998, we had Dalet workstations and a few machines that could do dial-up email. In just 10 years' time, we've grown dramatically. All of our stations have an Internet presence, from Websites to streaming audio. The corporate Web, mail and FTP servers are being concentrated here in Birmingham, but there's still a lot of stuff scattered around the country. I don't envy Larry Foltran one bit having to keep up with all of those different sites, services and hosting providers. The fact that it all looks and works

as well as it does is proof enough that he's doing a good job!

Over the weekend before Thanksgiving, we finally moved the corporate email system from Denver to Birmingham. It was delayed for a few weeks because of DNS issues; we finally got those resolved, and Amanda lugged the two units in question down to FedEx and overnighted them to us on Friday. They arrived Saturday morning in good condition; Todd and I got right to work. But once again, what should have been a relatively simple task ended up taking a day and a half. The Demon Murphy, some poorly-documented open source software and a testy modem/router (not to mention a few script kiddies) all conspired to make it take much longer than we'd hoped.

We use the open-source Scalix server on SUSE Linux for email. As I mentioned last time, we have a Barracuda Spam Firewall appliance to filter that email... and at this point, I'll apologize to those of you who went to work this past Monday morning and found your inbox jammed with spam. During the move, there was a period of about a day during which the mail server was running but Barracuda wasn't in line. If it makes you feel any better, the fact that you don't normally receive that much junk mail is another proof that Barracuda is normally quite effective.

The Barracuda is now in "series" with the email server; *all* incoming email goes through Barracuda, regardless. In the past, a spammer could get around our firewall with some IP tricks; that'll be much more difficult now. However, we learned the hard way that this introduces a new problem: one of the methods that Barracuda uses is called "rate control." Simply put, if it sees a flood of email coming from the same IP address, it assumes that it's being spammed and drops the connection. Now: imagine what happens in a busy market like Denver, or Detroit, or Chicago, when everyone gets to work and everyone starts sending email! Yep, Barracuda was declaring some of our own stations "spammers" and was dropping connections! Raising the threshold on the rate control took care of that (though, after we've run it for a week or two, we may want to raise it still higher).

Most of Sunday was spent dealing with Outlook problems. I've learned more about that rascal than I ever wanted to. Apparently, some older versions of Outlook will actually query the server to see what type of transaction it will support. Unless it gets a definite, "No, you can't do that," it will just send a request and then wait until the server times out. Better yet, some versions of Outlook then provide an error message that bears no resemblance

to the actual problem. In my own tests, Outlook Express repeatedly insisted that Scalix thought that I was a spammer. In fact, Scalix was simply timing out and then killing the connection. Thankfully, we got all of these issues resolved before Monday (though poor Cris had to wait through most of Monday before his Blackberry would start receiving messages again).

Another disappointment is that we're still running on the old server machine that was shipped here from Denver. We had planned to move to a new server running an upgraded OS and a newer version of Scalix, but that just didn't happen. Scalix is quite nit-picky about what it'll accept. For example, the host name has to be exactly the same (which complicates hooking the two machines together on the same network, especially if that name is publicly registered with DNS!). For another, the numerical user name ID values must be the same. It's not enough to tell it that the users will be "Scalix" and "Postgresql;" the actual numerical values assigned by the OS must be exactly the same. We found that out the hard way, too.

We'll get back on that after the holidays; for now, it's working, thank the Lord. Now for the script kiddies... and I'll treat that to a separate section:

### **Securing Against the Script Kiddies**

It's time for Stephen to rant about security again. If you're running a standard UltraVNC server Windows and doubt that you're being probed, look at the "mslogon.txt" file in your C:/Program Files/UltraVNC directory. Look for lines that say things like: 16/11/2008 11:25 Invalid attempt from client 189.130.85.112

If the line is repeated several times, it's probably a teenager using an automated script (whence the term "script kiddies") downloaded from the Web. It's trying all of the common passwords. Hopefully, you're already using a mix of numbers and letters, not easily guessed. I've also mentioned in the past that, whenever possible, you should change from the default port number (5900 for VNC) to something else. Unfortunately, you can't just pick something like "25900" or "49500;" the kiddies are starting to try those now, too. Pick a port number that can't be

easily guessed, too.

I'm harping on this again because of what we experienced while we were trying to move that mail data from the old Denver Scalix machine to our new one. We were using a network copy to do the transfer, and at times, it would slow to a crawl. I wondered what was going on... and then I noticed that our DSL modem's Internet activity light was flashing like mad. Folks, we were being hit by script kiddies *as we were building and installing the new server!* I got tired of it, so we unplugged the DSL modem until we were done with copy and initial configuration.

The bottom line is: use a good password and a good firewall. On the latter, start with all ports closed. Following your vendor's documentation, open one port at a time until you just get the minimal functionality that you need, then STOP. You can't change standard "public" ports (HTTP, SMTP, and so on) very easily, but if at all possible, do as mentioned above, too. Open that new port number, and not the old one, in your firewall.

That's it for me for this time; I'll hand the keyboard to Todd and let him finish up with a little ditty about Cross Loop. I haven't used it yet, but it sounds like an excellent alternative to a full-blown VNC link when you just need to help someone on the fly.

### **Cross Loop and the Spirit of Giving Todd Dixon, CBNT**

It is often a blessing and a curse to be one who is hard wired to understand things of a technical nature. The blessing, of course, is that there will always be a need for people who can solve technical problems. On the flip side of the blessing, there will always be a need for people who can solve technical problems. My standard approach to helping others with computer problems is that [Ultr@VNC](#) (a free PC Anywhere(tm)-type program) is the next best thing to being there, but I happened to be talking computer "shop" with a non-radio network guy at church about remote access when he asked me if I had ever heard of a free remote access service called Cross Loop.



Cross Loop (<http://www.crossloop.com>) brings people of every level of computer experience together at a single website. Experts in everything from office applications to windows system applications are available to help those who need it and they may even be geographically close to you. Before Cross Loop, I would often tell family and friends “If I were there it would be a five-minute fix, but talking you through it will easily take three hours.” Some of you have been there and know what I am talking about.

[insert “crossloop.jpg,” caption “Not as powerful as VNC ... but quicker: Cross Loop]

Having to explain to someone you love how to install VNC, setup a Windows remote desktop session, or open up a port in their broadband router is what actually started the legendary Hatfield-McCoy feud. Cross Loop makes it a simple process to access another computer. Each party needs an account at Cross Loop. When the accounts are established, the person who needs the help clicks the “share” tab of the window shown above. A 12-digit code pops up and they share it with the helper and the helper clicks the “access” tab and enters the code. The sharer acknowledges that it is okay for the helper to access their computer. A secure remote connection is then created and help is on the way.

Of course, the major caveat here is that the person wanting help must have Internet access. I have used it to help a friend find sound card drivers



and install them, to help my parents find things on their laptop and to help our GM in Birmingham fix an Internet Explorer problem on her computer when she was in Philadelphia. At the end of each session, you have an opportunity to document how you helped so that you can remember, and they have a chance to do the same.

Save your sanity, spread some Holiday cheer, and get a Cross Loop account. Then, when your friends and family need help, encourage them to get an account. Even if you can't help them, there is bound to be an expert in the Cross Loop community who can!

**Gateway Adventures**

By

**Rick Sewell, CBRE**  
**Chief Engineer, CBC–St. Louis**

**The Fairness Doctrine**

The election is over, and while stations probably benefited from the extra revenue, I think we all are really glad to not be hearing or viewing one election ad after the other. While I would not want to make this a forum for political views, it is sometimes beneficial and wise to analyze how the results of an election will affect your particular industry.

An Obama administration is sure to bring some changes to radio in the areas of localism and station ownership rules. These don't nearly concern me as much as the idea that the so called Fairness Doctrine could be revived. President Elect Barrack Obama has been on record that he opposes such a move. That makes me feel a little better about the situation, but to be honest, not a whole lot. I never heard from him that this was a heart and soul, "I would never let that happen on my watch" kind of assurance.

There have been rumblings for years from the Democratic Party that the Fairness Doctrine should be brought back. Even some in the Republican Party have said that it might not be such a bad thing. That's not surprising because such a move would take control of content from away from local management and station ownership and essentially put it by proxy in the hands of government. It's no secret that most politicians like control.

Now that the Democrats are very much in the driver's seat, it would not take any stretch of the imagination to see President-elect Obama move from his opposition of the Fairness Doctrine in a quid pro quid move with the Democratic controlled House and Senate.

What would it mean to our industry if the Fairness Doctrine were revived? There are many opinions on this, varying from the idea that there would many more voices and opinions expressed on the air to the exact opposite, that the Fairness Doctrine would essentially stifle talk radio and lead to less talk on controversial topics and hamper free speech. You probably have guessed by now that I

would agree with the latter position. I would simply say that you only need to review history to see what would happen in the future. I am old enough and was even working in radio before the Fairness Doctrine was abolished.

For those of you who have that same experience, we can remember that talk radio was not nearly the prevalent format that is now. Most large markets had probably one mostly talk radio station. It was probably mainly devoted to being a news and information outlet. Any talk shows that might handle controversial topics were largely done in interview formats and in such manner that they were most likely to put you to sleep than to cause you to either think or take action.

Fast forward to the time after the Fairness Doctrine was removed. The talk format grew exponentially, even to the point that most markets now have one or two talk formatted FM stations along with the traditional AM talkers. It is by no means a stretch to say that the talk format saved AM radio. While the format maybe dominated by conservative hosts, they are by no means alone with various stripes of political views available to the listeners. It would seem a hard case to argue freedom of speech was hampered by the removal of the Fairness Doctrine.

Now to the analysis of what would happen to our industry if the Fairness Doctrine is revived. In my humble opinion, it would significantly hurt the AM radio dial. It may make it so hard for local station management to do any kind of controversial talk programming that many will abandon the format altogether. Most station managers and owners will eventually not want to deal with the hardship of giving equal time to every fringe group out there that will demand their share of "government guaranteed time" air time.

If the format begins to die off because of this and the big names like Rush, Hannity and the others decide to move to the greener, less controlled pastures that Satellite Radio would provide, the



erosion of terrestrial radio will be worsened. I don't want to be a doomsayer, but I would not want to think about what Fairness Doctrine controlled airwaves might do to radio when there are so many media choices out there today.

Now to make this point even more personal to these pages, what might the Fairness Doctrine do to Christian and Religious Radio? There are many who think that Christian Radio has become too political with the viewpoints expressed by Dobson and many numerous others now on our airwaves. Don't think that there will not be groups out there gunning to get the chance to get their equal time on our Christian Radio stations. Without knowing exactly how this legislation maybe written, it will be hard to know how it will exactly play it out on Christian Radio.

One could easily imagine in this era of being

politically correct above all else that it might be written in such a way that Christian Radio stations might have to provide equal time to Muslims, Buddhists, radical cultists and etc., etc.

Even within the body of Christian belief, there are many doctrines and various opinions of Scriptural interpretation. Would this be used for various groups and individuals to get their "fair" time on our airwaves? Would groups that are in opposition get essentially free time to oppose those who paid for the time? These are questions that we are bound to face under a newly revived Fairness Doctrine. My last question would be, could the revival of the Fairness Doctrine make it impractical to do Christian Radio on terrestrial radio stations? This is a question that is definitely worth pondering as a new Democrat administration and a House and Senate under even greater Democrat control gets underway next year.

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### Catalina Tales

By  
Bill Agresta  
Chief Engineer, KBRT

Greetings from Santa Catalina Island! The winter weather has finally arrived here on the island. With all the warm summer weather we had last month, I was beginning to wonder if we were going to see much cold, rainy winter this year for the holiday season. It just feels strange to go out into 80-degree weather during Thanksgiving, so the recent rain and cooler weather came welcomed.

Though we did not receive the two inches of rain that had been forecast, we got enough to wet the ground pretty well and even cause an electrical problem. As always, I try to check everything that might be affected by seasonal changes, the roofs, waterways and so on. I had prepared us for quite a downpour, so the light rain we got was no big deal except for the old electrical wiring that runs from the transmitter building out to our towers. That old wiring was put in quite a long time ago and was run in metal conduit that had rusted out years ago. The remaining undersized UF cable never could handle much of a load on it. In fact, about the only thing it



was good for was to run a small fluorescent light in each tuning house and some ultrasonic pest chasers that had been keeping the wasps from nesting in them.

I spent most of the day in my rain gear making sure the tuning houses did not leak as they will need to be re-roofed soon, but they all did fine. It almost felt good to stay outside and work in the mud, something I have not had to do in quite a long time. We will now consider running PVC conduit out to the towers to provide a better electrical feed to each tuning house unless we decide that AC power out there is no longer needed. At that point, I will probably install a small solar panel at each shack and a small battery for lighting and pest control.

I have been dealing with the *island factor* in some ways that have challenged me quite a bit over the last month. Since I live at the transmitter plant, burnout can be an overwhelming issue to face at times and a tough one to get away from. Add to this the fact that I am a single parent who has been raising two teenagers who home-school here until recently,

and you can imagine how things can get tough. There is something about driving to another location after work, one that you call home that helps you to get into a new state of mind, melting away much of the stresses and the mindset of work and letting you prepare for family. Here on the island, even when I leave the transmitter plant, I never have a place to go where I can “get away.” Even when I go to the grocery store, I am dealing with people I know and see quite a bit. Living here, it is like you are always “on.” When I go to church, there is always plenty of work and responsibility since the place is in desperate need of repair and we have very few workers. When I go home, there I am back at work while at the same time at the place where my children need help with schoolwork or me to entertain them. It seems that wherever I go, I cannot escape. Now quite suddenly, I find myself living the opposite extreme.

My daughter left to attend school on the mainland a few months ago, and now my son, needing resources not available here on the island, recently moved over as well. After they both moved out, I went into overdrive, catching up on neglected chores that had been set aside while I was overwhelmed with other things. This, too, has begun to have its effect, however, as now I am working alone, it is dead-quiet, without distraction, and, well, though it sounds like the perfect situation, I find that I am now in another extreme! It is now so quiet and lonely and the place seems so desolate that I am craving interaction with other people. I have plenty of work to keep me busy here, and I try to rearrange my workspace often to help break the lonely feeling as much as possible. This is one of the reasons I decided to work out in the rain, just to break the monotony of it all. I have learned to deal with this isolation for the most part, but it would still feel good to take a drive on the freeway, that thing that most of you dread to do each day.

The new concrete pads we had put in a couple years ago have helped me quite a bit here, too, as on a nice day I sometimes wheel my soldering bench outdoors and work outside for a change of scenery. There is still no one to interact with, but the birds and the buffalo are interesting to watch sometimes. Through this all, however, I have grown to realize how blessed I am that even though I may feel lonely at times, God is here with me and He has

never let me down. The miracles I have witnessed here are beyond amazing, things you only expect to hear about in distant places. Though I am dealing with something that is not comfortable or easy, it has at the same time shown me how much I have to give thanks to God for during this Thanksgiving holiday and all through the year!

So, for several reasons besides those mentioned above, I have begun to work out some great new ideas where we can invite individuals up to the plant to participate in several types of projects. As things have changed quite a bit over the years here on the island, so has our involvement in the community. We have had both good and bad experiences working with the community, and we have learned quite a bit in the process. It can be tough to create positive projects many times because we often find that no matter how hard we try, someone always seems to try to attach a negative spin to it. With the current economic situation, however, our small community is hurting badly. The need to work together and for good sensible communication has never been greater. One of my current projects is to rebuild our little studio to not only be available to go on the air for emergency programming, but also to be used as a production studio, something it has not been used for in quite a while. I am working with someone who has some great new ideas for good, positive, local-issues programming, something that has been pretty hard to come by here for the last few years. Instead of recording this with my portable equipment, we will be inviting the guests here to the site, and before the interviews begin, each person will get a tour of the plant including an overview of its history and its capabilities. This should serve to promote a more open feeling here. At the same time, it will increase our overall security by creating a “neighborhood watch” type of situation, as many of these guests drive past our plant each day. As these guests become more informed about what we do here, this should serve to integrate us more functionally into the local community as well as help the local community to communicate and find remedies to many of the issues they now face.

Until next month, the Lord bless you and keep you; the Lord make his face shine upon you and be gracious to you; the Lord turn his face toward you and give you peace.

## The Chicago Chronicles

By

Art Reis, CPBE, CBNT, AMD  
Chief Engineer, CBC–Chicago

### Future Shock Revisited

Alvin Toffler might have himself be in future shock today if he's still around. Don't remember Alvin? That first sentence is a clue. He wrote the book, "Future Shock," a classic in its day and of its genre, a prediction of the future and what we are to expect from it. Much of what Toffler predicted has indeed come true, for better or worse, but even he had no idea about the extent to which mobile communications has become such an integral part of our lives now. Here are two new examples of some of the more exciting things in store for us, linking Broadcasting and mobile communications, in the near term:

First, we have "Shazam!" That piece of software, which was recently demonstrated to me by our own James Kelly who has it on his Google Phone, is simply amazing. All you have to do with the phone is hold it near a radio or other audio source playing music, and the phone will, within thirty seconds or so, identify and display the song title and artist. James demonstrated the phone for me on the local soft jazz station, which was playing something which could be considered somewhat esoteric, and it worked. The possibilities for this sort of technology are limited only by your imagination. In this case, "Shazam!" can be used to both identify the song being played and then order the song right off the Internet, using the phone. One could also put this software on the audio stream ahead of the digital delays and put data for it on line or on the air without having to resort to the library on your automation system. Better yet, the individual songs in a mix, or coming in from a satellite service such as ABC Long Forms, could be put out on the data stream for the Internet, or whatever. Check it out at [shazam.com/music/web/](http://shazam.com/music/web/).

Next, we have an application called "The Stationalized App," a title which is just begging for a replacement if you ask me. Forget the name, though. This little gem was produced for and marketed by

Jacobs Media in the Detroit area. It's designed to work with the iPhone and the iPod Touch, at least for now. According to Tim Davis at Jacobs Media, a station would buy this application, then provide Jacobs Media with a copy of the station logo and an MP3 stream of the station's audio. iPhone subscribers would then only have to touch your station's logo on their iPhone or iPod, and the station audio stream would appear on their phone. This application will also be available in the near future for the Google phone and the Blackberry, including the new "Storm." Cost to the station is a one-time fee of \$1000, \$900 for Jacobs Media clients. Jacobs Media is on the web at [jacobsmedia.com](http://jacobsmedia.com). Phone is 248-353-9030.



### Importer Blues

Anyone who has been around HD Radio for more than five minutes knows what an Importer is. For those who don't know, Importers are what make an FM station's HD multicasting happen. I don't know how they're making them these days, but we have a bunch of the "original ideas" both here and in Detroit, and these computers are built like tanks. Each of ours weigh something like sixty pounds. That's a lot of beef for a computer. Too bad that they're using the *Windows* operating system instead of Linux. Don't blame Ibiqity for that situation, either, other than maybe their slowness in making Linux the OS for the Importer. At least the original HD radio software is, and always has been, Linux-based. Ibiqity actually bought the Importer technology from another company and put it on the market before they took the time to change OS platforms. Then, from day one, the demand for multicasting turned out to be overwhelming with digital-minded radio station owners, and the rest is history.

Having said that, once an Importer is set up and turned loose to do HD Radio, the observant engineer will start to notice some things. First, there



doesn't seem to be a need for a large hard drive because the whole idea of the thing is data in, data processed, and data out. And quickly. There's not a lot of data stored. Well, okay, very little. So, there's not much point in backing up an Importer, right? And even if there were, when are you going to find the time to take the system down (meaning your HD-2 and -3 streams are *off the air* for the duration) and back it up? And, even if you did, what good would it do you to back it up, when the hard drive fails utterly?

Which is exactly what happened to us a few months ago, when the hard drive on the WSRB Importer crashed flat. Thus began an odyssey which is just now concluding. Here's some of what happened.

When it died, the hard drive had nine days to go before its warranty expired. Beautiful. That turned out to be the last good luck we had in this situation. The thing is, the warranty was not with BE, but their vendor. We had to deal with them. It took a couple of weeks to get the procedure straightened out and the new hard drive in place, but there it was, a hard drive in the Importer, new and empty. When I started to install the Windows XP operating system, I ran smack into my first stone wall. It wouldn't load. I put in the Microsoft License Key, which is on that beautiful sticker on the top of the cabinet. No dice. A call – several calls – to Microsoft told me that 1) the license key is dependent on the serial number of the hard drive, which wasn't the same anymore; and 2) the folks at the Microsoft Customer Service Center know little more than their most geeky customers do about how to get a proper key code into the system. In short, it took three days to find and enter the proper key code for that hard drive. After that, XP loaded just fine.

With that done, it was time to load the Importer software into the system. Or, at least try to. Three things kept getting in the way, however. First, downloading of the software for the system, even through BE's FTP site, was problematic. The problem wasn't with BE, but rather with the Internet, or rather our connection to it. And there were firewall issues, too, which had to be resolved on our end.

Second, the software license key is, like Windows XP, keyed to the hard drive's serial number. Third, certain applications and applets which the program uses to work properly weren't part of the package that we got, and there were more than a few of those. All of this had the effect of making every program launch a dud. There was an error message every time the software was opened. Often, the error messages seemed to be different for each

launch.

About this time, we realized that it would be necessary for BE to not just talk us through the problems we were having, but to actually come into the system, virtually, of course, and do more of the work themselves. After all, they have access to parts of the system that we don't even know exist. And we're on familiar territory because we do this sort of thing a lot with a number of our other vendors. So, we set up an Internet portal for them to get into the Importer, and let them have at it. This would probably have worked very well but for the fact that the last part of the path is over the air through our LanLink STL. The LanLink handles both our PAD data and remote control as well as an Internet Link, and fast is not in the system's vocabulary, to be sure (500 kbps total max bandwidth). This makes it a recipe for "slow, slower, and slowest." And the system kept kicking them out. We use Ultra VNC for our communications software here, but it makes no difference what software you use for this purpose. Once the system starts to reboot, any virtual user is kicked out and gone. And there were a lot of re-boots.

Let me say this right now: I can't blame BE for much of what happened throughout a lot of this debacle (especially considering what we here in the department have gone through with some of our other vendors lately); from what I've been able to learn, this is the first hard drive crash they've experienced on an Importer. To me, that is a testimony to the reliability of this product, and as such, I'd recommend it. But the downside is that, when a failure finally did occur, their Customer Service department didn't really have a procedure in place to deal with the situation. We are not actually using this Importer on the air at the moment, which made ours the ideal "guinea pig" with which to work out a procedure, but if this thing had actually been used on the air, there would have been hell to pay, and I'm saying that advisedly. The solution finally came down to: get the Importer back to the factory and get their engineers working on it. Which is what we did, at their insistence. I'm *hoping* that, because of this, they will be able to figure out the best way to take a dead Importer and bring it back to life in a hurry, in the field, and get it back on the air.

It also tells me that if a broadcaster is looking to make any money with multicasting in the foreseeable future, it will have to be a requirement to have a fully-updated spare Importer be on hand that, if not in hot standby, is at least within easy reach, in order to be able to get back on the air at a moment's notice in case of an on-air unit failure. The good

news is that because an Importer is not a transmitter, is relatively inexpensive and very portable, only one is needed for even a multi station group to keep on-air reliability high.

Who would have think such a thing a few years ago?

### **In a pinch: re-using an old tripod**

I recently had a small project to replace an old TV antenna at one of our transmitter sites. This was an *old* tripod, still physically strong, but the base of which had been roofed over. That meant that replacing it, or even removing it, was out of the question. Besides, antenna tripods aren't readily available anymore, since Radio Shack stopped selling them. Did you know that "The Shack" doesn't sell FM antennas anymore, either?

Despite rust on both the tripod and the mast, the structure was plenty sturdy, except that the pressure bolts had rusted into place. See Figure 1. Even a can of WD-40 didn't help. As soon as I applied any wrench pressure to those bolts, "Snap!" Cute.

Well, even now there is a time and a place for "seat of the pants" engineering, and this is one of them. The other pictures tell the story. It wasn't practically possible to put wedges into the space between the mast and the tripod. The pressure forces there would tend to tear the tripod structure apart. The best way to handle the situation was to provide a means by which any pressure would tend to hold the tripod together. Enter an engineer's friend, the ubiquitous, cheap, and effective hose clamp. Figures 2 and 3 tell the story.

The actual heroes here are the pieces of 1/8" rod stock, which physically connect the mast and the tripod. It doesn't have to be rod, but this was easy to both acquire at the local Home Depot, and to cut and form in a vise. I bought a four-foot length of the rod, along with the aforementioned hose clamps, and cut it into three 16-inch pieces. The stock can easily be bent to the proper angle for the connection, about thirty degrees. Each rod then connects a tripod leg to the mast. The hose clamps keep the connections on the straight and narrow, the more merrier. Keep the clamps as close together as possible at the point where mast and tripod meet, so that the structural integrity will be at its best.



When I was in my first CE job at a station in Idaho some thirty-five years ago, the local running gag was about the Idaho potato farmer's solution for everything: "Get me a welder and some bailing wire. I'll fix that sucker!" With broadcast engineers, simply change the bailing wire part to hose clamps, and you've got the universal fix-it item in our business. But I bet you already knew that.

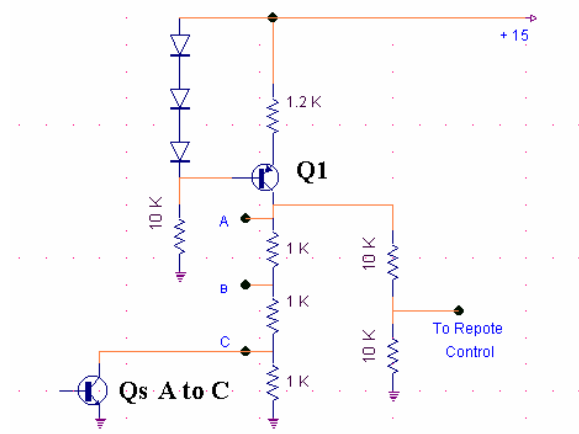
Blessings to you and yours for this Holiday season, and never forget whose birthday we celebrate most at this time of year. Until next year....

The Portland Report

By  
John White, CBRE  
Chief Engineer, CBC-Portland

Last month I spoke about the code beacon monitoring changes with the new LED beacon here at KKPZ. One question that came up is with all the functions being monitored, how is it possible to manage monitoring all those functions? Monitoring lights on along with all the other failures I monitor for would burn up five status channels, and many remote controls only have eight channels. Not practical. I did indicate I use a single metering channel, but didn't go into much detail. This month I want to talk in some detail about how I did that.

My tower lights are monitored by a Potomac Instruments 1750CS comparator module to monitor the tower light currents. This provides four current status outputs plus ON for a total of five tally indicators. I used a circuit to create a sample voltage that provides four states from zero volts to full voltage, depending on the status. In the example I am showing here, the sample is 100%, 66%, 33%, and 0%.



Referencing the schematic, Q1 is a constant current source. Its base voltage is established by the three diodes in series at approximately 2.1 V. The emitter resistor value sets the current that will be driven into the collector of Q1. This will be a

constant collector current independent of the collector voltage of Q1.

This constant current is driven through the three series 1K resistors, making the collector voltage above ground a function of the collector resistance. The task now is to control the value of this resistance.

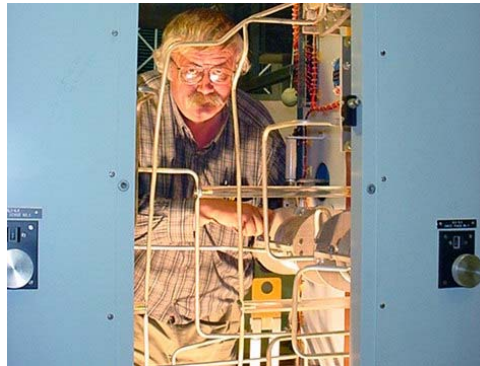
I accomplished this using transistor Q<sub>S</sub>, which is one of three switching transistors. When turned off, in the normal condition, no collector current flows and the collector voltage is determined by the series resistor

string. However, in the event of an error condition, Q<sub>S</sub> is turned on, shunting that portion of the resistor string to ground. For example, if the transistor Q<sub>S</sub> C (shown) is turned on, the resistor string changes from 3K total to 2K total, reducing the sample voltage to 2/3. Similarly, if transistor Q<sub>S</sub> B (not shown) is on, the voltage is 1/3 and Q<sub>S</sub> A on the sample voltage is zero. That's the basic circuit, and it works nicely.

I want to diverge for a moment and talk about building codes using the National Electric Code (NEC) as an example. The NEC is updated yearly, typically with a large number of small changes. A house built last year will not be wired to the current code. Does that mean all wiring must be updated for every code change? That answer is, of course, no.

Which brings me to something unpleasant we discovered this summer. The three-tower array at Mt. Scott consists of all self supporting towers, and the center tower is 420 feet tall. Originally, this tower also supported a seven-bay ERI FM antenna and 3-inch feed line.

This summer, we discovered two warped cross members on the center tower just below the taper change on the tower. The warping of the cross braces is not extreme and nearly impossible to observe from the ground. It is somewhat visible, but only if one knows where to look and what to look for. The lower 25% of the tower has a faster taper, so the tower base is wider for stability and strength. What



has not been noticed before is that the slight “S” shape of those cross braces. The indication is that at some time, those members had been under compression stress and yielded slightly.

This demanded immediate investigation and was at the same time a real puzzle. There have been no recent wind events that could have caused excessive tower loading, and therefore no known cause. We do get regular high wind conditions at the site, but that happens every year. Along with the needed maintenance work, I began forensic investigation to try to isolate the original event. That partially turned out to be possible due to some luck and historical data.

There had not been a lot of major work on the tower in many years. The most recent was the feed skirt boom replacement in 2003, and the base insulator replacement in 1993. So no high wind events and nothing recent for major tower work.

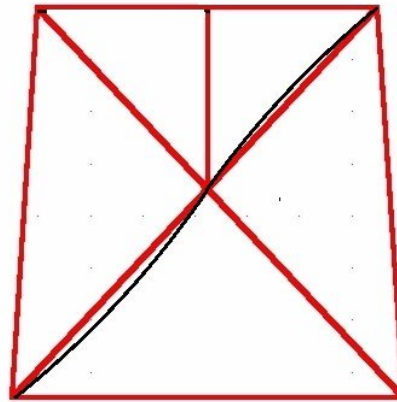
At this point, I noticed some photographs I had taken during the ground system replacement in 2000. In one photograph, I had a clear view of the lower portion of the center tower. I looked at the picture, but couldn’t see anything obvious. But, as I said, it’s hard to see from the ground, even with binoculars.

Next, I scanned the photograph into a computer file. Using my photo software, I cropped out that portion of the tower and blew it up. Now I could see the cross brace. I placed a straight line on the graphic between cross member bolts, and bingo! The warp was clearly visible. Now I knew the warps had existed since prior to 2000.

Next, Cris checked his files and found a similar photograph from 1995 also showing the warping. We now knew the situation has existed for 14 years and simply not been previously noticed.

While this gave us confidence that we had no impending failure, we took another prudent step. The unused FM antenna and feedline represented significant tower wind and weight loading. We have since removed both from the tower.

As to the event that likely cause of the problem, there are currently two possibilities. First, in 1993, one of the insulators failed due to sheer stress. With no adequate replacements, the base insulators were removed from the tower and replaced with steel spacers. A potential over-jacking during



the replacement could have caused the problem.

The second (and more likely) event would be the Scotts Mills earthquake, which occurred southeast of Mt. Scott in March of 1993. This quake was magnitude 5.6 and caused damage over a wide area. A quake can easily set up a harmonic vibration in the tower.

Either way, we are now proceeding with an orderly evaluation for replacement of the damaged members.

Before I sign off this month, I thought I would relate an engineering story from years ago. Most all of us have seen pictures of the Golden Gate Bridge. Next time you see one, take a close look at the road deck at center of the cable supported span. If you look closely, you will notice the mid span is higher and the deck curves slightly.

On opening day, the public was allowed to walk on the bridge. The Golden Gate Bridge experienced the highest loading of its entire history. About midday, the bridge Chief Engineer stepped out to look at the bridge. What he saw was the road deck was flat and he immediately knew why. The bridge was beyond its design load.

I can hear the question now: Why? There were no vehicles on the bridge. Well the answer is simple but not so obvious math. A 6,000 pound car takes up a 10 X 20 foot space, 200 square feet. That’s 30 PSF. A 180 pound person takes up a bit over 2 square feet in a dense crowd. That works out to 90 PSF, three times the bumper-to-bumper traffic load.



**Rocky Mountain Ramblings**  
**The Denver Report**  
by  
**Amanda Alexander, CBT**  
**Acting Chief Engineer, CBC - Denver**

Another month gone already? Wow, where has the time gone? It has been a busy month, full of copper, building projects and just general maintenance.

GRB Construction started on the new ground system at the KLVZ daytime site this month. It seems to be a slow process for me, but then again, I've never dealt with a project like this. The final week in November, they will finish with the radials and move on to laying the screen at each tower base. From there, they will lay the copper strap, attach the radials, and then hopefully, blacktop over the whole mess. It has been quite an experience seeing how they do all this. I give anyone who does this job a lot of credit because I think I'd personally go crazy doing the same thing, over and over again, for eight hours or more a day every day.

This month we also lost a long-time presence at KLVZ. There was a horrible accident while the construction crew was working on the ground system. It seems as though they "bumped" into the old abandoned transmitter building out there and completely demolished it. It will be sad not



seeing the building out there any more, but somehow I think I will cope. They were also kind enough to

pull various pipes from the ground that were used with old satellite dishes and old guy anchors. The site out there in Brighton is looking better and better every day. I think once we move into the new

building and get rid of the existing one, it will look even better.

GRB Construction also went around to each guy anchor and removed the T-posts and barbed wire around them. These were leftovers from when there was livestock at the site, and they were mostly fallen over and in tangled messes on the ground.

Ed and I got most of them several months ago, but some were still left and we just didn't have time to do it ourselves. I am very grateful to Pete at GRB for all the hard work he has done for us with various things the past month.

We finally got a chance to install the security cameras at KLVZ. We have them bolted to a piece of pressure-treated 4x4 attached to the existing transmitter building. This project was a full-ay event.

It included Pete Chamberlain, my dad and myself. I didn't do much, though, to be honest; Dad and Pete had it all under control.

It began at the studio when Pete and I started hooking the cameras up, making sure they worked. Once we determined they did, we began cutting the cable so we had enough to go from outside the building to the inside where the DVR is located. We proceeded to put the BNC connectors on.

The next day, the three of us moved to the transmitter site, where we began drilling the holes where the cameras would be set. We also drilled the holes where we'd mount the wood to the building. I had to run back to the studio to pick up the equipment we needed because we had not actually planned on mounting the cameras that day. Pete had already gone for the day to his other job, so I left my dad alone at the transmitter.

By the time I got back, he already had the wood mounted to the side of the building and was





ready to start securing the arms for the cameras. I hung out the window, waiting to either hand a tool or a piece of equipment to him. Unfortunately, I still don't have the courage to go up a ladder. I have a fear of them as it is. So Dad hung out on the ladder getting everything attached. We worked until late that day getting cameras mounted, focused and ready to record. We are now recording everything going on at each tower base and wherever else we want at the site with the PTZ camera.

Along with the security cameras, we were able to get security lights hung on each tower to light up the tower base areas at night. This proved to be easier said than done. After GRB Construction finished hanging the lights, I noticed I was getting a tower lamp failure alarm every night. I called it in to the FAA and one day, my dad and I went out there to look. We noticed one problem was that the security light was directly over the photocell for the tower lights. Dad climbed the tower to the light and we moved it down enough that it would not affect the



tower lights. While working on this, he noticed some wires weren't properly connected. He connected those wires and all worked fine on that tower.

That same night, I got a tower lamp failure for tower 3, which turned out to be tower 1 (the tower light monitors were not numbered properly on the Burk). We also fixed that problem on the Burk by swapping the tower 1 and 3 status wires. It was a Saturday night when we went out there. We made it a family event. Robert Payne was in town, so he came along, as well as my mom and dad. It was a rather chilly night, too. Again, dad climbed the tower (in the dark) and immediately noticed a loose wire and fixed it. After this, the lights came on and have worked fine since.

To be honest, I think my dad might be enjoying the slow healing time for my ankle. After all, he does get to do hands-on work. He has been a

tremendous help to me as I am still learning how things work. He, too, is learning, so it has been nice



learning with him how certain equipment works. He goes to transmitter sites with me and helps me with the work. I don't think I've seen him do this much hands-on in years. I know he enjoys getting away from the office for a bit and doing other types of work, although I'm sure he does not really have the time to be helping me as often as he does. I think that if it weren't for his help, my head would have exploded by now.

On the 24<sup>th</sup> of November, we had our new transmitter building delivered to the KLVZ day site. We got there just in time to set up cameras and watch the crane lift the building and the contractor position it over the elevated foundation. It was breezy that morning, which made this more difficult. The guys at Kilgore Construction were only a half inch off their mark, which is nothing to worry about. Mike Kilgore worked hard and efficiently to get inspections approved before we could actually bring the building in.

Finally, a different site. KLZ has a wall of



shelves that we keep our spare parts and equipment on. For years, it has gathered dust and more

equipment. I gave my able assistant, Pete, the task of making it look good, organizing the equipment and cleaning the shelves off. I had to get some other stuff done, so I left him at KLZ and came back later in the morning to do some tests on a piece of equipment. What I saw was amazing. There was a sense of organization on the shelves. Never had I seen them look that good. By the end of Pete's day, the shelves were just amazing. I was speechless at the fantastic job he did.



Another thing we have been working on at KLZ is getting the mess on the side of the building cleaned up. There has been trash, wood scraps, old chain-link fence fabric and more on the north side of the building for years. One day I had Pete take apart an old C-band satellite dish that had been in that pile for a number of years. We got that in the dumpster. Then a few days later, we went out there again and while Pete was cutting up wood to make it fit in the dumpster, I was busy pulling, pushing and dragging whatever was on the side of the building.

There was a rather large roll of chain-link

fence that Pete and I couldn't even really push together. I got this idea to use one side of a tie-down strap. I wrapped it in a weird way from the outside of the fence to the middle, enough so I could drag it. This particular day, I had my dad's truck, so I hooked the other end of the strap to his trailer hitch. I was able to drag the fence close to the dumpster. Now all Pete and I have to do is find a way to get it into the dumpster. There is no more trash and useless junk on the side of the building anymore. This site too, is beginning to look great.

I can't believe winter isn't even here yet and I'm already planning my spring maintenance projects at each site. One in particular I get to look forward to next year is spring maintenance at KLTT. I don't mean the typical spring cleaning, I mean the outside work. In years past, we have had some stickers (large grass burrs that stick to shoes, socks, pants, tires and everything). The key word here is *some*.

At the beginning of October – actually the week I became acting chief engineer – Pete and I went to KLTT to mow. I was thinking it would be an easy job; it always has been. What I found astounded me. In just a short time, all the growth around the building had become sticker plants. Typically around the gate and trees and pretty much everywhere but right up against the building has been grass and weeds. Now the sticker plants are everywhere. From the looks of things right now, we will need to do a bit of burning and a lot of spraying. I plan on doing research to find a way to either completely get rid of or at least help with getting rid of stickers. If anyone has any suggestions, please let me know.

I think that about wraps it up for this month. Until next time, that's all folks!

**Digital Diary**  
by  
**Larry Foltran**  
**Corporate Website & Information Technology Coordinator**

It should come as no surprise that email has been top on my mind lately as we've worked to improve the mail system here at Crawford Broadcasting Company. One major issue that was faced is the amount of data left on the mail server. Whether here in the office or while working on computers belonging to an ever-increasing list of friends and family, I find that email clutter is becoming a huge problem. Just a few years ago, computer users commonly had one or two email accounts. Now, it's not uncommon to have four or five separate email accounts. I personally check close to ten separate email accounts on daily basis. This month, I'd like to offer some suggestions that could help keeping the email monster under control.



Before I do so, I'd first like to send some atta-boys (and an atta-girl) out to Amanda Alexander, Stephen Poole, and Todd Dixon for doing an outstanding job during the CBC email server move. They worked some late weekend hours to ensure any related inconvenience to the company would be minimal and for that I believe they should be commended.

Now on with the show...

We have definitely become accustomed to communicating in the cyber realm. Whether it's through an email sent via computer, an email by cell phone or a text message, we are bombarded by numerous messages on a daily basis. Some statistics show that the average worker receives between 150 and 200 messages per day spread between the various sources. Needless to say, these can add up quite quickly, filling your email boxes with hundreds of forgotten messages you probably will never need. Fear not, dear cyber pack-rat, for I can bring you joy this Christmas season.

The Crawford Broadcasting Company document retention policy states that everyone should delete any messages older than two years. I carry over a similar policy for my personal email accounts, deleting any messages older than one year, or, in some cases, six months. Despite this typically being an annual task, it can quickly eliminate hundreds of

aging messages instantly. If the thought of parting with these messages keeps you awake at night, you can first back them up and then delete them. I'm quite sure you'll never need to look at these messages ever again and they will simply take up valuable disk space, but that's a topic for another time.

I know many people use groups of folders and subfolders within their email client to better organize their messages. I'm a member of this club. Despite my best effort in keeping my messages organized, they still pile up. The only difference is now I have numerous boxes of junk as opposed to one main and larger box of junk. I recently read an organizational plan I hope to begin using in 2009 that may solve this problem. This organizational

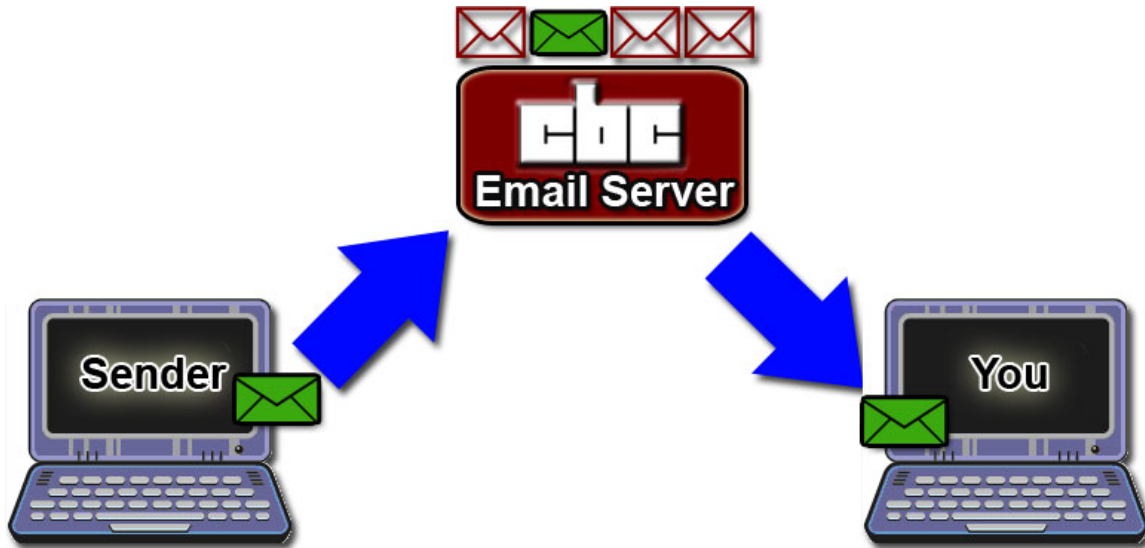
philosophy setting up email folders from the These folders



calls for three aside Inbox. should

be named Soon, Later, and Warehouse. As the parade of new email messages come in each day, you should decide where each message should go. Any messages that can be replied to within two minutes are done so immediately and then deleted. Messages that may take a bit longer are moved to the "Soon" folder and added to a daily to-do list. Any messages that will require follow-up within a week of receiving are put into the "Later" folder. Finally, any reference related messages are put in the "Warehouse" folder. The goal is to clear your inbox and the "Soon" folder every day. The "Later" folder should contain a few messages and the "Warehouse" folder will have a bit more. Of course, don't forget to clear your "deleted" folder as well.

As I mentioned earlier, one major hurdle encountered during the recent email system changes was the number of messages left on the server. Let's pause for a quick lesson in email server 101 for those who aren't 100% clear on what an email client is as opposed to an email server.



When someone sends you an email message, the message first travels to the CBC email server and stays there until retrieved by your local email client. The email client can be Outlook, Outlook Express, Thunderbird, or a variety of other options. The email client connects to the email server and downloads the messages. If set properly, the messages will be removed from the server and will only reside on the computer you're staring at. Instead of taking up disk space on the email server, the messages are now on your computer's hard drive. Easy enough? Let's move on...

For people who travel a lot or simply want access to their messages 24-hours a day, keeping the messages on the mail server is a logical solution. Aside from the disk space issues caused by doing so, it also puts all of your messages at risk of being lost in the event of a complete server or hard drive crash. If you are in this group, I have a solution for you as well. Gmail, the free email service, gives users the benefits of being an email host as well as a virtual email client. In other words, you can set up Gmail to receive all of your messages, whether they are business related or personal, using a feature they call Mail Fetcher. Aside from the primary Gmail account, you can add up to five POP3 accounts. As long as you are connected to the Internet, you can access all of your messages and send message as well. So rejoice, get those messages off of the CBC mail server, and fill up someone else's disk space. ;-)

Another villain in the world of email clutter is the joke message. I'm sure you've seen these – messages that have a forward list a mile long and have made their way around the world faster than

Phileas Fogg. I'm the type of person that will simply delete about 99% of these messages. I know others who prefer to horde these away endlessly. If you can't resist and you are confident it isn't a worm-laced spam message, read it and then delete it. If you absolutely must forward it to your fellow email joke mongers of this world, do so and then delete it. Do you see the common thread yet? Say it with me now! Delete, delete, delete.

Don't forget about your "Sent" folder, either. This area of your email client can become overloaded with old messages and is ignored and forgotten as often as the deleted folder. Although I adhere to our corporate email retention policy for this folder as well, I typically clear out any sent messages older than six months in my personal accounts.

When it comes to spam, there is one quick and easy rule: simply delete it. I've seen several inboxes and spam folders full of spam messages. When asked, the user simply responded that they'll get to cleaning it up later. Why later? Just delete it when you see it!

I sincerely hope the ideas I've provided will help get your inbox under control. Ensuring that your email collection is trimmed down to the essential messages will not only keep your computer running quicker, but will also prevent finding that elusive "important message" from becoming an all day task.

It's hard to believe that another Christmas is upon us. I'd like to take quick moment to wish you and your families a safe and enjoyable Christmas, and stay focused on the true meaning of this celebration. ...until next year!



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The Local Oscillator  
December 2008

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**KBRT • Avalon - Los Angeles, CA**  
*740 kHz, 10 kW-D, DA*

**KCBC • Riverbank - San Francisco, CA**  
*770 kHz, 50 kW-D/1 kW-N, DA-1*

**KJSL • St. Louis, MO**  
*630 kHz, 5 kW-U, DA-2*

**KKPZ • Portland, OR**  
*1330 kHz, 5 kW-U, DA-1*

**KLZ • Denver, CO**  
*560 kHz, 5 kW-U, DA-1*

**KLDC • Brighton - Denver, CO**  
*1220 kHz, 660 W-D/11 W-N, ND*

**KLTT • Commerce City - Denver, CO**  
*670 kHz, 50 kW-D/1.4 kW-N, DA-2*

**KLVZ • Denver, CO**  
*810 kHz, 2.2 kW-D/430 W-N, DA-2*

**KSTL • St. Louis, MO**  
*690 kHz, 1 kW-D/18 W-N, ND*

**WDCX • Rochester, NY**  
*990 kHz, 5 kW-D/2.5 kW-N, DA-2*

**WDCX • Buffalo, NY**  
*99.5 MHz, 110 kW/195m AAT*

**WDJC-FM • Birmingham, AL**  
*93.7 MHz, 100 kW/307m AAT*

**WEXL • Royal Oak - Detroit, MI**  
*1340 kHz, 1 kW-U, DA-D*

**WLGZ-FM • Webster - Rochester, NY**  
*102.7 MHz, 6 kW/100m AAT*

**WRDT • Monroe - Detroit, MI**  
*560 kHz, 500 W-D/14 W-N, DA-D*

**WMUZ • Detroit, MI**  
*103.5 MHz, 50 kW/150m AAT*

**WPWX • Hammond - Chicago, IL**  
*92.3 MHz, 50 kW/150m AAT*

**WSRB • Lansing - Chicago, IL**  
*106.3 MHz, 4.1 kW/120m AAT*

**WYRB • Genoa - Rockford, IL**  
*106.3 MHz, 6 kW/65m AAT*

**WYCA • Crete - Chicago, IL**  
*102.3 MHz, 1.05 kW/150m AAT*

**WYDE • Birmingham, AL**  
*1260 kHz, 5 kW-D/41W-N, ND*

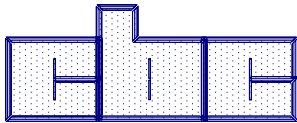
**WYDE-FM • Cullman - Birmingham, AL**  
*101.1 MHz, 100 kW/410m AAT*

**WXJC • Birmingham, AL**  
*850 kHz, 50 kW-D/1 kW-N, DA-2*

**WXJC-FM • Cordova-Birmingham, AL**  
*92.5 MHz, 2.2 kW/167m AAT*

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