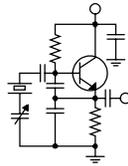


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

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A Challenging Year

It's hard to believe that we're about done with 2010 already. I know that it's all a matter of perspective and that not everyone's perception is the same, but for me at least, time is flying by. I must be having fun!

What wasn't so much fun was my surgery, convalescence and forced inactivity back in the early part of the year. In so many ways that seems like a long time ago, and yet the months since have been compressed; I've been hard pressed to get through everything on my to-do list.

I am in so many ways thankful to have this year mostly in the rearview mirror. In retrospect, we have accomplished a great deal, including the build-out and relocation of the Denver studios and offices, the commissioning of a new three-path microwave system and the moment-method licensing of several more stations. We have also made a lot of progress on the KBRT antenna site relocation project (although it doesn't seem like it at times). And we have gotten a lot done in many of the other markets as well.

I am thankful for each and every project done and for all the progress made on others, and I am thankful for my crew of capable and talented engineers, the very best in the business. Our company is far from the largest, but we top the list of the most respected. A big part of the reason for that is our excellent engineering crew. What other company of our size has such an august list of industry-recognized names? I'm proud of each of you.

EAS/CAP Games

Most of you know by now that the deadline for having CAP-capable EAS equipment installed has been pushed to the end of September. This was a smart move on the part of the FCC. There was simply no way manufacturers could have equipment ready

by the end of March, at least not bug-free equipment in the quantities that will be required.

That's good news for us in that it buys us some breathing room. We have budgeted and purchase orders have been cut for new Sage/ENDEC EAS equipment for all our signals. The Sage folks have told me that their equipment will be easily field-updateable via the onboard Internet connection and that it makes little difference when we make the purchase, at least where CAP code revisions are concerned. With that in mind and understanding that there will be a crush of orders starting in May, I plan to go ahead and place orders for the new equipment this month or next. By doing so, we can stay ahead of the curve and be done with this mandate while everyone else is scrambling. Since that (the summer and fall) tends to be our busiest time of the year, that will count for a lot.

If you want to get an early look at the new units, go to:

<http://www.sagealertingsystems.com/products.htm>.

Amanda and I took a look at one of the units at another cluster across town and were impressed with it, its operation and interface. I know that anyone who has spent the last 17 years with the existing EAS units, their thermal printers and frequent vapor-locks will find these new web-based units a breath of fresh air.

More MoM

One of the items on my 2011 to-do list is relicensing a number of our directional antennas under the new moment-method modeling (MoM) rules. We have already licensed KCBC, WXJC, KLZ and the KLVZ daytime facility under the new rules, and I have just been granted an STA to begin work on the 50 kW-D/1.4 kW-N KLTT antenna. All we

need is a little good weather.

The KLTT facility was constructed new in 1995 and I cut the sample lines myself, using a General Radio bridge and Potomac SD-31 to resonate them on the same frequency to within a few hundred Hertz. I also made bridge open/short circuit measurements to determine the characteristic impedance and loss. As such, I don't expect any sample system issues; we should be able to simply measure the lines and call them good. We will still have to remove the sample transformers and check their calibration. I used a moment-method model to do the initial setup of the array and the final tuned numbers weren't very far off the initial values. That should mean that we won't need to make much of a change in operating parameters and we should have plenty of range in our networks. Hopefully we can knock this out this month and next.

Next on the list is the KLVZ four-tower nighttime facility. It was built new in 2005 and, like KLTT, I measured and cut the sample lines myself and used a moment-method model to do the initial setup of the array. The challenge will be modeling the 810-pass/560-reject filter circuits at the bases of the towers. I had to do this with the KLZ array (which was granted last month), so it shouldn't be a problem – just more work than usual.

Following that we will start working our way through the remaining eligible arrays in the company. We will likely start with a “look-see” at the sample systems of these arrays to find out if they can be economically modeled (they may not be if significant sample system work is required).

MoM Part Deux

Back in September, the question came up of how to handle adding microwave (or other) antennas to an existing AM array that was licensed pursuant to the new MoM rules. That was very timely as we were on the verge of doing some of this ourselves in Denver. After some back and forth between the committee members and the folks at the Media Bureau, a procedure was drafted that works for everyone.

In a nutshell, an STA must be requested for “parameters at variance” while the antenna is being installed. Immediately after the antenna is placed on the tower, a new impedance measurement of the affected tower is made. If the new measured Z is outside the ± 2 ohm/ $\pm 4\%$ window for resistance and reactance, the model must be revised to account for this and new operating parameters derived.

That's exactly what we did with the KLVZ daytime array. We got the STA, mounted the antenna

and measured the impedance of that tower with the other two towers open. While the resistance didn't change much, the reactance (which was close to zero to start with) did move outside the window, so I had to revise the model. I did so by breaking out the top segment of the one tower and modeling it with a much larger radius. That did it, and about the only change in operating parameters was a 2% decrease in ratio for the affected tower. Of course I had to prepare a new Form 302-AM with all its exhibits, and that has since been filed with the FCC for processing.

All in all, this was a fairly painless process. It required a minimum of field work, just a quick Z measurement (that took maybe half an hour), and we didn't have to mess with the sample system or make new reference field measurements. As we go forward, modeling towers with microwave antennas won't be such a big deal and we'll know that making changes to such antennas doesn't require a new “full proof.”

KBRT Progress

Movement on the KBRT mainland transmitter site development has been glacially slow at times but when we stop and look back we can see that we've definitely made measurable progress. Since October's test antenna work and conductivity measurements I have been working with the folks at Hatfield & Dawson to refine the directional antenna pattern and get the FCC application ready to file. That was done late last month and it started a four-year (or thereabouts) clock – nine months to a year for a grant plus three years for the CP term. That will carry us to and beyond the 12/31/2013 date when we must vacate the existing island transmitter site.

This month we are making subsurface soil tests in preparation for tower foundation and guy anchor design (and the county requires this in any event). We are also working on seven “photosimulations” that will show the site as it is now and what it will look like once we're done with the project. Four of these will be “sight line” simulations, showing what the site looks and will look like from vantage points in the valleys below, and three will be made from the site itself, showing what things look and will look like to neighbors and folks up in the national forest.

We hope to have the next packet of material ready to file with the county by the early part of January.

Merry Christmas!

“The people walking in darkness have seen a great light; on those living in the land of the shadow

of death a light has dawned.”

I know that this message was written to the people of ancient Israel, but it is certainly what we need today.

These are indeed dark days for our nation, our states and our communities. Like the Israelites of Isaiah’s day, we are stumbling around in darkness, unable to find our way out of the mess we are in, both as a nation and many times in our personal lives. The trouble is, we’re looking in the wrong direction. The way out, the Way, the Truth and the Life, is the other way!

God has graciously made a way for us to be

reconciled to Him and sent the Light of the World into this dark place to draw people to Himself. How sad that so many decline the invitation.

My prayer this Advent season is that people all across this land and indeed throughout the world will stop looking to government and self for answers and instead look to the Light, to the Blessed Bethlehem Babe, the Source of the only real answers in this life.

May you and your loved ones be blessed as we celebrate the birthday of the King! Merry Christmas!

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

Hello to all from Western New York! This time of year, we seem to be able to slow down a little as all of the stations’ equipment inventories have been tallied, cap-ex purchases have been made, new equipment has been installed and next year’s budget has been completed. In early October, we in the Northeast have already begun preparations for the winter months ahead, so by the time December rolls around we can relax a little before the winter storm season arrives.



I have noticed in the past several years that the retail industry has begun to overlook the Thanksgiving holiday. It seems that store displays go from Halloween straight to Christmas, with Thanksgiving being only an afterthought. Aside from Christmas and Easter, Thanksgiving is one of my most endeared holidays. We, as Americans, have a lot to be thankful for, and should take the time to reflect on all the things we take for granted. There is no country that benefits us the rights we have here in the U.S. Many of our rights would be considered violations in other countries, with penalties as severe as imprisonment or death. Foremost, we have the right to worship as we choose, and no law should be able to govern those rights. The Bible and history has

taught us that people throughout time have been persecuted for their religious beliefs, and it still

continues in many places in the world today. We have freedoms guaranteed in the U.S. Constitution that allow us to live where we choose, work at a profession of our choice, and live our lives to the fullest. Many third world countries do not recognize those rights, and the citizens of those countries are without most of the material things we take for granted, such as a place to live, food to eat, clothes to wear, a job

that enables us to provide the necessities to live, and the rights that enable us to worship and serve our Lord.

During this holiday season, I would like to extend my blessings and thanks to Mr. Crawford and all of our company’s managers and directors. Collectively, everyone works to ensure that our company runs smoothly, and that ensures that we each have a job to come to. I look forward to each and every workday, and give thanks that I have been given the opportunity to work with the best people in the broadcast industry. May God richly bless you and our company in the upcoming year, and remember to give thanks daily to our Lord, whom makes all things possible!

IPA Coupling

The month of November was quite busy here in the Buffalo and Rochester markets. We had several transmitter problems to deal with, along with numerous UPS failures. To start the month off, I had ordered a new rebuilt PA tube from Freeland Products for the WDCX-FM Continental transmitter. For a couple of years now I have been replacing the 4CX15,000A tubes with an English made EEV tube. The EEV rebuilds have proven to be more robust and trouble-free than the "A" series tubes. It was not uncommon to go through two or three 4CX15,000A tubes before I got one that would work properly in our transmitter. So far, the 4CX15,000EEV tubes have been perfect on the first install, tune a lot smoother and operate at a slightly lower temperature than the "A" series.

Getting back to this tube install, before removing the old tube, I fired up the auxiliary transmitter, an 80s vintage Continental 816-R4, which has the tube-type IPA using a pair of 4CX250B drivers. When I applied plate voltage to the transmitter, the plate would come up to near maximum, with no plate current, which is indicative of no drive from the IPA. Checking the performance of the amplifier showed no problem – the tubes were good and output of the amp was normal. A physical inspection of the underside of the final tube socket did not reveal any indication of defective or blown parts; everything there looked normal.

The connection between the IPA and final in this transmitter is fairly simple, the coupling and matching is accomplished with a doorknob and vacuum variable capacitor. Thinking that the vacuum variable had drifted over time, I began to adjust the grid tuning all the way up and then down to its lowest capacitance, while watching the plate current meter for any indication of output. Only then, while adjusting the grid tuning back up from its lowest point, did I begin to see any plate current. I was able to tune the grid circuit to make licensed power, and the auxiliary transmitter stayed on while the tube went into the main.

After completing the main's installation, I shut down the auxiliary transmitter and removed the capacitors in the grid matching circuit to get a better look. Both caps looked good and checked good using my capacitance meter, so I cleaned the connection points and re-installed them. After a good cleaning, the transmitter came up with no problems!

The WDCX-FM auxiliary is so seldom used that this problem did not show up until the transmitter was needed. In fact, except for the transmitter building installation back in 2008, this transmitter has

not been on the air except during tube changes in the main. I assume that because the transmitter was so seldom used, that a high electrical resistance had developed over time and the circuit would not work until it heated up. I will wait a few more weeks and try to bring the transmitter up, to see if the problem has gone away. I feel certain that the cleaning of the capacitors using Scotch-Bright and emery cloth followed by denatured alcohol took care of this problem.

Battery Trouble

Another ironic problem that occurred this month was the failure of five of our "Un-interruptible Power Supplies!" All five were purchased and installed within weeks of each other, and all failed at the same time! Three of the UPSes were APC brand and the other two were PowerWare models. I have found that the PowerWare models will accept standard 12-volt F-2 replacement batteries, but the APC units have to be replaced with the battery tray from the manufacturer, which is quite expensive! If any of you have found an alternative in replacing the APC batteries with an aftermarket replacement, please let me know.

Fan-tastic!

In Buffalo and Rochester, we use the BE FMi-106 and -206 transmitters respectfully for our HD-R broadcasting. This past month I had to replace one of the cooling fans in the Buffalo transmitter. The fan was starting to squeal quite loudly, indicating that the bearings were about to lockup. If you haven't had the luxury of replacing one of these 220-volt muffin fans, consider yourself lucky! There are a total of four fans located underneath the RF modules, in a space just barely big enough to fit your hand in.

In order to determine which fan was going bad, you have to remove the AC Molex plug from each one and re-connect one at a time until you find the squealer. The back two fans were not a problem, there is enough room that you can reach in and disconnect them. The front two, however, are a different story. To be able to reach them, you must remove the complete front of the transmitter to allow access to the mounting tray. I think there was a serious design flaw in this setup. Seems like BE could have a slide in/out tray that would make access to the fans much easier.

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 have a very Merry Christmas!

The Motown Update

By

**Joseph M. Huk, Jr.,
P.E., CPBE, CBNT**

Chief Engineer, CBC–Detroit

WMUZ Transmitter Power Upgrade

As a continuation from last month, we were initially planning the last details of the power service upgrade for the WMUZ transmitter. Our electrical contractors came by at 6:00 on a Sunday evening during a time when no air time had been sold and worked on cleaning out the 400-amp wiring trough and installing the new transient suppressor disconnect switch.

Since we only had a one-hour window, the contractors planned in advance to determine what needed to be done so that the remainder of the work could be finished while the main feeder was live. Like clockwork, they finished at about five minutes to 7:00.

The next day our electrical contractor came to examine the transmitter after I dismantled the panels leading to the power termination location in the NV40 main transmitter. They gathered some final cable lengths and scheduled the final phase of



Power conduit entry on the NV40 transmitter

the project for the next Tuesday morning.

The work crew arrived at 8:00 AM and finished connecting the new 225-AMP disconnect and termination to the transmitter. The crew finished

at about noon. The system was tested and the NV40 ran into the dummy load without an issue.

I spent the next hour putting the panels back on the NV40 and returning it to on air operation. The HD power was then returned to our authorized power level of -14 dBc.

The project, since it was properly planned, it was implemented without any issues and fell within the tight budget constraints we presently have. Defining the scope of the project thoroughly and finding a contractor who was willing work under our time and budget constraints was essential to the success of this project.



Starguide Satellite Receiver Issues

For some time, we have been having intermittent issues where the audio during Dave Ramsey has dropped out. Since the issue has not gotten any better and the weather is changing, I wanted to investigate the issue much closer.

After noting the current received Eb/No of the Starguide receiver (14.1), I removed the cover from the feedhorn of the Patriot dish at the rear of the WMUZ property. Upon observation, I did not notice any water intrusion into the LNB or transmission line leading into the LNB housing. I cleaned the F-connector and reciprocating female on the LNB. I added a ferrite bead to the transmission line to attenuate any possible common mode noise that might be causing interference to the receiver.

Next, I marked with a Sharpie the current position of the LNB in the feed horn mount. I then proceeded to rotate the feed horn, changing the polarization to maximize the Eb/No to a final value of 15.2. The housing was replaced and audio programming was monitored over the next few days.

For about four days we have noticed no more dropouts in the audio of the Dave Ramsey show and no degradation to the Healthline programming on the other service channel. Then we noticed that the audio still experienced intermittent drop outs with the

Dave Ramsey programming.

Reassessing the issue, since we essentially checked the entire RF portion of the system and the power supply, I realized that the Starguide works on a single frequency and transponder. In addition, we have never experienced any issue with the Healthline programming. I thought the issue may be with the codec card.

The Dave Ramsey program material is decoded with the codec card in port C and the Healthline program is decoded with the codec card in

port A. So I placed a known good codec card in the receiver and programmed it for the service channel for Dave Ramsey. After over a week, we have not experienced any issues.

I learned a great deal about the Starguide III receiver and the antenna system. Once the RF and digital demodulator were eliminated as suspect, I figured there could only be one thing left.

Until next time, be safe, and if all goes well, we will be reporting to you from the pages of *The Local Oscillator* next month. Best regards.

News From The South

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

How Time Flies... And How Technology Has Changed!

One is tempted to associate the term “IT” with Stephen King’s famous monster (and at times this seems quite appropriate), but of course I’m referring to Information Technology. In radio, this catch-all term is applied generally to everything from the computers to the data transport methods that we use to get stuff from point A to point B. Most of us have digital STLs now, and most of our stations use digital audio over IP to ferry sound around the studios.

When I first took the job here in Birmingham in December 1998, the company provided me with an old computer running Windows 3. I had a dial-up account with Compuserve for company email. At home, I used a dial up modem (I was cutting edge, too – I had recently upgraded to a US Robotics 56K) with an Earthlink account. The only “high speed” link was the T1 line between the studios and 1260 AM. We had a Dalet automation system with four workstations – two productions and two controls.

Now, just twelve years later (12 years!), look how far we’ve come. To start with, the Birmingham market has grown from two to five stations. This is no longer a one-man engineering show: I have two of the best assistants in broadcasting, Todd “Damperfield” Dixon and Jimmy “Pelo Loco” Parker. All of our transmitter sites have network access to the studios using a collection of

Motorola Canopies, Moseley Lanlinks, and Ethernet-over-T1 links. We’re using RCS NexGen with five controls, seven audio servers, 2 DRRs, primary and secondary Novell file servers and several workstations and production machines.

New File Servers

And that brings me to the point of this gentle reflection. Not that many years ago, Novell Netware was the standard file server OS for several reasons. It wasn’t outrageously expensive, it had excellent performance and it was everywhere. Its few quirks were well-understood and easily worked around. It was

reliable.

Plus, it was *fast*. Novell outperformed even some “enterprise-class” networking systems with a number of tricks. All file open, access and close was done on the server, with tons of RAM used to “cache” the currently-opened file(s). The downside, of course, was that if you had a power glitch, you could suffer *severe* data corruption. A good UPS was absolutely essential with a Netware server. This is why NexGen and Dalet warned that you needed to unload the database before “downing” the server; some of your data might still be in memory, not yet written to the drive(s).

We’re one of the last remaining NexGen installations with Novell Netware 5.1. The problem is, we badly need to upgrade those old servers. We



still have the old 5.1 installation media, but we can't find the drivers for our new Dell hardware.

The official Novell replacement is their Open Enterprise Server, which is basically a Netware stack running atop Suse Enterprise Linux. That appeals to me in more ways than you can imagine, but after a lot of thought (and some moist eyes), we reluctantly decided that the best bang for Mr. Crawford's buck was to move to Windows Server 2008.

Microsoft's server offerings are not cheap, but they offer some advantages. First, it's essentially a one time expense: you buy the server and the needed client access licenses (CALs) and you're done. Second, a lot of people in broadcasting are using them now, so there's a large community of people online who are willing to help if you run into snags. Third, RCS Support no longer recommends Netware and they don't support Open Enterprise Server at all. You can tell: at present, when we call with a file server issue, they have to find a "Netware guy" to answer our questions.

Of course, there are irritations, too. First and foremost is Microsoft's anal-retentive, hysterically paranoid approach to licensing. We must be careful with the older servers in other markets, moving Windows Server to the new hardware without down time... and without violating that licensing agreement. (Thank the Lord for Emergency Control Room in NexGen.) If you have two servers in operation at the same time, both using the same software package, technically, you are in violation. Todd and I are helping a couple of other markets upgrade their NexGen file servers, and we're pondering how best to do it.

Second is the fact that it's not open source. I know you folks get tired of me harping on that, but my attitude is simple: the data on that computer is *mine*. I have a right to know how it's stored, where it's stored, and how to recover it if the company that makes my database should get tired of supporting my current version, or (yes, this has happened) goes out of business. With a proprietary system like Microsoft Server, there's a thick layer of obfuscation between you and *your* data. That annoys me.

Third is the process itself. Moving a file store from an old machine to a new one shouldn't be a big deal, but this particular transfer is anything but trivial. The steps, basically, are

1. Do a complete, wall-to-wall and top-to-bottom backup of everything on your current NexGen server. You do this in NexGen, under Utilities|Backup. Don't miss

anything! Copy it to a safe place (we plan to use an external USB drive).

2. Install Windows Server on the new hardware (being careful not to have two active licenses at once!).
3. Install NexGen on the new hardware. You'll have to download the latest version of NexGen and then call RCS Support for a password for the installation. Move the security key from the old file server, then create a new, empty database.
4. Now connect a workstation to the new file server. Using the backup that you created in Step 1, you restore the entire database to the new NexGen file server. Give it the correct IP addresses, put it on your NexGen network. Wash hands, wipe on pants, repeat, and you're ready to go! Theoretically.

Theoretically... and if all goes well, that's it. So why do I feel a tingle running up my spine when I think about it?

Another New Toy

Here's another case of, "My, how things have changed!" In the past, we've ferried Ethernet over T1 to some of our transmitter sites with add-on cards for our Adtran TSUs and Intraplex units. But now, as our Harris Aurora becomes long in the tooth, we've begun planning to do the opposite: we want to transport a DS-1 signal over wireless Ethernet (we have a Canopy, but of course, other methods, such as the Trango that Cris and Amanda are using in Denver, will work just as well). That way, we can get a few more years of service out of our existing STL equipment.

We've purchased a couple of Adtran MX408e Pseudowire Gateways for this purpose. Being Adtrans, I expect them to work flawlessly and to be absolutely bulletproof. But being Adtrans, I also was not surprised that the setup on them is anything but intuitive. Todd and Jimmy are fanning my head to keep it from overheating as I look through the documentation, figuring out how best to do this.

All we need is the one DS-1 signal; the rest of the available bandwidth will automatically be allocated to other purposes: site cameras, remote controls – the usual. We get traffic shaping for free: the Adtrans automatically give highest priority to the "T" signal(s). But what's making this a bit of an exercise in Advanced Propeller-Headness is the

fact that Adtran designed the MX408e to handle several DS-1 signals at the same time. They've targeted this unit to ISPs and Telcos who need to transport older T1 services over high-speed intercity data links. For a lowly guy like me, it means that I've got (yet still more) work to do.



The Hat Is Required To Understand The ADTRAN MX408e!

The Audio Files: Decibels

We're all familiar with these rascals: decibels are a handy way to express real-life ratios between quantities. The original Bel was developed by the Bell System (whence the name), and for power, expressed a logarithmic ratio of 10:1. It was soon realized that this was too large, so the *decibel* (or 1/10th of a Bel) became the standard.

Nowadays, of course, decibels are applied to a host of different ratios in engineering. I could just as easily say that WDJC-FM has an effective radiated power of "20 dBk" as I could, "100,000 watts." But let's take a quick look at the original application of the Bel to audio levels.

The original Bel was derived from the fact that our hearing is logarithmic. The Bell folks realized early on that it takes approximately 10 times the sound pressure level ("SPL") at normal listening levels for your ears to judge that it has become "twice as loud." It's even worse at very high levels; you'd need more than 10 times the power if you're already at 100 dB SPL, for example, but let's keep this simple.

If you take a sampling of the population and expose them to different audio sources and different sounds at average levels, the typical response will be as follows:

- 1 dB - only a very perceptible

listener will notice this degree of difference.

- 3 dB - this is the smallest change that most people will notice. It's barely perceptible.
- 10 dB - most people would consider this "twice as loud" (or "half as loud," if you're lowering the level).

This holds electrically, too, and you can easily prove this to yourself. Go into an unused studio and watch the meters as you increase or decrease the volume. Close your eyes and turn down some typical speech until it sounds about "half as loud" to your ears. You'll find that the meter has decreased by approximately 10 dB.

The ear isn't linear, either, especially at low and high frequencies, which is where the (in)famous "Fletcher-Munson Equal Loudness Curves" come from. This is why the average listener will pump the bass on his/her stereo, especially at lower volumes. This has implications.

Suppose Average Joe is listening at 85 dB SPL, but he likes a lot of bass. He jacks the low frequencies by 20 dB. This means that his amplifier has to produce up to *100 times the power* at the bottom end of the audio range. Unless he has a really large amplifier with lots of headroom, it will probably clip.

Here's some more science: clipping adds harmonics, which are higher frequencies. When I was doing pro audio work many years ago, I can't tell you the number of times I had to inform an unhappy customer that his blown tweeters weren't covered by the warranty because they had been burned out. In every case, they'd protest. "I only have a 20 watt amplifier!"

Yes, but you drove it into heavy harmonics, which overloaded the tweeter. Sorry...

There are plenty of other oddities about our sense of hearing that I won't get into here. But I'll close with this fact, based on hard science and not opinion. If you run across an engineer who insists on overmodulating to be competitively loud, you need to set him or her straight. If you modulate at 140%, that's about 3 dB louder. Most listeners will barely even notice that small change, so you are courting an FCC fine for no real benefit. The better (and more legal!) approach is to massage your audio processing for higher density within the legal limits.

Vacation... and the TSA

I hope everyone had a happy and blessed Thanksgiving. Sandy and I decided a couple of months ago just to fly back to NC to visit her family. When you consider the mileage on your auto, the

extra motel rooms and the extra meals for a 3-4 day road trip, it's about the same to fly nowadays, even with a rental car in NC.

That's the good news. The bad news, of course, is that the TSA has decided to yet still further ensure that Sandy and I (and of course, 80 year old grandmothers in wheelchairs) aren't bomb-laden terrorists. Folks, the fact is, they have taken all of the joy out of flying. They argue that they're just trying to protect us, but I'll do what other commentators have done and point to the Israeli security model. In a word, they *profile*. Their people are highly trained to spot potential terrorists as soon as they head into security. Their approach is fascinating, too: they ask rapid-fire questions and gauge your response, then they check your visa to see where you've been, and use other common-sense, *intuitive* methods to decide whether you're a high risk or not.

How successful have they been? Well, let

me ask you this: when was the last time that you heard about an airliner being blown up after taking off from Tel Aviv? There have been bombs in Jerusalem and bombs elsewhere in Israel, but not one plane has been lost. What does that tell you?

But we, in the land of the free and the home of the brave, cannot *profile*, because that would be politically unacceptable. Therefore, we can't use the Israeli security model; fageddaboutit and just get in line to be searched and x-rayed, prodded and probed. Be prepared to be treated as a criminal, even though you're a natural-born citizen who has lived here all of your life, who attends church and who loves this country.

Makes no sense to me, but then, I'm just a buck engineer. What do I know?

Until next time!

Valley Notes
By
Steve Minshall
Chief Engineer, KCBC

Another year is coming to close and I have to marvel at how quickly time moves on. The Thanksgiving holiday has already come and passed. The holiday causes me to reflect on how blessed we all are. The Lord has blessed our socks off. There are countless things to be thankful for. We live in an awesome and amazing time despite the problems that we have to deal with.

This last year has been very eventful for my family and me. There were some sad times. Our very good friend, playmate and body guard, Jennifer, a 14 year old Siberian Husky, departed us. She was an integral part of family as our boys grew up.

My dad, Edward Minshall, died this year. He was a World War Two veteran who served as a Yeoman 3rd class aboard a troop ship in the Pacific Ocean. His ship carried US Marines who had the mission of invading Japan. The use of atomic weapons saved their lives, according to my dad.

My dad retired from the Southern Pacific Railroad and moved to Missoula Montana. He was not in the best of health for the last two years. At his

funeral the Missoula Veterans of Foreign Wars presented me with a flag in his honor. Somehow this flag seems to be the perfect closure.

Now for the brighter side of last year. My

son, John, married a nice young woman, Veronica. Six weeks ago John and Veronica gave us our first granddaughter, Adalia. She is perfect and came with long black hair. After considerable consideration I determined that she might be the cutest little girl ever born on the planet. Remember that I am an engineer and as such am completely

objective. I did an exhaustive study on the Internet and it turns out that she is indeed the cutest thing ever born on the planet. What are the chances of that?

That's probably enough talk about the family so let's talk ham radio. I received my first license at age 15 and I am now 54. Do the math and it turns out that I am an old-timer, still short a few years from geezer status however. I can't quite explain how it came about but my wife of 32 years, Ann, decided to get her ticket. This was somewhat of a surprise to me.



Way back in the years of dinosaurs, getting a ham radio license was no easy chore. Now things have changed considerably. It still requires some dedication and study but the Morse code requirement is gone.

Ann received her Technician class license on the first try. She had phone privileges on part of 10 meters and all of the bands above. Since I am a 6-meter nut, I got her set up for 6m SSB. This was back in July and the band was alive with E-skip almost every day.

The band was open for about an hour after she received her call letters and then went dead for the rest of the year... so far. She was able to work a few stations but that was that. Several months later, 10 meters opened up one day and she worked her first DX, a station in Rarotonga.

The next thing I know she is off taking the General Class test. She studied on her own and walked into a test session. The drill sergeant, I mean examiner, gave her a look like, "Fat chance, you didn't take the class," but an hour later he smiled and gave her a thumbs-up.

When the FCC dropped the Morse requirement, I thought they had completely lost their minds. There goes the neighborhood! I had struggled to meet the Morse code requirement and now they were going to give licenses to anyone that can pass a written test! The world would surely come to an end... *10-4 good buddy!*

Now I have several friends that have passed the no-code test... and the world did not come to an end. These new hams are good radio operators. One of them even operates CW, albeit from a computer. This old timer will admit that he was wrong (mark the calendar) about the no-code licensing. It has turned out to be a good thing, bringing in a new generation of good operators.

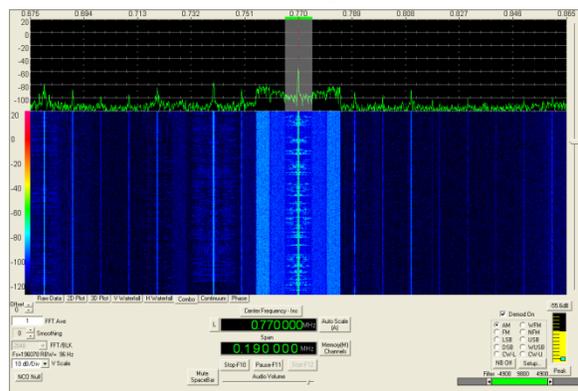
Most of you know that I love vintage ham equipment, but my wife did not have the same nostalgic warm and fuzzy feelings for the glow of vacuum tubes like I do. So I did the unthinkable. I bought a brand new modern rig, a Yaesu FT-950.

I have always liked slide-rule tuning because you can, sort of, visualize the band. The digital readouts are super accurate but are very sterile. I have been doing a lot of looking into Software Defined Radios (SDR) and I liked the visual displays that they provided. I found one that was designed to interface directly with the FT-950.

The SDR I purchased is an SDRIQ from RF SPACE. There is an interface card for the Yaesu rig that takes the IF down to 10 MHz where the SDR processes up to 190 kHz of spectrum and displays it on the computer monitor. Now we are talking visualization!

The waterfall display, in my opinion, is the most useful innovation in radio receivers, ever. You can "see" the signals. You can determine the frequency, the type of modulation, strength, and bandwidth of a multitude of signals simultaneously. You can click on any of the signals and listen to them instantly.

I have included a screen shot of the AM broadcast band at night, KCBC being centered. Note that you can see the HD sidebands of the stations that are running HD. You can see the bandwidth the analog filters used at each station. Notice that KCBC is filtered to 5 kHz and you can clearly see what filters other stations are using.



On the business side of things, last year was certainly busy. We built a night phasing system for KCBC and licensed the day and night patterns using Method of Moments (MoM). That was a lot of work, and a lot of fun. For another company I rebuilt a transmitter site converting it to a dual FM station combined on one antenna and the same applies, it was a lot of work but a lot of fun too.

For next year I have only one large project on the horizon. That will be an MoM licensing of a DA-2 using base voltage sampling, cutting new ground there. With major projects behind I look forward to having time to clean up and refine a lot of things around the stations.

That's it from the Central Valley of California, have a Merry Christmas!

Catalina Tales
By
Bill Agresta
Chief Engineer, KBRT

Greetings from Santa Catalina Island! Just a couple months ago I was reporting how summer has finally arrived here in Southern California and now we have quickly swung the other direction. Cold temperatures and rain have arrived, seemingly out of nowhere, as one day it was hot and summer-like and then the next it has become very cold (well, as far as us here in Southern California are concerned). This old concrete block transmitter building is not one to warm up easily, either, so I find myself bundled up most of the time since we only have electric space heaters and electricity is very expensive here.



The cold here does quickly remind me about the poor homeless people in the streets each year, that growing number of people who must endure these sometimes freezing temperatures, some with hardly a blanket. With this in mind I spent this Thanksgiving serving the homeless, especially the growing number of homeless families, many who have recently lost jobs and homes, leaving them and their children nowhere to go but the streets. Even in this situation, however, we always have something to be thankful for: the fact that God send His son Jesus to die for us as a sacrifice for our sins. Though many of the things we once gave thanks for seem to be dwindling away, this is one thing that no one can ever take from us!

I hope that you enjoyed quality time with family and friends this Thanksgiving and that you remembered to pray for the growing number of those who are less fortunate, many who are now living out in the streets with their children.

As I reflected on the things that God has blessed me with, I was glad to thank God for the opportunity to work for such an awesome servant of our Lord and Savior Jesus Christ as Mr. Crawford and to have a relationship with my boss, Cris Alexander, which goes beyond business. They are both very caring and God-serving people and that has gotten me through many ugly situations here on this strange island over the ten-plus years I have work for Crawford Broadcasting.

With the cold, rainy weather here at the KBRT Ranch have come some very high winds, so I have been in clean-up mode, picking up and preparing for more. To give you an idea of the type of wind we deal with up here, I had a stack of wooden pallets stacked six high on our concrete pad and the wind did not just blow them over, it blew them across the yard!

The overall facility here is in pretty nice shape, but I am doing a bit of reorganizing, preparing for some winter projects inside the facility. I continue to deal with the ongoing power and phone issues but think these will remain with us until we move off the island, as I see little being done about it.

I got a call in late November from someone at Edison, the supplier of our electric and water utilities. They told me they are going to turn off our water for two weeks! I got the call a day before they planned to do this, and not long after I was informed that our 10,000-gallon water tank must remain full so that we have a way of fighting fires. Well, this was just one more of those “island factor” things that I have become so accustomed to but, this one is really frustrating.

Edison shut the water off in order to replace a section of pipeline that runs from their pump house to our water tank, but they began this project right before the holidays, ripping out the old section and now letting the job sit while the crew has left the island for the holidays. So far it has sat for five days, and I am hoping to see crew returning here to repair it very soon, as it is tough to function without water. I cannot understand why they would not wait to start the job until after the holidays, thus allowing us water for the five days that we have been without while the job sat untouched. But then again, this is Catalina Island and this is just one more case of the “island factor”...

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

Merry Christmas, All! (including all two of my Islamic friends)

Yes, it's that time of year again (already?). Time to remember, whose birthday it is we celebrate. Time to *try* to forget the commercial aspects of this or any other Christmas (there, I *said* it—go ahead, beat me up!) season. Ahem, sorry.

As I write this, it is 24 hours after I received my grandson's wish list for Christmas. It's enough to make a grown man (me) cry. Scary as Halloween. The kid is too far away for me to deliver the proper message myself, but he sure needs a reality check as to *why* there is a Christmas at all. If there's no such thing as a true, greedy capitalist, then he'll never be a capitalist. Heck, the *shipping charges* of some the stuff he wants is bigger than my budget!

That's sad, really. I wish I could be down there with him this year because I'd be trying to teach him what he really, plainly needs to know about the Real Gift from God in our Lord Jesus Christ. This may be just one more result of being raised in a single parent household. Instead of counting the gifts under the tree, he needs to be counting his blessings. Try telling *that* to a kid who's just approaching his thirteenth birthday. Heh, make that, any near-13-year-old kid. Sigh. So much to teach, so little time...

Congrats (and other delights)!

He finally did it. James Kelly got his first SBE Certification, the Certified Broadcast Networking Technologist! All of us here in Chicago Engineering are now certified.

It's not that James took the test several times and missed it. Rather, I made him wait until much of the old school technology was out of the test before I would let him take it again.

Speaking of which, I attended the SBE national convention in Madison, Wisconsin in October and got to sit in on the Certification Committee meeting there. During that meeting, the announcement was made of a new certification to be offered beginning next spring: The "Certified

Broadcast Network *Engineer*." The new on-line version of Cert-Preview for this Certification should be available in a couple of months, and SBE University will be offering a course in it as well. Just thought you should know.

I also got my two cents worth in on the DRB (Digital Radio) Certification test, which I recently took and passed. I'm still not comfortable with the makeup of that test, as there is too much emphasis on the theoretical and not enough on the practical maintenance/fix-up stuff in it, as is the case, let's say,

with the AMD test. Now, *that's* a great certification exam. Yes, I read most of David Maxson's "HD Radio" book, using it as a reference when I took the DRB, but even that book covers in great detail stuff that too many engineers don't use in their daily dealings with HD and probably would have difficulty in remembering. Gordon Carter, who took and passed his DRB just before he retired from WFMT in Chicago, made the point to a mutual friend of ours that the DRB was the hardest test he had yet taken. I agree, and I think I know why. Let's just say, I believe that the test could stand a little tweaking and leave it at that.

Project Sheherazade

Last month's question was: True or false: There is nothing in the FCC rules regarding the amount of limiting and compression of signals to maintain modulation levels.

Oh, yes there is, boys and girls! Meet 47 C.F.R. §73.1570(c), to wit: "If a limiting or compression amplifier is employed to maintain modulation levels, precaution must be taken so as not to substantially alter the dynamic characteristics of programs."

Now, how many of you folks knew about *that* one? How many folks on the FCC staff truly *know* about that one? How many *field office inspectors* do you think know about that one? Do any of *them* care?? How many stations in your area (including yours) would get busted if that rule were actually enforced at the field level??? And what kind



of criteria would they use to judge as to whether your station was obeying or disobeying that rule? And how much would the general public complain to the FCC about stations that they *think* are in violation of that rule? How many of them would want to? (Answer: more than usual since so many of them are unemployed and have all that time on their hands to do it.....)

My point should be figured out by now: This is a great example of a bad rule. Why? Because the enforcement of it is so very subjective. And audio processing, for those who know, is entirely subjective. So, how is an FCC inspector going to be able to judge whether your signal is over-processed or not? If your station is doing hard rock, for instance, how much compression does your source material (CD's, mainly) squash the audio to an unacceptable degree *before* it goes on the air? I have a whole article coming up on this in the next little while. You'll know it when you see it. It'll be called, "Garbage in, garbage out." I'll have at least one co-writer for that one, and it will be a name that most of you know, and respect. Watch for it.

Enough mirth here. Actually, next month's question is buried further down in this column. See if you can find it.

Reader Feedback

I'm so pleased and astonished by the level of readership of this newsletter, and about how much our readers care about what's going on and what's said here.

Case in point: My article last month on transmitter tubes. Reid Brandon, who is a Senior Applications Engineer for Power Grid Products with CPI (Eimac) in Palo Alto, CA, had a few observations and corrections for what I said. First of all, both EEV and Svetlana are, for all practical purposes, out of the transmitter tube business. EEV (or E2V, as they now like to call it) no longer makes high power tetrode tubes, which covers most of the tube types in broadcast transmitters today. Svetlana, for its part, makes no more high power tubes, period (great news there), and hasn't in the decade since George Badger left that organization. George has since passed away. These days, Svetlana is contenting itself with a niche in the small glass-envelope audio tube market (such as the 12AX7). So be it.

According to Reid Brandon, the situation with the 4CX3000A tube wherein I mentioned the filament material collecting on the nearby insulation material and creating heating havoc within the tube, has two causes. First, if that sort of condition exists

within any tube, the problem is likely related to excessive filament voltage. Maybe that should be the basis of a future Project Sheherazade question, although we've covered that ground in the past. Second, if a tube is returned for rebuild in that condition, Reid suggests strenuously that the tube must be cleaned before it's rebuilt, to get rid of the collected thoriated tungsten residue. By the way, my error was in assuming that the 4CX3000 had an oxide cathode. Not true. Either way, my suspicion is that a tube returned for rebuild in that condition is there because the tube is in too bad of shape to be rebuilt, what with overheating and the resulting cracking of the insulation ring. I've seen enough of this sort of thing in my career to believe that transmitters, in the main, are not cared for well enough. Then when the fat's in the fire, the tube rebuilder is called upon to clean up the mess. There's only so much those folks can do.

One more note about something I didn't bring up in last month's article. Reid Brandon mentioned in his note to me that the situation with the 4CX300A, which was discontinued by Eimac this year, is not as dire as has been reported in the press. In his words: "The 4CX300A..... We have since taken another FAA order for this product and I believe additional tubes are being stocked at Richardson Electronics, so that, plus the large inventory of surplus 4CX300A that seem to abound, should provide plenty of tubes for the owners of Harris FM10K and similar transmitters that use this tube (including some really old GE two-way transmitters) for at least a couple of decades." Goody – that should help assuage the qualms of those of you who are worried about whether you're going to have a driver tube or not.

I'd still make some plans for a new rig if I were a station owner and had a '300 as a driver. You contract engineers can tell the owners of your stations I said so.

Government Intrusion

This column was going to be such a peaceful one this month. Was. That is, until I got my recent semi-annual visit from my Cummins generator maintenance man, Stan. Stan is an old school pro at his business, and he's seen the business change a lot across the years. In the last few, the changes have been more and more by government fiat... er... regulations, rather than from the marketplace. As if we didn't know. But as a whole, what he told and showed me is enough to anger the heart of the most timid person who's just trying to get a job done out here. So, if you like the kind of rant that a Mark

Levin or Stephen Poole can conjure up, you've come to the right place, right here, right now.

I won't tell you everything which led up to this, because... well, because, but at one point during our chat, I told Stan that, in the not-too-distant future, new natural gas service was going to be coming to our Burnham (WPWX transmitter) site, and I would be planning to convert our emergency power generator engine from LP gas to Natural Gas. Stan's response was that, if we were going to be doing that, we'd be better off going to diesel. I asked why, since diesel as a gen fuel isn't on either my short or long lists, if only because I was looking for a fuel supply which would be almost inexhaustible, not subject to refills by truck. Besides, there are the issues of exhaust soot, elevated maintenance costs, ease of starting, and cold weather's effects on the fuel.

Stan told me that natural and LP gas fuels, in effect, had been pretty much regimented out of existence by Government regulations... er... fiat. Under the rule of the neo-statist regime, fuel conversions are banned outright, and if you want to install a new generator at all using either LP or natural gas, it must be ordered as a "dual fuel" device, and on such engines, government-mandated maintenance schedules would likely elevate the cost to the point where having them would not be economically viable. Read that, a couple of grand for such maintenance, every other year. On the other hand, diesels, with bio-fuels (\$\$) would be under much lower restrictions. I'd like to meet the jerkweed who wrote *those* regulations.

Let me tell you a little about my Dad. Boyd Reis, PE, who passed away over a decade ago was, when he retired, the Dean of Mechanical Engineers in Michigan, and registered as a PE there for over 45 years in (obviously) Detroit. His specialty ended up being in designing environmentally correct infrastructures for the auto industry: Heating, Air Conditioning, Water and Sewer systems, anything which had to be designed for the protection of the environment by an auto plant, my Dad did that. If you wanted an environmentally correct paint booth for car sheet metal parts, you called my dad. He knew what to do for you. And the stories he could tell.....

Dad was a political conservative, to say the least. He taught me to love Barry Goldwater, for instance, which means, of course, to love being politically incorrect. Especially dangerous in the union-dominated town of Pontiac, Michigan, circa 1964. But he would be the first to tell anyone who would listen that the idea of environmental protection

was not such a bad thing. There are, or *were*, times back in the day, some forty-five years ago, when that was definitely true. The environment needed help, no doubt, and I can attest to that, living as I did in a factory, smoke-stack town. There were things which we as a country could do that not only made sense in a practical way, but also could, under certain conditions, would save money or even make profits for those who practiced such stewardship properly. That's what dad tried to do for all his clients in the automobile industry. (He also liked to quip that I should love the EPA anyway, because that's how my sister Caroline and I got our college tuition paid for.)

However, as an engineer, which here translates to being a pragmatist, dad also knew that there was a point of diminishing returns on environmental protection. That above a certain level of cleanup effort, the environmental process is no longer economically practical. That magic number is not quite set in stone. It really depends on the particular environmental situation. However, as a general guide, a number somewhere around 90% of perfect is the tipping point, beyond which any further efforts to make the water, the air or the soil "better" become a financial burden to those who must make it happen. And that's the point: It is their *zeal for perfection* which leads the environmentalist wackos out there (yes, I said *that*, too!) to lose it with reality, and with the rest of us who try to make this country work.

To put it another way, we as a nation are being told that perfection in the environment is the only standard. But, and this is a "closed circuit" to those who demand such: perfection isn't attainable! This is Earth, folks, and we all are mere human beings. Please note: God does not demand or even ask for perfection. Guess who does. God *does* want us to do our best at whatever we do, including environmental stewardship, which we have already done, and to worship *Him, not his creation*. Were we to try to do as the EWs demand, we are no better than those who worshiped the golden calf during the 40-year journey to the promised land! There, I said that, too! Anyone who has a problem with this is hereby put on notice: It is *YOUR* problem! (I did promise you a rant here, didn't I?)

And there are consequences to this demand for perfection. The costs of any further improvements are now so burdensome, both economically, and as an assault to our freedoms as Americans to do our jobs and live our lives, putting us at such an economic disadvantage to the rest of the world, that it's time to call a halt to any further EPA over-regulation, roll back some of the more egregious ones, keep the good

rules, and work with that. Call it simplistic. I don't care. I'm not running for President!

The good news is, we as Americans are the ones who are benefiting most by our efforts right now. Lake Erie doesn't catch fire anymore, water-borne diseases don't magically re-appear anywhere near as much as they use to, and we *can* prevent forest fires merely by removing all that old-growth brush which acts as fuel for the big conflagrations we've seen out west in recent years. If only we'd practice some common sense where environmental regulation is concerned.

Now, by way of contrast, I give you Beijing, China where, as I write this in late November, they *have no environmental regulations*. The air quality there is so bad that it's been judged toxic by the local authorities. I grant you, that is where we'd be if it weren't for our environmental efforts here. But that's behind us. We've done our job. We merely must maintain what we have. Not so in China. The headlong rush to become like us economically, the smokestack industries, the 1,200 new cars a day in that city alone, all done without any consideration for their own environment there, will cost that country lives and who knows what else. And in their system, there's no legal recourse for the harm done. Remember, life is so much more cheap with them than it is with us, unfortunately for their citizens. *That's* where the environmental whack-jobs should be going. *That's* where those folks are *really* needed. They'd have their work cut out for them there, in spades. That is, if the nation's authorities don't shoot them or otherwise suppress them first. [Please resist the temptation to call that an idea.]

Again: we in America have done about all we can to preserve the environment we have, to the point where we are near to destroying our own economy. We may have gone too far already. Why, oh why, can't those who lead their nations realize both when something needs to be done, and when enough is enough? It's called wisdom, and it's in all too short a supply.

As it stands now, the new Congress doesn't have to enact any new laws outside of a budget to do good. But they can do a lot more good if they would just start deleting a lot of the stupid ones, and that's where they are going to have to concentrate their efforts for, not just this session, but for many years to come. As Mark Levin has said in *Liberty and Tyranny*, "It took eighty years to get us where we are today. It's going to take maybe that long to get this country back to the way it should be." No kidding.

The Congress can certainly de-fund the Presidential czars, for instance, and definitely cut

down the manpower size and cost of the bureaucracy, along with a lot of the oppressive regulations which have emanated from them. The EPA or the Department of Energy would be very good places to start. The folks who are rule from there have no clue about the effects that their over-regulation has on those of us out here in fly-over country. Nor do they care. I truly believe that the only folks who should be working in such a bureaucracy are the ones who've seen what environmental stewardship is like from both sides. Then maybe sanity would reign. And that's just *one* area where the government should be removed from our lives. There are so many others. But I'm only talking sense here. Since when did that count in Washington?

Our Federal government was originally instituted to protect us from enemies foreign and domestic, to see to our peace and tranquility, and to see to our pursuit of happiness. They have instead become the town bullies, going way beyond their Constitutional limits, in effect extorting money from us who work, and using it to tell us how to run our lives and our business, among other things. Enough is enough, already.

John Dingell, Congressman from the Detroit area, told Paul W. Smith of WJR in Detroit, *on the air in morning drive time*, that it took a long time to draft "health care" because "...it takes time to figure out how to control the people." I would have loved to be able to tell you all that he is now an ex-Congressman, but he's not, though his victory margin was the slimmest of his career. Next time, he likely will be retired by the voters. That actually happened to the congresswoman in my own district, and just for that reason. That's progress, the kind of which we need more, a lot more.

Does it sound like I could go on and on? Don't tempt me. But I will say this: This is why America just elected the Congress that it did in November.

We're not done with Stan yet...

Another shocker from Stan the Generator Man during this latest visit. Our studio generator had quit working some time back and we didn't know it! Here's the scenario, and it is instructive.

You who are regular readers will remember the story about the big Easter Sunday storm where the lightning hit our studio site, not on the tower, but on our big iron front entrance gate, and entered the building through the electrical conduit. The damage it inflicted throughout the place was both monumental, and in some cases, just plain weird. One such was at the generator, on the other side of the property, where

the strike glitched its control circuit into thinking that the oil level was over five quarts low, which it wasn't, thus tricking the gen into not starting. We were down over an hour on all stations because of that.

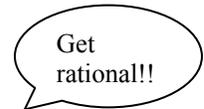
Well, we don't know how we could have found the cause of this one, but some time during August, the fuse to the generator's control circuit opened up. No reason for it to blow, it just did. What really happened was that the fuse, weakened by the lightning strike, just gave up the ghost because it had weakened to the point where it couldn't operate at its heretofore normal ratings. I'm chagrined that neither I nor any of our folks noticed the problem before Stan found out. But the lesson is clear. When lightning strikes, when it really strikes, the collateral damage takes a long time to work its way through to discovery. You'll never be able to figure out what the cause was until any of it happens, and only then can you surmise the reason, even if there didn't appear to be one. Try explaining that to your programming department, or to your friendly neighborhood insurance adjuster.

And finally, folks...

This one came from Jeremy Ruck of the professional engineering firm of D. L. Markley and Associates, who showed this to the assembled multitude during his presentation at the SBE national convention in Madison, Wisconsin last month. This is a great way to tell if your friend or acquaintance is a real geek. If the person laughs at this, he or she is definitely one of us. If not, forget it, they never will be. Hope you like it!



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Next month, I think we're going to be able to tell you the saga of flashing the BIOS in a non-PC computer environment. It's developing into quite a story. Until then, Blessings!

The Portland Report

By

John White, CBRE

Chief Engineer, CBC-Portland

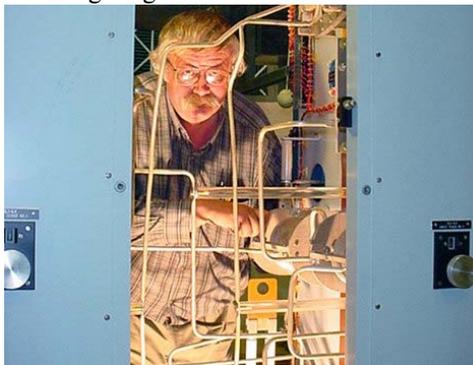
As the holiday season is upon us, I chanced to think back to my days as a Boy Scout and the lessons of Thanksgiving.

The modern, PC version of Thanksgiving seems to be captured in a single short phrase: Native Americans taught the inept Pilgrims, who were fleeing religious persecution, how to plant corn. They had a great feast and everyone sat down to watch the parades and football games.

The historic truth is far more complicated and uplifting.

While the bulk of the colonists made the journey in search of religious freedom, the individual colonists included other non religious participants. The colonists were farmers and craftsman, although none of the colonists had the financial resources, individually or collectively, to finance the trip. While the Pilgrims owned the small ship Speedwell, financing came in the form of a loan from London

merchants, including the strings that common collective ownership was dictated by the contract. The merchants wanted assets retained and accountable.



The obstacles the Pilgrims faced began before they even left port. The master of the Speedwell ordered the ship rigged tight, rendering her unseaworthy. On the third attempt and late in the year, the Pilgrims sailed aboard the Mayflower, leaving the Speedwell behind.

That first great lesson of Thanksgiving was the Mayflower Compact, an extraordinary document which established just and equal laws for all, believers and non-believers alike. That concept, equal justice under law, was no small contributor to the United States constitution, what today we call the rule of law.

In the New World the Pilgrims found a cold, rocky, barren, desolate wilderness. William

Bradford's journal speaks of no friends to greet them, no houses to shelter them. With the late arrival in November of 1620, the colonists had no opportunity to build shelter for the winter. Here, Providence stepped in as the captain of the Mayflower agreed to winter over, providing shelter for the colonists.

The harvests of 1621 and 1622 were disastrous for the colonists, even with the assistance of Squanto and the New World corn along with the fresh supplies from the ship Fortune, which arrived in 1621. The harvest was not sufficient to sustain the colony.

Thus we come to what I consider the greatest expression of the God-given human spirit. The contract between the merchant-sponsors of the colony in London and the Pilgrims required that everything the colonists produced to go into a common store. All of the land they cleared, the houses they built, the crops they grew and things the made belonged to the community.

After the disastrous winters of 1621 and 1622, Governor Bradford recognized the failure of this collectivist system. In his official journal of the colony, Bradford wrote:

“The experience that was had in this common course and condition, tried sundry years ... that by taking away property, and bringing community into common wealth, would make them happy and flourishing – as if they were wiser than God,”

Bradford went on:

“For this community (so farr as it was) was

found to breed much confusion and discontent, and retard much employment that would have been to their benefit and comfort. For young men that were most able and fir for labor and service did repine that they should spend their time and strength to work for other men's wives and children without any recompense ... that was thought injustice.”

In the face of hopelessness, Bradford unilaterally abolished the far-away London contract and assigned privately-controlled property, allowing the people to keep the crops they grew. Governor Bradford describes in his journal that harvest season of 1623:

“By this time harvest was come, and instead of famine, now God gave them plentie, and the face of things was changed, to the rejoysing of the harts of many, for which they blessed God. And in the effect of their perticular planting was well seene, for all had, one way and other, pretty well to bring the year aboute, and some of the abler sorte and more industrious had to spare, and sell to others, so as any generall wante of famine hath not been amongst them since to this day.”

The result was the bounty of the harvest of 1623. The colony prospered, produced surpluses and paid off the London debt early.

This holiday season may God, the human spirit and divine Providence be with us all.

Rocky Mountain Ramblings
The Denver Report
by
Amanda Alexander, CBT
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Last month, we finally found someone to look at the 1972-vintage Massey-Ferguson tractor at KLZ. It has been fun using it without brakes and with the hydraulics not working properly. As it turns out, the gentleman we found to work on it is also a firearms dealer and we knew him from the local gun shows that come around. We are



still waiting to hear from him what is wrong with the tractor and the cost of repairs, but it is winter, snow has finally fallen and there is nothing to mow. I pray he is able to fix it at a reasonable cost so we can get it up and running for any major snowstorms (we have a snow blower attachment) and for the growing season next year.

November really did fly by. I had one late night when I guess we had a small power glitch at the office. It was enough of one that it “freaked out” a bunch of equipment. That, on top of board op error, meant a call for me around 11:45. The two-hour paid show ended up cancelling for the night after a frustrating hour wait for the client as I drove to the studio. That show starts at 11:00 PM and goes until 1:00 AM. You see why there was a wait? The board op had waited 45 minutes to call me for help. I walked him through resetting the Wheatstone control surface, but he was still reporting major distortion in the headphones in the talk studio. I assumed the board op would have done the basics to make sure everything was okay on his end. Wrong!! I drove on the icy roads to the studio and the solution...TURN THE VOLUME DOWN!!!

It was an easy fix, and all but the telephones were working after that. I ended up waiting until morning to fix the phones, as I did not know the key system was what was messed up. So no studio phone worked and many of the office phones did not work, either. This was also an easy fix. Just turn off the phone system and then turn it back on. Five minutes later we were up and running.

I came across something interesting on my way to KLZ one afternoon. I had to check on some levels for a tone encoder we had installed earlier that day and upon pulling into the drive area I found that a large branch of a cottonwood tree had broken and fallen across the road. This completely blocked my way in, so I had to get out and somehow was able to muscle it out of the way enough to get by in my car.

And speaking of that tone encoder, that was the solution to an issue dropped on us at the last minute by Dial Global, the satellite distributor for the Talk Radio Network (Laura Ingraham, etc.). We began having issues with local breaks not firing on time. The problem, as we found out when we complained to Dial Global, was that they were “phasing out” the 25 Hz subaudible tones that we detect at the studio to trigger NexGen for local spot



A large branch blocked my way into the KLZ transmitter site

blocks. We have over the years experimented with different ways of getting relay signals back to the studio from the KLZ transmitter site (where the satellite receivers are located), but we always run into significant and inconsistent latency, which results in sloppy local breaks. Our solution was to install a subaudible tone generator right on the output of the receiver, triggering the tones with the receiver’s relay outputs and inserting the tones into the program stream. Problem solved.

And so November, while productive, was relatively quiet. I hope December brings even more productivity and something more to write about. I hope to finally start making a dent in my list of things to do. First on the list is cleaning up and organizing the KLZ transmitter site. That’s where we store all our out-of-service but usable equipment. It is time to get all that equipment off the shelves and straightened up (things are still a bit messy from the move). I plan on getting things grouped together instead of one here and another over there. I hope that before January I, along with Keith, can get KLZ looking great again.

So until next time... that’s all folks! Merry Christmas!

Digital Diary

by

Larry Foltran

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Some Geeky Tech Gadgets for the Shopping Season

I've recently noticed that more and more developers are including FM radio tuners in their digital devices. To me, that means that although MP3 access is just about everywhere, demand for terrestrial radio is strong. And why shouldn't it be? Good luck trying to get an up-to-the-minute traffic report out of the 1,000 MP3 files you have saved to your player. This month – and just in time for the Christmas season – I'd like to show you some of these digital audio devices that have raised the bar by including FM radio tuners.



First on the list of tech devices that have piqued my interest lately is RCA's 2GB thumb drive. This little gadget has 2GB of general storage space, features a small LCD display, functions as an

MP3 player, and has a built in FM tuner. It operates on a single AAA battery and even has a slot for a MicroSD card which obviously expands its storage capacity. You can easily reserve the 2GB of space for your business files, leaving the MicroSD storage for any music or recorded programming. Did I mention that you can even record FM programming to it? Well you can! Record an air-check and review it later either on the unit itself or on your computer. Pricing for this thumb drive seems to be hovering around the \$30 to \$35 range. Although you can gain the same general functionality with an iPod nano or other equivalent devices, I find this one unique in the sense that it's marketed as a thumb drive rather than a dedicated MP3 player and it's considerably less expensive.

Next is the Brando USB MP3 Pen. This little device features data storage



(comes in 512MB, 1GB, & 2GB models), has an FM radio tuner, is an MP3 player, a voice recorder...oh, and it's a pen too. It runs on a rechargeable lithium-ion battery and features a plug for your head phones. The 2GB model sells for \$60, but it may be a small price to pay to feel like James Bond as you walk

around with this thing in your pocket.



The final item is the Carmen Car Audio Player by Livio, which is a Detroit-area company. Although this device does not feature an FM tuner, which would obviously be a bit redundant since it's meant for your car, it does allow you to record programming from online streaming radio and play it in your car. A great application for this device would be when you are out of town but still would like

to listen to your local radio station's programming. Leave it recording the station's online stream while at your business meeting or site-seeing and then plug it in the car and listen to it whenever you'd like. The Carmen Audio Player can store up to 45 hours of recorded audio or 2GB of data. This gadget plugs right into the cigarette lighter or battery outlet in your car and sends the signal to your car's speaker system via an FM transmitter or the Aux port in newer car systems. It even has a small remote that can be used to adjust volume, EQ, the transmitter frequency, or skip through the saved programming. The Carmen Audio Player sells for \$59.99.

Online Buyer Beware

Some reports show that online, Christmas-related sales will surpass \$250 billion this year. It should come as no surprise that stolen credit card numbers are at the top of every internet hacker's Christmas list. Much of the information gathered by cyber criminals is gleaned via keystroke logging. There are a variety of ways keystrokes can be collected. From non-descript peripheral hardware installed on a specific machine to software lurking in the PC's operating system. Those of you who use wireless keyboards should also be very careful. I recently read an article showing how the packets of data transmitted between the wireless keyboard and the computer can be collected. Needless to say, these folks want your credit card numbers and it's obvious that they will work night and day to develop a way to get them.

One often overlooked feature within Windows that can easily combat keystroke loggers is the on-screen keyboard. Keystrokes entered using this method are seen as mouse-clicks rather than actual keystrokes, leaving the keystroke log empty. It's definitely not the most convenient way to submit your online orders, but is certainly a secure step when

entering your credit card number if you suspect your computer may be compromised in any way.



To activate this feature in Windows XP, go to Start > Programs > Accessories > Accessibility and click on the On-Screen Keyboard item. Clicking on the red square will close this feature.

With all this talk of Christmas buying and the hordes of impatient shoppers in the stores, just remember to take the time this Christmas and reflect on the true meaning. As cliché as it is, remember the reason for the season and to share the good news of our Savior's birth that we celebrate. I pray that everyone have a safe and enjoyable Christmas this year and I look forward to the blessings that 2011 will bring.

...until next month...

The Local Oscillator
December 2010

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

KCBC • Manteca - 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, 3.8 kW/126m AAT

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

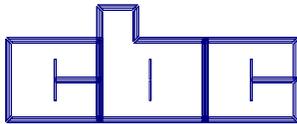
WYDE • Birmingham, AL
1260 kHz, 5 kW-D/41W-N, ND

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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