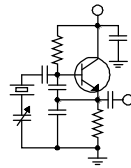


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

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Auction 99

As we slide into the last full month of summer, we also slide into a couple of projects that have been pending for months now.

On July 26, the FCC opened a translator auction window for class C and D AM stations that did not participate in either of the prior AM translator filing windows. This is a short window ó it closes on August 2.

Our company had only one station eligible for this window, WRDT in the Detroit market (class D). We could have filed a 250-mile move-in application for a translator for WRDT, but with its transmitter site some 50 miles south of the city and at the time a 25-mile radius (from the AM site) limit on the translator's 60 dBu contour, it was simply not worthwhile to spend the money on a translator purchase and move-in to provide FM service to a few cows and chickens.

With the 25-mile radius no longer a factor for WRDT (the station's 2 mV/m contour covers the entire Detroit market), we can put a translator right up in the city ó that is, if we can find a frequency.

I started looking at a particular frequency, one we have a bit of a history with, months ago when the auction window was first announced, and I found that I could indeed make that channel work from the centrally-located WMUZ tower site. Week after week, just about every time I updated my FM database from CDBS, I would check to see if the channel was still available. Right up through the start of the freeze on July 19, it was, so when the auction window opened the following week, I filed the short-form application.

At this point, I don't know whether any other applicants have filed mutually-exclusive (óMXö) applications. The FCC will at some point in the coming weeks issue a public notice listing all the MX applications. A settlement window will be

announced in which MX applicants can work together to eliminate the MX situation. One option may be minor engineering changes (site change, pattern/power change or whatever). If we can't do that, applicants can settle among themselves, which would presumably result in one or more applicants withdrawing their applications, leaving one grantable singleton application.

If applicants in an MX group cannot resolve the MX situation by minor technical amendment or settlement, then the facility will go up for auction, and the individual applicants will have to bid on it.

I am obviously hoping that there were no other eligible class C or D AM stations in the area that (a) did not participate in one of the first two FMX filing windows, and (b) want a translator.

It's not an easy thing to search the FCC's database for the primary station in a translator record ó you have to open the Form 349 application and look in there. Nevertheless, I did look. I came up with a list of three AM stations in the area that appear to be eligible. Of those, two have the potential to be in competition with WRDT for a translator frequency (by virtue of their 2 mV/m contour distances). We'll see.

Hopefully by next month's issue of these pages, we will know what, if anything, we are up against.

WCHB

It has been a long work in progress, but we're now coming down the home stretch to closing on WCHB in Detroit. This 50 kW blowtorch uses four towers day and ten (!!!) at night to blast the Detroit market with a first-class AM signal. It will be a great addition to our cluster there.

Once we close, the real work begins. I plan to order a new Nautel NX50 transmitter immediately. The existing late-1990s vintage Harris DX50 will



Several of WCHB's ten towers on a foggy day in January.

slide into auxiliary service. That transmitter has a history of module issues. We want to go on the air with a solid, reliable, full-power signal.

Next on the list is a Trango Apex Lynx 11 GHz microwave link from the studio to the WCHB site. We already have the FCC permit for this, so we're good to order equipment and schedule tower work to install and path the system. We will put the studio end of the link on the WMUZ tower at the studio. At the transmitter site, the dish will go on tower #3, where there is already a 6-foot 950 MHz grid antenna (which we will take down). We will also have to install a lighting choke at the tower base to couple 120V AC power onto the tower for the microwave radio (the 162-foot WCHB towers are unlit and have no power on the structures).

At the studio, we have to install a new station license on our Nexgen system and add an audio server and Wheatstone blade. We also need to decide what codecs we plan to use to get the audio out to the new AM site.

Brian Kerkan and I have been kicking around the idea of putting a blade at the transmitter site and transporting the audio that way. That would save us the cost of one codec, and it would be elegant in that we could simply map the output of the audio server blade program bus to the blade at the transmitter site. The challenge will be integrating the VLAN for Wheatnet's class C network with the other network traffic for the transmitter site over the single, bandwidth-limited (47 MBPS) microwave link data pipe. We would need a rather sophisticated switch, such as a Cisco 2960, on each end to merge, split and manage the traffic. Brian is going to try this on the bench in the coming days to see if we can make it work.

At this point, assuming we close early this month, we are anticipating a sign-on date of early to

mid-October. That is totally dependent on equipment delivery and installation schedules. Obviously, we cannot install what we do not have, and it will take a few weeks to get things up and running once we do get the equipment. Tower crew scheduling is another wild card. We plan to install a backup data link (internet) at the site, so we may be able to go on the air using that link if we don't have the microwave link up and running.

We'll have an update in next month's issue, hopefully all good news on getting this great station assimilated into our operation.

KCBC Wheatnet

Steve Minshall has just about wrapped up the partial conversion of KCBC to Wheatnet's AOIP platform. I say "partial" because at this point, it's just the control room, Nexgen on-air workstation, audio server and streaming encoder. The production room conversion will come at some point in the future.

The Audioarts D75 on-air board was getting pretty long in the tooth at KCBC, and we had budgeted for a replacement this year. Going any way other than AOIP just didn't make sense, so we made the jump into Wheatnet, establishing the infrastructure that we can build on in the future as we convert the production room and its Nexgen workstation.

This is particularly important as more and more equipment becomes Wheatnet enabled. No audio I/O; just connect it to the Wheatstone AOIP network and the device is "wired in."

National EAS Test

FEMA recently announced the date for the next national EAS test: 6 September 27. A secondary date: 6 October 4:00 was announced in case there were some actual emergency taking place on September 27.

In preparation for this test, I have opened a single ETRS account for our entire company. In accordance with the new procedure, the results of the test for every station in the company will be reported under that one account, which will make things much easier for me.

In the coming weeks, make certain that you have the latest firmware revision in your ENDEC units, that you have a good connection to IPAWS and good signals from your over-the-air sources, and that you are getting good weekly tests from each of these sources.

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

Hello to all from Western New York! It has been a while since we last visited here. Last month I was on vacation in Kentucky close to month's end, and did not have enough time to submit my New York Minutes for July. As of this writing, I am on vacation again! However, I am at home, enjoying my time off, so this will give me a chance to fill you in on all the activities for the past couple of months in the Buffalo and Rochester CBC markets.

As you may recall, we began a rather large facility makeover in March. We had the entire station painted, and we got new carpeting throughout. At the same time, we also began studio renovations which involved switching our existing main air studio with the talk studio, installing new Wheatstone E-6 surfaces and Wheatnet blades, tearing out completely the wiring infrastructure that had been in place for nearly 40 years! This was quite a feat, as we had to continue our day-to-day operations while removing the old wiring and installing the new infrastructure. At times, it seemed that this project would never end, as delays from several sources kept cropping up, but once we did see light at the end of the tunnel, the project progressed quickly.

I cannot state enough how much we are enjoying the Wheatnet system! The board operators have adjusted to the new control surfaces with very minimal problems, and I haven't even scratched the surface of how much can be done with the system! It is indeed a pleasure to now do talk show pre-records without having to disturb the on-air board op! We simply dial up the talk studio mics in another studio, set the headphone monitoring to the correct surface for the talk show host and guests, and configure talkback to the program host. We have also generated several different board configurations for live shows and weekend programming, so with the touch of a button, we can reconfigure the console for a

particular show or event.

Installing and programming the Wheatnet system went practically flawlessly! I am so thankful that Cris, Amanda and a host of others put together a practical step by step instructional white paper for the installation and programming steps. We had very little communication (questions) on how to get everything talking and interacting together with NexGen, thanks to the wonderful job our corporate engineer did in documenting each and every step. I can't imagine how long it would



have taken to get everything done without this well documented aide!

The above projects have put me way behind in getting a lot of my summer outdoor projects done, in particular, mowing at the transmitter sites. I have looked into contracting this work out, but have not been able to find anyone interested in doing the work, and when I did find someone that could brush-hog, they did not have adequate insurance to protect our assets. I will have to take advantage of every opportunity that comes up to get the mowing done when weather allows.

Recently, we experienced a failure in one of the RF modules in the WDCX-FM Nautel NV-40 transmitter. After examining the module screen in the transmitter's AUI, I found the failure was due to a faulty fan in the module. A quick swap-out with one of our spares got it up and going at full power in record time. For years, I thought that there would never be a transmitter better than the Continental R-series, but after having the NV-40 in place for several years now, I am realizing how much I like all aspects of this transmitter's operation and design. Not to mention, no tube changes!

Speaking of tube changes, it is nearing time to change out the 4CX15,000A in the WLGZ Continental transmitter in Rochester. I have ordered a new National brand tube from Richardson

Electronics to have on hand once the tube reaches its end-of-life. I have found that the National tubes are far superior to Econco rebuilds, as with the past several rebuilt tubes I have purchased, I had to go through 2-3 tubes before I found one that would make power. That's a waste of time, not to mention the wear and tear on the tube socket, as you keep

changing out tubes to find a good one. Oh, and the Nationals are priced the same as a rebuilt tube, and tube life far exceeds that of the rebuilds.

That about wraps it up here in the Northeast. So until we meet again in the pages of *The Local Oscillator*, be well, and happy engineering!

The Motown Update

by

Brian Kerkan, CBTE, CBNT
Chief Engineer, CBC-Detroit

Greetings from the Motor City! So far, we have gotten through the summer without any storm damage, and I am thankful for that. We have had a lot of rain, but no lightning damage.

I have been preparing for our upcoming WCHB acquisition. We plan on installing an IP STL using a Trango Apex Lynx 11 GHz system and Wheatstone blades as our codec. This will provide a lot of flexibility for routing and control. We will setup the Cisco network to use VLANs to protect the audio and provide Quality of Service (QOS) controls. We will be mounting the dishes on a hot AM tower, and will use wireless Ethernet bridges between the tower and the transmitter building. This will provide isolation, and hopefully provide some level of lightning protection. We cleared space in the TOC for the new automation system and blade.

Our emulated T-1 that is tunneled through the Internet is working flawlessly. We have been able to substantially cut the cost of delivery and provide stable service to the WEXL transmitter. We were having an unacceptable level of dropouts before this change, and paying \$500.00 per month for a point-to-point T1 that was unreliable at best.

We have had several outages overnight from our main cable Internet provider, however. There are live broadcasts every night, and unfortunately our PRI line is also provided through the cable connection. When it goes down, everything goes down. Apparently, Comcast had a bad power injector that caused the cable amplifiers in our area to go out.

I looked for a way to provide redundancy and backup service. I ordered a backup DSL line, and extended the IP connection to a load-balancing and

failover router. This new router is connected to both WANs and will automatically switch to the backup during a failure. All of our broadcast codecs are now covered in case of a single WAN failure.

Next, I looked into solutions for the telephone lines. Comcast provides an unreachable destination option to redirect service if the connection drops. I found a VOIP solution that provided multi-port ring group capability. I setup four ports in a ring group and extended them from the telco room to the WMUZ control room. The nice thing about this solution is that I will be able to switch and use SIP endpoints instead of POTS when we upgrade the phone

system.

We will be adding a Telos Prime VX phone system in the near future. I am excited about adding Skype integration and using it for guests of the Bob Dutko show.

In industry news, it was good to see the discussion and article on the noise floor and its impact to radio. This article is available online at: <http://www.radioworld.com/news-and-business/0002/noise-inquiry-spurs-recommendations/339989>.

I don't think the public is aware of its impact. I recently had an interesting experience when receiving a USB cellphone car charger as a promotional gift. I was happy to have a multiport charger to accommodate the growing number of devices that I use when commuting. One morning, I was in Monroe, Michigan at the WRDT AM transmitter site to meet a vendor. While waiting, I turned on WMUZ. Keep in mind, WMUZ is a 50



kW FM. There was no audio, and it sounded like dead carrier. I checked our systems and everything looked fine. I called our operations manager and he confirmed that everything was ok.

After thinking things through, I remembered that new charger that I was using. I unplugged it and the station came back. This adapter completely blanketed WMUZ's signal. The combination of the charger and a Samsung Galaxy phone had a major impact on the received signal.

I did some testing closer to Detroit and discovered that even close to our transmitter, this charger caused multipath-like distortion to the signal. On AM, it generated a lot of noise, and pretty much made the band unusable. This is only one example, but it shows how a consumer wouldn't be aware of an issue and would just find another station, or turn the radio off. There are so many power line issues and devices that cause increased noise out there. The electrical grid has bad insulators in a lot of places,

and cable boxes and switching power supplies splatter the bands with noise.

Several months ago, I had a conversation with the chief engineer of a legendary 50 kW AM station in Pittsburgh. They were having reception complaints less than 20 miles from the transmitter site. One cable box in a home wiped out off-air reception. It is my hope that something can be done to provide better standards and testing for consumer electronics. The disappointing part is the amount of noise generating devices already out there.

I miss the days when you could listen to DX stations clearly at night, and still enjoy driving in a car with a great radio at night on the Interstate and open road. To me, there is still something magical about listening to a station hundreds of miles away. August will be a busy month preparing for the new WCHB transmitter, STL, and remote control installations. I love being busy. Until next time, God bless, and 73 from Brian, W8FP.

News from the South
by
Stephen Poole, CBRE, AMD
Chief Engineer, CBC–Alabama

Wow, what a month it has been! Normally, July isn't that bad for severe weather, but this July has been the exception. We've had one severe storm after another, along with high winds, power outages, flooding, you name it.

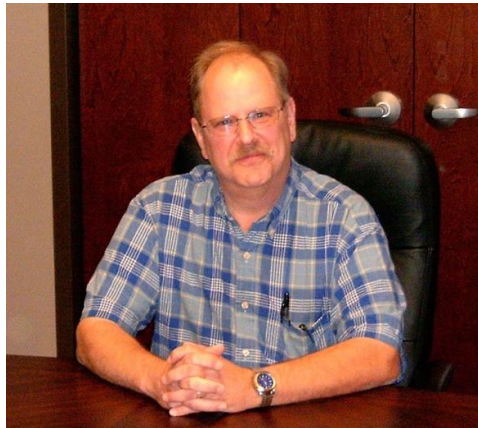
Naturally, we've also had a lot of damage. Part of this is due to our horrible ground conductivity in Alabama. I remember the first time I drove to the 92.5 site in Pumpkin Center on the road through West Jefferson, past a huge Alabama Power generating plant. Right after you get through town, there's a sign that says, "Anode Field" with AP's logo. It goes on ... and on ... and on. This is the ground rod "farm" for that generating facility.

The phone lines here are absolutely toxic as well. We have line fuses and MOVs in place, but sometimes, the lightning can get past this. We can't use a transient suppressor with the voltage as low as I'd like, because you need headroom for the +48V battery *plus* the 70-90V AC ring voltage ... *plus* whatever AC happens to be riding on top of that,

which can be significant. I don't know if AT&T isn't grounding their lines properly or what, but if you happen to have one hand on ground and touch a phone line with the other, you might get your bell rung. 1260's line in downtown Birmingham is the worst for this; it'll knock the taste out of your mouth.

The link from Red Mountain to Mt. High, part of WYDE-FM's STL chain, stopped working. So did the link from Red Mountain to the WXJC(AM) site in Tarrant. We've determined that the fiber run on WYDE-FM's link is bad, and we had a corroded Transtector on WXJC's link. The latter is back up as I write this; the WYDE FM link is waiting on connectors and a return tower crew (we have the fiber).

Oh, and the WYDE-FM tower remains under a NOTAM. We've traced the problem to a bad cable, but we're waiting on the crew to return so that they can trace 1,400 feet of wiring to find the short. Additional damage from the storms occurred at WDJC-FM, and we lost two remote control units.



On a personal note, my wife Sandy has been battling severe muscle spasms for over a year now. She's currently out of work waiting on some answers. I appreciate everyone's prayers.

WDJC-FM Meltdown

We have a shorting stub in the transmission line, the transmitter is thoroughly grounded, and we even have the Nautel-recommended toroid on the 3-1/8" coax. Nevertheless, our number came up in mid-July during a really severe storm. Todd's wife works near the WDJC-FM transmitter site on Red Mountain, and Todd had left to go pick her up. He watched as one bolt after another struck the tower. He said that one strike in particular lasted for several seconds, blindingly-bright. That may be the one that did it.

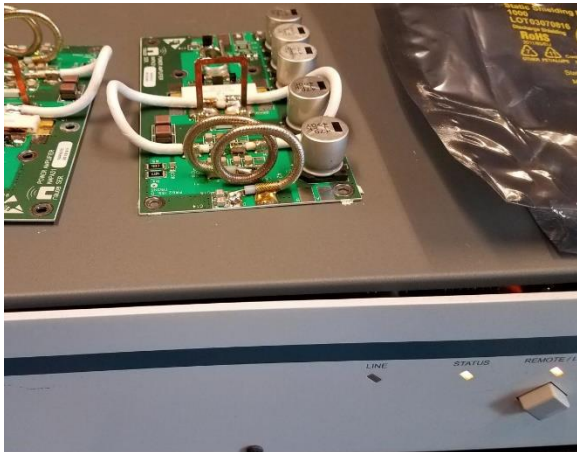


Figure 1 - Just part of the damage from severe storms.

We lost a total of 12 (out of 48) amplifier boards. Modules 3, 6, 8, and 15 had lost two each; module 7 lost all four. Nautel's logging is phenomenal -- I can even tell you precisely when the damage occurred: 3:57PM on July 17th. At that point, the logs filled with warnings and errors as one module after another reported bad amplifiers. Jack ran to look at it and said that the AUI had frozen, too (we were able to restore it with a reboot).

We ordered replacements amplifier cards from Nautel and experienced another bout of hilarity. Because they came from Canada, there was a small import duty of about \$38. The first time they arrived, no one here was prepared for it, so the UPS driver scheduled a retry for the next day. This time, we had cash waiting on him ... but he said they couldn't accept it. No cards, no cash, checks only. I told them to hold it at the facility, which is not far from our

studios. Todd picked it up the next morning.

Meanwhile, I had to make a judgment call. With 101's STL down, we were relying on WDJC-FM's HD2 to deliver the audio. I wanted WDJC-FM to be at full power. WDJC-FM's older BE HD rig would use the aux antenna, which is about 100' lower than the main. In the past, we've had some signal problems in Cullman on that lower antenna. Long story short, it was more important to me to get WDJC-FM back to full power, so I drove to Cullman, pulled five modules and switched WYDE-FM to its BE auxiliary equipment. We then installed the borrowed modules at WDJC-FM and brought it back to full power.

We also went over the grounding at the tower base very carefully. We haven't had as much trouble with copper thieves as in the past, thank the Lord, but it appears that one of the 2/0 wires from the base of the tower had been cut and stolen. There were still two other ground runs, but see above re: terrible ground conductivity here. It may be that this one missing ground was just enough to push us into the red.

GV-Series Tips

Boy, it's nice having the same transmitters (both main and aux) at both WDJC-FM and WYDE-FM. But if you ever run across a big meltdown like this, I'd share some things that I've discovered about the Nautel GV series. You may know most of this, but just in case ...

First, if you lose a module, the power is going to drop off far more dramatically than you might think. Nautel's people have told me that the GV series is essentially just a bunch of 3 dB combiners that are stacked to provide the final output. (Incidentally, module #7 is closest to the antenna electrically, which is why he's most likely to be damaged.) The problem isn't that the other modules are inadequate, it's the reject power from the unbalanced inputs to the combiners. Simply put, the reject loads in the combiners will run hot, so the controller reduces power.

From experience: if we lose one complete module, running with HD, our output drops to 60%. If you lose more than one module, the drop is even more dramatic. Our normal TPO is 27 kW. With five (of 12) damaged modules (four of which were still making half power), the transmitter output dropped to about 4 kW once the reject loads heated up. The point is, you can indeed stay on the air at reduced power with defective modules, but you need to be aware of this. You may want to switch to your aux.

Second, I could only pull one module at a

time while I was working on the problem. Nautel's manual may say something about this; I don't know. With more than one module missing, the transmitter came up, then shut down with a fault. You may need to either switch to your aux or pull the big modules one at a time for repair.

Third, don't forget to run the PA bias routine before you bring it back up. Once we had repaired the old WDJC-FM modules, I took them to WYDE-FM. We were on the BE FM-30T aux. I wasn't sure if I could run bias with no antenna load. I texted Rick Sewell and asked if he'd ever done it; he hadn't. I figured, why not, and ran the routine. It seemed to work fine, so I put the Nautel back on air.

Nautel's metering is phenomenal, too in fact, it can approach information overload! But immediately after running a bias, I always pull up the metering for all modules and glance at the values. The bias for each PA card should run somewhere around 3V. In this case, we looked good, so I brought the power up to full TPO and let it run for 30 minutes to get nice and warm. I did another bias routine just to be safe.

Finally, installing the PC cards in the modules isn't difficult, but you will want a large soldering iron to do some of the connections. A 30-watt pencil won't get it. It's also essential that you use a torque screwdriver to tighten the fasteners on the FET; those devices are quite fragile and will easily crack. We picked up a nice tool from Home Depot, of all places, for about \$50, as I recall.

Figure 1 shows two of the Nautel cards atop a dead Burk remote control (more on that next). The FET for the PA card is available off-shelf for about \$250. When I get time, I may try to repair some of them. I'd need a way to test them, but if I succeed, I'd let everyone know and I'd share them with others in the company who have the NX or GV series.

Remote Controls

Now for the two remote controls that were damaged when lightning came in on the phone lines. These are 2000 and 2004 vintage Burk (formerly Gentner) VRC2500 units. If you've ever used the VRC1000, 2000 or 2500, you know how sensitive they are to transients. As mentioned above, these strikes made it into the units and ate the voice interface (i.e., the dial-up control) before the fuses could blow.

It didn't take much work to condemn both voice interfaces. But the unit from WXJC-FM (92.5) had suffered some other kind of damage. It's hard to tell from Figure 1, but the middle LED is flashing red. According to the manual, when you see that, you

must call Burk.

Well, I called them ... and was told that they no longer repair or support these older units. The parts are too hard to find. Ah. And heh. Looked like we were getting ready to spend some more money. Cris approved the emergency purchase of a couple of Burk ARC Plus Touch units, which are waiting on phone line repairs as I write this.

The Master of Raspberry™

I am blessed with two of the best assistants in radio engineering. Todd Dixon and Jack Bonds worked tirelessly during all of these storms to keep us humming. And of course you can count on it! right in the middle of a meltdown, when two stations are off air and everyone is running, something at the studios will die and Must Be Fixed Right Now. (!)

Believe me, I have only scratched the surface above. We have all been running like madmen during this terrible weather. But I asked Todd to detail what I mentioned last month: he set up a Raspberry PI as a print server for our wireless devices. His recount follows; feel free to contact him if you'd like to try this at your facility.

I'd turn it over to Todd now, but until next time, keep praying for this nation!

The Things We Do

by

Todd Dixon, CBRE

I've been tinkering with for some time with the Raspberry Pi SoC (System on a Chip) boards. The credit card sized, \$35 Arm processor boards have been used by hobbyists all over the planet because they are so versatile. I've made media centers to hook to my television, a personal Wordpress webserver, and an Owncloud instance from the two that I own. I have also had several opportunities lately to use them for radio applications.



Figure 2 - Credit-card sized, \$35, and it runs Linux.

We needed a replacement wireless network print server when our door access computer died earlier this month. This was part of the keycard system that was installed when we bought the building and made it into a radio facility it's hard to believe over 11 years ago. In that time, mobile devices have become so prevalent that I had installed a print server on the door access computer to support wireless printing throughout the building. So not only did I have to repurpose one of our older spare computers with the door access software, but I had to replace the print server. Because the Raspberry Pi is a low-resource, low-energy usage computer, it was the perfect candidate for this.

The number of custom operating systems that have been created for the Raspberry Pi is staggering. The most popular by far is Raspbian, a version of Debian Linux compiled specifically for the Arm-based computer. I installed this operating system and then basically followed the instructions on how to install the CUPS (Common Unix Print System) server and the Avahi daemon (an AirPrint service in Windows world) on the system. I had to add our three network printers to the server so it could make them available to the mobile devices on our network.

The nice thing about the CUPS/AirPrint combination is that the printers are easily available to all Apple products (including Mac OS computers) so the changeover for most of our users was pretty simple. This simplicity came in handy. About three weeks after setting up the print server, we changed printer vendors in Birmingham and had to replace the printers I had added with the new units. In about an hour, everyone was back up and running on the new printers.

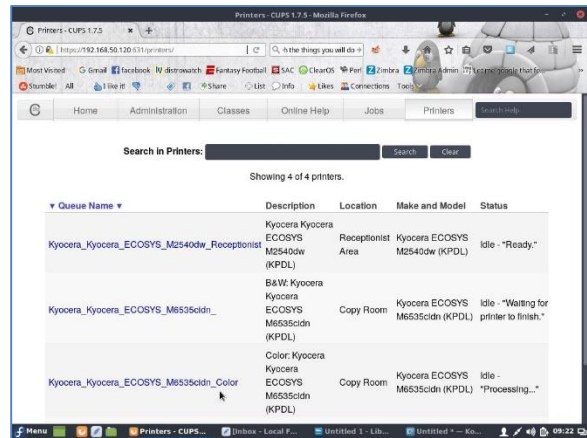


Figure 3 - You can even configure the server with a Web browser.

One other project I am working on is using the Raspberry Pi for digital signage. We recently updated our studios with Auralex sound treatment and our hosts weren't permitted to put their white boards back up on the walls, but we have a flat screen TV with an HDMI input. I'm using a custom image called Screenly to do it and hosts will be able to put their messages on the screen in a slideshow type manner. I think we'll end up using the television's Picture-in-Picture function so that they'll still have the news running on the primary screen, but also be able to see the Screenly input in the bottom right corner. This way, the hosts will be able to cross promote upcoming events going on in other host's shows.

I'll keep you posted on this as well when I get it operational, but most of the parts are already in place.

The Chicago Chronicles
by
Rick Sewell, CSRE, CBNT, AMD
Engineering Manager, CBC–Chicago

It's always an edge-of-the-seat ride when it comes to full-on lightning season for us broadcast engineers. Those who aren't in broadcasting don't get it. Sure, you have those people who have morbid fear of lightning and thunder, but for most people, electrical storms are either very fascinating displays of nature's power or something that spoils their outside activities. Maybe a bit of both.

When storms are approaching, I'm probably like most broadcast engineers, I got the radar app open on my phone or iPad seeing just how strong the storm is and is it heading for one of my sites. Confession time: I have been known to make hand motions over my phone trying to shoo the storm cells in red or violet away from the site. What's worse, I'm pretty sure it's worked a few times!

When I'm around friends, family and acquaintances and they see me looking at the radar on my phone, I often get asked why I do so. The best answer I have come up for helping them understand my fascination for the radar app is this: "We have very expensive equipment attached to large metal poles going straight up in the air." This usually gets them a bit closer to understanding my obsession. I suspect they still think I'm bit touched.

At the time of this writing, we're already in the middle of the summer. I wouldn't characterize the summer storm season as being a quiet one in the Chicago area. We've had our share of flash floods and just plain old flooding from torrential showers. Some that dropped six or more inches of rain within a few hours. Over the last half of July, it's been one system after the other with lots of rain, high wind gusts and plenty of lightning.

Despite this barrage of storms, we had few if any problems due to the storms. I guess I didn't knock on wood enough when saying that. Last year, we had a very bad episode when lightning struck our STL tower at the studios in Hammond, Indiana. During that event, we lost tens of thousands of dollars in equipment and had two of the four stations off air for an hour or so. It was quite a weekend in that the days that followed that studio tower strike, lightning took out equipment at two of the transmitter sites.

So, as I write this, last weekend was the anniversary of that event. Of course, we got plenty of storms lasting about 18 hours. Just one cell after the other. I tried to not be negative and superstitious. We were less than an hour for the anniversary date to be past and I was just settling into a nice sleep when the phone went off and it was my least favorite ringtone on my phone, the air raid horn, which only means a transmitter site was calling.

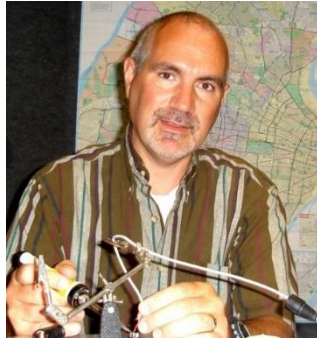
Sure enough, we had a transmitter problem. The main transmitter at the WYCA transmitter site was at almost half power. I cleared the alarm and proceeded to log into the remote AUI of the transmitter; it is a Nautel VS2.5 and has that feature. I knew with that particular power level, the half power condition most likely meant we had lost one of the final RF power amplifiers. I was hoping that with a reset using the AUI, it might clear out and the transmitter would go to full power.

However, by the time I got logged into the remote AUI of the transmitter, the power level was now at 75 watts. Basically, we were off the air. The AUI showed that we had lost three of the final RF power amplifiers. It only has four, so we were just basically dead in the water with that transmitter.

It was back to the remote control to get the aux transmitter on air. I tried dialing the remote, but all I got was a busy tone. I assumed it was calling the other engineers on the list. I then tried the web server of the remote, but that wouldn't come up. I kept getting the same alarms emailed over and over, so I knew the remote control was rebooting itself repeatedly. That it explained the web server not working.

I was in my car getting ready to drive to the site and try to get something on the air when I got a text from our chief engineer letting me know he had the aux transmitter on the air. This saved the drive though the heavy storms in the dark. There wasn't much we could do for the main transmitter at that point, since we didn't have that many spare final power amplifiers on hand to make the repair.

Fortunately, it was only the final PAs that were bad on the transmitter, and once we had the parts in hand and replaced the old ones, the main



transmitter was back up and running. I am hoping
this was our öbigö event for the summer storm season

and that it remains quiet the rest of the way.

The Portland Report
by
John White, CBRE
Chief Engineer, CBC–Portland

At press time, details of the upcoming EAS National Periodic Test (NPT) were released. FEMA and the FCC have placed a high priority on this test with tracking and reports required for each broadcast station and cable system. Needless to say, with the intense focus, broadcasters become nervous and hesitant to make a mistake.

In the past, I have commented that the best radio connects with the audience and responds to the needs of its listeners. The listener becomes involved with the program both the program and the audience benefit.

In recent months, I described a local Oregon program that provides identification for broadcast engineers that will assist travel during emergencies to keep broadcast facilities operating during a disaster. The program recognizes the vital public communications resource and the need to broadcasters operating.

With the announcement of the upcoming national test, I see an opportunity to promote the ability that only local broadcasters have to serve the public during a disaster. To be honest, the EAS system has been around for many years, and the public understanding of the system is not as good as it ought to be.

Here in Oregon, we get few tornados and no hurricanes. In the absence of ongoing disasters, our listeners have little experience with the EAS system.

Several years ago, my wife was at a deli for lunch. A radio was on and she heard an EAS tone, so she listened for the message. No one else at the deli noticed and she had difficulty hearing the message, although she did hear tornado watch. Since that experience, I have come to believe that EAS is routinely ignored, which severely limits its effectiveness.

The upcoming NPT will be highly visible to the public. When activated, every radio and TV station will interrupt programming and simultaneously transmit the test message.

With this visibility, we can discuss EAS and the test in our local forum programming. The test is an opportunity to promote the public service resource that broadcasters provide. We also have the occasion to describe the silent alert capability that is supported by HD Radio technology. Even when off, these radios monitor the HD data stream for alerts and activate to warn listeners.

Here in Oregon, we are developing a commercial to promote local broadcasting as an emergency resource. In a large scale event, the internet is unreliable, cell and land lines unpredictable, and satellite radio a know-nothing resource.

We should seize this as our opportunity to promote the vital link that local broadcasters are in any disaster.



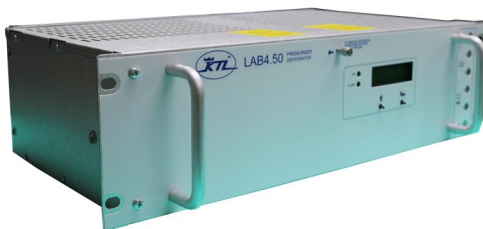
**Rocky Mountain Ramblings
The Denver Report
by
Amanda Hopp, CBRE
Chief Engineer, CBC - Denver**

More Mowing

Mowing season is slowly winding down. Keith was able to get the mowing done at KLTT, and we were finally able to move the tractor to KLVZ. Keith has been picking away at that, and we plan on moving the tractor back to KLZ, its home, shortly. This will allow us to finally get caught up with the mowing as KLZ is the last site that needs the fields to be mowed.

Dehydrator

We finally got the new dehydrator for the KLTT transmitter site. We ordered the Kintronics LAB4 50. I must say, it doesn't do all we thought it would, but it is still very nice. When we purchased it, we were under the impression we could connect the lines independently and then monitor independently. While you can connect the lines independently, monitoring looks to be as a whole. I guess that's not a bad thing, because if the dehydrator isn't working for some reason, you'd see it in all the lines. Apparently I just don't know how to read and assumed much of this.



We are still enjoying being able to monitor site line pressure it from a web page. I do think there needs to be a bit more security for the web page. I do not see a place to set a password and it just takes one person to hack in and mess with some numbers.

Another thing that we are having to get used

to is kilopascals (kPa) instead of pounds per square inch (p.s.i.). Thankfully I found a converter using Google and was able to get things where we need them.



KLDC AM Mod Monitor

After receiving some silent alarms for KLDC, I decided to log into the Inovonics AM modulation monitor and wanted to change the time it takes for the silent alarm to trigger. Surprisingly, I was unable to log in. We had this issue several months ago. I remember very clearly setting the IP address up on the unit and even logging into it. I had gone out to the site and reset it, and it worked fine until this time. I don't log into it every day so who knows how long it's been not working.

I went back out this time around and found DHCP had been turned on. The week before, when I was out at the site, I had noticed some of our equipment had clearly been messed with and assumed maybe some other site user did it. I reset the monitor to a fixed IP address, but when the unit rebooted, it would not come up. When it finally did come up (after several tries), DHCP was back on. I decided to bring it back to the office, and I plugged it in and it works perfectly.

I have about determined it is RF interference. We have had issues in the past at the site, and perhaps there is something this piece of equipment does not like. I took the monitor back out there and put some split core ferrites on it to see if that helps. So far, so good.

August

August is always a month I look forward to. It is when my parents, my husband and I all go to Lake City, Colorado, high in the San Juan Mountains in the southwest part of the state, for our weeklong vacation. It's a time to get away from the city and be able to enjoy doing the things we love.

While this year will be a little different as

The Local Oscillator
August 2017

we have decided not to bring our ATVs due to my dad still healing from all his surgeries, I am still looking forward to fishing and even going off-road in my husband's new truck. What better way to break in a new vehicle than by trying to break it?

It'll hopefully be a time of rest and recovery. It'd be nice to come back from vacation and not feel like I need a vacation from my vacation!

It is always a little nerve-racking walking away and leaving someone else in charge. It's not that I don't think Keith can handle it or he can, but I

do know some things he's not as comfortable with. I am always grateful for the engineers around town who are willing to help out if he needs it. I know that in many markets, engineers are "enemies," usually because their managers won't let them help out the competition. Thankfully, in Denver, we are a good group of friends. Our companies allow us to help each other out as needed.

That about covers it for this edition, so until next time! That's all folks!!!

The Local Oscillator
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KBRT • Costa Mesa - Los Angeles, CA
740 kHz/100.7 MHz, 50 kW-D/0.2 kW-N, DA-1
KNSN • San Diego, CA
1240 kHz, 550W-U
KCBC • Manteca - San Francisco, CA
770 kHz/94.7 MHz, 50 kW-D/4.3 kW-N, DA-2
KKPZ • Portland, OR
1330 kHz/97.5 MHz, 5 kW-U, DA-1
KLZ • Denver, CO
560 kHz/100.3 MHz, 5 kW-U, DA-1
KLDC • Brighton - Denver, CO
1220 kHz/95.3 MHz, 660 W-D/11 W-N, ND
KLTT • Commerce City - Denver, CO
670 kHz/91.1 MHz, 50 kW-D/1.4 kW-N, DA-2
KLVZ • Denver, CO
810 kHz/94.3 MHz, 2.2 kW-D/430 W-N, DA-2
WDCX • Rochester, NY
990 kHz, 5 kW-D/2.5 kW-N, DA-2
WDCX-FM • Buffalo, NY
99.5 MHz, 110 kW/195m AAT
WDCZ • Buffalo, NY
970 kHz, 5 kW-U, DA-1
WDJC-FM • Birmingham, AL
93.7 MHz, 100 kW/307m AAT

WEXL • Royal Oak - Detroit, MI
1340 kHz/96.7 MHz, 1 kW-U, DA-D
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/95.3 MHz, 5 kW-D/41W-N, ND
WYDE-FM • Cullman - Birmingham, AL
101.1 MHz, 100 kW/410m AAT
WXJC • Birmingham, AL
850 kHz/96.9 MHz, 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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