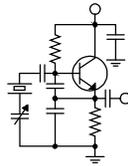


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

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Bring on Spring!

After the crazy weather of the past month, this year more than usual folks are looking forward to spring. Here along the Front Range of Colorado, we had our share of sub-zero weather, but we had none of the power and infrastructure issues that our friends down in Texas and elsewhere did. Utility providers in this part of the country are well-equipped to handle a little cold weather. Still, I'm with the rest of you. Bring on spring! Since "senior-citizendom" has sneaked up on and overtaken me, my bones don't like cold weather they way they did in my younger days.

Somehow, we have managed to make it through a full year of COVID. I'm pretty sure most of us thought we'd be done with it by now, but here we are, still wearing masks and social distancing. And if you believe Fauci, we'll still be doing it this time next year, too. The world, to some degree anyway, has irrevocably changed.

The way we operate in broadcast radio has also changed as a result of the pandemic. The need to work from home has driven or accelerated the development of apps and hardware that make that kind of thing possible. I have been amazed by the resiliency of our people, both programming and engineering, in adapting to changing conditions and requirements over the past year.

Most of our operations are back in-studio at this point, but we can, with very little trouble, go back to remote operation if the need arises. We saw this in Portland last month during the big weather event there. Our building was inaccessible because of icy roads and broken branches, and for those that did make it as far as our entry gate, crossing the parking lot would require ice skates and proficiency with such to avoid injury. And oh yes, the ice falling off the tower was a huge hazard as well.

More and more, we're seeing the flexibility provided by our AOIP infrastructure in many markets

come into play. It allows us to remotely reconfigure the operation in a hurry to accommodate the exigencies of the moment. Thinking back to the infrastructure we had in place just a few years ago, there's no way we could have done this then.

Space Race

I grew up in the 1960s and 1970s, an era dubbed the "Space Age," and indeed that's what it was. I was glued to the screen watching Mercury and Apollo launches and moon landings, and I had no doubt at the time that someday I would pilot one of those rockets to distant worlds. Sadly, the phone never rang with that call, but I digress. That era produced innumerable "Space Age" products and technologies, spinoffs of technology developed for the space race, and our nation and the world benefited.

Here we are some 50+ years later in the "COVID Age" and we are seeing all kinds of "COVID Age" products and technologies. Zoom, Microsoft Teams and other platforms provide the means for millions to work from home or remote locations. VOIP and cloud-based telephony provides for call routing to private landline or wireless phones. If you call the support line for a product, if you're fortunate enough to get a live person on the line, it's almost a sure bet that he or she is working from home. When I call, I often hear barking dogs and crying babies in the background.

All I have to do to confirm that many are still working from home here in Colorado, even though it is permissible for offices and businesses to be open and fully staffed (with masks and social distancing, of course), is look at the parking structure here at our high-rise office complex. Although by no means empty, the parking garage is probably one-fourth occupied.

This would not be a great time to be a landlord with an office building. My guess is that now that many companies have found they can operate just as well with workers at home, they will continue to do so and save themselves a lot of money on rent, utilities, parking and other office space costs.

My next-door neighbor heads up security for the major cable/internet provider in the area, and he has spent most of the past year shutting down offices. I frequently drive by one of this company's big complexes. There are just a few service trucks in the unplowed parking lot, and those vehicles are also covered in snow. It's a ghost town. But the company continues to provide great internet and cable TV service to millions of homes and businesses.

Another change that's readily visible in communities all across this nation is the shift from brick-and-mortar to online retail. We recently got an appraisal on one of our transmitter sites, a small part of which is being condemned in an eminent domain proceeding for a road project. In the process, we found that while small commercial parcels zoned retail were king of the hill in years past, now it's the large urban parcels on which warehouses can be built that bring top dollar. I was astounded at the per-square-foot figures we were seeing in the comps. I sure wish I had bought some Amazon stock a decade ago!

So, what's the point of all these musings? It's that our world has changed, and we in the broadcast engineering business must change with it. We must be prepared to provide outside-the-box solutions on a moment's notice. No, we're not shutting down our offices and studios. In fact, we're upgrading them. But in the process, we are also increasing flexibility and providing the tools to create those outside-the-box solutions. All that is going to require a change in our thinking.

Much of our listening is coming through different platforms than in years past. We are no longer just a radio company – we are now a *media* company. People “tune in” through streams, apps and smart speakers. They listen to our podcasts. And while over-the-air radio is our primary delivery means, we must pay attention to all the others as well and ensure that they sound great and provide the listener with the very best possible experience on each. We cannot afford to treat any of those as also-ran sources. Any of them could have a significant number of listeners at any time.

Bob Dylan sang *The Times They Are A-Changin'*, and indeed they are. To borrow another song title, this one from REO Speedwagon, Keith Peterson's favorite, we've got to *Roll with the Changes*. I think it's going to be a ride...

The New York Minutes

By

Brian Cunningham, CBRE
Chief Engineer, CBC – Western New York

Hello to all from Western New York! February turned out to be a quirky month with gremlins, snow, and more snow, winds and power outages.

In our Buffalo and Rochester markets, I use a 4 TB Western Digital “My Book” for continuous backups of our file servers. I have gotten into a habit of checking the backup every morning to ensure that scheduled backups have run. Several times this month, the backup failed for no obvious reason.

After three failed attempts (not successive, but

random failures), I scheduled a backup while I was standing in front of the drive, and got a surprise when the backup began! The My Book sounded like a

bandsaw was running inside the unit, and the outer case was warm to the touch.

I had a spare drive, which I immediately used to perform a backup of our Spots and Songs folders in case the original drive died completely, leaving us without a fresh back-up of our inventory.

Right away, I replaced the bad drive with a new 4TB drive and began



the long, full-backup process.

I was curious as to how long this drive had been in service and was surprised that it was installed almost four years ago! I P-Touched the date on the new drive and will replace it after 36 months of service, and re-use it in one of our production workstations. I will also be replacing the Rochester drive, as they were installed within months of each other.

In Rochester, a portion of our NexGen configuration just vanished! I looked in the events log and could not find anywhere where these configuration files were deleted. The missing files were affiliated with the Broadcast Tools 8.2 switcher, which controls background recordings into the DRR. Source #2 completely vanished; therefore, no recordings of programs were recorded from the AMBOS system. Fortunately, we were able to download the missing programs from their FTP site until I could rebuild the missing data.

Another recent gremlin surfaced when Earl phoned me to report that the AM internet stream was down. I walked him through restarting the streaming encoder, which showed that the stream was working. However, the player would not load on our web page. I phoned Tom at Triton Digital to ensure that they were receiving audio, which he verified, so I began looking for the reason that the player would not run. I found that the command line on our website that loads and runs the player was gone! I can't explain how this could have happened, as there are only two of us that have access to the web configuration, and neither of us has accessed it in months!

The weather has not been kind to us thus far this year. At the time of this writing, we have over five feet of accumulated snow at the WDCX-FM transmitter site, and several feet each at the WDCZ transmitter site in Hamburg and WDCX(AM) in Rochester.

We have a neighbor that plows at the WDCX-FM site, and George does a wonderful job of keeping the driveway and walkway to the transmitter building clear. I keep the drive plowed at WDCZ with our Kubota tractor, but at the Rochester AM site, we do not have anyone who can plow the road for us. We have searched for two years to hire someone to perform this work but have been unsuccessful in hiring someone to keep the access road clear. For years we used a local landscaping and plowing contractor, but we had to sever our association with them as I caught them billing us for

plowing they didn't do. It was unfortunate, as they did a wonderful job, but I couldn't trust them to provide accurate billing of services.

We experienced several commercial power outages this month at the WDCX-FM transmitter site due to high winds. Our standby diesel generator kept us on the air while NYSEG made repairs to the wind-damaged transmission lines just south of the transmitter site. In one instance, a downed tree took out one of the main feeder lines from the sub-station in Springville, NY which feeds the Boston, NY area. Another outage was weather related – slick roads and blizzard-like conditions caused a motorist to take out a pole just down the road from the transmitter site.

Another issue that resurfaced last month happened at the WDCZ 5 kW directional AM site. The board operator phoned me and reported that the parameters on the entire array were low, along with the transmitter output power. When I arrived on-site, I found that the transmitter had folded back to just over 1 kW output.

A check of the antenna monitor showed that tower 5 had a dead short to ground. It never fails, this only happens when the field is nearly waist-deep in snow, and it's always the furthestmost tower! The issue turned out to be a Kintronics cabinet belonging to our tenant, WHLD, was dead shorted to the tower leg. Frost heave has caused the support legs to lean inwards, toward the tower. I was able to wedge in a 1/4" piece of wood between the cabinet and tower leg to keep the cabinet from shorting out the tower.

As soon as spring comes, Cumulus Radio Group has plans to repair all the WHLD network enclosures at this site under my supervision. I have been after them for over a year to get this fixed, but their local engineer reports that their corporate engineering department did not have the money to make all the needed repairs. They have been operating under an STA at 1 kW ND for several months now.

There are additional issues with the array, and the local engineer has little experience maintaining and servicing AM directional systems. I will be heavily involved when they make the repairs next spring, to ensure that all work is done properly and to our satisfaction.

That about wraps up another month here in the great northeast, and until we meet again here in the pages of *The Local Oscillator*, stay safe, keep social distance, and happy engineering!

The Motown Update
by
Mike Kernen
Chief Engineer, CBC–Detroit

Having now installed the first of our three new Wheatstone LXE consoles, I can declare that they have a learning curve not unlike anything else this complex. Flexibility and complexity are proportional factors, and the LXE is on the far-right of the flexibility bell curve. That's fantastic, considering that it'll bend and stretch to meet our needs for many years, and therefore it's time well spent to learn it thoroughly.

Though it comes with some files allowing you to load in factory defaults, you won't stick with those for long. The console and blades all need to be pre-configured to the unique needs of your installation, which means consideration of each button, knob, fader, and display.

It is, it's possible to load a configuration into each fader strip, monitor strip, and blade – some of these arrive dumber than a bag of hammers. None of this is particularly hard work, but there is a lot to study and think about prior to landing on a final setup. Fortunately, it's possible to save and recall setup files to and from these components.

Once you've landed on a layout for the console, there are users, events, processing settings, salvos (what Wheatstone calls their macros) and routes to be created. Oh, and there are the utility mixers (U-Mixes) to set up, too. U-Mixes are not just handy little freebee mixers that come two to a blade, they are essential to creating all sorts of backend functionality. I've got U-Mixes feeding each STL and splitting up caller and host audio for VoxPro. I'm sure I'll find countless uses for them.

Another primary pre-installation task for us involved updating the Wheatnet devices we already had. New Wheatnet gear ships with firmware designed to work with AES67, and is therefore incompatible with older versions. AES67 is newer than our Blade 3 devices and our computers' Wheatnet drivers, meaning all would have to be brought up to current versions prior to joining even a single new blade to our Wheatnet AOIP network. This meant downing our entire NexGen and Wheatstone systems, installing new drivers and firmware, and rebooting everything. A bit scary!

All the blades restarted running their new firmware, but a few took 20-30 minutes, rebooting themselves several times. The computer drivers were a different story, requiring almost a different tactic for each one to achieve the uninstallation, reinstallation, and many checks to ensure that things finished up correctly.

Now that the FM studio console is installed with its external parts feeding and being fed as required, we are free to learn about all the unknown tasks that were being done inside the old system that no longer work. Yes, it's inevitable – "I had four studios going to do my special thingamajig you didn't know about and now it doesn't work, and I need it..." (um, what now??).

Once we get the other two control rooms up and running, we'll begin the lengthy task of removing all the old point-to-point wiring. WCHB is in the on-deck circle.



News from the South

by

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

Man, it has been cold here. For Alabamans, anyway, it has been frigid – single digit temperatures at night, and several days where we didn’t get above freezing. We ain’t wired for that here. But thank the Lord for my 4-wheel-drive Ford! That thing kept me moving and engineering even in the worst of the weather.

To add to the joy, there was a dead skunk in the road just up from my home. The state is rebuilding a bridge over the railroad tracks behind our house, which is my alternate route to get out of the neighborhood.

Therefore, I had no choice but to drive over said skunk each time I went anywhere, with the thing stinking to high heaven. Even at freezing temperatures, a skunk is a malodorous wonder. Ah, the hazards of living in the South.

Our weather hasn’t been nearly as bad as that experienced by the poor folks in Texas. We had a day or two of icing, when the reflected power crept up on our FMs, but we were never in any danger. The transmitters never folded back. We never lost power at our tower sites, either, though some folks to our north and west did. Jack manually switched to the generator at the studios for a couple of hours during one of the freezes, but that was just a precaution (which I wholeheartedly supported).

The folks in Fultondale, AL continue to clean up after the terrible tornado that struck in January; during the cold, rainy and freezing weather, they just couldn’t catch a break. I do believe most of them have power restored, but I’ll tell you, seeing all of those smashed homes on my way to the 850AM site in Tarrant saddens me.

The Reluctant Guru

Back when MS-DOS was king, I was known as something of a guru. I think I’ve mentioned this before in these pages, but back in the 90s, a friend and I wrote a set of antivirus utilities for DOS that were extremely secure. To do that, I literally traced through the DOS kernel I don’t know how many times, finding all sorts of buried goodies.

Now my (alleged and highly suspect) guru-

ness is being applied to other areas. The Central Canada Broadcast Engineers (CCBE) were given my name by the Society of Broadcast Engineers (SBE)

here in the States, and they want me to do a series of seminars on broadcast audio processing. I’ve never claimed to be a Frank Foti (Omnia) or Jeff Keith (Wheatstone), but I do love good audio. Making it loud and clean is something that I’ve been doing since my small-town AM days back in NC. As I write this, the first seminar is scheduled to be done on February 25th.

It’s fun to address things that people “know” to be true, but which actually aren’t. For

example, I have had engineers tell me – right to my face – that they have no choice but to overmodulate in order to be competitive. But I pointed this out in the original Broadcast Audio Processing course that I did for the SBE several years ago: look at an older modulation meter. Most of them have two scales, one for the percentage of modulation, plus the equivalent in decibels. Look at 140% modulation: it represents about 3db increase. Folks, most people will barely notice that.

The key to on-air loudness is modulation *density*. Keep a good average level, reduce the crest factor (peak-to-average) with a good, clean clipper, and you’ll sound fine. As proof of this, there have been times that I’ve installed a new processor and have turned it up to what sounded good ... only to check my work and discover that I’m only modulating about 80-85%. Density makes the difference.

Heresy, you say? I also covered this in the SBE course: go into a vacant studio and set things so that you can watch your level meter(s) as you raise and lower the volume in the monitors. Close your eyes and reduce the volume until it seems about “half as loud” to you, then note what the level meter says. Try it with different programs, voice and music, and get a few co-workers to join in. Average their reports and you’ll find that roughly 10db is considered “twice as loud” (or “half as loud,” depending on





Figure 1 - Fiber in the middle of nowhere! Yay!

which way you're going with it).

This is most obvious with voice, and that makes sense; the original "Bel," as developed by Bell Labs for speech. 2 Bels was twice as loud as 1 Bel; 4 Bels was four times as loud, and so on. But the original Bel was a bit unwieldy, so for finer measurements, it was divided by 10 – whence the "deci-bel."

High Winds

We've had high winds in some of the recent storms, with gusts beyond tropical force. This caused a few power outages, including one at our home. A tree reportedly fell on a power line up the road from our house, and the line crews needed a few hours to get that one straightened out.

The high winds revealed one other problem: I've been spraying insecticide on the wood at the WYDE-FM site in Pumpkin Center, but we obviously had carpenter bees nesting in there regardless. The winds knocked off the loose wood that was hiding the damage. That's on the schedule for repair ASAP, now that the weather is finally starting to dry out and warm a bit. The rest of the roof looks fine, so it's not a screaming emergency, but you don't want to take chances on something like this.

Fiber for Pumpkin Center! (Maybe.)

The phone line to WYDE-FM's transmitter building is a sad-looking thing. It runs for over 1,000 feet from Alabama Highway 269, and if there's a lightning storm, it's gonna get hit. I've got all sorts of protection on that phone line, with the key being some fast-blow fuses. After a storm, I just accept that one of us will need to run out there to pop some replacement fuses in the line. But at least that saves

the equipment.

That little tower won't support the weight of a Cambium or a Dragonwave dish, and AT&T has thus far refused to provide any type of high-speed access out there. This is the only site that has no network connectivity. If something needs to be tweaked, Todd, Jack or I have to run out to turn knobs and smish buttons.

But when I was there the other day, I saw a gladsome sight: fiber is being run out of Highway 269 (Figure 1). It hasn't made it to 92.5's neighborhood yet, but there is hope. Cris and I have chatted about this. If we can find one of the neighbors out there who is able to get high speed access, we're going to see if we can shoot it from the neighbor's house to the tower on something like a lightweight NanoBeam. If so, that would be a precious and beautiful thing.

In related news, I heard from Spectrum today regarding backup internet access that we've ordered for the 1260 transmitter site in downtown Birmingham. They plan to have it installed within 2-4 weeks. This is also a beautiful thing.



Figure 2 - The new LXE making blinky lights in the WXJC-FM control room.

I've whined before in these pages that Birmingham has been stuck in the dark ages regarding high-speed access for way too long. It was only a few years ago that fiber finally made it to our studios in Homewood, and at first, the best we could get was 20 megabits. We've since increased that dramatically, and 1260 will (supposedly) get a 200-megabit service(!) from Spectrum.

I'm also looking at similar tricks for 850 AM in Tarrant and 101.1 FM in Cullman: finding a neighbor who will host our access, then shooting the signal over a NanoBeam to our tower.

Wheatnet, We Gots Wheatnet!

Since the COVID madness started, I've been primarily doing transmitter site work. Jack and Todd have been covering the studios, and they've done a splendid job. We're essentially done with installing the new LXE consoles and blades, completely retiring the old TDM Bridge Router/G6 system. I had suggested to Cris that we could use a blade as an STL to the WDJC site on Red Mountain, but Todd and Jack are a bit ahead of me there, too: they've already mounted a blade in Engineering to feed all of our existing STLs, with signals clearly labeled and

marked. It'll be a relatively easy matter to move that blade up to Red Mountain. We have a 350-megabit Cambium link that will work quite nicely for this.

Figure 2 is the WXJC-FM studio. This was originally built for an all-talk format; you can see the talk studio to the right of the image through the big window. That old G6 stuff trucked and motored along splendidly for over 15 years, but it was time to upgrade. Todd and Jack did a very good job.

That's about it for this time. Until next month, please keep praying for this nation!

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

I always love the opportunity to learn new software, especially when that software gives me the chance to employ my creative streak.

Recently, I was able to get my hands on the Screen Builder software for the Wheatnet system. The software allows you to design custom screens that can be used in a stand-alone mode with the screen engine or in the GUI of an LXE Control Surface. There are probably other applications for which it can be used, but for my purposes, the two I mentioned already are what matters in our installation.

I started playing around a bit. My first intention was to build a screen that we could use on our Wheatnet Navigator computer to control the rack room speaker and the input to our Barix Instreamer. That was my

intention, but I also wanted to add some controls that might be useful for maintenance crisis modes.

Actually, I started with creating controls that I have wanted to make available for our engineering staff to use remotely. Since our front gate and back door entry are connected already to an LIO on the system, it was just a matter of adding soft LIOs and then programming the buttons on the Screen Builder customized screen.

The other part of this was to create a Salvo in Wheatnet for each of these buttons. There might be another way to have multiple buttons control one output LIO in the Wheatnet, but I have been using salvos for six years now to accomplish this, since a

destination in Wheatnet can only have one source connected to it at any given time.

There are already six studios that have buttons for these functions. Each has a salvo associated with it, so that when that button is pushed, the first thing that happens is a salvo firing to create the connection from the button to the output LIO. Using this method, we could literally have hundreds of physical and virtual buttons control one output.

Having done all that, we tested the buttons and they worked. While we never had a moment where I regretted not having remote access to these functions, I am glad that I have them now. I am fairly positive we will use them now that we have them.

Beyond having control for the rack room speakers and Barix Instreamer inputs, I wanted the screen to give a view of all four stations along their given audio chains. I did this by putting four meters for each station. The first is the output of each LXE control surface. The next is the output of ASERV blade going to the profanity delay. Next to that is a post-delay meter, and the final meter is an air monitor.

Under each of these meters is a small button that when selected, will send that particular audio simultaneously to the rack room speakers and the Barix Instreamer.

The rack room speaker is used for when we have an engineer in the room. However, we also have



a Barix Instreamer so that we can listen to any source on the Wheatnet system remotely on a computer or mobile device. These buttons allow us to quickly listen to the audio along the air chain and find where an issue may be occurring.

The buttons to the right of the station meters are used to change the mode of the station, where we put the ASERV directly on the air, bypass several different pieces of the audio chain, or even move the station to an emergency control room. The idea of remotely changing station configuration quickly is a real asset for us.

I also included meters for our satellite sources so that when we jump into the computer, they are available for monitoring and can be listened to through the rack room speakers and remotely through the Barix.

While we haven't had a lot of remotes with our Zephyr units during the pandemic, we are sure to get busy as soon as we feel safe to do them. The meters will provide engineering with a quick view of the input and output meters let our people listen to them as well. The small buttons to the right can

control which station is feeding the given Zephyr from the LXE control surface.

Finally, the faders in the upper right-hand



Screen Builder display for our Hammond studio complex.

corner control the volume level to the rack room speakers and the Barix Instreamer, which wasn't necessarily a big addition but could be handy if something is a little low or too high. I am considering adding more layers to this custom screen, perhaps a layer for each station giving deeper views for each individual station.

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

Being an old guy (I won't use the usual acronym), I have often been confused by the constant need to be connected with some kind of device to rest of the world. A few years back I saw two teenagers walking down the street, each talking on a mobile. And then I realized they were talking to each other on the "phone." That's taking things a bit far, I thought.

At home, I can't use my own phone for incoming calls with the constant ring of robo-calls. In fact, I suspect that the last year of COVID has begun to wear thin in the remote meeting department. I haven't been sucked into Facebook or Twitter as a way to live my life. I don't have accounts on either.

Our family rebuilt connections two years ago at Thanksgiving; the face-to-face communication helped build real relationships that had drifted apart over the years. And – recently the advent of the "cancel culture" being imposed on various forms of

"social" media has put a point on the disconnected life.

All of the above is to provide contrast to events this year. We had two fairly large weather-related disasters in the same year. The last few weeks were a bit jarring as winter imposed its own form of the cancel culture across the nation. Widespread power and communication blackouts providing Yin to the Yang.

I'm now back in the land of the connected, and even without any addiction to the social media culture, being able to send email and use the internet is nice.

Here in Portland, we had some warning of the coming storm, so we were able to place KKPZ in storm status before it hit. I was at the station the prior Friday and Saturday to prepare. At the last visit Saturday morning, ice was building up and shedding from the towers at the same time. It looks like we had two ice falls from the tower. The first was the



initial snow, which was then covered with ice. That shed when then weak underlying snow let loose. Then, cleared areas of the tower started building a second ice layer.

Late in the day Sunday, I attempted to get in. Several large limbs were iced down and hanging just at breaking point and at windshield height, blocking the driveway. Any attempt to move them would likely bring the limbs down. Just inside the gate, there were several large broken limbs. Fortunately, I had intentionally left the gate open, so there wasn't a blocked gate problem.

Inside the parking lot was a sheet of three or more inches of ice over six inches of snow. Large

chunks of ice were falling from the towers and trees, making any attempt to walk to the building unsafe. The building generator had auto-started and was running fine. I was hearing a carrier with no audio, and I had no safe way to get in.

I was able to get in on Monday. Power was by then off at my house, so my wife and I threw together a survival package prior to the trip. Once we got in at the station, we decided to bunk in for a while in a warm building.

The dead carrier issue turned out to be a failed UPS, which cut off power to the audio chain at the transmitter. I bypassed it and put us back in operation. Shore power was off at the building, as was the internet. The land lines were working, so I was able to schedule cleanup to remove downed limbs blocking the parking lot access and other recovery operations. With no internet, I had only had access to land line telephone communication.

The failed UPS shut down the main transmitter, A and B exciter audio and the auxiliary transmitter audio. I had to physically bypass the UPS in order to restore service. The UPS is dead – the fan runs with no AC out, and all attempts to reset result with no indication on the control panel, fan running



Figure 1 - Broken bowl insulator on the 1640 ATU/filter cabinet.

and no AC out.

By Tuesday morning and with no sleep, we put together a survival list of bedding, etc. to pick up, and we made the trek back to my house. Fortunately, the station was operational on generator, so when power at my house returned, we chose to stay at and get some sleep.



Figure 2 - Mangled feed tubing at one of the towers.

We have a number of repair items to deal with as a result of the storm, such as repairing roof damage. The Salem 1640 station, our tenant at the site, had extensive damage and will need to be non-directional for a period of time for repairs. The feed tubing from the tower to both the 1330 and 1640 tuning units/filters need to be rebuilt.

Ice fall damage aptly demonstrates the safety concerns of falling ice. Ice has a firm recognition of gravity from 170 to 300 feet in the air. The conductor from the tower to 1330 is $\frac{3}{4}$ inch hard-drawn schedule M copper pipe. A "T" and short run of $\frac{1}{2}$ inch hard-drawn schedule M copper pipe connects to the 1640 ATU.

Figure 1 shows the damaged bowl insulator at the 1640 ATU. Figure 2 is very enlightening – the $\frac{3}{4}$ -inch copper was straight, and the what looks to be a "U" in the half inch was originally a 90-degree

elbow. In the process of the falling ice bending the 3/4-inch pipe, the 1330 sample line, which is normally bundled with the run to the ATU, was ripped free and fell to the ground. That put 1330 with no audio into SWR cutback.

A few lessons learned. Ice fall damage can be extensive and poses a real safety issue. Beware approaching a tower following a winter storm. Hard hats don't survive ice falling from high elevations.

Second, it's a good idea to have a contingency supplies list. More than a "bug-out" bag, the list should include items to make bunking at a studio or transmitter building more comfortable for

an extended period. What I missed most was fresh laundry. No power at home and no wash there, either.

Third, the internet was down in both recent storm and power failure events. Both were nearly a week in duration, with no remote access or internet communication. Finding an alternate solution may not be easy. The wireless service also at Mt. Scott was up and down, mostly down as well. DSL and land line phone were up, although the bandwidth is very limited. That problem may not have an easy solution.

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

KLTT FM Antenna

We had a tower crew come out to once again fix the FM antenna on tower 4 at the KLTT AM transmitter site. This will be the third time the antenna has rotated in high winds. It is also something that we cannot have happen.

The crew came out prepared, remembering what they saw the last trip out and preparing ahead of time. It only took them a few hours to get up the tower, replace some hardware and test everything. I kind of wish they would've hung off the antenna like a monkey to really test its strength, but I can't imagine that would be OSHA approved.

We have had a couple days with really high winds since, and so far it has held up. I have used our PTZ camera on the back of the building to check on the antenna daily. I actually have it on a "tour." We are very lucky to be able to see the top of tower 4 with the camera. This is the only site where we can see the top of the tower with the microwave/FM antennas. I will continue monitoring it daily to be sure all is well.

Weather Changes

January and February have been very dry months for us. It's been a bit scary. I saw a picture from one year ago recently that showed my husband

in waist deep snow at our mountain home. This year, there's plenty of bare dirt showing.

Last year we had the big winter snows, but

no rain in the spring and summer, which is what made the fire danger so high. Many of you may remember me mentioning the East Troublesome Fire narrowly missing our mountain home. My prayer is that this year, with so little snow, that it rains constantly in the spring and summer. I know rain will produce flash flooding and mudslide issues because of the fires, but so many places were

unaffected by the fires and they need to be protected. Only time will tell what will happen.

Of course, as I write about dry months, I am looking out my office windows to a fog bank to the east, steam from many buildings, and over a foot of snow on the ground. It is amazing how meteorologists have one of the few jobs where one can completely screw up time and again and still keep their jobs. Imagine if engineers did that. While many companies might let it slide from time to time depending on the severity of the mistake, that could mean hundreds or even thousands of dollars lost, as well as a job.

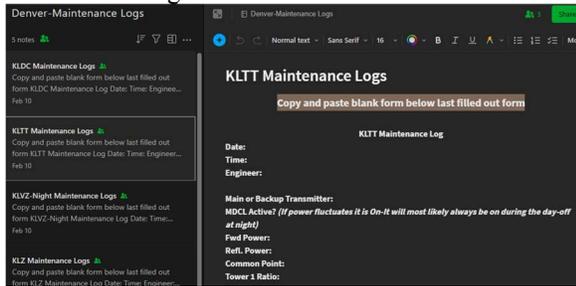
Maintenance Logs

I have learned that I am bad about keeping a log showing what I've done at a transmitter site.



Years ago, my predecessor Ed Dulaney had a printout with all the parameters we needed to write down, but even he didn't really do them that often. It's just easy to forget. You make a quick trip out to do one quick thing and leave. You don't even think about it. Or, you are out there dealing with a major issue that takes hours, and by the time you're done, you just want to leave, so once again, you do just that.

I cannot tell you how many times my dad and I go back and forth trying to remember when we did this or that. We had this issue before, but when? I want to change that. I have gone into Evernote, the document sharing app that we use in many of our markets, and created a "Maintenance" notebook with five separate "notes" that will be the station maintenance logs.



Evernote display of maintenance log.

I took the info from the old logs we had from the Dulaney days (yes, I have kept them just in case all these years), and as I make my first trip to each site, I am updating them to more accurately reflect the current transmitters and other equipment – very little of what was there in the old days is still present. I take my iPad with me, open up the note for that station and fill out each parameter blank. I have even included things like transmitter filters, because this is something that can very easily be forgotten and

before you know it, the filter is clogged. I have also included the A/C filter, whether MDCL is on or off and a few other items like that, making it specific for the station and site. The screen shot above is from Evernote and shows what I've done along with part of a log. I included a notation to always copy and paste. I want to leave the first part of the note where the blank stuff is blank, so I copy and go below that and paste it.

It's possible that I may end up having to save a copy of these logs to a local computer periodically. It will all depend on space within Evernote. I do not want to use it all up. But I think this will be a great way for me to keep track of things. My goal is to do a log any time I go to a site. I will have to get Keith into that habit as well. The more logs, the better.

Upcoming

I do not know what March will bring. Maybe snow or even rain. I am working on planning, though, planning for spring. What are things I need to get done at each site once things clear up?

Some of those things I am working on planning for is getting some infrared floodlights set up at KLTT to get better night lighting for the cameras covering our two front gates. This will take some serious planning. I will be installing some new indoor security cameras at KLTT and KLZ to keep an eye on things inside, just in case someone gets in. I need to figure out what maintenance items I need to get done at the transmitter sites. The list will be long, but this year I am planning on spending some quality time giving each site some TLC.

That about covers it for this edition. I pray you all stay safe and well.

The Local Oscillator
March 2021

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/103.3 MHz, 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, 660 W-D/11 W-N, ND

KLTT • Commerce City - Denver, CO
670 kHz/95.1 MHz, 50 kW-D/1.4 kW-N, DA-2

KLVZ • Denver, CO
810 kHz/94.3 MHz/95.3 MHz, 2.2 kW-D/430 W-N, DA-2

WDCX • Rochester, NY
990 kHz/107.1 MHz, 5 kW-D/2.5 kW-N, DA-2

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

WDCZ • Buffalo, NY
950 kHz/94.1 MHz, 5 kW-U, DA-1

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

WCHB • Royal Oak - Detroit, MI
1340 kHz/96.7 MHz, 1 kW-U, DA-D

WRDT • Monroe - Detroit, MI
560 kHz/107.1 MHz, 500 W-D/14 W-N, DA-D

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

WMUZ • Taylor - Detroit, MI
1200 kHz, 50 kW-D/15 kW-N, DA-2

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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