The Local E Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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Hello Summertime!

At long last, the start of traditional summer is upon us. Yes, I know that the summer solstice and the official beginning of summer comes several weeks later, but for us old folks, summer runs from Memorial Day to Labor Day. In my formative years, school was out for that whole period of time, three months of bliss and outdoor fun with my friends.

For most of us, it means the end of snow... for a while, although here in Colorado we have seen snow as late as the first week in June. In fact, we got about six inches of snow in metro Denver on May 20-21 (and we're still getting snow at our place in the mountains), all the while our east coast friends were cooking in record heat.

The start of summer signifies warmer weather and the time when we begin a lot of projects and outdoor maintenance. The sound of mower engines and the smell of freshly cut grass return along with allergy symptoms. It's a time when we start cleaning antenna tuning units, replacing weatherstripping and broken mounting insulators. It's a time when we fix fences that were broken or damaged over the winter. It's a time when we paint towers and service HVAC units.

We have such projects underway all across our great company as I write this, and we are preparing for several other projects as well.

At KBRT, we plan to replace the aging Dragonwave microwave link with a new Cambium PTP850S system. This will get us throughputs of close to 300 mbps, which will make streaming 4k video from our excellent security camera array a snap. The downside is that it requires replacement of the dish antennas at each end with new Radiowaves HP-series antennas, so it will require some down time (as we operate using our satellite-delivered backup STL) and realignment of the antennas. In Buffalo, as we prepare to move our studios from near downtown to suburban Amherst, we plan to install the first segment of a three-leg 6 and 23 GHz microwave network this summer, linking the WDCX-FM and WDCZ(AM) transmitter sites. As with KBRT, the link hardware will be Cambium but it will be PTP820S transceivers. Throughput won't be quite what we get at 11 GHz, but it won't be bad. We chose 6 GHz rather than 11 because of the proximity of Lake Erie and its effect on microwave signals.

In Denver, we prepare to relocate KLDC from the existing diplexed Ruby Hill tower site to the KGNU site in Englewood. Parts are arriving and Amanda and I are already at work getting equipment racks and other foundational items installed. The main event will take place after Labor Day, in mid-September, but there is much to do in the meantime.

In Chicago we were planning a big generator project this summer but that has been derailed by supply line issues. The 150 kW generator we ordered in January of this year will now be delivered, we are told, in January of next year. Unbelievable! We've also got a microwave system to replace/upgrade. All the equipment is on hand and we're just waiting on a tower crew to get it done.

We've got transmitter site HVAC units to replace in Birmingham, Buffalo and Detroit. We'll see what the supply line has to say about that. And we've got tuning house repairs to do in Rochester, leftovers from last year that we never got to because of a pandemic-related labor shortage.

In Detroit, Mike Kernen is eager to use his new Kubota B-series tractor and brush hog to mow the Romulus and Monroe antenna fields. My guess is that he will have had his fill of it by the middle of July!

Finally, Amanda has some Austin transformer maintenance to do in the coming months,

rewrapping, priming and painting them with a very messy epoxy paint to keep the weather out of the windings.

So it's shaping up to be a very busy summer across most of our company, but I'm glad it's here. My guess is that most of you are as well. Slather on the sunscreen and stay hydrated!

Changes

By the autumn of 1998, it had become clear that our Birmingham operation was growing and could no longer function with the services of a contract engineer. We had recently added a 5 kW AM in the market, we had our eye on a 50 kW AM and some aspirations for one or more additional FMs as well. Our 100 kW FM WDJC was the only game in town for contemporary Christian music – and it topped the market for listeners as well. And so the search was on for the right person to become the chief engineer for our operation in that market.

It's been too long to remember all the contacts and correspondence, but one name kept surfacing in that search – Stephen Poole. I had been seeing Stephen's name and posts on some broadcast engineering forum or other (I can't remember which, but maybe Compuserve's Broadcast Professionals Forum?). I had put the word out for the open position, and Stephen, then in North Carolina, applied for the position. I interviewed him and knew immediately that he was the person we were seeking.

Stephen came aboard in December of that year. It was a transitional time for us. I had been told that I was relocating to Denver after 14 years officing in our Dallas facility, and I had my hands full with that. At the same time, we were closing in on the acquisition of the aforementioned 50 kW AM, which was an absolute disaster in terms of facilities (a "teardown") but had incredible potential if we could rebuild and restore it. We purchased that station later that year and within a few months were neck deep in rebuilding it. That project was Stephen's first big test, and I couldn't have asked for a better man to manage it.

Over the next few years, we purchased a 100 kW FM with a really tall (1,330 ft.) tower and had to do some significant upgrades to the tower and antenna and build an all-new transmitter facility for that. Then we purchased a class-A FM that also had to be rebuilt. And then we bought a building, 20,000 square feet of potential in which we had to

completely renovate the top floor and build out studios and offices. Stephen was the perfect guy to run all those projects, and they all got done right.

Since then, Stephen has remained market chief engineer in Birmingham, but he has taken on many more corporate-level tasks, taking responsibility for our company email system and servers, web servers, FTP servers and a whole lot more. He has been my go-to guy for many things, especially IT-related tasks, projects and issues. He has blessed us all with his knowledge, skills and sense of humor. I have no doubt that many readers of these pages turn first to Stephen's column each month.

If you haven't figured it out already from the content of the paragraphs above, Stephen has announced his retirement from full-time employment. This will be his last month. He gave us plenty of notice, telling me on numerous occasions over the past couple of years that he was looking to retire, so his pulling the trigger was no surprise.

But before anyone panics, some good news: Stephen will continue in a new part-time corporatelevel role with our company, one that I am titling Corporate IT Specialist. He will in that new role continue to maintain many of our servers, our new POR system (more on that in next month's issue), and will serve as an on-call consultant to me for all things IT. He will also be available for emergency backup in our Birmingham market. I will, as things evolve, advise our chiefs of Stephen's new role and how they can tap into this great resource. Stay tuned for that.

So while his role is changing, Stephen isn't going anywhere.

As for the chief engineer's slot in Birmingham... well, that's easy. Todd Dixon, who has been assisting and learning from Stephen for the past twenty years, will seamlessly step into that role starting in July. He is more than ready. I am excited to see Todd really excel in his new position.

Jack Bonds will continue in his current position, but he will have to step up. There will be more work for him to do, no doubt about it, but we have every confidence that he will do well. And just as Stephen passed on his knowledge and wisdom to Todd, Todd will pass his on to Jack.

When you get the chance, pass along congratulations all the way around. These are exciting times in our Birmingham operation.

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

Hello to all from Western New York! I can hardly believe that we are already at the doorway to summer, Memorial Day! The days, weeks and

months are flying by, and before you know it, we will be preparing our sites for the long winter months, but let's not get ahead of ourselves.

This summer will be unlike any other we have experienced in the Buffalo market, as we are in the beginning stages of a facility move from downtown Buffalo to the northern suburbs of Amherst, New York.

As of this writing,

Cris has signed the agreement with the construction company, and physical construction will begin as soon as all the proper permits have been issued. We are hoping that the permit grants will materialize in early June, and then we'll be off to the races!

With supply/availability issues uncertain with our vendors, Cris has been busy ordering items needed for the build-out. Better to order them early and warehouse these items than to wait until the last minute, only to find that many needed items are on extended back-order, literally bringing the entire project to a grinding halt!

We are extremely excited with the plans for our new facility, as we will finally be fully digital from the studios to the transmitter. No more A/D and D/A converters, our Wheatnet system will be configured (correctly) to operate as it was designed to, and most of our older technology equipment (analog) will be retired and replaced with state of the art digital equipment, which couldn't come soon enough! We are beginning to experience failures in our 950 MHz STL equipment, and I have been busy keeping our equipment patched-up and operating until its impending replacement.

On April 18th, the WLGZ transmitter site in Rochester experienced a short power outage, and when power was restored, everything came back up



with the exception of our BE FSi-10 IBOC signal generator. The front panel touch screen had been out for some time, so I have been performing

> maintenance on this unit using the web-GUI. After the outage, I was not able to access the unit via the GUI, and a software re-installation did not solve the issue, so I reluctantly sent the signal generator to BE for an expedited repair, as we lease out our HD-2 channel, and didn't want our "tenant" to be off the air any longer than necessary.

On April 19th, the unit was sent in to BE, with

an expected turn-around of about a week. Uncertain as to what the issue was, we didn't receive the unit back until Thursday, May 12th, almost a month after it was shipped out! I contacted BE's service department several times weekly to inquire about our repair, only to be told that the technician was working on it. So much for expedited service!

When I re-installed the repaired unit, I had to reprogram the operating parameters, and it synchronized with the importer, but no HD signal was on the air! Carefully going through all the settings and finding nothing amiss, I was stumped as to why we couldn't get our signal out. I turned my attention to the FXi-250 exciter and found that the frequency on the exciter was set for 96.7 MHz instead of 102.7! This must have occurred after the power outage, and after re-programming the exciter, we were back on the air!

The week of the 16th, I took a scheduled vacation to get some much-needed work done around the house. It never fails: whenever I take a vacation, something craters, and this time it was the WDCX(AM) STL transmitter. On Sunday morning, the 15th of May, Earl Schillinger called to let me know that WDCX(AM) was off the air. I called into the Burk remote control to find that the transmitter was on with normal readings, but no audio. I first

checked the Tieline Bridge-IT XTRA codec in Buffalo to find it was connected and sending audio, so a trip to Rochester was warranted. I started at the WLGZ transmitter site where the head-end of the STL resides and found that the Moseley PCL-6020 had failed. I had a working spare and installed it to get us back on the air. I am hoping that I will be able to repair the failed unit, as these transmitters are now obsolete and finding parts may present a problem in itself. More on this in next month's report.

Another instance of WDCX(AM) being off the air occurred on Monday, May 2nd. This was caused by a lock-up of the Sage ENDEC EAS unit after a weekly IPAWS test. A simple reboot of the ENDEC took care of it, but I have never seen it lock up after receiving a weekly test. We have been keeping an eye on it, and so far, no additional failures have been noted.

With the arrival of warmer weather comes the chore of keeping our transmitter sites mowed. With numerous spring showers, our tower fields are growing at an unprecedented rate! Our FM site in Buffalo and AM site in Rochester require nothing special as to when and how often I must mow. Usually, I mow these when I get an opportunity to do so.

Our AM site in Buffalo, however, presents challenges, as it is located in the town of Hamburg, which has strict guidelines on how high the grass can get before cutting. The WDCZ transmitter site is located smack-dab in the middle of a gated community, and town regulations state that the grass cannot exceed 10 inches in height along roadways and where our property adjoins other property owners. The tower field can get as high as a giraffe's rear end, but where our property adjoins others, it must be below the 10-inch limit, and cut 60 feet back from the property line.

The town of Hamburg's property and maintenance inspector has been diligent in keeping an eye on us since we purchased the site seven years ago. He has yet to issue a fine for violations of the mowing ordinance to us, but he sure likes lurking around, trying to catch us with a violation. I was told that the previous owner was nailed several times a year with violations (\$250.00 a pop), as they only mowed the site a couple of times a year.

With the beginning of spring, remember to replace your A/C air filters and transmitter filters. A clean filter helps keep your A/C running smoothly and efficiently, and Murphy's Law states that the A/C will only fail on the hottest day of the summer, and it will take your HVAC repairman two days to look at the problem!

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 happy engineering!

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

Tractor Beam

After a lengthy wait, our late December order from Kubota is finally fulfilled. Detroit sorely needed a capable tractor for its transmitter sites in Monroe and Romulus, where combined there are 14 towers and nearly 100 acres of land, much of which needs mowing on a regular basis.

The Kubota LX3310 was selected for the job and is a very capable machine. Along with a Yanmar rotary cutter (brush hog), the task of keeping these two properties in respectable condition becomes much simpler.



The Kubota has a 4-cylinder 33 horsepower diesel engine and has a front end loader. It's much

larger and heavier than the little John Deere we inherited with the 1200 site and will tow a larger cutter, knocking down time spent cutting considerably. Recent supply chain

problems are brought into sharp relief when one goes to purchase something like this. The nearly five month wait for the tractor itself was one thing, but there was nary a brush hog to be had for us to marry up to it. I finally found one that had been lost in old stock, sitting for years untouched. It's an ideal unit, but its front shaft seal

started pouring out oil as soon as we took delivery of it.



The new Kubota tractor.

Also, upon delivery, our expert dealer representative promptly demonstrated how not to remove the loader by gouging the Kubota's fresh orange paint job with one of the loader's hydraulic fittings – fail! So, now a complete new hood is on (back)order from the Kubota plant in Georgia and the Yanmar folks are sending out new shaft seals so the dealer can repair our rotary cutter. Meanwhile, the grass? She is a growin'!

On Her Majesty's Secret Servers

The Crawford standard for audio storage and delivery is RCS's NexGen system. NexGen is admittedly a bit long in the tooth, but still updated regularly and in use at thousands of radio stations worldwide. It's incredibly capable, solid, and overall, well suited for purpose. I've also had the good fortune to have had factory training on the system. I'm a fan.

Like any other system young or old, its computers have a life cycle. Laboring away out of sight and out of mind, the various workstations and servers on its back end are crucial. Ours have become due for replacement, and acquiring the new hardware has been punishingly slow. We're seeing similar supply issues with these as with the tractor I mentioned above.

To illustrate, we just received one server that we had ordered back in January! It's Dell's Precision Rack 3930, and will replace the existing Dell desktop computers that are lying sideways on rack shelves in our TOC.

The 3930s are a fantastic offering from Dell – if you can afford to wait for them. Unlike so many rack servers, these can be ordered with a plain ol' Windows operating system (rather than a pricey Windows Server OS, Linux, or VMWare). This is huge because I can't count the number of hours spent getting PowerEdge servers to run regular Windows, fiddling endlessly to find drivers for a PowerEdge R230 or R320's onboard devices.

Windows Server OSs are expensive too. If you don't need to host virtual machines or web services but want the robust hardware and integration offered by rack-mountable equipment, you had little other choice. Maybe you'd order custom built equipment made from off-the-shelf motherboards, and power supplies, but those are usually 3RU and somewhat consumer grade.

One challenge of these new 1RU units is that they do not come standard with VGA or Display Port. If you don't wish to order a costly graphics card, a USB-C port is your video output, and you must adapt that to whatever you plan to use for video.

USB-C, see?

We're fast becoming accustomed to seeing this new little port on just about every new device. Some obvious Tolstoy fan dubbed it "one port to rule them all." It's so prolific now you could say it's become and industry standard, and while it may be large and in charge, it doesn't come without confusion.



Remember, USB-C is a port, not a protocol. That's the first source of misunderstanding for this little guy. Generally, USB-C ports are used for super high-speed data. With Apple's Thunderbolt protocol, up to 40GB/sec. can be achieved. Wow! But that's not all we do with USB-C:

• USB-C connectors are used for charging. Phones, laptops, et al.

• It naturally supports data transfer: USB 2, USB 3.0, 3.1, 3.2, 3.2 GEN2 aka SuperSpeed USB 20Gbps

• It transfers both video and audio. USB-C can support 4K. Look for the display port logo or DP Alt Mode.

• With the right adaptor, networking, charging, video, and data transfer can all be simultaneously supported on just one port.

USB-C is starting to find its way into KVM extenders, KVM switches, and monitors. How nice would it be to snap a USB-C to CAT6 adaptor on the back of a server in TOC, and a user station in the studio? You can! You'll probably need a multi-port hub at the far end to support your keyboard and mouse, though.

I'm guessing that manufacturers of new devices will nearly limitless ways to utilize it. It's sure a long way from the 37 Pin D connector we used to use for printers!

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

It is official: I have now achieved "Cranky Old Man" status. In July, I will partially retire, moving to part time and will hand the engineering

reins over to Todd Dixon. The world may never be the same, but then, you can't step into the same stream twice and all that.

I've always considered it a blessing to work for this company and I'm grateful that I may continue to do so, doing ITstyle work and programming.

Since I am an old man, I can ponder and reminisce about some of things I've seen and done in my 67 years around the sun. Some of them are radio stories, such as the one about the

guy (who shall remain nameless) asking if we could put one ballgame on the left channel and another on the right channel. (He was told, "no." Rather loudly.) Another was about the guy who wanted his headphones so loud that I had to rig an extra amplifier just for him. You could hear his headphones through the studio door; that's how loud they were. We had to carefully tweak things to avoid feedback. He's on air in Nashville now, and I hope he's not deaf yet.



Figure 1 - It's not easy restoring power in these rural areas. (Photo courtesy of Cullman Electric Cooperative.)

One of my favorites, though, came during my first chief engineer gig back in NC. The modulation monitor was at the transmitter site, and I had to send an (analog) signal to a meter back at the



studio. I asked the guy on air to tell me what the modulation was while I adjusted. "50% ... no, 95% ... hey, it dropped to zero ... now it's back to 80% ..."

Storms

The biggest concern about my slow move into partial retirement is that Todd may not let you know that we routinely have bad weather here. (Heh.) In fact, as I write this, I was up late last night at 101.1, WYDE FM, nervously watching a generator running and hoping that Cullman Electric Cooperative ("CEC") would restore the power soon. Adding to the fun was that our Spectrum internet service was

out, so I didn't get an email alert. It's a good thing I headed up there to check on things, but then, that's SOP in Alabama.

In fact, it took over 12 hours to restore utility power. CEC, like most rural electric cooperatives, has to run lengthy lines through wooded areas (Figure 1, courtesy of Cullman Electric Cooperative). The storms of the past couple of days pushed some trees onto one of their main feeders, knocking 1,700 people out of power, including WYDE-FM. This particular line didn't have an access road alongside, so they had to literally stretch the replacement wire on the ground and then climb each pole to pull it into place.

Typical of utility work, these heroes also did all this in pouring rain and lightning storms (though they did climb down and wait out the lightning, for which I cannot blame them). At any rate, the generator kept us on air and Cullman EMC eventually restored the power, thank the Lord. I had to hand-ferry some fuel up to the generator, and I had already switched off the air conditioning and anything else I could think of to reduce the load and extend the run time. Lord willing, the generator will be refilled shortly.

POR Stuff

Getting back into the mad world of programming/IT stuff has been fun, to be honest. As mentioned here in previous issues, I've been working on a new online POR system for our company. It

works, but we're still finding glitches. This is totally normal, of course, especially when it's web-based. To give you an idea and an example, PHP, the language commonly used at the server end (including big content management systems like WordPress), has almost constant updates and patches.

Some of these are for security, but I'll repeat one of my few complaints about open-source software in general: you'll get used to something and then the UberGeeks who maintain it will decide to just restart from scratch, or change a bunch of stuff, or whatever. With PHP, there are quite literally cases where code written for an older version will not work on later versions.

To help ease the transition, the UberGeeks start marking various features as "deprecated." I have learned the hard way to pay close attention to that word. When Microsoft "deprecates" something, they might continue to support it through several new versions of Windows. When an UberGeek "deprecates" a function, this means, "Don't use this anymore and be prepared to rewrite your code to conform to the New And Improved (capitalized out of reverence) way that we just introduced."

Most of y'all know that I'm a Linux guy. I've used it for going on two decades now, and I still love it. But one very unpleasant experience was when KDE, the "K Desktop Environment," upgraded from version 3 to version 4. The latter was a nightmare, especially in the initial releases. Things didn't work, those that did had been changed, you name it. But given that the stuff is free and all that, I can't complain too loudly. (I'm sure you read the previous paragraph softly.)

Now I turn it over to Todd. The random hangs and dead air that we have experienced over the years with WDJC may – I repeat, may – have been solved. We've spent endless time and treasure on this problem, even to the point of paying a considerable sum to have RCS send a technician to Birmingham to look at our system. If it turns out to be a simple case of Too Many Opened Windows (control room screens, in this case) ... well, there you go.

Until next time, keep praying for this nation!

More News from the South Todd Dixon, CBRE Soon-to-be Chief Engineer CBC-Alabama

Race Conditions...

Some of you may be aware that we've been struggling for some time with the WDJC-FM Nexgen audio server (ASERV) and it wanting to disassociate

from our databases on its own and run by itself. 95% percent of the time, the control room screen simply goes blank and it puts itself in emergency control room (ECR) mode, but we continue to be on air. This created problems since any change to the logs from any other machine would not take, and when our traffic people went to "verify" the logs, it would look like a lot of spots didn't play.

That leaves the 5% and we all knew what would happen then – dead air. The fix was to simply restart Nexgen on the ASERV

machine and everything would resume as though nothing had happened. It was always random, and the windows event viewer was useless. We had an open ticket with RCS support about the issue and they would always run through their checklist of the way Nexgen was supposed to be set up on Windows



10. I had checked it 50 times myself and run their tweaker tool more times than I could count.

In events like this, more often than not, the Nexgen localviewer file in the HLC directory would

create a 100 MB text file in about 0.75 seconds and would give us no good data. As a believer, I had even begun to question whether spiritual forces in another realm were at work and that this issue was going to be my thorn in flesh. The fact is, I was simply running out of things that I knew to check.

Jennifer Thompson, who is a level 87 wizard at RCS, had told me that the last resort was for us to kill all the clocks for WDJC-FM and rebuild them from scratch and see if we could remove what we thought

was corruption in the database somewhere.

At 1:56 PM on Monday the 16th of May, I got a text from talent saying that the ASERV had once again done its trick. I was ten feet from the unit, so the reboot happened quickly and we were back to normal. A couple of back-and-forth trips

between the WDJC-FM control room and

engineering and I was back in the control room at 2:10 when host Russell Wall said "Well, there goes the control room screen again... Oh, never mind, it's back "

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Figure 2 - Surely it can't be that simple ... can it?

One of the most beneficial things I've found to use while running down issues is "Station Activity" in the Nexgen reports, so I ran it and what I saw around 2:10 was interesting (Figure 2). The key word was all. It turns out we had about four control room screens running on different workstations. On a hunch, I asked RCS support about it and here was their response: "Hello Todd. Let me weigh in as Jen has left for the day. We have noticed in other clients having 3+ control rooms for the same station can create random hangs and pauses, especially if there are multiple people working in the control room/log for the same station as it creates a "race" condition, and the DB has to try and sort out which changes are valid or which order they even resolve in."

So this may have been our issue all along...ugghhh! We pretty continually have had three or more control room screens open between the control room, our music director's office, and where music gets ripped into our system. A quick email let everyone know to shut control room windows when not absolutely necessary, and on Tuesday we clobbered the clocks and rebuilt them anyway for good measure.

If I hadn't been standing there when it faded and came back, we may have been chasing our tails forever with this issue. We still may, as it has only been eight days at this writing, but we're off to a good start, and I'm hoping we may be able to put this behind us!

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

It's been two years since we received our shipment of Wheatstone LXE control surfaces and the associated Wheatnet blades to convert our studios

to a completely Wheatnet AOIP system. I am still learning all that we can do with this amazing system. I also find myself having to re-learn something I did two years ago because I'm at the age that if I don't do something on a regular basis, I find myself asking the question, "Now, how did I do that?"

I have to admit, doing any kind of programming of equipment is right in my wheelhouse. I do enjoy the puzzle and making things work. Finding a new way of doing something in a better way is the best part of my work. So, I am almost always up for the challenge.

Recently, I have been working with some different challenges in the LXE control surface and



Wheatnet logic. One of the challenges was how much we use VoxPro recording in the control rooms. We use the Offline bus of the LXE to record mic audio

> and phone audio into the VoxPro. This method of recording is convenient for hosts, but it does not turn the on-air light. A lot of shifts hardly ever open the mic live on air.

> The issue was how often a recording would get interrupted by someone walking through the studio door. It was almost always because the on-air light would only come on when the mic was on air live not while recording. We needed a way to turn the on-air light by the record function.

> Fortunately, VoxPro is also a product of Wheatstone as well as the Wheatnet system, so they are very complimentary products that will work

well together. The VoxPro has logic that will give a record tally available to any Blade within the

Wheatnet network. So, it was just a matter of getting that tally to the on-air light which is wired physically to a Wheatnet Blade LIO in the control room.

The issue is that within the crosspoint map, a destination like the LIO that turns on the on-air light can only have one source connected to it at any given moment. The challenge is to share the on-air light between the mic being live and the record tally from VoxPro.

I could have attempted to physically wire two LIOs to the on-air relay. That has some issues that can get some unexpected results, not to mention that you are now taking up two LIOs to do the same function, turning on the on-air light. I really didn't want to do any additional physical wiring. After all, that is the advantage of this system. Only wire once.

In the past, I have gotten around getting multiple sources to one logic out LIO by using the salvo function in Wheatnet. We have a parking lot gate and a back door that need to be opened by six different studios. What I did was to have a salvo for each room so that when they pushed the button on their control surface, it would also fire the salvo that changed the cross-point to their button. This has worked seamlessly.

However, due to nature of the way the LXE sends the mic tally, it does not show up directly in the LIO list, so I didn't have a way to add the fire salvo feature to this function, which meant I had to find another way to accomplish that sharing of the same destination. After thinking about it, I realized we have already been using a method that shared the same destination between two sources momentarily. That was how we got our EAS audio on the air. When the EAS encoder/decoder needed put audio on the air, it would close a relay to a Wheatnet LIO. This was setup in the LIO list so that when it received the closure, it would momentarily change the STL audio path to the EAS audio. Once the closure was removed, the normal path would be restored.

I was glad to find this not only worked for audio connections, but it would also work with logic connections. So, I sent the VoxPro record tally to an SLIO input on the host Wheatnet blade. I then configured that SLIO to make the momentary connection between the VoxPro record tally and the LIO controlling the on-air light. Once the record tally was no longer on, when they were done recording, the normal cross-point for the mic tally was restored.

For the operator, this all happens seamlessly. They turn the mic on, and the on-air light comes on. They start recording on the VoxPro and it comes on with that function as well. This has really worked out well.

Of course, this does nothing for the person who never pays attention to the on-air light at all. If only Wheatstone could figure that one out...

[How about a magnetic door lock actuated by an LIO with the same logic as the on-air light? – Ed.]

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

Colorado Weather

Colorado is hateful. Okay, maybe not Colorado per se, but the weather will not let up. We have had some of the windiest days over the last month. Typically the wind is saved for the fall, when the leaves need to come off the trees. This year, nearly every day in May has been incredibly windy. Colorado has had several wildfires start, although none that were too bad, thank God. We even had a late snow on May 20-21.



I love living in Colorado. While I'm ready

for spring showers and no wind, I love that we have four seasons each year, and sometimes all are in the same day! Plus, at this point, I will take any moisture we can get, even in the form of snow.

Because of the weather, my outside transmitter site work hasn't even begun. I have noticed in my recent trips to the sites that the growth has started. Weeds are growing tall already

and I have no doubt that with the sunshine we are

expecting in the coming days and after the snow late last month, things will grow up tall. I will have to do my best to get out and knock them down.

KLDC Move

Items needed for the KLDC move have been arriving each week. I have a nice pile in my office of various things. Even our new equipment rack, which will house everything including the Nautel J1000 main transmitter, showed up last month and we have already taken it out to the new site.

We will be doing as much preparation as possible to make the week of the move in September as painless as possible. It will already be a hectic, time crunch of a week, but us getting things like the rack in and wired up, the aux transmitter moved and installed and certain equipment in the rack that we can live without at the other site will be a huge help.

KLTT Day/Night Switch

I have continued to have issues with the day/night pattern switching at the KLTT transmitter site. It is very sporadic.

On one visit to the site for another issue, I went ahead and switched to the night pattern, waited several seconds then switched back to day to try and see if the problem would be there. Sure enough, it was. I immediately changed it to the backup transmitter which corrected the issue, letting us know the problem is with the main transmitter interlock in the antenna controller.

We looked in the controller and immediately saw that the main transmitter interlock relay was a good eighth of an inch or so higher than the rest. We pushed the relay all the way into the socket and since then, the issue doesn't happen as often. In fact, I thought we had found and corrected it. It was over a week later the problem came back.

I don't see anything in any log that would help me find the problem. The transmitter logs look the same as they do every other day for the switch. As I look at the ARC Plus, when the issue does happen, I can see it try to switch, and in fact it appears to switch, but briefly. I see the power level jump up before going back down to 0 watts. Usually within a few minutes it will find its way and switch properly.

Sometimes being an engineer can be tough. This is one of those problems that rarely happens. The majority of the time, when I try to cause it to happen, nothing does. I can monitor the pattern change at sunrise and it works. It seems it's the weekends, especially when I have no desire to get up at 5:45 AM MST to watch the change, that the problem happens. And, if I do decide to set an alarm and get up to observe, the problem doesn't appear.

As I write this, I am going to be at the site today to fix a module in our ND-50, and while there, I plan on looking again and seeing if a relay has somehow popped up again. My hope is to find and finally, permanently correct the issue.

Livestock on Site

We learned a very valuable lesson a couple weeks ago. I was at home, getting ready for bed when I got what I thought was a butt dial from an arborist guy who had done work at the KLTT transmitter site a few years ago. I dismissed it and went to bed. My phone goes to "Do Not Disturb" and I am typically dead to the world.

When I woke up at 3:45 AM the next morning, I had two voicemails: one from the arborist and another from Jerry to whom we lease the pastures at the KLTT tower site for his horses. The arborist's message told me what he witnessed when he was driving by the site on his way home. He said that a horse had been hit in front of our property. When I heard this, I was thinking a wreck happened and the horses were on our property just inside the fence and a car went off-road and hit one.

Jerry's message just asked me to call him. I immediately did – yes, at 3:45 AM. He had just gotten home. One of the gates at the tower site had come open and the horses had made their way to the road.

I was able to find the video on our surveillance system and figured out the order of events. Basically, the horses were tended to four days prior, and the horse guy closed and appeared to lock the gate before he drove off. Nothing unusual.

As I watched hours of video, I watched that gate like a hawk. While the shot of the gate isn't super close-up, it is good enough for me to see that a few days later, it began moving more, swinging back and forth a few inches. Do you remember me telling you about the winds we've had in Colorado? The wind would move the gate back and forth a bit, and finally, on the 11th of May, around 3:00 PM, the chain appeared to drop and the gate swung open.

Horses aren't smart, and they began making their way over to that open gate. Right at dusk, they made it out onto the road. A pickup driving by hit one of the horses, killing the horse, while the pickup went off road, landing in the adjacent irrigation canal, which was full of water. The canal waters had begun flowing just that morning and I have no doubt, that landing cushioned by the water saved the guys life.

We went to the site later that morning and

checked the lock. It was in place and working. All we can assume is that the horse guy closed the lock but did not pull on it to check it, and after days of the gate moving back and forth in the wind, the lock was finally able to pop open, freeing the gate to open in the wind.

We know this all could have been prevented. The post near the gate has a bale of wire around it in the form of a loop. We use it to hold the gate closed while locking it, or even when we are at the site doing work and we don't want to have to lock it each time. The wire slides over the gate post and is secure, held in place by friction. We have always made it a point to always make sure that is on the gate even when it is locked. Apparently Jerry and his helpers don't always think about this. Had he taken a second to put it on, chances are, the gate would not have popped open.

The property at KLTT is different than most sites. It is bisected by a the wide and deep irrigation canal, which runs with water from April to October. We have the transmitter building and two of the four towers on the north side of the canal, and the building itself is fenced off with a front area and gate to the road. This gate can stay open while we are there because the secondary fence around the building keeps the livestock out of that area. Then behind the building we have another gate that separates the field from the building. This gate we keep closed so the horses don't get to the building area and leave us "gifts" to try and avoid.

To get to the south side of the property on the other side of the canal, we have to go to the main road, cross a bridge and enter through the other gate. This gate must remain closed at all times because of the horses.

I have reminded Jerry about the wire bale how to use it and to always pull on the padlock to be sure it's securely closed.

As far as I know, the guy involved in the accident walked away with barely a scratch. I think he was taken to the hospital out of precaution. I have not heard anything since.

Jerry was able to wrangle the other horses and get them back on the property with no others getting hurt.

Coming Up

My hope is that this month I can begin getting my transmitter site work done. Changing out the weatherstripping on many ATUs and cleaning the cabinets out is at the top of the list. I need to clean the transmitters really well and get the sites themselves in good shape. All this is on top of the work needed to get things ready for the KLDC move. I will no doubt be a busy girl in the coming months. I do look forward to it and to being out of the office and in the field more.

I pray you all stay safe and well!

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 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 • Cordova-Birmingham, AL 92.5 MHz, 2.2 kW/167m AAT WXJC • Birmingham, AL 850 kHz/96.9 MHz, 50 kW-D/1 kW-N, DA-2 WXJC-FM • Cullman - Birmingham, AL 101.1 MHz, 100 kW/410m AAT



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