The Local iOscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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Round Two

Here we are just a little over a month from the fall NAB convention in Las Vegas, and here we go again... with mask requirements and vaccination provenance requirements. And just when we thought we were done with all this.

In the past month, we have had some in our own company come down with COVID, proof positive that it is still around. Scarier than that is that we're hearing about "breakthrough" infections, people that have been vaccinated coming down with the delta (or other) variant. If it can happen to others, it can happen to us. So what do we do?

We were scheduled to attend the NAB convention, but those plans have now been scrapped, and for the most part I'm glad of that. Rubbing shoulders with upwards of 50,000 people for several days seems like a significant risk to me, especially for those of us that are seniors. I will miss – once again – seeing friends and colleagues as well as vendors and reps, but it's just not worth the risk to me. Hopefully by next year's convention, this thing will (really) (finally) be under control and we can safely attend.

I won't try and convince anyone to get vaccinated, get a booster or whatever. That is a personal choice that each individual must make. But I will encourage each of you to take this thing seriously, especially those of you that are seniors. In general, young people have an easier time fighting off the virus than older folks, so it is different for us, both in terms of risk and pathology.

Chip Shortage

Unless you've been living in a cave for the past year, you're bound to have heard about the "chip shortage" that is plaguing manufacturing across various sectors. And I'm not talking about Frito-Lay here (although Amanda insists that they also have supply issues).

There are, I am told, multiple reasons for this chip shortage. COVID is, of course, at the top of the list. Semiconductor factories in Taiwan and Malaysia reportedly closed down or reduced output as a result of the pandemic. Then there were factory fires in Japan. Add to that increased demand for personal computers, laptops and tablets as a result of work-from-home and distance learning and the squeeze was on. Then, just as things were starting to look up heading into summer, here comes the delta variant and a resurgence in the number of cases worldwide, and here we go again.

The auto industry has really taken it in the shorts as a result of the chip shortage. I heard an auto expert on one of our Denver stations talking about huge parking lots in the Midwest filled with new vehicles that are all awaiting semiconductors. The evening news regularly has stories about dealerships unable to meet demand because of the "chip shortage." In the auto sector, apparently much of the crisis is of the automakers' own doing, as they cancelled large semiconductor orders when the COVID slowdown began last year, and that resulted in their own stocks becoming depleted even as semiconductor production slowed.

All this has definitely had an effect on our industry. Computers are the biggest challenge. As I order file servers and computers, it's not uncommon to have delivery dates that are 60 or even 90 days downstream. It's not uncommon to have the delivery date change – sometimes several times – as a result of further delays or unexpected developments in IC availability. In some cases, we've had to resort to purchasing remanufactured computers rather than brand new PCs just to meet our needs.

Thankfully we have not seen the global semiconductor shortage extend much into broadcast

equipment, although I read a news story that some are starting to feel the pinch. Most manufacturers in that sector have been far-sighted enough that their stocks are adequate for both manufacturing and service needs.

On a couple of occasions, I have gone to Mouser or Newark looking for an IC or other semiconductor device and found them out of stock with crazy lead times.

All this is to say that none of you should assume that it's business as usual for parts availability, especially semiconductors, and new computers and servers may take months. Be prepared for that with backup plans.

Equipment Repair

In recent months, the trade journals have dealt with the issue of customer repair of equipment. This issue has come to light in a broader sense as certain manufacturers, most notably John Deere, required its customers to use only factory-authorized repair contractors to service their equipment. Farmers sued for the "right to repair" – after all, why can't a farmer fix his own tractor? – and that is still in the courts. But other actions are also in the works, including some recently enacted FTC rules that prevent companies from restricting the repair options of their customers.

So, what does that have to do with broadcast engineering? Not a lot in the strictest sense. I know of no broadcast equipment manufacturer that prohibits their customers from repairing their own equipment. That said, it is, in many cases, impractical for broadcast engineers and technicians to perform field repairs of a growing amount of equipment. Largescale integration (LSI), surface-mount technology (SMT) and other cost-reducing manufacturing techniques make field repair all but impossible. In fact, quite often, even factory troubleshooting and repair of some assemblies and circuit boards is impractical or impossible; it's cheaper and easier to simply replace the board and toss the defective one. I have run into this with even mainstream transmitter manufacturers.

Call me old-school, but I like to troubleshoot and repair my own equipment whenever possible. Doing so eliminates shipping costs, factory repair labor costs, and it often results in getting the device back up and running much more quickly, especially in this time of pandemic when repair queues can be long because of worker shortages. But how do we deal with those impractical or impossible repair situations?

In some cases, you simply don't have a choice. Some items aren't repairable, in the field or elsewhere. In those cases, you replace them, whether it's a circuit board or a whole device. Don't waste your time on a fruitless pursuit that will end up costing the company more in the end than outright replacement. The trick is knowing when to quit, and that's not always apparent... and our pride can certainly get in the way here – none of us wants to be beaten by a piece of electronic gear.

At other times, however, you may well be able to figure it out and effect field repair of a device, even when it appears (or you have been told) that it is impractical.

A few months ago, I had a transmitter subassembly on the bench from one of our west coast markets. There was significant damage to the circuit board and a good number of SMT components were damaged. The manufacturer told me it would not even attempt repair. It took me a few hours, but I fixed that device, repairing the damaged traces and replacing the SMT components. After it was all cleaned up and reassembled, it's as good as new. A few hours of my time and a couple of hundred dollars in parts saved the company several thousand. But it doesn't always end this way, and I was prepared to bail at any point in the process had I decided field repair wasn't worthwhile.

My advice to our group of very capable engineers is to repair if possible but replace if necessary, using your best judgment to decide which course to take. Don't throw good money after bad – be prepared to stop your repair efforts at any point that you determine continuing is not worthwhile. And be aware that the "chip shortage" could well come into play in the process. It could be that parts are not presently available and waiting for them to become available at some undetermined point in the future is not an option.

If you're a fixer like me, good on you. Just know that it's a different world these days.

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

Hello to all from Western New York! As summer trudges on, so do the heat and humidity here in the northeast. During the month of August, we

experienced the hottest weather ever recorded for the Niagara region, breaking records that date back over 150 years! With the extreme temperatures come A/C problems, as units work double-time in order to keep up with the cooling demands.

We had several failures in the lead-lag Bard 5-ton A/C units at the WDCX-FM transmitter site this past month, most due to overworking of the cooling units.

The A/C unit at the WDCX(AM) site also saw some down-time due to excessive dirt/cottonwood buildup in the condensing coils, resulting in high head pressure in the compressor.

Our HVAC contractor, Solly Industries, was very accommodating in hastily taking care of our problems in a very timely manner, no doubt saving us from additional problems with other broadcast equipment being damaged from excessive heat. Having a thirty-year working relationship with Solly certainly has earned us with "top of the list" service and maintenance on all our HVAC equipment.

Another issue we had to deal with in August was tower lighting at the WDCX(AM) 6-tower array. At tower #3, the beacon went out completely for a couple of days, then came back on, partially lit, by the bottom beacon. That's the first time I have ever seen that happen – a bulb go out, then come back to life!

Additionally, the beacon at tower #4 had gone dark some time earlier, and we had to renew our NOTAM with the FAA several times until Patriot Tower could work us into their schedule.

The lighting at tower #3 was a simple relamping of the 620-watt beacon bulbs. Tower #4 turned out to be a loose connection at the output of



the lighting choke inside the tuning house. I guess at some point I need to add to my yearly to-do list lighting inspections of the tower lighting components

> located inside the tuning houses. A semi-annual inspection could have detected and remedied the loose connection issue at tower #4 and perhaps saved us some money in the long run.

In Rochester, at the WLGZ transmitter site, we were seeing a failure of the 4CX15,000A tube in the Continental 816-R 2C transmitter. Output began dropping off early in July,

but I elected to squeeze as much out of the failing tube as possible before replacement.

On Sunday, August 22nd, I took the transmitter down and replaced the ailing final with a new National tube purchased from Richardson Electronics. The installation and tuning went very smoothly, and I was confident we had purchased a good tube.

Things ran smoothly until early the next morning when the transmitter shut down. The board operator phoned me with the off-air news just as the remote control was calling to report the same. I dialed into our Burk VRC-2500 remote control and turned the plate back on, and the transmitter ran about 60 seconds and shut back off. Repeat prior procedure, and repeat prior results!

A trip back to the transmitter site was made, and upon arrival I found that the transmitter had shut down with PA and screen overloads. A quick re-start resulted in the same, indicating some type of flashover inside the tube.

This was very disappointing, as this was the first time I have experienced a problem with the National tubes. They are new, not re-builds, and cost approximately \$40 more than the price of a rebuilt Econco tube and in my experience are much more

reliable! I reinstalled the old tube and placed a call to Richardson Electronics for a replacement.

On Sunday the 29th, we had a repeat performance of what happened the prior week. The replacement tube tuned very nicely, but quickly went sour with a shutdown due to a plate overload. After bringing the transmitter back up, I noticed unusually high reflected power on the IPA and very low forward power, indicating low drive power to the tube.

I began troubleshooting the issue and found that the connecting strap from the PA grid tuning capacitor had come loose between the capacitor and tube socket. Removal of the capacitor was warranted in order to re-solder the strap to the back of the cap, and after re installation, everything came back up with near factory test data readings.

With a TPO of 9,460 watts, this tube should see several years of service until replacement is warranted. Perhaps, at some point in time, we can replace the aging Continental transmitter with a new solid-state Nautel capable of analog and digital lowlevel combining. We currently employ a BE FMi-206 for our digital services, high level combined into an ERI injector. It would be nice to have everything contained in one unit, eliminating the need to ever perform a tube change again!

With the above normal heat we dealt with last month, I have been limited in the amount of mowing I could do at the WDCZ transmitter site. The saving grace has been that the lack of rain combined with the above-average temperatures has slowed down the growth in the tower field. At best, I can get in four or five hours of mowing before it gets too hot, depending on how early I get started.

As best I can figure, if the heat wave continues into September/October, I will only have to cut the field a couple more times before the weather starts to turn the corner with cooler temperatures, and before we know it, the snow starts to fly! I assure you, in future editions of *The Local Oscillator*, you will not hear me complain about the cold winter temperatures ever again!

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, social distance, and happy engineering!

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

Maintenance Projects

Summer maintenance is the order of the month here in metro Detroit. As many of you are

acutely aware, there is tons of work to be done while the weather permits. The trouble is, it doesn't permit! IT NEVER STOPS RAINING HERE!! I suppose because I've attempted to keep my truck clean, and the forces of nature are just not having it.

Maintenance projects this summer are mostly routine, but this year I'm addressing many things that have been kicked down the road for far too long.

Late in the fall of 2020, at

our site in Ferndale, WCHB 1340AM, we re-sided the transmitter building and did some mold remediation. It is now painted and looking super! Just in time for the landlord to hire a tower crew to paint their tower that it sits next to. I made them cover the whole building with a tarp. Heaven forbid



that it gets those familiar aviation orange and white spots.

In Monroe at WRDT 560AM's transmitter site, the main building had rotted siding replaced along with new paint. Our four tuning houses have been painted too. I had to wait for most of the summer to get on the painter's schedule, but it's finally done and looks fantastic, too.

> In 2022, I plan to have the transmitter building in Huron Township, WMUZ 1200AM, painted, which should be cake considering how fast those sprayers can paint concrete block.

Also on the maintenance radar are generators, and since it's rained so much, the grass hasn't given us a break. Also, it's time for the HVAC PMs, too.

Goodbye DX Fiddy

It's no small task to find someone that will take and/or even remove an unwanted transmitter. Once all the used equipment brokers have passed on it, what do you do?

I recall a station across town, WKNR 1310AM, once the mighty "Keener 13" where legends such as Robin Seymour, Dick Purtan, Russ Gibb, and the nefarious rumor that "Paul is dead" began. Keener's vintage transmitter that delivered its famous "Motown Sound," replete with PAMS jingles and spring reverb, sits walled up behind a drywall partition without even a door – a thankless interment for an unwanted piece of equipment that once had the ear of The Motor City.

22 years ago, WCHB's Harris DX25 had been painstakingly upgraded to a DX50 and even adorned with the correct badging on its front door. The station's upgrade involved a new 10-tower array and a capable phasor which gave 1200 AM a 50 kW signal, enough power to be heard in Finland (I've received several QSLs from there).

Now WMUZ AM, Crawford has equipped it with a spanking new Nautel NX50. My (and several others') attempts to start up the ol' DX50 have failed noisily and spectacularly, so it's finally being dismantled and its good parts hopefully extending the life of other like transmitters still filling the need in other markets.

I won't miss this monster. Its final "big bang" came from the rear accompanied by a corona ball that seemed to crawl up the transmitter building wall. Time of death 2:45PM. Goodbye DX, you were unique. Don't let the door hit you.

And while I'm talking about transmitters, don't forget that your J1000 has a CR2032 button cell inside the controller near the top of the front panel. It



The freshly painted Monroe (WRDT) transmitter building.

retains operational state and power settings during a mains interruption. Might be a good thing to check annually.

Mishmashmesh

I've equipped our offices with mesh WiFi access points. Ubiquity's UAP-AC-LR has PoE power, auto channel, simultaneous dual-band 802.11 a/b/g/n/ac, and is UniFi Controller manageable. Other than the RF power level starting out too low, these have made the perfect complement to our super-fast ISP circuit. Just crank the RF up to high and their coverage is amazing. I created an open guest WiFi that can only access internet, and engineering only network, an IoT (internet of things) network and a general office network. Very cool stuff for only about \$110 per AP.

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

Sometimes I feel like I'm living in a situation comedy. The world, which hates me, conspires against what should be a relatively simple

task, and in ways that I can't anticipate. For example: WYDE-FM had a burned line. We were trying frantically to get it back on air (more on this in a moment). As I rushed through traffic to take some things to Todd and Jack at the site, a train decided to block the road that I needed to use (Figure 1). Traffic behind me meant that I couldn't turn around. So, I had to wait. And wait. I could hear some goofy sitcom music and audience laughter in my head while I sat there.

Adding to the general hilarity, I had cataract surgery on August 10th. The procedure only takes a few minutes and is no big deal. I only needed one day off work. If your vision is getting blurry, I strongly suggest that you get it fixed sooner rather than later. Don't put it off. But I should warn you that it will be a few weeks before you will get your new glasses or contacts. In the interim, it's hard to see some things. With my new artificial lenses, I can actually see to drive better with my old reading glasses. But as you can imagine, this does make close-in detail work a bit of a chore at times. Now, hold that thought.

As I write this, it has been very stormy here again, and Hurricane Ida is expected to bring even more flooding rain to our area. God bless the poor souls along the Louisiana and Mississippi coastlines, but I'm grateful that the track takes her well to our west. Earlier severe storms knocked WDJC-FM off air (more on that below as well) and caused the aforementioned damage to WYDE-FM's line. Just driving to the sites was an experience, because the road you needed to take might or might not be flooded. I just thank God that I have a four-wheel drive truck now.

WDJC Off Air

In mid-August, we had several problems from storms rocking through central Alabama. The first was the loss of the data link to 101.1, WXJC-FM in Cullman. Todd ran up to check on that and



determined that the radio on the tower in Cullman was shorting its power supply. Given that (and the weather), there wasn't a whole lot he could do, so

> after confirming that the Spectrum (cable internet) link was working normally, he drove back to Birmingham. 101.1 stayed on air with its Spectrum link.

While he was headed back, WDJC-FM suddenly went off air. Unfortunately, it stayed off air, which told us that the generator had failed to crank. Jack ran up to the site to see what was going on. He discovered that several power lines had dropped in the middle of the road, tangled

in fallen trees. There was no way he could get to the site, not even on foot. Alabama Power had already been notified of the outage, so he came back to the studios to keep an eye on things there.



Figure 1 - NOT what I wanted to see with a station off air.

WDJC-FM is the STL nexus for all of our stations in Alabama. Our studios send the signals to Red Mountain. Various links on WDJC-FM's tower, then shoot toward all of our other sites from that high elevation location. 1260 and 101.1 stayed on air, thanks to their Spectrum Internet access(es). 850 dropped off air, as did WDJC-FM itself and the 1260



Figure 2 - Left: building to tower, right: splice on the tower.

translator, which is on WDJC-FM's tower as well.

OK, this wasn't sitcom stuff. Like you, I get very stressed and unhappy when one station is off air, much less several of them. All I could do is gnaw my fingernails and wait for the road to be cleared enough for someone to make it up Red Mountain. Todd made it back from 101.1 in Cullman, then drove up to WDJC-FM's site. He waited while the road was being cleared, then drove up to the transmitter building. The generator was showing a fault and refused to crank.

Finally, around 9:30 PM that evening, Alabama Power was able to restore service up the hill. WDJC-FM and all of the other stations came back on. But now for the next Sitcom Moment. While Todd was at the WDJC-FM tower site, a mountain lion appeared about 50 yards away with a rabbit in its mouth. Deciding that discretion was the better part of valor, he immediately eased back to his van and got back inside. A mountain lion. In Birmingham, Alabama. There you go.

Our generator guy, Perry, met Todd at the WDJC-FM site the next morning. Perry found a bad coolant sensor that he was able to bypass for now. He's coming back to do a full service on the generator, replacing any parts that he deems to be questionable.

WYDE-FM

While Todd and Jack were sweating that blocked road at Red Mountain, I was dashing through the countryside to the 92.5 site in Pumpkin Center, AL. The station was making dead air; apparently, the silence sensor had failed and I needed to at least turn off the transmitter as soon possible. I made it to the site and lunged for the "RF Off" switch on the AUI.

Once WDJC-FM came back up and we had audio, I brought the Nautel GV3.5 back up ... and noted that I was getting SWR alarms. Another wave of stormy weather had passed over while I was there, and that was obviously the straw that broke the camel's back. I had no choice but to reduce power until the transmitter would at least stay on, but it would only make about 300 watts forward (normal TPO is around 2.6 kW) before it shut back. Not good, not good on toast.



Figure 3 - OK, things are looking up!

There was another wave of storms coming through, and given that I generally try to avoid standing around giant lightning rods (also called "towers") when lightning is nearby, I decided to head home. The station was on air, though the signal was quite weak. I have no idea how much power was actually making it into that 2-bay ERI LPX.

Early the next morning, I headed back. The first thing I had to determine was whether the transmitter was being fooled, if we had an antenna issue, or if the line was bad. We have a Nautel FM5 auxiliary, which would have been a great way to rule out the transmitter, but when I turned it on, the exciter gave an AFC Error and refused to come up. (See above re: Sitcom. Comedy of errors. It had worked fine the last time I exercised the FM5, a few weeks before.)

We have an inline Bird wattmeter at the site, and I reconnected it to get a second opinion on the forward and reflected levels. It didn't show as much reflected as the transmitter did, but it was still too high. There were still storms coming through, so we called in a tower crew. The earliest they could take care of us was the following Wednesday. Sunday, I once again adjusted the transmitter for the most that it could safely make, but now, the reflected was even higher and the signal had degraded even more. I began to suspect water in the line, but with failing rain and pea-soup humidity, I didn't want to crack it



Figure 4 - Todd and the tower crew built connectors and spliced the clean copper sections together.

to check.

On Monday we went to the site again. Todd cracked the line to check for water ... and found a badly burned joint where we had spliced the line some years ago (Figures 2-4). One reason I had suspected water in the line was because we'd had that previously, and the symptoms had been similar. In fact, we had replaced that water-logged section at the time, whence the splice. But it wasn't water this time, and once Todd cut back past the burned line section coming out of the building, we saw clean copper. Thank you, Lord!

I began thinking of ways to get the transmitter back on at some kind of real power while Cris applied for an STA. The tower crew was on its way, and Cris had already decided to order a replacement line and connectors. We inherited that old transmission line when we bought the station back in 2004; the previous owners had operated with no air pressure for quite some time. Given that we had already spliced it once, Cris didn't want to splice again, and I fully agreed. (And thank you, Cris, for ordering all of that for us!)

I rigged up an extremely ugly jumper with clip leads between the clean cut in the "ground" coax, and the still-burnt section up on the tower. It was a little too high for us to safely cut with a hacksaw, and the tower crew would be there the next day, so we did the best we could. I didn't bother taking a picture of that, because it was dark by the time that I finished.

The next day, the tower crew arrived and began cutting past the burned section of line. A few

feet up, they found clean copper (thank you again, Lord!). I had a couple of type-N to 1-5/8" adapters, as well as a section of 5/8" line, and was thinking about using those. However, Todd was unable to find the N adapter at 92.5 ... probably because it was still in my truck. (Cue the sitcom music and laugh track again.) But then Todd and the tower crew decided to get creative: it just so happened that we had enough parts left over from the previous splice job to let them cobble up a usable connector. They were able to splice the lines back together, and when we fired up the transmitter, the reflected was nice and low. Thank Yyou, Lord again and again!

The tower crew had thoroughly checked the antenna for any soot or damage and scanned it closely for leaks or burnt spots from a suspected lightning strike. Todd droned the entire length of the tower as well. Everything looked OK and the power readings seemed to confirm that. We decided to let it cook at half power overnight. I drove up the next morning and increased the power to the normal TPO of 2.64 kW. The Bird wattmeter didn't see any reflected power at all; the Nautel only showed 2 watts.

All that remains now is to replace that line once it arrives. Well ... that, and I need to finish repairing our dehydrator. It's a Kintronic Labs 4.5 model and it refuses to come on. It's possible that lightning hit that as well, though it's hard to believe that a strong surge could make it through the multiple TSS units that we have on the AC line. But remember: sitcom.

That's It!

And that's enough for this time. Whew, what a month. But cue the sitcom noises one more time: while we were running around madly to get all of this fixed, the city of Homewood decided to do a fire inspection of the 120 Summit studios and offices.

We use Brentwood Properties for routine maintenance, and it's their job to file any needed reports with local authorities. Unknown to us, our representative, a guy named Avery, had passed away while playing golf in April. We were never told and the guy they chose to replace Avery obviously didn't know what we needed.

So ... while we were scrounging parts and working to stay on the air, we had to deal with an inspection at the studios. And all the other usual happy things that keep us employed and busy.

Just goes to show that it's always something. Until next time, keep praying for this nation, and if you hear sitcom noises ... well, you must be a Radio Engineer!

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

The last thing you want when you get back from vacation is to have a sick transmitter to fix. That happened to me this week as I just got back from nine

days out of town. I was going through security for the flight home when I was contacted by one of my engineers about a problem with the main transmitter for our Rockford, Illinois radio station.

The issue was that the transmitter was occasionally dropping power for a few minutes. At first, it was fairly sporadic, but by the end of the week, it was happening almost hourly, causing him to put the auxiliary transmitter on the air.

Now before I go on vacation, I always try to address all the outstanding issues to make sure

everything goes as smoothly as possible for the crew I leave behind. In this instance, we had some issues at another site, but I also knew about the problem with the main in Rockford. The dropout had happened once a couple of weeks before.

The main transmitter is a Nautel NV5, and it has hardly had a hiccup in its eight years of service. This power dropout issue was a "blue sky" event, and Nautel support said it was likely an issue with serial communication between the power modules and the controller. As the transmitter gets older, the ribbon cable connectors become oxidized, and they then drop packets. This will cause the transmitter to fold back the power on the modules. In the case of this transmitter there are only two power modules so if one is dropping out it will be very noticeable.



The cure is very simple: With the transmitter off, exercise the connectors on the ribbon cables. Better yet, spray some contact cleaner (like Deoxit)

on the connectors while doing this.

I wanted to make sure I didn't leave this issue unaddressed before I went on vacation, So the week prior, I drove the 100-mile trip to the site and performed the suggested maintenance on the ribbon cables. So needless to say, I was a bit surprised to hear it had actually gotten worse while I was out of town.

I contacted Nautel support again to get their further thoughts on the issue. They assured me that most of the time it was due to the oxidized connections. They also suggested that I exercise the serial bus selection switch

that is in series with the ribbon cables.

So, fresh off vacation, I drove to the site again and exercised all of this, like Richard Simmons "Sweating to the Oldies." I also followed the ribbon cables around to the front of the transmitter and exercised the connectors there as well.

The other thing that can cause an issue with dropped packets is that the 5-volt power supply needs to running around 5.6 volts; if not, it can be an issue. In this case the power supply was at 5.51 volts, so it was not the issue.

After this exercise session, the transmitter hasn't had a dropout in the past three days. Of course, after the last exercise session, it started dropout after five days. Fingers are figuratively crossed, but I think we got it this time.

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

Inventory

It's already that time of year. I've gotten most of my inventory done for 2021. I have some transmitters sites to deal with but never takes long.

Thankfully this year has been a year of little going on in the world of moving things around. There were items located at the studio that I did move to the KLZ transmitter site storage area, but other than that, I was able to keep things where they were.

Inventory is always a nice reminder of where things are. I can make sure the list is up to date for later in the year when

I decide I need this or that. I can easily look it up and go grab it. It also gives me a gentle reminder that we indeed do have this or that.

With inventory also comes budget time. For 2022, I am looking to do a few minor things. The garage door openers at KLZ are old (well over 18-years) and are in need of replacement. The other day at the site, I opened the leftmost bay and could not get it to close. It took several tries at power resets before it would decide to close. Not fun to deal with when you are short on time and need to leave.

I am looking to get a newer opener with Wi-Fi/smartphone capabilities. I have that at my own home, and I love it. I can see when the door opens and closes, I can even set rules. One rule I have on our third-car garage at home, which does not attach to our main garage, is for it to automatically close after 15-minutes of being open. That way if my husband or I accidentally open it and don't realize it, it won't be open for hours.

In addition, I am looking into the possibility of electric gates for two of the sites. While not necessarily an immediate need, there are times each year when we have to stop in the road (sometimes blocking traffic) and get out into traffic to go open the gate because we have a trailer and our drive does not have the room to fit the truck and trailer while we open the gate. Winter is also a time when getting out in the snow isn't fun. We have been talking about this for years and about how convenient it would be.



Now we have some low-cost DIY options, so I am doing all my research to seeing what is available and figuring out what all is needed for a project like this.

Satellite Issues

One morning last month, one of our producers came and told me he was having to deal with a particular syndicator over a show we receive. It was not coming through. He assumed it was them since he was getting news on the same satellite channel. Upon investigating, I found that our satellite earth station was down with a zero EbNo. I spoke

to Westwood One and they have certain things they can feed over IP, such as the news, which is how we were getting some things but not others.

I went to the site and began investigating. First thing to always try is a power cycle. Nothing. Since it was both our XDS receivers with no signal and our Amb-OS receiver on a different dish was okay, I knew it most likely wouldn't be our inside equipment, but in true troubleshooting fashion, I still started there and did everything I normally would.

Then I went outside and followed the cable from the dish through the conduit to a junction box on the ground at the Amb-OS dish and quickly found the issue. Mice. Years of hot and cold shifts had moved the conduit between the building and junction box (where it splits off to all three antennas) enough that it actually broke away from the junction box and exposed the RG6 cables. And one of those cables was completely chewed through – you can guess which one.

For whatever reason, we didn't have any RG6, connectors or the crimp tool at this site. We probably should have with the various satellite stuff we do, and that would've made this project a bit easier. Instead, I went to Lowes and got connectors, a crimp tool and some RG6.

We were able to find the broken cable inside the building and replaced it from the building to the junction box. I used double-female couplers to connect the ends together and get things working.

We were able to do a cheesy mouseproofing job to get us by until the fall when we will cut the conduit, cut the other two cables and do the same thing with them, and then replace the cut conduit with new and get it properly sealed back up.



Freeze-thaw broke the connector on this PVC conduit, and then a critter chewed right through the cable.

Maintenance

I know I bring this up a lot, but it is an important topic and one that I'm failing at. I have five different locations that I deal with, not including the office/studios. Crawford owns three and the other two we rent. The rentals are a bit easier to deal with, as general site maintenance is on the site owner. I do my best to keep our area as clean as possible, but the rest I have no control over. The three sites we own are ones that I have been relying heavily on Keith Peterson to deal with. He has done a great job, making monthly trips to clean the sites. However, in recent months, due to things beyond his control, he has not been able to keep up as much as he would like. And to be honest, I have been lazy. I really should have picked up the slack and just gone to the sites to deal with the various issues.

At KLZ, when we were working on the satellite issue, we needed tin snips. They are located in a red toolbox in our workshop with the welding stuff. I moved the toolbox away from the steps a little bit so I could open it and found, hiding behind the toolbox, a spider the size of a Smart Car. That was *not* okay. I do not like spiders, especially big ones. This is the second large spider I have seen at the site in a matter of months.

I realize it is my own fault as I could have bought bug spray and taken the time to spray around the building to deal with all the bugs. Instead, I chose to ignore it. I see that with how dusty the sites are getting. I take pride in having a clean site. When we can easily go to the site, do work, and leave without getting too dirty, that is a plus in my book.

Right now, I am working on a gameplan. Trying to figure out how often I want to go to each site. Do I want to go weekly, bi-weekly or monthly? I am leaning towards just rotating, week 1 I will go to site A, week 2 to site B and so on, and then just start over, so possibly every three weeks. This would give me time to make sure the site is cleaned, sprayed for bugs and all around looking good.

Upcoming

August is always a slower month as I am typically gone for one full week while I go on vacation. I look forward to getting a bit busier in September. I plan on finishing up inventory and begin making my rounds to each site. If cooler weather finally comes, I will work on installing some outside IR lights at the KLTT transmitter site and installing another indoor camera at the KLZ transmitter site. I hope to report back in October that all the sites are looking great again. 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 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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