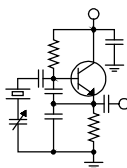


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

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A New Skill

My first 50 years were relatively benign in terms of health issues. Other than a few childhood illnesses and broken bones, I really didn't have any health problems to speak of, And for that I'm grateful.

But I've heard it said that after 50, sooner or later, that check engine light is going to come on. I'm way, way past 50, and that light has come on a number of times since that birthday.

Most readers of these pages know that I've dealt with spinal surgeries and multiple leg surgeries, each of which came with a long period of rehabilitation. Each one of these events taught me something, usually something about myself. I developed all kinds of new skills I thought I would never have or need.

For example, in our multistory house, I learned to navigate stairs with both a walker and crutches. I actually got pretty good at it. And while I hope I never have to use these skills again, it's good to know that they are there.

Last spring was a challenging time for my family and me. My wife and I both had COVID and were very ill for a good while. Then, weeks later when we got our vaccinations, it was like having COVID all over again.

It was on the heels of that fun experience that I began losing sensation in my right hand. The numbness continued to progress, and at some point in the early summer, I went and saw my physician. He believed that the issue was with the nerve in the wrist and put me in a brace, telling me the issue should clear up. A couple of months of that conclusively showed that the wrist was likely not the problem, so he sent me to an orthopedic hand specialist.

That specialist sent me for a nerve test, which was great fun. There's nothing quite like the experience of being jolted time and time again with electric shocks. It reminded me of that old episode of

The Simpsons titled, "Shock Therapy" (Google it!). I never did figure out why the doctor was snickering into the sleeve of his lab coat after every zap... but that test did reveal the location of the problem, which was a constriction of the ulnar nerve in the elbow joint of my right arm.

The fix was to relocate that nerve outside the joint, and I recently had that surgery. I left the surgery center with my right arm wrapped up from bicep to the middle of the hand, leaving both elbow and wrist immobile. I have use of the fingers of my right hand, but not the wrist.

And so, as I write this, I find myself developing yet another new skill. Touch-typing is, of course, impossible with just one hand, and hunt-and-peck with just the left hand takes *forever*. So I am exploring the use of the dictate function in Microsoft Office programs. This function is very good and intuitive, but it requires the use of clear diction. It also helps if you spend some time training the computer to your own voice. The tutorial encourages the user to "speak like a radio announcer." Uh... okay.

The doctor told me before the surgery that I could expect several weeks with my arm immobilized. I am hoping that he will at least free up my wrist when I see him for my first follow up.

In the meantime, if you see me apparently talking to myself in my office and sounding like a radio announcer, I am probably just answering an email. Probably.

Budget Wrap-Up

It's been a long process, but at long last, we have wrapped up the draft capital engineering budget for 2022. The middle of next month, I will meet remotely with Mr. Crawford and Mike Cary to go over this draft line by line. The result of that meeting

will be our final capital engineering budget for next year.

After the COVID slowdown of the last year, we definitely have some catching up to do in 2022, and codecs are at the top of the list. We have been generally happy with the APT (now Worldcast) Horizon Nextgen codecs that have been our mainstay for the last decade plus. However, with necessary firmware updates, these units have become increasingly prone to lockups, not a good thing for the device that carries your program audio to the transmitter site. We have one unit in Denver that is totally bricked and will require replacement of all the internal electronics to bring it back to life. That expense represents most of the cost of a replacement unit, so obviously we won't be doing that.

I plan to make a move to Tieline codecs in many of our installations in the coming year. Tieline has been very innovative with its development work

and has come out with some products in the last year that will allow us to simplify our codec architecture while adding redundancy.

One very attractive feature of these products is that they're Wheatnet enabled. this will allow us to feed them via IP directly from our Wheatnet network.

I also like that these units feature forward error correction with several of the included algorithms. That will give them the capability of riding through packet loss and less than perfect connections.

We also looked to continue upgrading some of our microwave equipment in a couple of markets. We have orphaned equipment in these installations, leaving us with limited options should we have a failure.

All of these things and more are on the table for consideration as we discuss the draft budget. Stay tuned...

The New York Minutes

By

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

Hello to all from Western New York! Just when you think you have seen it all, along comes something that just knocks the wheels off your wagon. We broadcast engineers work in some strange and remote areas, and see many different types of critters, insects and the like, most of which are trying to make our facilities their home! Most transmitter sites are in somewhat remote areas, mainly away from the general population, so it is not unusual to see or encounter wildlife native to the area.

Here in the Northeast, we are abundant in deer, foxes, turkeys and many other types of game fowl, insects like hornets, wasps, praying mantis and such, and reptilian nuisances such as frogs, salamanders and snakes!

Now, most of the above do not bother me in any way... they do their thing and I do mine, with the exception of snakes. I do not like snakes, never have and never will. It is not unusual to see snakes at our transmitter sites, as all are in relatively remote areas, and the snake varieties are harmless, i.e. of the non-

venomous variety. Doesn't mean I have to like them, and in most cases, if I can, I will send them to snake heaven by whatever means are near me at the time of encounter, which brings this topic to light.

On Tuesday the 12th of October, weather conditions were ideal for me to get out and do some catch-up mowing at the WDCZ transmitter site. It was a sunny day with a slight breeze and temperatures a little over 70 degrees, a near perfect autumn day. While mowing, especially in higher grass, you tend to run up on things

that are seeking shelter in the high grass, a nesting turkey, rabbit holes, field mice nests and such... nothing much here to write home about, until today.

While mowing, I look off to the left of our Kubota tractor and saw the biggest snake I have ever seen in my life! I'm certainly no expert on snakes, but I believe it to have been either a python or boa constrictor. It was nearly as long as our tractor and mower deck, which is nearly 12 feet, and this sucker was as big around as my upper forearm! I can only



suspect that it was at some time someone's pet and got out, or it got too big to handle and was released to live its life out in our transmitter tower field!

Anyone watching me mow that day would in all probability thought a Laurel and Hardy movie was being filmed, as I frantically ran all over that area of field looking for that snake! Luckily, I did not encounter this creature again, I can only imagine what kind of mess he would have made had I run over him with the 72" mower deck. Fortunately for him, he lived to see another day.

I can only hope that it plans to move on and not stay in the area, for now I cannot enter the tower field without both eyes glued to the ground, in anticipation of another encounter, and another chance to rid this world of one less snake.

We had a listener contact us recently about the time updates we were sending via our Inovonics 730 RDS encoder. Evidently, the time being sent was 78 minutes off the current time, meaning each time he tuned into WDCX-FM, his car receiver would reset the clock to the wrong time. I had no idea that this feature was included in the RDS menu, even more so, that it was enabled.

A call into Cris helped steer me in the right direction. I found that the time sync, otherwise

known as CT, was set for manual time update, relying on the internal clock instead of internet time, which updates each minute. I set it for automatic internet time updates, and so far, no more complaints about incorrect time stamps on RDS receivers.

As the calendar marches on, knowing cold weather is just around the corner, I am busily preparing our sites for the long, cold winter months ahead. Snow shovels are at the ready, plowing services secured for the transmitter sites, salt buckets ready to de-ice wherever needed, and heaters tested and ready to keep our facilities warm and toasty.

Forecasters are predicting a long, cold, snowy winter this year in the Great Lakes area, with winds and heavy snow predicted for the end of the year, lasting well into next year. I can only hope that the winter will be a gentle one, and spring just around the corner. But, for a while, I will not have to keep my eyes peeled for that nasty snake at the WDCZ transmitter site!!

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, have a happy Thanksgiving, and happy engineering!

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

Beating Back Nature, Part Two

Installing the sprayer on the tractor and spraying the vegetation at the tower sites has gone well (forgetting all the rain). The sprayer mounts to the tractor's three-point hitch, which allows it to be attached and removed with the usual three-point kicking, yanking, twisting, and cussing. Fortunately, there exists a three-point quick hitch which I'm looking to add to our tractor.

The sprayer we chose is a 40-gallon Fimco Ion 3-point with attached folding boom which extends to about 120 inches. It also includes a 12V pump, pressure gauge, manifold, and hand sprayer wand. So far it works great. I plan to modify the boom so that I can shut off three of the four nozzles so I can drive the tractor along fence lines and only use the nozzle closest to

the fence. Should be super easy to add a few valves and get that done.



Droning On

Now that I am an FAA certified Remote Pilot, I can take to the skies with our awesome DJI Phantom 4 Pro Plus quadcopter. I'm super excited about getting this certification!

The FAA's Part 107 covers everything one needs to know to fly a Small Unmanned Aircraft System (Small UAS). A remote "pilot in command," as we are known, is required to know a big chunk of what you'd learn in private aviation (Part

61) ground school, sans the bits about operating the aircraft itself. The online course I took was Remote Pilot 101 hosted by MzeroA.com ground school academy and presented by a certified flight instructor.



The spray rig attaches to the tractor's 3-point hitch.

I can say the course is not super difficult, but it is thorough, and for good reason.

Drones like ours can interfere with private, civil, and even military aviation and must be operated responsibly. These, too, are aircraft and with significant capabilities. They can easily reach altitudes of 1,500 feet

AGL.

Part 107 states: "Small unmanned aircraft cannot be higher than 400 feet above ground level unless the small unmanned aircraft is (1) flown within a 400-foot radius of a structure, and (2) does not fly higher than 400 feet above the structure's immediate uppermost limit." The way this is written gets Part 107 certified broadcast engineers the ability to inspect our towers.

Being aware of the FAA's regulations and having a comprehensive understanding of airspace, weather, loading effects, airport traffic, and a lot

more are why Remote Pilots need to be Part 107 certified.

For more on this, Cris Alexander recently hosted an SBE webinar on the subject which can be reviewed here: <https://youtu.be/DBOZoKFJ498>

Windows 11

Time marches on and so do the hard-laboring code writers inside Microsoft. New PCs are arriving with Windows 11 pre-installed, and we here in Detroit are on the bleeding edge, getting our Writer/Producers set up with new Win11 machines.

So far, both RCS (NexGen) and Wheatstone (WNIP AOIP drivers) are untested with Win11, and their support personnel have said that they've not even seen the new OS. Yay!

With the help of the RCS support team, it seems NexGen can be installed and run without issue, though I'd start with non-mission-critical applications first. Adobe Audition also runs, but some odd message about gaming overlays must be dismissed a few times during the program's startup. WNIP required several runs of the installation executable before successfully creating all four audio channels; it otherwise seems to perform well.

Windows 11 should be easily integrated into the broadcast environment as it is an evolution of Windows 10. That said, see above. I genuinely wish that Microsoft would introduce a dialog box or two during a machine's initial setup whereby the user could opt for the role of the computer either to be home, gaming, or business usage. I'm always struck by the amount of home-leaning features and bloatware that Windows insists on installing on a machine that must be used in a professional environment. The fact that X-Box Game bar interferes with Adobe Audition and that there is no apparent way to keep it from doing so undoubtedly underscores this point.

News from the South

by

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

If you are planning to travel by air in the next few months, I have a few tips for you. These come from my recent vacation to the Carolinas to help celebrate my mother's 90th birthday. I hadn't traveled in a while; you Frequent Flyers probably know all this, but anyway ...

First, security wasn't too bad. The airports still aren't that busy post-COVID, which has a good side and a bad side. More on that in a moment; Sandy and I have TSAPre, so we get to skip the usual "shoes off and walk through the x-ray" stuff. You'll have to jump through some hoops and pay a fee (ours was \$60 a few years ago) to get it from the Transportation Safety Administration, but once you

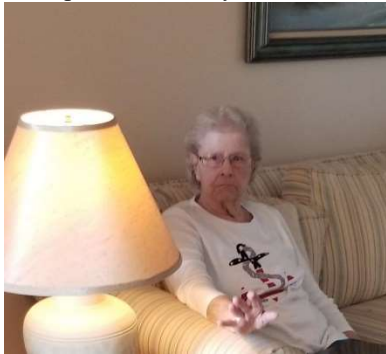


Figure 1 - Her 90th Birthday!

do, it's worth it. I was alone for this quick trip; Sandy stayed in Birmingham. TSAPre made the Security Circus a breeze.

Second, prepare for some hunger. I traveled via Delta from Birmingham (BHM) to Atlanta (ATL), and from there, to Jacksonville, NC (OAJ). The only thing that was open in Birmingham was Chick-Fil-A, and there was a long line of folks waiting for food. I figured, I'll just grab something in Atlanta. The flight from BHM to ATL is about 30 minutes, after all.

But in Atlanta, there were only a few (absolutely packed) places open for business; most were closed. I grabbed some chips and a bottle of water from vending machines as I ran to catch my connector to OAJ. In the past, I've always expected some delay in Atlanta, figuring I could grab

something to eat before my next flight. Not this time.

Third – and this is the biggie! – rent a car well in advance. I'm told that the rental car

companies sold off their vehicles during the pandemic, and now, they're having trouble getting new cars. Confirm your reservation on-line AND with calls to the airport rental desk. Don't assume that because you have a reservation number that you're OK! This is true of all of them, from Dollar to Hertz to Avis to whomever.

In my case, I was unable to get a car when I arrived on Saturday, but was able to reserve one with Budget's website for

Sunday. Then an extremely harried worker at the airport called me and said, so sorry, we don't have any cars. He said he'd been trying to call people for hours to tell them that there were no vehicles available, and was unable to reach most of them. They were going to arrive at the airport expecting a car, and would then be told that their reservation had been canceled. Fortunately, my brother was able to pick me up late Saturday night and my sister loaned me her van Monday morning so that I could catch my early bird flight back to Birmingham.

Seriously. Since most folks just scan these articles, I'll repeat that: *RENT THE CAR WELL IN ADVANCE AND CONFIRM IT A DOZEN TIMES BEFORE YOUR TRIP.* Not sure what to do about food, because TSA won't let you take food through security! Just hope the vending machines are available.

But the good news is, I arrived safely and was able to spend time with my 90-year-old mother (Figure 1). She's still just as sassy as ever. The family was staying in a rental condo on the Crystal Coast, in Indian Beach, NC (Figure 2). What a blessing!

For those who care: there is a "Beaufort" in both North and South Carolina. The one in NC is pronounced "BOH-fort;" SC's is "BEW-fert." I was at BOH-fort, NC. It's a beautiful area. I wish I had been able to see more of it, but I didn't want to be away for too long. I was able to enjoy some fresh NC



Figure 2 - A view of the Crystal Coast in NC.

shrimp while I was there.

Sandy is doing much better, but I still don't like leaving her for more than a few days. The good news is, she's working with new doctors, and thank the Lord, we're making real progress. I deeply appreciate the prayers on her behalf.

forearmed. The sad thing is, they keep doing it because people fall for it. Be careful and don't be one of the victims!

101 WXJC FM

We've had an ugly gash in the cover for our 8-foot 6 GHz dish at 101.1 FM in Cullman for some time now, and experienced the usual Keystone Kops routine trying to get a replacement. Keith Bergstrom at 3db Networks in Colorado is our go-to guy for microwave links, and he's a good one. He will dutifully submit our order, and about half the time, we might get what we actually wanted.

In this case, we needed (obviously) an 8-foot cover for an Andrew dish, with hardware. The original had 24 turnbuckles that mated to clips on the dish, and grommets in the cover. The one we received had only 16 grommets. The hardware was only 10 inches long as well; we needed 14-inch hardware.

Unfortunately, the high wind that tore the original cover loose had also scattered some of the hardware, so we needed the right stuff. Todd, Jack and I studied on it, closing one eye and then the other, trying to figure some way to fasten it that would (a) actually work and (b) not look weird. We sent the cover back to Keith; this was in June.

The second cover arrived after another lengthy delay. It had the required 24 mounting points, but the hardware was again too short. Through a combination of rigging, crafting, and holding our mouths just right, Todd was able to work with the tower crew to get the dish covered again. It had been opened to the elements while we waited (months!) for the correct parts.

This wasn't Keith's fault; he was submitting the order properly. The supplier just couldn't get his or her mind right. The hardware that they sent wasn't quite right, either. At one point, Todd ran to Tractor Supply to see if they had some hardware that would work; we wanted that dish to look like a kettle drum, not a giant gaping hole that would attract birds and wasps. But finally, we got it (re)covered (Figure 3).

Budget

Like everyone else in our company, I had to finish up our budget requests in October. Given the horrible, hot, stormy and windy weather here, the two things that we focused on were air conditioners and some modest roofing damage. We obtained quotes and submitted our requests (along with the rest of my fellow engineers) by the middle of the month.

SPAM, Scams and Crooks (Oh, My!)

I've said it before, but I'll repeat it: if you get a lot of SPAM from our mail server(s), just be grateful that you're not seeing what our Barracuda system has blocked. For every useless message in your inbox, there are 5-10 that were blocked by Barracuda.

The scammers are getting more and more sophisticated, too. They'll send you an email that looks like it came from a legit source, but you have to dig and carefully examine it. Personally, I never click a link in an email unless I'm 100% sure that it's going where I want. I run Firefox and Thunderbird, and I have them set up to show me the actual links when I hover the mouse over something. I can't tell you how many times the link has appeared to say, "yourbank.com" ... but when I moused over it, I saw a gibberish link that went somewhere else.

Just this past month, we've had several co-workers forward an email to us, asking if it's legit. In every case, it wasn't. One of the newest scams is to say, "We have received your order for [insert item]" and have charged your credit card." There's a number you can call. You do so and say, "I never ordered that!" They'll ask for your credit card number or banking info to "confirm your identity" ... and you're hosed.

The crooks are doing this with texts and mobile phone calls as well. They'll do or say anything to get your personal information, at which point, they rip you off. It's a shame that we have to be paranoid about stuff like this, but forewarned is

I keep fairly decent records of everything that has been done, but that doesn't help an old, slow brain. I hadn't realized (or realized and then forgot at some time in the distant past) that WDJC-FM still had the original wall-mounted Bard units from when we purchased the new building. Those are definitely due for replacement. They've already had new compressors and other large components replaced, but our HVAC guys warned us that they had become old enough that replacement parts were becoming scarce.

Alabama works an AC unit to death; I'm just grateful to be working for a company that's willing to pay for good air conditioning. When I was doing the contract gig in NC (which has a similar climate), most station owners just brought in outside air and hoped for the best. If you were lucky, they'd pay for a filter on the inlet, but as often as not, dust and moisture came right into the building ... and the equipment. It kept me busy and made me a good bit of money, but several times, I pointed out to these people that a sealed building with an AC would probably save them money in the long run. They didn't want to do it.

Anyway, that's enough for this month. Until next time, pray for this nation!



Figure 3 - The cover being replaced on 101's dish in Cullman, Alabama. Finally!

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

Phone Lines

The move from traditional phone company services is continuing at a quickening pace. When I first arrived here seven years ago, we had two T1 lines used for STL to a transmitter site and two PRI circuits for our phone system. Additionally, we had at least five ISDN lines between the studios and the transmitter sites. We had at least four analog POTS lines, mainly at the transmitter sites for remote controls and alarm panels.

The two PRI circuits for our main phone system had been replaced with a SIP trunk delivered over a broadband cable connection by the local cable provider. The two remaining T1 lines were used as an STL to a transmitter site at Kirkland, Illinois, which was quite a distance from our studios in Hammond, Indiana.



While we were strongly considering replacement of one or both of these T1 lines, it took a huge increase in rates to make the decision so much easier. Just 11 months ago, we got word that the price would increase by nearly fivefold. With a 30 day notice, we got into scramble mode. Fortunately, we already had a plan in mind.

We replaced those lines with a dual Internet approach: adding a second fixed wireless ISP at the transmitter site and then adding a fixed wireless ISP at the studios so that we had two Internet providers at each site.

Once everything was setup, the system has worked well, with the slight exception of a major rain event that caused some momentary dropouts on the transmitter side. Not bad, considering that we often had times of dropouts on the dual T1 lines, and

even times when both T1 lines were down for hours.

The final phone service that we still had is the four analog POTS lines at the transmitter sites. Knowing these services were getting massive price increases at other parts of the country (to \$1,000 or more per month in some cases), we decided that when the lines were up for renewal, we needed to replace them with alternatives. We had also received notice that many of these services were being discontinued.

We went with Magic Jack, a low cost VoIP phone service. I purchased my first Magic Jack to replace my home phone line 12 years ago. They have greatly improved on the initial Magic Jack considerably. I have found them to be very reliable, despite the low cost of the service.

We first installed them at two of our sites that already had an Internet service beyond our in-house networks. These were the Beecher and Kirkland transmitter sites. They worked fine with the Burk remote control systems. However, once I attempted to use them on the Security alarm panels, they wouldn't work. This prevented the remote control from answering or dialing out. Even when

they were only connected to the alarm panels without being paralleled to the remote control system, they still wouldn't work. So the idea of two Magic Jacks, one for the remote control and the other for the alarm panel, was not an option.

I figured that the alarm monitoring companies had to have some of this resolved already. I was hoping that it wouldn't be too expensive. I had three different companies to work with through the four sites. While each of these companies had different solutions in mind, they pretty much were the same type of solution employing a cellular radio.

We already have three of the four sites switched over. The good part is we didn't have to invest more than a few hundred dollars per site for the installation, and our monthly costs were hardly increased at all. By the time we subtract the cost of the analog phone lines, we are actually coming out ahead, especially considering that one site had constant issues with copper theft taking the POTS line down, and sometimes it took weeks to repair.

Once we are fully switched over, we will officially be finished with the traditional phone services. A lot has changed over the last two years.

Valley News
By
Steve Minshall
Chief Engineer, KCBC -- Modesto

I regularly walk around the KCBC studio and transmitter site and do a visual inspection. You never know what you might find, and occasionally I spot something that needs attention.

Recently, during one of these walk-around inspections, I heard the transmitter air-conditioner start up with a large grinding sound. I surmised that it was likely one of the condenser fans that was making the noise. When the cooling cycle ended, I shut off the unit and checked the fan motors for play in the shafts. Of the four motors, I found one motor with very excessive play, one with slightly less play, one with a very small amount of play, and one with no detectable play.

Two of the motors needed immediate replacement, while the other two could probably wait, but since they are all over ten years old, I felt it

best to replace all of them and be set for another ten years. It's more efficient, time wise, to get it all done at once. Four new motors were ordered, and they arrived in short order.



I had made the decision to replace the motors myself rather than having our HVAC contractor do it. It's (normally) an easy job, and that would save a lot of money. I figure it probably saved a couple thousand dollars.

The motors came out of the A/C unit quite easily with the fans still attached. In the past, I have seen fans cracked from stress and vibration, but these fans were in perfect condition. It was all going smoothly until I tried to remove the fans from the motors. These fans were stuck on the motors, and I mean really stuck! Penetrating oil and hammering did not work. I tried a moderate amount of heat to no

avail. I'm sure the with enough heat I could have gotten them loose, but I didn't want to take a chance on damaging the relatively delicate fans. Because of the geometry of the motor/fan combination I did not see any way to get a bearing puller or a hydraulic press to do the work.

Desperate times require desperate measures, and this was a time of desperation for sure. I cut the shafts off of the motors with a Sawzall. I was then able to back up the fan collar with a piece of chrome moly tubing and use a hammer and punch to drive out the remaining pieces of motor shafts, or so I thought. The method worked on one of the four fans, the other three were still really stuck.

I drilled the other three shafts right down the center with progressively larger drill bits until most of the shaft material was gone, and then I was able to drive the remnants of the shafts out of the fan collars. After that ordeal, it all went smoothly.

The motors are made with built in plugs that mate with molded plugs on the wires. York builds nice stuff.



What should have been an hour of work turned into six hours, since I had to drive to my home shop twice.

I finished up just as the sun was dropping below the horizon with a good feeling of accomplishment.

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

Mowing

With the Kubota tractor back and working, Keith and I were able to get the mowing done at KLZ. It took several days but, at long last, it is clear. There are still areas where a string trimmer is needed, but that can wait.

One thing I noticed while mowing is that you must stop and check the brush hog often. I should have guessed this, as we don't have smooth ground. Instead, our ground is riddled with prairie dog holes and mounds, making it a bumpy ride.

At one point while mowing, I looked and noticed the wheel on the back of the brush hog on the ground. Thankfully the two washers and pin were right with it, so I just had to put it back on.

At another point, a nut came loose where the 3-point attaches to the brush hog. This caused the threads on the draw pin to be damaged. Thankfully, we have a Tractor Supply store, and they had the draw pin needed. We noticed a cotter pin missing while replacing the draw pin and replaced that as

well.

What all this means is that every hour or so, we need to stop and really inspect things. Check for tightness on any nuts, make sure all pins are secure, and clear out any debris that might be stuck in the grill that could cause airflow issues. That is all good practice anyway, so that is what we will do.

Fuel

I like to make sure things are good to go before winter. We have a generator with a 149-gallon diesel tank at KLZ, and the generator seems to run quite a bit each winter with storm-related power outages. We have a 50-gallon portable tank we keep fuel in, and we use that to refill the Kubota and the generator along with several 5-gallon cans.

We had used nearly all the diesel fuel in the 50-gallon tank, so one Saturday, I had my wonderful husband Jordon help. We drove out, emptied the last of the cans and tank into the Kubota and generator tank, and then went and filled the tank and cans up.





Jordon prepares to unload the portable fuel tank.

generator.

Satellite Conduit

Back in the September issue, you may remember me telling you about our satellite issues. We found where the conduit that runs from the building to the satellite dish outside had separated at a junction box, exposing cables. Mice were able to get into the box and have some nice snacks. We ran a new cable to get the satellite working again, but could only do a temporary fix to “seal” the area. That fix did not last long at all once the hot/cold season began.

We went out and bought the pieces to fix this and were able to get it done. This involved us cutting a piece of RG6 cable and using a coupler to put it back together. We were able to cut the old conduit back and cut the new piece to length. It’s a beautiful thing when there isn’t a gap in conduit. The mice will need to go elsewhere to find a snack now.

Furman HA-6AB Issues

I received a discrepancy report from one of our ops managers about a host complaining of hearing only one side of audio in her headphones during her show. This is a long-term client (20+ years), and she knows what to expect to hear. She could hear out of one side, but the other side was very low.

I went into the studio after hours to inspect and to be honest, at times it was hard for me to tell. I could tell there was an issue there, but could not quite place it. I compared the sound to the other studios, which helped confirm there was a real issue. I

This always gives me peace of mind. I know the generator can run a good long while and I won’t have to kill myself trying to get to the site, especially if the weather is bad. Instead, I can wait a bit and allow things to clear up before heading out to refill the

brought my dad in, knowing how much he enjoys troubleshooting, and while I worked in one studio testing things out, he went into the talk studio and we quickly found the issue to be the Furman headphone distribution amplifier, not the wiring to the headphone stations (which were recently replaced).

We brought the amp back into engineering and opened it up, setting up the signal generator and the scope. We could clearly see the discrepancy from right to left. We found the schematic and began troubleshooting. The output of the right side was 6 volts RMS while the left was 20 volts. We started by replacing the power amplifier op-amp IC. We have had to do this in the past, and all signs pointed to this. So, my dad went to Mouser – he’s great at finding these parts – and ordered several. We replaced it but the issue remained.

We continued to troubleshoot and decided the issue had to be in the feedback loop. The left channel had a gain of 20 but the right had a gain of just 6. The 20k and 1k series and shunt resistors in the feedback loop were of the correct value, so a gain of 20 would be correct.



My dad loves troubleshooting and fixing equipment -- when I let him!

After disconnecting some parts to isolate this circuit, we did indeed find a bad electrolytic capacitor in series with the 1k shunt feedback resistor. Thankfully we had plenty to choose from and found one of the exact value that would work. We put it in, tested it and all was back to normal.

These Furman headphone distribution amps are old, as in 1999 old. Somehow, they continue to work. I am sure at some point we will need to find something else, hopefully in another 22 years!

Upcoming

While Winter technically isn’t upon us yet, in Colorado, we are already getting snow in the high country. It is only a matter of time before we see it down here. I am working on getting projects finished

up.

We replaced a security light on the back of the building at KLTT to allow the camera to see the back door better in the dark. We have an infrared light we'd like to install out front to try and light up our entry gates better.

I also have a PVC 5-inch conduit carrying the main building 400-amp 480V feed that has come away from the current transformer box. We noticed this a few years ago when a transformer blew at the building and United Power had come out. While replacing the transformer and with utility power off, they opened the CT box. They found a dead snake and nesting materials inside. We cleared it out since the power was off but knew we needed to seal up the gap, which was the result of frost heave and a broken conduit connector.

Because of the size of the conduit, I couldn't just go to Home Depot and buy what I needed, so it kept getting put off. This year, I decided I would fix it. While still not being able to find the size conduit I need anywhere, I decided to text a friend who is an electrician for a local company we've done work with before. He ended up getting out there while I was in the process of writing this. He put a rubber boot on the bottom, lifting up the conduit to the box. I will get some silicon and seal up top even better.

I'd like to take advantage of the cooler weather, before the snow flies, to get various transmitter site maintenance work done. It would be great to get things to a point that 2022 can start off in a really good place all around at every site. Only time will tell, though. We will take things one day at a time and see what comes up.



The fix is in on the 5-inch conduit at KLTT.

And in case you all didn't realize it, we are in NOVEMBER – Thanksgiving is just a matter of weeks away, and then CHRISTMAS!!!! Can you believe it? I sure can't. I'm not ready for any of it.

I do pray you all have a wonderful Thanksgiving and that you stay safe and well.

The Local Oscillator
November 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

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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