

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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### Changes

I've heard it said that all good things must come to an end, and that would appear to be the case in many instances. For the past 20 years, Elizabeth

McGuire has been my executive assistant, serving as my gatekeeper, supporting me administratively, processing PORs and payables, overseeing the EEO efforts and compliance of our markets, making sure that issues/programs reports are complete, detailed and timely filed, and overseeing political broadcasting recordkeeping. That list is, of course, not inclusive; she did much more in support of our engineers and managers.

Borrowing the lyrics of Joni Mitchell's *Big* 

*Yellow Taxi*, you don't know what you've got 'til it's gone, and that's certainly the case here. In addition to all my regular duties and project management, I'm now doing everything – well, most everything – that Elizabeth has so faithfully done over the past two decades, and it's a load. I so much appreciate all she did in that time.

Now the search is on for a replacement, and that's a challenge. The biggest issue is that I am right in the middle of several projects and processes that make for long days and a messy desk, and I just won't have time to look in earnest until the end of this month. So until then, I am the proverbial onearmed paper hanger.

One thing that I have done to help manage things is set up a new email account for invoices and



The Kintronics CAT6 isocoil installed on the KLDC/KGNU tower provides two CAT6 paths across the base insulator.

other payable-related traffic.

<u>Tech\_Payables@crawfordbroadcasting.com</u> is the address to send such things, and we are working our way through the vendor list to get things moved over

> to that address. Anything going to Elizabeth's old email address will go to that new account for a few months with an autoresponder providing the new address to senders.

Until I find someone and get them trained and up to speed, please be patient and help me out all you can by making sure paperwork is complete, legible and in order. We'll get through this.

### **KLDC Move**

Things are starting to move (heh) on the KLDC

relocation project. In recent weeks, we got the CAT6 isocoil installed on the KGNU tower along with our Ubiquiti link. That took some doing. Apparently, we are one of the early users of the Kintronics CAT6 isocoil, and both we and KTL are learning a few things about it and the best way to install it. I'm confident that we have a handle on it now, and we can check that item off on our relocation to-do list.

In late August we got the Nautel ND1 auxiliary transmitter moved from the old Ruby Hill site to the new site, and as of this writing, we have it making RF. We also moved the antenna switch and got it installed. The new equipment rack was installed months ago, but it now has a number of new conduits coming out the top and providing feeds to the ND1 and antenna switch. Soon it will have one more



Making power! The KLDC ND1 aux transmitter is good to go with a full kilowatt at the new site. The box on the front is the RF attenuator for lowpower night operation.

conduit running over to the backboard where the telco comes in.

We're awaiting installation of broadband internet service, and that's slated for early this month. It was actually scheduled for mid-August, but the telco was a no-show. They evidently did eventually show up that day – at 6:30 PM, long after the gate was closed and locked at the drywall supply warehouse on whose property the new site is located and long after we had given up and gone home. CenturyLink, Lumen or whoever they are this week, keeps giving us an 8:00 AM – 6:00 PM installation window, and they don't call when enroute. We're not going to waste another whole day sitting around the site waiting, so I'm not sure how that will play out.

The big part of the project is slated for the 12<sup>th</sup> of this month. On that day, Lord willing, we'll take both stations down at the old site and pull out the diplexer/ATU cabinets and prematch cabinet. The other station's engineer has a tuning unit ready to install and get that station back on the air. We'll haul the cabinets to the KLZ site where they will be stripped of components, power washed and have

fold-down stands (provided by Kintronic Labs) installed. Then over the next couple of days we'll install new components and pre-tune everything. Hopefully by Wednesday or Thursday of that week, we'll haul the completed ATU/filter boxes and prematch to the new site and start installing everything.



The dummy load and antenna switch are good to go.

At the new site, we plan to use precast slabs, really made for HVAC installations, to set the cabinets on. We have a bunch of bags of sand on hand with the slabs to use to provide level and stable mounting. RF plumbing will all be done with ½-inch rigid copper piping and fittings, and we have a roll of 4-inch copper strap for grounding. We'll use PVC conduit for CAT6 and remote base current samples. Hopefully by the end of that week we'll have both stations back on the air from the new site.



# Everything in conduit keeps things neat and well shielded from RFI.

Once the RF work is done, we'll bring over the rest of the equipment, including the main

transmitter, a relatively new J1000. We may not have the main up and running right away, and we'll most certainly be in analog for a while as we finish up rack wiring and optimize the load. But how sweet it will be to be out of that old Ruby Hill site! It's a mess in every sense of the word. The new installation will be state-of-the-art, all done right and employing good engineering practice. We plan to bring Stephen Poole in to help with the project. He's an outstanding AM engineer and will be invaluable in making this project a success. He told me that he reserved a pickup truck instead of a car... now that's thinking ahead! I'll bet we'll be very glad he did that.

It is my hope that this time next month I will be reporting on the success and completion of this project in these pages. Stay tuned!

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

Hello to all from Western New York! With Labor Day quickly approaching, it's hard to accept that summer will be officially over in a matter of

weeks! This year has flown by at an unprecedented rate, and I am nowhere near getting my summer work completed. It didn't help that I had six weeks of no physical work due to my heart failure, but trying to catch up on outdoor projects is difficult when the weather doesn't cooperate with you. It looks like I will be mowing and getting my outdoor projects completed clear up through the end of October!

The WDCX-FM studio project is moving right along, but we have discovered a few issues that were overlooked by subcontractors. We had specified that the conduit runs between the studios and TOC were to be  $1\frac{1}{2}$ -inch EMT. The electrician ran  $\frac{3}{4}$ -inch EMT from the  $16\times16$  NEMA box in each studio, back to the TOC.

There is no way this would work, as it would not leave any room for additional wiring in the future. We required that they tear out the previous work and re-install according to the written specs, which the electrical sub was none too happy about!

This meant that each wall would have to be torn out, the existing conduit removed and the proper size reinstalled, and the drywall reinstalled and refinished.

Additionally, they did not provide a 1<sup>1</sup>/<sub>2</sub>-inch conduit between the NEMA boxes located in the air



studio and talk studio, and the NEMA box in the talk studio was mounted flush with the wall, making egress into and out of the talk studio cabinets

difficult.

All of these issues were eventually corrected to our satisfaction. As of this writing, the painting has been completed along with the installation of the suspended ceiling grid, and all door frames have been installed and painted.

Once the flooring is installed, our studio cabinet contractor, Pat Viola, will install the custom broadcast cabinets we designed

specifically for each studio.

We were fortunate to find Pat for our cabinet construction, as our former builder, Brian Francis, retired after the Rochester studio build two years ago. Pat and Brian have been friends for years, and Pat was familiar with the style of cabinets we wanted, so it worked out perfectly for us.

Brian has answered all questions Pat had, so we know that we will be getting the highest quality cabinets that money can buy! I have studios that I have built in the mid-90s using the same design and materials that to this day look practically new!

Hopefully by month's end, I can get the CAT-6 cabling run to each studio for the NexGen and Wheatnet networks, along with the low-voltage wiring for each studio's "On Air/Recording" warning lights. The racks and wire ladder have not yet been installed in the TOC, but I hope to have that completed in the next few weeks.



The new driveway and parking apron at the WDCZ transmitter site.

Inventory went rather smoothly this year, with no surprises noted. We have a lot of retired equipment lying around that in all probability will never be used again, so before we move our studios to the new location, I will go through all the retired equipment, make a list of everything no longer needed, and pass the list along to all our market engineers to see if anyone has a need for any of it. If not, off to the dump it goes!

On Monday August 1st, Sutton Paving installed our new driveway and parking area at the WDCZ transmitter site in Hamburg, NY. The old driveway was crumbling and severely cracked due to its age making removal of the old pavement relatively easy. There were portions of the old asphalt that had to be ground down before the new asphalt could be applied, but in all, the installation went smoothly, and the new drive looks great!

Another capital improvement that has yet to be done is the replacement of one of our Bard 6-ton air conditioning units at the WDCX-FM transmitter site. Solly Industries will be performing the installation as soon as the new unit arrives here in Buffalo. As with many companies throughout the US, Bard Company has been operating on a back-order status for some time, all due to the COVID-19 situation beginning in early 2021. We placed the order for the new A/C back in February, with an expected delivery date sometime in late August/early September. Next year, we will budget to replace the other 6-ton A/C unit, which is operated in a lead/lag configuration. Hopefully we will not have to wait six months to have it installed!

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 bv Mike Kernen, CSRE Chief Engineer, CBC–Detroit

### New FM 103.5 Talk Studio Part II

Last month, I shared what we were doing with the talk studio for WMUZ-FM. To recap briefly,

the studio had been heavily used for at least two shows a day for decades since (I think) 1997 and needed remodeling and freshening up. It's complete, back in service, and I'm happy to report that its occupants love it.

Amongst the improvements are, of course, new furniture, wall sound reduction treatments, flooring and lighting. Also new are mics, mic and monitor arms, headphone turrets, and a monitor speaker – yep, the old room never had a speaker.

The Wheatstone TS-22



The previous FM talk studio had no active audio componentry save for one lowly headphone amplifier. It was time for at least a little technical improvement, so I decided to install the Wheatstone TS-

22 talent station for the host. Its display, volume controls and programable buttons were principally what I was after.

Of course, adding a speaker required its attendant volume control, the host needed his separate and individual headphone feed so that only he and not his guests hear talkback from the CR, and some degree of control was needed for

what got routed to headphones, speakers, and

elsewhere depending on what was happening in this studio.

The TS-22 is not a mixer, but it bridged the gap between a small console and simple on/off/cough mic functionality.



## The beautiful new WMUZ talk studio.

Minimally, this room has three modes of operation. First is, of course, an accessory to the FM control room; the usual board-op through the window talk setup. Next, we have Podcast mode. Podcast mode reconfigures the studio for use during production of the National Crawford Roundtable podcast. Not only does it change the studio in which the host's mic appears, keeping control of the studio's "on-air" light, it gives our host a mix of the other podcast participant's mics and appropriate talkback from his producer. The third mode is an "off-line" mode that allows the host to hear audio from the local computer.



The Wheatstone TS-22 Talent Station

Future needs can easily be met by programming unused buttons. The host also has a

view of the studio's mode and a GPS-synchronized time-of-day clock and a timer that resets every time he opens his mic.

The TS-22 fit the bill for this talk room perfectly.

## Let's not burn the place down!

As a former electrician, I'm keenly aware of electrical systems. Electrons are generally friendly except for when we lose respect for their power (I'm aware of the pun).

Recently, we pulled a few outlets from service here because they'd obviously been overheated. They were damaged by years of use by the custodial crew's vacuum cleaners.

A few things I've run across that are electrical no-no's:

- 14-gauge wire in a commercial building.
- Light switches stuffed into a wall box then covered by a blank (presumably to keep people from shutting the lights off?), yikes!
- Using the push-in connections on the rear of receptacles. Take the time and use the screw terminals. The push connections rely on spring tension and grow weak over time resulting in poor connections.
- Improper grounding, or no grounding at all.
- Reversed receptacle polarization.
- Buried junction boxes. It's never ok to remove access to any splice.
- Bare cable. This one shown below was once run outdoors with no protection at all!
- And the worst? Daisy-chained plug strips with an electric space heater on the far end. I found out about this when it started to smolder. This can often smell like dead fish.



Uhh... no.

### News from the South by Todd Dixon, CBRE Chief Engineer, CBC–Alabama

It's been said that air conditioning made the South habitable, and I can't say that I disagree with the sentiment. As much as I have loved living in

Florida and Alabama for the vast majority of my life, my body still doesn't know how to stop sweating until its about 37 degrees F outside.

With all of that being said, air conditioning units take a real beating down here, trying to not only cool the air but also removing the humidity out of the air from April to September.

I try to carry water, a sprayer and coil cleaner out to our sites on a semi-annual basis to make sure that the coils are clean so they can efficiently exchange heat and

keep the head pressures down in the compressor, but it's always a battle. Our Red Mountain site has probably had two compressors replaced and maybe three fans that shorted since we had the building put on its foundation some 15 years ago, and the two new Bard self-contained units were budgeted for replacement this year.

It may come as a surprise (he says facetiously), but those new purchases will most likely show up in Santa's sleigh at the end of the year, and we paid their full sticker price before they ever got ordered! If there's a silver lining in any of that, it is that it will be much closer to 37 degrees then than it is right now.

Around 13 years ago, I taught a class at my church called "Your Christian Computer." The premise of the class was to help adults, parents or otherwise, keep up with the brutal pace of the technology around them. It covered things like protecting your computer with anti-virus and malware software, finding free and open-source software that might be replacements for paid software, and even an introduction to operating systems like Windows, MacOS and Linux. Other topics included portable apps that could be set up and ready to go on USB drives and used on any computer.

One part of the class that I forgot about was



introducing students to UbuntuCE (Ubuntu Christian Edition, https://ubuntuce.com/). To the credit of the distribution's creators, they're not trying to rewrite

Ubuntu; they're only adding a host of tools that might help Christians in their walks with Christ. Things like domain name server resolvers that might help to wall the garden your eyes see on the internet, filters that help to keep illicit sites or ads off of your computer, and useful parental controls that help to curb time usage and things that children would have access to on the machine. They also have a number of Bible study resources built into it as well.

Fast forward over a decade, and I've been asked to dust off the

material and teach it again. I guess I shouldn't have been, but I was astounded at the amount of material I'd actually have to revamp and extend in order to make it relevant to what people see around them every day. We have portable computers called smart phones that do way more than our devices did back then.

The fact is, there are just way more devices that are pining for our attention – that includes Internet of Things (IOT) devices, home automation and even entertainment devices (like a Roku or smart speakers). They all can be considered computers of a sort. Even my favorite little credit card sized, fullfeatured Raspberry Pi computer wasn't around then. My point in saying all of this is to say that in another 10 years, we'll likely be staring at even greater innovation.

A case in point, I saw Jay Tyler (Wheatstone) post on Facebook that at IBC 2022 they were introducing "Layers" – the equivalent of virtually hosting AOIP on a couple of servers. Using his words in the post, "replacing racks of hardware" – locally or remotely.

Until next time, I hope this sticks in your throat like a hair in a biscuit!

### Tales From Cousin IT by Stephen Poole, CBRE, AMD CBC Corporate IT Specialist

The propeller heads say that the dinosaurs were wiped out by an asteroid down in the Gulf of Mexico. They're wrong. In fact, like most calamities,

it was obviously caused by the Russian invasion of Ukraine. Dino died because of Putin.

That invasion apparently reverberates through time and space and "continuously" (a concept of dubious meaning where time travel is involved) makes all sorts of stuff happen. But if you're Cousin IT, it's fun: when the traffic computer stops working for no apparent reason, or a bug manages to sneak unkindly into some of my

code, I can shrug and say, "Those pesky Russkies!"

One of the geek sites that I sometimes frequent, TechRadar, has teaser headlines in the Google feed on my phone. One that caught my eye said, "Amazon and Microsoft have canceled several new data centers." Thinking that it was supply chain issues, I clicked the bait and landed on an article that said, no! – it's the pesky Russkies again. Go away, Putin, my lunch is getting cold!

#### Attacks

While I doubt Putin's ability to traverse space time, it is a fact that Russia is just one of many bad actors on the Internet. Google "live internet attack map" sometime and you can watch the major assaults coming in from Russia, North Korea, India, and of course, China. A caveat: note that I said, "major." You're not going to see Joe Hack's attacks on your little SSH server; it concentrates on major data centers. But it's still intriguing to watch the attacks streaking around the globe.

Thanks to the severe weather in the past couple of months, I'm a bit behind in prepping some things for other markets. I've been building a new double-WAN ClearOS box, for example. I never realized that it needs to access Mozilla during setup. (Why?) But it would hang during the initial boot and say, "Unable to contact Mozilla."

I did a quick check at a command prompt: sure enough, Mozilla wasn't returning my pings. It had disappeared. I checked Microsoft; it was down as well. Now, that got my attention. Giant distributed



sites like Google, Amazon and Microsoft NEVER go down. But the aforementioned attack tracking sites showed that, yep, they were getting hammered.

Amazon was also having a datacenter issue, according to Todd.

Eventually, things came back up, and aside from a few other issues (see below), I got the ClearOS box built. But the lesson here is that things can go wrong at any time, and even in ways that you don't expect. As more stuff moves into the "cloud," you're going to be more vulnerable to outages. Even something as simple as a temporary

loss of Internet due to storms – something that I've experienced here many times lately! – can bring your work to a screeching halt.

It's very handy to keep your email online "in the cloud," but I strongly recommend that you download and/or make copies of anything important. You don't necessarily need that email from J C Penny, but if the boss sends you a contract, keep a copy on your local computer. Don't just assume that it will always be there in the cloud when you need it.

#### And Stay Safe!

And I can't resist: this is yet still one more opportunity to remind everyone about security. Use passwords that are at least 10 characters in length, with a mix of characters. If at all possible, use twofactor authentication: the website will send a text or email containing an access code. This is such a good idea, we've been looking at a way to add this to some of our services.

And make backups! Everyone says this, but most people are very slack about doing it regularly. I myself have been a victim of a hard drive that just up and died around Christmas of last year. I was able to restore most of my work, but I lost some things, too. Here, whenever possible, automate the process. The POR system, for example, does a full backup every night. That way, the most we might lose is any PORs entered just before the failure, but at least we wouldn't lose everything. Of course, even good backups won't protect you from the dreaded ...

### **Rump Thump**

Back to that ClearOS box. Todd had given me an old Moseley USB stick with the ClearOS installer on it. I took it home and, once I figured out how to turn on the new Dell server that would run it, I inserted it and started up. I ran an integrity check on the USB drive; it checked fine, so I moved into the install.



# Figure 2 - It suffered a Rump Thump, but the innards still worked!

Then I was hit by the aforementioned network issues. Thinking that maybe the install didn't run properly, I started it again. As soon as hit "go," someone knocked on my door. I ran to answer it, and my rump must have thumped that poor USB drive (Figure 1). When I finished at the door and returned to the new ClearOS box, the screen was filled with warnings and errors. That's when I looked down and saw that the USB stick had cracked open. Yay.

But all wasn't lost! We engineers often joke about something having a bad cabinet, but in this case, what do you know; I pulled the USB stuff out of the plastic case, straightened out the connector, and it worked. It was a beautiful thing.

### After Losing a Loved One

There are so many things that you wish you'd taken care of, but just kept putting off.



Figure 1 - Sandy filled several cases and shelves with collectibles.

Fortunately, Sandy and I spent time together daily, so I had plenty of opportunities to tell her that I loved her. We read the Bible faithfully every evening. In fact, the day before she died, she was asking me about God's *agape* love. She told me that she didn't think anyone could truly understand it. I agreed.

Make sure your will is up to date. Make sure the insurance is paid for. Make sure that you can get into your loved one's phone and other devices! Believe it or not, that was a big problem for me, because Sandy had moved all of her business to apps on her iPhone. She had recently changed her lock code, and I had forgotten it. That iPhone is sitting on my table beside me, dead and useless.

In my case, I also have to figure out what to do with Sandy's HUGE doll, figurine and porcelain collections. I just don't have time to sell each item on Etsy or eBay (Figure 2 shows just one of several cabinets and shelving units filled with her stuff). I hate to just throw it away, because she spent a bunch of money on it over the years. So for now ... I have a bunch of stuff just taking up space.

But God has been good, He is good, and will continue to be good. Again, I deeply appreciate all the prayers after Sandy's passing. You have no idea how much that meant to me. So ... until next time, keep praying for this nation!

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

Just getting back from a week of vacation and the usual fires that need to be put out are waiting and needing my immediate attention. I usually then

have to decide what do I need to get to first. There are the obvious high priority items, like if there is a situation causing us a station to go off air or if we are losing billing. These are always the highest priority.

Short of that, if I have a list of things that don't fall into the categories above, I usually try to tackle what I think is the easiest first. The reason I do this is that it's my nature to go at the hardest issue so I can get it out of the way. But then I get engrossed and take hours on one issue and the list starts piling up.

That's why I have found it better to get the easy items first. If I

know one or two of my problems can be resolved by a simple reboot, why not get them done first and then tackle the bigger, more intensive issue? That way the list shortens, and I start to feel better about my task list.

Of course, sometimes what you think will be resolved quickly and simply doesn't turn out to be the case, and the reverse is also true. My first day back from vacation had that kind of situation. I had one station with the HD graphics not working, which I figured would be time consuming. The other problem was a station that wasn't getting audio backhaul from a transmitter site 100 miles away. I thought that would be the simpler issue and that a reboot of a piece of equipment would get us back up and running.

So, I started with that issue. We were not getting audio back from either codec combination, Worldcast Horizon to Worldcast Horizon and Tieline Genie to Tieline Gateway. Both setups have redundant internet streams through two different ISPs at each location. Surely something should be working. Audio was getting to the site, which meant we were on the air, but we were not getting it back from the site for off-air monitoring back at the studio. This also meant the PPM monitors at the studios were not happy.

After logging into all the associated



equipment, I found the issue was weirder than I thought. I rebooted the backup audio codecs, the Worldcast Horizons, but found it didn't help get that

going. I decided that the Tileines were best left alone for the moment since I was on the air and didn't want to make things worse.

So, I turned to other issue and logged into the RDS/HD artwork computer. I immediately saw there was a DLL error. Once that was cleared, the HD artwork was back up and running.

I turned my attention back to the backhaul issue and have been working the problem. Again, I was proceeding with caution since I was still on the air and didn't want to put myself in a situation that was worse with a two-hour drive to resolve it.

I figured that one of my ISPs at the transmitter site might be the issue or one of the issues. I rebooted the POE for that fixed wireless internet service along with its associated router. It took a while before the path for that internet connection came back up. I called the ISP's support line and they told me they could see their equipment but not mine. They could also see when I used the remote rebooter on the POE.

So, I figured part of my issue was at the transmitter site. In the meantime, I found out from our IT director that the main internet at the studio had gone out when I was gone and that was when the backhaul audio started going in and out.

So, there were issues at both sites on each redundant connection for the Tieline Codecs. But wait! I had planned on this very scenario. I had put the Worldcast Codecs on opposite redundant paths so that we would always have a good connection as long as one internet service was working at each location.

As I said at the start of this article, one of these pathways should be working back the studio. But that is not the case. My guess is that we are having issues with the static IP addresses on the main fiber internet at the studio. That would explain getting audio out to the site but not back.

As I write this, we are still working the problem and I am sure we will get the connection

working properly. In the meantime, I used the studio's internet computer to log into the Inovonics mod monitor at the transmitter site. Since this computer is on the Wheatnet AoIP network, I was able to feed the off-air monitoring system and the off air alarming.

At this point, you are probably wondering the same thing as me. If I can get audio back from the transmitter site through the internet from the mod monitor, why is not coming back through the codecs? That is why I strongly suspect that we are having issues with our static IP addresses from our main ISP at the studio. Since the codecs are pointing back at static IP addresses.

As you can see, when you have multi-layer redundancy, you can also sometimes have multi-layer issues happening at the same time. That means we have to find each issue and resolve them one at a time. Fun!

So, when is my next vacation?

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

### Where Did August Go?

What a month it has been! Even with a week off, on vacation, the month has been long yet somehow it has flown by.

The first week of

August was a good time for me to check on the tower sites before going on vacation. It was also a time to somewhat prep for work at the new site for KLDC. We hadn't done too much, but we wanted to be prepared for several things the week we got back from vacation. This mainly involved several trips to Home Depot and dropping what we bought off at the new site.

#### Vacation

We did enjoy a wonderful, week-long vacation the second week of August. I'm sure every August you read about our trips. My parents go and then my husband and me. We get two cabins and spend the week relaxing, fishing, maybe some offroading. This year was a bit different as our dear friend Robert was not there to join us. While we missed having him there, it was a good time for healing.

### **KLDC Relocation Update**

We hit the ground running upon our return to the office on the 15th. I don't think I have been in the office for a full day since the 15th. We had a tower crew out to the new site on the 16th to mount the isocoil and to mount our Ubiquiti PowerBeam.



I had programmed the PowerBeams up and tested them on the bench with no issues. My dad and I mounted the studio end unit on the roof of the office

> and had it powered up and ready for test. The tower crew got the other unit mounted on the KLDC/KGNU tower.

What I should mention here is that the day before, it began to rain. The monsoonal flow came back to the area, and it had been raining constantly for a couple of days. I woke up that Tuesday morning to unforecast rain. By the time the tower crew arrived, it was barely a drizzle,

and nothing was on the radar. They made the decision to climb and get the work done.

What none of us saw coming was that the rain system would build nearly right on top of us and just sit there, dumping tons of rain. The dirt lot surrounding the site became a lake in areas (including where I parked). The tower crew got soaked to the bone and the climbers probably weighed 30 pounds more coming down than they did going up.

So, when I could not see the PowerBeam on the tower from my browser, we pretty much had to call it quits for the day. There was not a good, easy way to troubleshoot in the rain.

The next day the crew came back out. Thankfully it was a beautiful, sunny, and warm day. I had one spare PowerBeam at the office, so I grabbed it, programmed it, and brought it to the site. We changed it out, confirmed on the ground once again that it was indeed working, and then sent it up

the tower where the solo climber would mount the entire unit again.

While we could see the unit up on the tower, we could not see the unit on the studio end. We had to send the crew home, and we went back to the office and got up on the roof to look at the PowerBeam on that end. As had been the case on the other end the previous day, the studio unit would not come up.



## Dad and me up on the roof at the studio programming the PowerBeam.

I have the Ubiquiti Discovery Tool, which we determined does not work with the PowerBeam AC units, only the M5 units. But regardless, we ended up resetting the unit to factory, and reprogramming it on the roof. We did several power cycles to confirm it would continue to work, and then went back out to the transmitter site. I was able to log in to that unit there and could see the studio end. The signal wasn't great, but it did see it long enough for me to "Lock to AP" so I wouldn't have to keep selecting it the studio unit's SSID. But it wouldn't stay connected; I would see it lock and unlock constantly.

We called the tower crew and scheduled them to come out the following Monday to align the antenna on the tower. During this time and a Google search later, I figured out the locking and unlocking of the unit wasn't a signal issue but a wireless security issue. The unit on the tower had a different WEP than the studio end. I had recently changed what we use and didn't pay attention to notice the unit I had brought out had the old one. As soon as I changed it, it locked right up. We got the signal up to -65 dBm, which is in the ballpark of what we would expect for the link.

The next step is to get internet to the site. This was supposed to be done on the 17th. Century Link gave us a window of 8AM-6PM. Great. A site with no bathroom, running water, and no real place to sit down. This was the day the crew had come out (after all the rain), so at least in the morning we had that to deal with, but once we got the link going, we still had to go back out and sit around and wait for no one to show up.

After some phone calls to CenturyLink, I was told that if the tech hadn't arrived by 5PM (the new arrival time) to call back, which I did. We left at this point, and I waited on hold for a long time only to be disconnected when the business office closed for the day.

We found out the next morning the tech showed up at 6:30, still long after the window and after the drywall supply business on whose grounds the tower is sited had locked its gate.

We are now rescheduled for September 1st. We must get this done, so we are once again planning a workday at the site. There is still much to be done before the move takes place on the 12th. I am praying that CenturyLink will realize that this is a business within a business and due to how things are done, we must have the installation done earlier in the day (we put all this in the notes for the installer).

We made plans on the 23rd to go ahead and move the Nautel ND1 auxiliary transmitter from the current KLDC transmitter site to the new site. The prior evening, my wonderful husband and I drove over to Home Depot and rented a small trailer. The next morning, I took it to the office and then we headed over to the site and met Keith and his son Seth there where we began disconnecting it. This was all fairly easy.

We got the transmitter loaded on the trailer along with several other items we were planning on taking to the new site ahead of time to get installed. Once we got the transmitter in the new building, Dad and I were able to begin with the real work of running conduits and wiring things in. We spent the day at the site and were able to get several things done. We also went out the next day to do some more work and spent another day. By the end of the second day, we were able to power on the transmitter and had the antenna switch connected and working.

### NanoBridge No More Workie

While getting things ready at the old Ruby Hill site, we realized we had a Ubiquiti NanoBridge still on the roof (along with the Motorola Canopy we currently use). We had used the NanoBridge for a short time years ago until we figured out that heavy, wet snow would take down the link until the snow all melted out of the antenna.

We have a security camera issue at the KLZ site. Basically, we have a pair of NanoBridge units between the building and barn and a security camera on the roof of the barn that looks at the gate, which is several hundred feet from the building. Some time back, the NanoBridge on the building quit working.

I had ordered a pair of Ubiquiti LiteBeams, something we are familiar with and use at our mountain home, to replace the NanoBridges (the Nanos are no longer made). I would program them up and they would work on the bench, but as soon as we put the unit on its mount on the building, it would somehow reset to factory defaults.

We are not entirely sure what is going on. RF should not be an issue – the nearest tower is almost 500 feet away, and the total power is only 5 kW. Perhaps once the radio is clicked into the antenna housing it is causing the reset because of some mechanical factor (we tried both units and both did the same thing). Or maybe it is the cable. We haven't had a ton of time to dig into it.



# Installing the ND1 at the new site. That's the old man behind the transmitter.

But knowing we had the NanoBridge on the roof at the old KLDC site, we grabbed it and took it to KLZ where I was able to power it on, see it with the Ubiquiti Device Discovery Tool and reprogram it to be used on the building at KLZ. This got the link going for us, which is great.

The security camera on the barn roof, however, is not working now. I had ordered several cameras for the three sites we use them at, and the one on the barn is one I planned on replacing.

Because the barn is a big metal building, we

are going to have to plan a trip early in the morning before the sun hits it and makes it an inferno before we can replace the camera. What we will have to figure out is if the new camera will use the same mounting holes or if we will have to do more work to get it to fit.

### Uh Oh, No RDS!

One morning in late August, we had noticed no RDS on one of our FM stations. I wasn't at work at the time, but my dad, who noticed it on his way in that morning, began looking into it, and when I arrived, he informed me the Trango Apex Lynx microwave system was most likely the issue. I power cycled the studio end, but it did not come back.

We grabbed a power supply and some tools and went up to Lookout Mountain to investigate it. While I worked on a smaller issue at the site, my dad looked at the 48-volt power supply in the rack. He quickly found it wasn't working properly. He switched it out and the link came up with no issues.

Parts are on order and we will attempt to repair the failed power supply, and if that doesn't work, we will permanently replace it, so we at least will have a spare. Now the real question is, will we buy a spare radio (assuming Trango still sells them), or will we go ahead and replace the last Trango pair with Cambium next year?

### Inventory...YAY!!!

Inventory time is here. I have not been able to do too much with it but will very shortly drill down, hit every site and get it done. I have worked hard in the last year to be sure when we move, toss or replace equipment to mark it so it gets updated in the inventory list. So far, I have only had a few microphones I replaced not get removed from the list at the studio. As I go to the transmitter sites, we will see just how good I did with it this year.

### **Coming Up**

In the upcoming weeks it will be grind time as we move closer and closer to moving the KLDC site over to the new location. There is still so much work to be done ahead of time, and then even more work to do when the 12th hits. I look forward to documenting it as much as possible and telling you all about it next month. Until then, 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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