

The Newsletter of Crawford Broadcasting Company Corporate Engineering

DECEMBER 2021 • VOLUME 31 • ISSUE 12 • W.C. ALEXANDER, CPBE, AMD, DRB EDITOR

The Test

As another year draws to a close, I can't help but think back over the past almost four decades. It's hard to believe, but this month marks my 37th year in this position, and I have loved every one of them.

In that first year, 1984, I think on my first day on the job, I got a letter from Mr. Crawford detailing for me the signal problems that we had with WMUZ-FM in Detroit and giving me the job of fixing them. Between you and me, I think that was a test, and as tests go, it was a pretty good one!

At the time, WMUZ was a grandfathered "superpower" class B, running 115 kW at 300 feet above average terrain. Having worked exclusively in the west in class-C



Figure 1 - The old, 366-foot WMUZ tower (L) and the "new" 500-foot tower (R).

country, I didn't know that such a thing as a grandfathered superpower class B existed, so I had to learn all I could about allocations in the east and in the Canadian border zone before I could even get started.

The signal problems for WMUZ were severe multipath throughout the Detroit area. How could that be with all that power? I studied the allocation and the facility and figured it out fairly quickly.

The station operated from a 366-foot Blaw-Knox tower, the top 100 feet of which was a mast. The station employed an RCA "Tri-Pole" 10-bay antenna to produce 115 kW ERP horizontal and 89 kW vertical. An RCA BTF-20 transmitter sent 19.84 kW up the pipe. It didn't take me a long time to come to a conclusion about the situation. That 10-bay antenna not very high up put a really sharp vertical lobe right on the horizon with some pretty deep nulls below. In fact, that main lobe was only about ten degrees wide, and only five of that was below the horizon where it

would do any good (see Figure 2).

Detroit is nothing if not densely urbanized. There were multistory buildings everywhere, with real highrises downtown and in pockets elsewhere including just south of the transmitter site, which was (and still is) centrally located in the city. Lots and lots of surfaces to reflect all that power, creating RF shadows while sending significant amounts of RF into unpredictable locations.

The cause of the

problem was a combination of that high-gain narrowlobed antenna and the relatively low antenna height. To fix the problem, I needed to use a lower-gain, broader-lobed antenna and raise the center of radiation as much as possible.

The thing I learned was that by making any change in HAAT, we would be forced to give up the grandfathered superpower status and come into compliance with the class B maximums then in effect. That would mean giving up 115 kW ERP and reducing power to 50 kW. Remember that I was new on the job and this project was, for better or worse, a test of my abilities. And now I had to convince the boss to do *what???* Oh boy.



Figure 2 - The vertical plane radiation pattern of the WMUZ RCA "Tri-Pole" 10-bay antenna.

But I couldn't see any other solution because there wasn't one. So, I carefully explained the situation to Mr. Crawford... in writing. We always communicated that way in those days, by letters sent via FedEx, typed on an IBM Selectric typewriter. How many times I typed and retyped that multipage letter to get everything exactly right I can't recall, but in that era before correcting tapes and using buff stationary, it was probably quite a few.

Mr. Crawford understood, and in an amazing leap of faith, he gave his newly hired, young DOE the opportunity to run with the plan. Truthfully, I would have been relieved had he rejected the plan and shut me down, because now I had to make this thing work. Would it? It should. But anyone who has ever built a transmission facility knows that *stuff happens*. I was scared to death.

So I went to work, first seeing what the FAA would go along with in terms of tower height. They eventually granted a no-hazard on 500 feet AGL, which would be about 25 feet less than we really wanted, but it was what we got and we had to live with it.

I studied everything I could think of to get things just right. Lobe widths. Brewster angles. Fresnel zones. First null locations and impacts. Second null locations and impacts. Eventually I settled on a four-bay full-wave antenna design (see Figure 3).

From an earlier project with a prior employer, I had some really good experience with Tom Silliman and ERI, so that is the manufacturer I chose. I worked with their engineers and got what I needed, settling on a pair of SHPX four-bay antennas, one as a main and one as an auxiliary.

Because there was substantial population and a commuter route in the first null area, I used some first null fill. That also broadened out the main lobe a bit more.



Figure 3 - The vertical plane radiation pattern of a four-bay antenna. In the final ERI antenna, we added some first null fill.

For transmission line, I opted for Dielectric 3-1/8" rigid line, which had a lower loss figure at 103.5 MHz than Andrew and Celwave rigid line. That made the difference between having to use a 27.5 and a 40 kW combined transmitter.

As for the tower, we went with PiRod. We had to have a free-standing tower since we didn't have the real estate for a guyed structure. A lot of engineering went into that tower and its foundations, but we got it done.

We also had to come up with a new transmitter building. The RCA transmitter was in the tiny studio/transmitter building on the other side of a window from the control room, and there was no space in there for another transmitter. The new building would be located in the ice fall zone of the new tower, so we went with a concrete block structure with a concrete lid. We went to the city and pulled the permit for tower and building.

Next, we had to decide on a transmitter. Continental was the leading manufacturer of the day, and they were located in my then-hometown of Dallas, so I went to the factory, met with the folks there and placed an order for a 27.5 kW 816R-4 FM transmitter.

It took many months to get the tower built, but at long last, in October of 1985, it was complete. We got the transmitter building constructed and the new transmitter installed.

I upgraded the processor to an Orban Optimod 8100A, and because the transmitter would be in a separate building from the control room, we had to use a remote control system. We went with a Moseley MRC-1600, which was state-of-the-art in those days.

We got the antennas installed, the line hung, and everything plumbed into the building and

connected. And with that, we were ready to throw the switch. I held my breath.

Initial reports showed a huge improvement. Multipath areas disappeared, overall coverage was improved, and the sound quality was amazing.

We had an SCA in those days carrying a reading service for the blind. Reports from that quarter also showed a significant improvement.

I borrowed a Potomac FIM-71 FM field strength meter and made some spot checks at ground level throughout the area. They showed what I hoped we would find. I made some measurements in some scary neighborhoods!

The net result of all this was loss of superpower status but a cure to the chronic, widespread multipath problems and an overall marked improvement in signal. It was a big win, the first of many for me with this company, and to this day I thank God for His providence in all the home runs He has given me through the years.

So, did I pass the test? I must have. I'm still here all these years later. And WMUZ is still operating with that same tower and 4-bay antenna, one of the best stations in our company... and in the country for that matter; you'll hear none better.

Looking Ahead

The last two years have been a challenge for the whole industry as a result of the pandemic. Projects have been put on hold in our company as we waited on things to return to some semblance of normal.

As we head into 2022, I've got a pretty good list of things that we need to catch up on, and we'll likely be working our way through that list going forward.

We have a major studio relocation project coming in early 2023, and a lot of the planning and groundwork for that will take place in '22. In fact, it's already begun.

The telco industry is moving away from premise-based hardware for office phones, and I suspect that we may be looking at some changes in that area in the coming year. I do plan to consider cloud-based SIP options for that studio move I mentioned.

As I mentioned last month, we will likely be making a move to some different codecs in select markets in the coming year, and we have some microwave equipment upgrades on the list as well.

And with that I wish you all a great Advent Season and a happy 2022!

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

Hello to all from Western New York! The month of December marks a milestone in my broadcasting career. It was 30 years ago December

23, 1991 that I began engineering duties at WDCX. It was then under the auspices of S&B Communications, a contract engineering group. We would soon go on to build/maintain additional CBC stations in Rochester, Syracuse and Albany. It wasn't until the summer of 2002 that I joined the staff of CBC as full-time chief engineer, but in those eleven years as a contract engineer,



I saw the WDCX ministry grow substantially, especially in the mid to late 90s.

And the changes in broadcast equipment! We went from Moseley TRC-15 FSK remote controls to Burk Technology, which can perform functions we

> couldn't dream about 30 years ago! Transmitters went from analog to digital, HD was introduced in the mid-2000s, broadcast consoles were no longer limited to source inputs, routers would greatly expand the functionality of studio consoles, and computer automation systems virtually eliminated cart machines, turntables, reel to reels and cassette decks.

> > Looking back, it

has been a great experience, and I am looking forward to whatever changes the future brings.

November was a relatively quiet month as far as equipment breakdowns are concerned, but that is not to say that it was a boring month. In Rochester, we utilize a Tieline Bridge-IT to provide audio from our Buffalo station five hours daily. Last month, we began experiencing sporadic dropouts during the afternoon hours.

The first thing I checked was the programming on the Tieline to ensure that nothing had changed since the initial programming. Everything was good there, so I moved on to look at the internet service and the managed switch. I got Spectrum, the ISP, involved, and they verified that the internet service was up to speed with no issues noted. The managed switch was good as well, so I moved on to the Buffalo end of the internet link.

In Buffalo, the Tieline checked out healthy, as did the internet service. I was a little concerned with the internet, as it is only a 35x5 service, but we are careful as to not load it down to the point where we would experience issues. The Cisco managed switch checked out healthy as well, so at this point, I had no answer as to what was causing the drops.

Next, I spoke with technical support at Tieline and got several good tips on what to check on the Tieline units via the web portal, when the problem arose again.

To give you the Readers Digest condensed version of what was causing the dropouts, it turned out to be the cable modem. It was losing handshaking with the switch, causing the ports to be closed that the Tieline needed to be open to pass traffic. Spectrum was hesitant to replace the modem, as every time they checked it, it was working. I eventually convinced them to replace our modem with a new one so we could verify that the modem was the issue. Since replacement, no connection losses have been noted. Another weird issue experienced recently was the failure of our HD-2 signal at the WDCX-FM transmitter site. I checked the ASERV that provides audio to both the web stream and STL and found it to be working fine, as was the HD-2 web stream. Upon arriving at the transmitter site, I noted that the importer was not running on the HD-2 computer. I tried starting the importer, but it would not start. After clicking on the shortcut, it would pop up and immediately go away. Same for all shortcuts on the desktop, so a reboot was in order. I rebooted the computer and saw the same issues – nothing would load. I would click on a desktop icon, the program would quickly come up and immediately goes away.

At this point I was thinking something had become corrupt in the OS, and with the operating system being XP SP3, I knew that there would be no rebuilding of this importer. Chancing that the first reboot was a fluke, I decided to try it again, this time removing power from the computer.

While in the back of the rack, I noticed a purple PS-2 keyboard was still connected to the back of the importer, which was strange as I replaced the wired keyboard/mouse quite some time ago with wireless. Tracing the old keyboard cable, I found that the keyboard had slipped down in the rack somehow, and some keys were being held down where it was leaning on the rack rail. Once I removed the PS-2 plug, I was able to restart the importer, and all was well! It's sometimes the simplest things that drive you nuts!

Soon, we will be upgrading this computer to a new W10 or W11 machine, but for now, it's working.

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 Merry Christmas!

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

Slow? No | Windows 11? Not quite...

Our writer/producers have complained about their slow machines for a long time and their

complaints did not fall on deaf ears. Replacing PCs was mostly what we did this past month and everyone who got one is thrilled with their new mighty mite workstations.

As I reported last month, Windows 11 came pre-installed on these Dell Precision PCs and it's certainly a good-looking operating system. Unfortunately, two of the essential things that must run correctly are untested by their respective manufacturers on Win11. The

WheatNet sound driver, and RCS's Nexgen software have not been evaluated for use with Windows 11 and therefore both are officially unsupported. It is because of this that I made the decision to deploy Windows 11 into only one studio and roll back the other new machines to Windows 10 (with all its service packs).

Power Player

Crawford's 1200 kHz WMUZ-AM is a 10 tower 50 kW class B powerhouse that regularly reaches DXers in Finland. That's very near 4,000 miles from our array in Taylor, MI. It's super cool hearing from Finnish hobbyists who use software defined radios (SDRs) and super long (630meter/2,066-ft.) Beverage antennas to see just what they can receive. They log the reception, then send broadcasters emails with audio clips attached for verification. They often share little snippets and photos of their lives too.

While it's amazing to think of the 1200 kHz skywave signal catching an ionospheric ride to northern Europe, what's more fascinating is that same DXer's recent reception report, complete with audio, featuring our WCHB 1340 kHz station. At only 1 kW and being one of the six very crowded "graveyard channels," WCHB can be a challenge to receive locally. Using a nearly \$3,000 SDR receiver and an antenna stretching more than a quarter mile through the Finnish north woods would apparently be the key to solving that challenge.



I Need More Power Captain!

The directional array for 1200 kHz WMUZ-AM, like many others, requires a pattern change at

dawn and at dusk. Being a tentower system, there are lots of moving parts (literally), all monitored by microswitches for positive feedback to the controller. This ensures no switching fault will result in an improper load and or pattern which would cause interference or system damage.

While pattern changing takes place, the antenna controller instructs the transmitter to mute its carrier until all contacts have moved

to their appropriate positions as confirmed by the aforementioned microswitches located inside the antenna tuning units.

All this monitoring is sensible and necessary. It's perfect except when the malfunction is the monitoring system itself. Then what you have is a radio station off the air for no legitimate reason, its carrier held off because RF contactor positions are not properly validated back to the controller.

I have chased problems with this very issue on this array for many months with varied degrees of success. I've found faults ranging from loose screws holding down microswitches, to broken microswitch levers, to bad relays inside the ATUs. I've built macros in the remote-control system that repeatedly try pattern changes and issue an alarm should human intervention be required. I've even trained a security camera on the control panel so I can remotely see which logic loops aren't closing in the event of a failure.

Troubleshooting usually reveals that a relay somewhere was just reluctant to pull-in, which I usually fixed by replacing the relay itself. After this happened a few times, I looked closely at the voltage present at the coil. Usually, it was a bit low but well within tolerances. However, as I thought this through, knowing that this controller is powered by very simple unregulated 24V supplies, I came to the realization that out at the distant ATUs, the voltage was dipping well below the relay's minimum pull in specification of 19.2V or 80% of the rated coil voltage. Bingo! – during a pattern switch I measured



The relocated regulated 24V power supply.

in the mid 17-volt range repeatedly at the more distant ATUs.

I decided to try a new regulated octal socket power supply, one like what was factory installed but

regulated. That's got to solve the issue, right? It'll provide 24 volts output even if the line side sags due to heavy electrical loads... well, not exactly.

First, it winds up being too large to fit where the unregulated supply was, forcing me to remotely locate it. Second, the "smart" supply protects itself for overcurrent, so when pattern change pulls-in 15 or so relays all at once, it crowbars. Grr...

The next step is to install an external regulated supply with significantly more current delivering capacity. It should tolerate the inrush to the relay coils without balking. For now, the array is switching reliably but it's apparent that the new supply hits its overcurrent threshold during the pattern change, prompting the backup supply to come toggle online briefly. More on this next time.

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

Here's a new way to entertain yourself: take a snapshot of the home screen on your smart phone. Now accidentally open that image without realizing

that you've done so. You will be mashing the useless, unchanging buttons and muttering for quite a while. Don't ask me how I know this.

Here we are with another year ending. I wish every one of you a blessed Thanksgiving and Christmas. I know that God has certainly blessed me again in the past year, and hope you feel the same way.

We've been doing a bit of remodeling (again) around our home, and Sandy has done her

usual outstanding job of designing and choosing colors (Figure 1). This is in spite of the fact that the poor dear is still in pain. We're seeing a new neurologist in the hope that he might actually know what to do with her.

But I'm still happy and blessed. We've even had beautiful weather in most of November, save for a few days of flooding rain. Hey, that's just Alabama for you. I am intrigued by the long-range forecasts that are calling for an unusually cold winter. Something about La Nina and upper-level rotations and all that happy stuff. Must be global warming, I suppose.

Satellite Internet for 92.5

WYDE FM (92.5) in the huge and happy metropolis of Pumpkin Center, AL, now has internet with ViaSat. It's a more expensive than we'd prefer, but given that AT&T had jacked up the price of the phone service to the point of insanity (well over \$1,000 per month for a single POTS line!!), we decided that it was worth it. We're using a Magic Jack for phone service; Todd and Jack are working on the data to/from our Nautel as

you read this.

We were told that ViaSat only provides dynamic (i.e., changing) public IP addresses. We can easily work with that using a Dynamic DNS service. This allows us to use a hostname such as "wydefm.dnsservice.xxx" and the rest is taken care of automatically. If our public IP changes, the dynamic service notes that and we're still able to find ourselves on the Internet for access.

Speed seems to be adequate; it's not like we'll be ferrying gigabytes of data in most cases. We





Figure 1 - Our back porch is now a day room.

could use it as a backup STL, but one must be mindful of the needed bandwidth. Unless you use very aggressive data compression, you could very quickly hit your "cap" on data throughput. (All wireless and satellite services start throttling data past a certain point – including those who claim to not throttle.) (Heh.) Even a gnarly-sounding 32 kbps stream will use over 100 megabits per hour. If you insist on uncompressed, high-quality audio (for example, 256 kbps), you're going to run through a gigabit of data in just over an hour.

A New Trigger Board

Nautel calls it a "firing board," and it's found in their NX series transmitters. It's part of an off-the-shelf SCR rectifier assembly from Semikron. This board triggers the SCRs at the proper time during the AC cycle to control the B+ voltage. This is nothing new; industrial phase control has been a thing for many decades. RCA did it with thyratrons and synchromotors in some of their BTA series. Collins, and then Continental, did this with thyristors and SCAs in their big FM transmitters. It's old, triedand-tested technology.

In this case, Nautel sent out a service bulletin warning that the firing board supplied from the factory could have a defect that might show up over time. Out of an abundance of caution, they shipped out a replacement board. The SCRs and the rest of the assembly were fine; only the firing board needed to be swapped. Figure 2 shows what this looks like.

I've gotten so used to tight spaces in modern transmitters that I didn't even blink at this job. It's a snug fit getting to the mounting hardware for the firing board, but through a careful choice of screwdrivers (and holding my mouth just right), I was able to remove the shield and then the standoffs. Slipped in the new board, made sure the hardware was tight and fired it back up (multi-faceted pun intended).

Nautel recommends that you record the average B+ value before starting the job. Once you're done, you compare that to the new value after replacement. In our case, they were exactly the same (399+V). I would polish my fingernails on my chest and grin, but in truth, it was exactly what I expected.



Figure 2 - Doing a factory mod on our NX50 at WXJC.

Nautel also warns to be careful when reinserting the plugs; you don't want to put a hairline crack in the firing board. I even wore the little wrist-grounding strap that they provided, though I doubt that it mattered that much in our climate.

The older Nautel XL60 performed like a champ while I did the work, too, so we didn't lose any airtime. It was a pleasure listening to the "closet full of bumblebees" noise when that thing came on; it brought back many memories. I had also forgotten how fast that thing will come up and make power. The meter was sitting at zero; I hit "RF On," and in a blink, it was up and at full output.

Web-Based POR?

In the future, we'll continue to move our corporate paperwork online. We're already doing this in some cases, such as with our Public Files (capitalized out of reverence). Our traffic functions have been computerized for many years. PORs, on the other hand, continue to be done on multi-part forms. Not only are the forms themselves expensive,

finding a good dot matrix printer nowadays can be a trick. I keep a spreadsheet of all my PORs and it's depressing to see the number of "SPOILED" rows representing PORs that didn't print correctly. I'm using the FormPilot software that Cris recommended, but even so, the latest model of the OKI printer that we have sometimes just decides on its own to bump up or down one line before it starts printing.

Requester's Name	
First	Last
Requester's Email	
Date Needed	
Station/Site	h
KBRT	~
Vendor Informati	on

Figure 3 - Putting our PORs online.

Figure 3 is a screen shot of what I've been working on in my copious spare time, mostly in the evenings. Making a decent-looking page isn't the trick, it's all the wraparound and glue code that is required to work with the database. But when we're done, we should be all electronic with purchase orders. We'll also be able to go in and search for specific keywords, which will be a big help -especially for folks like me who'd forget their own heads if they weren't attached.

And Now to Todd ...

I was going to rant about media bias, but I'd rather turn it over to Todd to close us out for this month. The TL;DR version of his story is that Windows 10 thumped us during November, and it took some serious head scratching and pondering to figure it out. But given that Todd and Jack are both bulldogs who refuse to admit defeat, he managed to fix the issue.

I'll let him tell the story. Until next time, keep praying for this nation, and be thankful!

When Windows Loses its Mind... Todd Dixon, CBRE

Our WXJC 101.1/850 simulcast runs like a top most of the time due to our Nexgen mystic, Bob Ratchford, who remotes in from North Carolina, hums, and creates Nexgen harmony on that air signal. On the tenth of October at around 2:30 PM, we had an odd situation where everything in Nexgen swore that we were playing a segment of Bob Dutko's show, but clearly what was going out over the air was Percy Crawford and a Youth on the March broadcast. We had a live show coming up, so we were able to get everything back on track right at about the time it began at 3:00 PM.

The next day Bob called me at about 11 in the morning. He noticed that the ASERV running WXJC was adding about 1.5 seconds to the log about every 37 seconds. So the system was on track to add about 2 minutes 30 seconds to each programming hour! Of course, the more curious part of problem was that all of the other Nexgen workstations were keeping perfect time. Clearly, some real investigation needed to take place to figure out what was going on.

I started with the Nexgen "localviewer" file (in the hlc directory). The file is a running log of what is happening in Nexgen locally on the machine you are on. What became clear was that Nexgen (about every 19 seconds) knew that it was about 0.7 seconds off time and so it was correcting by adding the time to the system. Something had happened in the system that was allowing Nexgen to freewheel its time without keeping it in check.

Because time is such a critical element in what we do, Nexgen has a single time sync machine that at keeps everything in the system on the same time. I went to the Windows event viewer in Bob's ASERV machine (control panel >>administrative tools) and started looking through the event logs.

Typically, depending on how often your time sync machine checks time, you'll see an "event id 1" every so often that basically remarks that at a particular time, Windows corrected time by a certain amount and that coyote.exe (Nexgen) was what generated the shift in time. Unfortunately, ASERV5 hadn't corrected time in this way since 2:32 on the 10th of the month. With no system time sync, the machine was in a loop of adding the aforementioned 0.7 seconds, and something had to be done quickly. I tried a number of elegant solutions, but none of them seem to fix the issue.

In the end, the solution was to put the station in Emergency Control Room (ECR) so that it would

then be able to keep correct time. Then, I did a Windows 10 system repair. Effectively, this put the Windows installation back to its default settings; I reinstalled Nexgen and the WheatNet AOIP drivers and everything else that is involved in a ground-up build.

The lesson here is that even with the modern operating systems we use today, there are still times

where bits are misplaced on the disk and the OS simply cannot retrieve the information. Often, that wayward data isn't critical to the running of the machine or your operation and everything continues to move happily forward. Yet, on rare occasions, the missing pieces are part of the most crucial thing you do, and the only solution is to restore the system to its original position and rebuild.

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

Two years ago, in December of 2019, very few of us gave much thought to remote workers. The work force in radio for the most part was at our

offices and studios. In fact, our operation at the time only had one remote worker. A simple, GotoMyPC license and two computers was all that was required to take care of that situation.

Flash forward three months from that time and I can remember the frenzied pace in which we worked as the pandemic hit the U.S. to get workers out of the building and trying to keep them productive. Most of our workers had never used a remote desktop application or software and teaching them to use a VPN was totally foreign.

The geographic landscape for radio's workforce has changed in the last 18 months. I know most of us looked at the work-from-home (WFH) model as something temporary. I know I thought it was for a few weeks, maybe a month or two at the most. As I write this article right now, we still have most of our staff working from a location other than their offices.

I am beginning to realize that this is now becoming the new normal. When I walk into the building, at times it seems like a ghost town other than the one side of the floor where our studios are located. Even there it is not the bustle it once was.

As I think about the frenzy that March 2020 was for us to get ready for what I thought was very temporary, I realize that for the most part the planning for such an operation was geared toward the temporary and not long term. The idea for me, and I can't speak for anyone else in the industry, was to get



them out of the office and make them safe and productive as soon as possible. How we could best and most securely do that was not top of mind at the

time. After all, it was only temporary, right?

I am slowly coming to the conclusion that this is not temporary but the new way of working, and it is not being driven by the pandemic alone. Drive down the street and you can see that nearly every business is hiring. The competition for good employees is fierce. Part of the equation for those workers is workplace environment. And yes, the ability to work from home is a huge factor!

Most managers that are in the trenches, hiring and replacing

employees, already know this. Companies are in competition for these workers. It's not hard to imagine how the typical office worker views this. Why should I drive through horrible traffic to work for you when the guy down the street doesn't require me to do so? In fact, I can work for the guy down the street simply by going from my bedroom to my home office.

This makes me question everything we are using for remote workers and trying to figure out what might be better, more secure solutions for remote workers. Of course, knowing that we have to keep costs down in this environment is part of the equation.

What I set up in March of 2020 as "temporary" may not really be the best approach. We have recently begun to make changes for the long term. Just this past month we transitioned our traffic and billing software from a local server scheme to the

cloud. The traffic personnel no longer have to log into computer at the office to interact with that software. The software now resides on their home computer, and they are connected through the cloud to our server at the office. The hope here is that we are more secure and have greater productivity.

I am not sure where we are headed with

other staff members. If it means the cloud, better VPN ability or just improving on what they are already using. I do believe that WFH here to stay. I no longer wonder when the rest of the staff joins us in the building. I do wonder what the buildings will look like in the future.

house, and we have plenty of storage at the KLZ

old, never to be used again equipment earlier this

transmitter site, especially after I cleared out a lot of

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

year.

December Already?

I feel like I am always saying this, and maybe I really am, but time flies. I cannot believe Thanksgiving has come and gone and we are now waiting on Christmas.

I look forward to the time between Christmas and New Year's. I plan on taking some time off beginning December 23 and not returning to work until the Monday after New Year's. I look forward to the down time at home. It helps me get prepared to start the year off right. November and December are slow months for me typically.

Last year, we replaced the Wheatstone TDM system, which was quite the project. I am grateful we have no big projects this year.

In Colorado, fall means wind. While the weather has been beautiful in November, it has also been very windy. I was surprised to receive a call from our security company about one of our tower gates being in fault.

Upon looking at the cameras, I found the gate wide open and a fence panel on another tower flapping in the wind about to fall over. It was a very windy day for it to make fence panels fall and to cause the gate to come unlatched (this is another story, let's just say we have some work to do to get this gate where it latches properly all the time).

Equipment

We received a large shipment of equipment from Portland in November. There was equipment left over from that market that we wanted to keep in

the equipment. We put in use one of the weather receivers. We have

never had one in Denver, and this is yet another place for us to get alerts for EAS. Installation was easy, and now, all four of our

We received four

sending to Birmingham for them to replace their old, outdated

NexGen machines. I think my

dad will try to sell a little bit of

computers that we ended up

stations have NWS as a source.

We were also able to send a Nautel Exporter Plus to Detroit as one of theirs wasn't working properly and needed to go home for repair.

This surplus equipment will be a help around the company. I think we have enough equipment (minus a transmitter) to put an AM station on the air and have it sound good and be in HD.

Upcoming

To be honest, because we don't have any projects going on, things are slow. I am spending my days in my office dealing with whatever pops up.

I have been working on Custom Views in our Burk AutoPilot program. I am trying to get some things figured out and set up. If I can, I'll be sure to write about it next month. Other than that, nothing really going on.

I pray you all stay safe and well. Have a very merry Christmas!



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



Corporate Engineering

2821 S. Parker Road • Suite 1205 Aurora, CO 80014

email address: crisa@crawfordbroadcasting.com