# The Local E Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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#### **A Strange Problem**

It was the strangest thing. One rainy Sunday in the early part of last month, the 50 kW KLTT(AM) antenna system would not go into the day mode. It ran fine in the 1.5 kW night mode, but if you switched it to the day mode, it would either hang up between modes with some contactors in the day and some in the night mode, or it would come up momentarily in the day mode and then switch back to the night mode all on its own.

The following day, I went out to the site with Amanda to see if we could figure it out. I switched it to the day mode and it went, all contactor lights indicating day mode and the transmitter coming up at 50 kW. But within five minutes, BAM! It switched on its own to night mode as if someone had done that remotely!

We spent hours troubleshooting, starting by disconnecting the night pattern select wire from the three controller panels, one at a time, in an effort to isolate the issue to one of the three. We figured out pretty quickly that it was #3, which is also the panel that connects to all the ATU contactors.

Next, I reconnected the three panels and started disconnecting the night pattern select wire from each of the control cables going to the four towers, one at a time. This showed us that the trouble was coming in on the #2 ATU control cable.

The way this and most all Kintronic controllers work is that upstream logic, including time delays to allow for RF muting and contactor travel time, puts a ground on a common signal line that energizes the 24V slave relays for that particular pattern at each tower. For example, if you select night mode, the controller does its logic thing and mutes the RF on the transmitter before putting a ground on the night pattern select bus. That ground causes all the night pattern select slave relays in the four ATUs to energize, which in turn applies 208VAC through an NC microswitch to the night solenoid in the RF contactor at each tower. So... put a ground on either pattern select bus and it will energize those relays and cause the contactors (all of them) to move to the position for that pattern.

Our troubleshooting was showing us that an intermittent ground was coming in on the night pattern select line from tower #2. If the system was in the day mode, that random ground would momentarily show up out of nowhere and switch the system to the night mode. Sometimes, when switching from night to day, it would appear during that transition and result in voltage being applied to both the day and night solenoids (*that* made a noise!), which would hang the system up between modes and interlock off the transmitter.

I sent Amanda out to the tower, and we disconnected all ten wires in the cable on both ends. Using an ohmmeter, I rang them out and found good continuity on all. We then checked each of them to the ground wire in the cable and all showed open... except that a couple showed a negative resistance on the DVM. Negative resistance? I was guessing that meant there was some sort of current flowing in the opposite direction of that induced by the DVM, but switching to the voltage function, I saw nothing.

Three of the wires in that 10-conductor 14 AWG cable are not used in the runs to the ATU, so I swapped the night pattern bus over to an unused wire. We switched to the day pattern and it worked, staying on the day pattern. We hung around the site for an hour or so and then headed back to the office. It wasn't long after that when – you guessed it – the system on its own switched back to the night mode. Grrrr!! We let it stay on the night pattern for that evening and overnight and headed back out to the site the next morning.

By that time, I was just about out of altitude, airspeed and ideas, so I did the only thing I could

think of. I swapped the night patten bus to one of the two remaining unused wires in the cable. As happened the previous afternoon, when we switched to the day pattern, it stayed on the day pattern. And pattern switching has been stable ever since, several weeks at this writing.

So, what is the issue? Clearly there is a problem with that buried cable to tower #2. The problem arose at the tail end of a multiday rain event, so I suspect that water was part of the problem, and there has to be some break in the insulation of several of the wires in the cable for water to be able to contact the copper conductors.

Tower #2 is some 700 feet southeast of the transmitter building and on the south side of a large irrigation canal that bisects the site. When we built the site in 1995, the company that owns and operates the canal required us to follow a published protocol for the canal crossing, to wit a 10-inch diameter schedule 40 steel pipe mounted in concrete collars and buried five feet below the canal invert. All the transmission lines, sample lines, power and control cables to towers #1 and #2 run in PVC conduit through that big pipe to cross the canal and then in PVC conduit all the way to the tower bases. Has that conduit somehow gotten compromised? Did it break apart at a joint, permitting water to get in? How did the PVC-jacketed multi-conductor control cable get compromised? All questions to which I do not have answers.

So where do we go from here? First, Amanda has sealed up the egress on that tower #2 control/power cable conduit. It was, many years ago, spray foamed at the exit, but over the years that has deteriorated, leaving the conduit more or less open to the elements (and the sky). It's likely that a significant amount of moisture made its way into the pipe during the rain event. She waited a couple of weeks before sealing it up with Duxseal, hoping any water would have evaporated out in that time.

I have a request for a quote in to a directional boring contractor to see what the cost would be to do a bore to that tower from the sample line vault behind the building to the tower. That's one option, a completely new path to the tower with new conduit and new cable. Another thought I had was to run a sewer camera down the pipe from both ends to see what we can see. That might tell us what's going on with the cable, and we may be able to come up with a solution based on that.

You might recall that a few months ago, we had to switch to a different conductor for the continuous 24-volt line to tower #1. We were measuring 16 volts at the tower unloaded, and that wasn't enough to pull in the slave relays. So we may have an issue at that tower, too (although it's possible that problem was just a bad crimp). But it might not hurt to run a camera down the tower #1 pipe, too.

For now, it's working reliably, and we hope it will stay that way.

#### **Almost Done**

Amanda and I made a trip to Southern California the first part of last month to assist with the Zetta conversion there. That was a great trip. We got a lot done in a short time, and we had KBRT and KNSN operating on Zetta by Tuesday of that week, just a day after we arrived. We learned a lot about how to use a "Streaming Sequencer" and do breakaways with it.

We were also able to get a lot done at KCBC in preparation for the Zetta conversion there the following week. RCS installer Samantha Johnson was with us at KBRT, and she went directly from there up the coast to KCBC and got them up and running on Zetta by her second day there.

While that was going on, the conversion was also underway in Detroit. That took a little longer, but we got Detroit on the air with Zetta early in the week of May 12<sup>th</sup>. The remainder of that week was spent doing training and making some tweaks to the system.

That just leaves Chicago, and that's underway right now, with on-site work slated to begin June 9. In preparation for Zetta, that market has been converting from Selector to GSelector.

After Chicago wraps up, RCS will provide some whole-company disaster recovery training. We look forward to that and to never needing to use it!

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

Hello to all from Western New York! It never ceases to amaze me the extent to which scammers will go to try and cheat a

vulnerable, uninformed person out of their hardearned money. In the past, most of these scams were originating out of Ethiopia, but these days, scammers are seemingly coming out of the woodwork, just like the termites they are.

And they are getting better at disguising their true intentions, sometimes hijacking legitimate websites and redirecting payment/account

information to hijack your bank accounts and additionally obtain your personal information. Once they have access to your banking information, it's now off to the races, cleaning out your account(s), and in some instances, applying for credit using your personal information.

This past month alone, I have received (to date) 47 email notifications that I have purchased a laptop (usually from Walmart or Target Stores) and if I didn't authorize this purchase, click this link or call the phone number attached. Additionally, I have received 12 text messages with basically the same information.

Usually, the message has an attachment, something like "Invoice.jpg" or a PDF file. Never click on the attachment! You may think that a .jpg or .pdf is safe, but there could be code/script imbedded that would run in the background that automatically downloads malicious files or forces your computer (or phone) to reach out to a server to download additional malicious files.

Be very careful and cautious, clicking on links within a webpage. With some vulnerability a browser may be able to run JavaScript through the internal windows scripting engine (wscript) which executes code on your device, instead of within a browser.



Additionally, calling the phone number included in the .pdf or .jpg could be as dangerous as clicking on a link. Often times, the scammer will

> impersonate a banking representative and try to obtain account information or passwords associated to your account.

The internet has become a very dangerous place, be careful and cautious wherever you go. Social media platforms such as Facebook, Instagram and X also have their share of dangerous predators. Always be cogitative of whom you are connecting with. And

never give out sensitive information to anyone!

The weather in the Month of May pretty much dictated when our outdoor projects would happen. We had ample amounts of rain which hindered the start of mowing at our transmitter sites.

Finally, after three weeks of waiting for conditions to improve, I was finally able to get the area around the five towers at our Hamburg transmitter site mowed and sprayed. The tower field is still too wet to get the big tractor out and mow without getting the tractor and mower deck buried axel-deep in mud.

Once temperatures get into the eighties and sustain that temperature for a stretch of time, we will be able to get the tower field mowed at both AM sites in Hamburg and Clarkson.

This year will be the 1st time we have mowed the tower site in Clarkson (outside Rochester). In the past, we hired independent contractors to perform the mowing, generally at least two times per year, depending on how fast the grass was growing, and each year the cost was increasing. By doing the cutting ourselves, we will save approximately \$7,000 per year over hiring someone to cut it for us.

On Wednesday the 7th of May, WDCX hosted a tour of our AM transmitting facility in

Hamburg for about 20 home-schooled students and their parents. The kids were given the opportunity to see a working transmitter site and ask questions about the operation of the plant. Brett Larson, our Station Manager conducted the tour and I was on hand to answer any technical questions that came up.

The students were amazed at what they saw and asked some very good questions about AM broadcasting and signal propagation. Hopefully, during this tour, some seeds were planted, and with God's grace, some future engineers will sprout. Lord knows our industry could use some young blood to carry on after all us old guys are gone!

In the April edition of *The Local Oscillator*, I wrote about the perils of finding replacement parts for our Continental transmitter in Rochester, especially the filament rheostat for our 816-R 2C transmitter. Continental Electronics in Dallas was not able to provide any replacement parts, as they are pretty much out of the transmitter business, which left us in a pretty bad situation.

Thankfully, a reader in Salt Lake City read about the need and offered up one that he had in a retired transmitter. Thank You Barry McLellan! I only hope that this generous offering comes back to you tenfold! Words cannot express the gratitude we have for your stepping up and helping a fellow broadcaster in need, when all other avenues failed.

I'm personally glad to see that there are still some good engineers out there, ones that are willing to help without asking for anything in return. Barry, you're tops in my book! Thank you again, and again...

That about wraps up another month here in the great northeast, and until we meet again here in the pages of *The Local Oscillator*, be well, and happy engineering!

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

#### It's all Zetta!

May is mental health awareness month. Good that it is, too, because it takes a lot of mental

energy to change out a radio station audio playout system.

This past month at Crawford in Detroit, we replaced our aged-out RCS NexGen automation system with their current product, Zetta. As Matt, or on-site support engineer likes to say, "It's not NexGen, but it rhymes". That is to say that it's all different, but familiar, in the broad strokes.

I've found Zetta to be welcoming and easy to get my head around. Matt, and his counterpart

Josh, were good enough to spend countless hours showing me the ropes and training the staff. They did two boardroom sessions with them, and a number of deep dives for Steve and me. I'm happy to say it feels like home, or at least a new house where you still need blinds and have yet to hang the TV on the wall.

Zetta brings with it countless major improvements over NexGen, and I must say, I thought NexGen was quite good! To name a few, Zetta is miles ahead in voice tracking with a simple intuitive interface (pardon the cliché) and excellent remote capabilities.



On the remote VT, branded Zetta2Go, one needs only possess a computer with a web browser and a decent USB microphone. Zetta2Go provides an

> HTML GUI that looks like everything else Zetta and lets you see a live log which is pulled real time, loads the heads and tails of next and previous elements, and lets you hear everything you recorded and your overlap with surrounding elements prior to committing the VT to the main system. You can hit the posts every time! You can even adjust levels for effective ducking of your voiceover.

Another massive

improvement is how Zetta handles storage. We have lots of options including Zetta Cloud, to which we have set up and published our inventory. It lets us keep an off-site backup continually synchronized with our main server. It also allows for streaming from the cloud should the need ever arise until local equipment can be brought back online. I've not fully dug into it yet, but I love knowing that it's there.

Zetta also improves the way engineers can purpose their hardware. I chose to commit two radio stations to one sequencer and free up one of my TOC computers to be a hot spare. In fact, I have it available to use for audio outputs should the main

sequencer fail, but it's also running Zetta and could take over for any other machine in the building in short order should we experience hardware or software failure elsewhere.

Zetta's architecture is easily understood, users adapt to it quickly, and I've caught some users already using its more advanced features.



Downed trees sometimes block access to the 1200 site.

#### Gas is \$20 per gallon!?

There are not too many jobs where a person can find himself diagnosing complex computer systems one moment, then running a chainsaw the next. If you hear someone telling you something like that, you need not ask to know that you're talking to a broadcast engineer!

At our WMUZ 1200 AM site, we have a two track that leads about a quarter mile through the woods, then turns out onto a field where the antennae are located. Take it another quarter mile to reach our transmitter building. These roads, or more accurately *trails*, are not unusual egress for transmitter sites and are oft strewn with debris, overgrowth, and bugs – lots of bugs. Recently, spring weather had blown a few trees onto the path blocking vehicle travel, so it was lumberjack time for Steve and me.

A couple of years ago I discovered this fuel in a can called TruFuel. Now, don't get all excited because it's only \$20/gallon, but here's why I think it's worth it. As a self-proclaimed hater of the 2stroke engine, I avoid them like the deep. If you want proof, I'll show you my 4-stroke weed whacker! Two strokes always mock me; I've always struggled to get them started.

While shopping for a chainsaw, I saw a display with TruFuel and started reading the can. It said all the right things, so I bought a quart. I use the chainsaw like most non-forestry engineers, maybe

three times a year. I'm here to tell you that TruFuel is perfect for this. After sitting all winter, the chainsaw started like you just used it five minutes ago.

At \$20/gal it's expensive, but it's ethanol free, so it is much less prone to attract water, and it solves the issue of varnishing in the carburetor, which clogs up jets and leads to having to rebuild or replace the carb. Just knowing that the chainsaw will start every time I need it makes it worth the extra money.

Our trees are once again road-free.



The Electrical Outlet I've always been a fan of remote control. It is beyond doubt a broadcast engineer's best friend. When I first started in this profession back in the late days of President Buchanan, remote control was crude and rudimentary.

Our TFT remote control connected to the transmitter site via a leased line, which was essentially just a super long pair of wires run through the telephone company's infrastructure from our studios clear across town to the transmitter site.

That particular TFT had a nasty propensity to randomly shut off the transmitter, then shut itself down much to the supreme annoyance of then Chief Engineer Fred. Fred quickly replaced it with a Harris unit, then took the TFT out to a friend's farm and shot it with an elephant gun. Its remains graced a shelf in the engineering office for a few years – perhaps sending a clear message to the Harris?

Today, remote controls are essential, and I build them out as best I can. One nasty bugger has always been the computer that needs to be restarted but has failed to the point that you can no longer remotely access it. It needs nothing more than a finger to the power button, but of course, you're on Mackinaw Island.

Remote power strips or PDUs are not new, but they can be pricy. I've recently begun testing one from Ubiquity that costs around \$60 for 6 120V outlets and 4 USB Type C power outlets. The unit connects via Wi-Fi, and should you want it to, continually pings an internet resource to determine if the connection is up, and if it's not, it will powercycle the internet modem, or whatever you want. I'll let you know how it's working out next time.

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

#### THE Month

What a crazy month! Generally, things jump out at me from the previous month that need to

be written about, but this past month has been one that was building for a long time. Things were set in motion months ago that were only going to complete this month, both personally and vocationally.

My youngest daughter graduated from nursing school. Kim and I sold and bought a house and moved all of our belongings about 18 miles closer to Birmingham. I also moved a son and his handful of belongings from Dothan, AL to Hilton Head, SC on the Monday of the Memorial Day weekend.

At work, Windows 11 has produced an update that somehow intermittently works with our Wireguard VPN solution. With Zetta2Go and some current remote worker situations, Wireguard has become an imperative for any work that needs to be done at our stations. So far it's been hit or miss on the solution to the problem.

One solution is that the update disables the Windows 11 Virtual Machine Platform (VMP), and Wireguard, being a virtual networking interface, needs it to actually connect to remote networks. So enabling VMP is a first step. Others have solved the issue by editing their Wireguard configuration files to narrow the "allowed IPs" settings in the file. Still others have found that simply regenerating a new configuration on the Wireguard server has solved the problem.

Maybe it is a "southern thing," but it doesn't seem that many of you end up talking about the weather as much as Stephen Poole or I do. May was one of those months. Severe storms popping up everywhere, generators running where we have them and electronics shedding their mortal coil.

Out at our Tarrant 50 kW tower site (850 AM), we had a power module go out in our Nautel NX50. I guess I can count my blessings for not having any of the modules go dark since we had installed the transmitter in 2020. We had B+ voltage missing for one module, and the NX50 was telling us it was the 3rd module.



There are some 20A cartridge fuses for module B+ that are housed on the backplane, which is conveniently placed right over the transmitter's

> power transformer coils. Getting several "ask me how I know" warnings from Cris and others, with everything safed, I covered the transformer and proceeded to pull the fuses from their holders and then drop both of them right into the backplane.

As my luck would have it, this was an upper power module so the fuses didn't fall to the transmitter's cabinet below, but they were also in a place that I simply couldn't see, either. Nautel support suggested that the side of the

transmitter could be removed and the entire



#### Figure 1 - The borescope camera's lighting allowed me to easily see where the fuses were on the transmitter's backplane.

backplane removed and then the fuses could be extracted from their positions, or I might get lucky with bendable tool with some sticky substance and possibly a mirror that would allow me to fish the fuses out.

Fortunately, I had spent several days with a friend from church recently at his personal shop replacing the engine on my 2015 Jeep Wrangler, and I remembered that he had a borescope. Engine mechanics use them to check engine cylinder walls

for major evidence of scarring. His was a really nice Xtools one with a large 10-inch tablet screen and an HD camera at the end of the articulating head. He let me borrow it along with one of those 3-foot flexible plunge-claw grabbers.

After getting everything in place so that I had the best vantage point, it took about an hour to figure out the way that I needed to manipulate



everything in order to pull the fuses from their positions. Both the borescope and the claw grabber worked exceptionally well and likely saved me about 10 hours of work. Ι hadn't considered really ever having a need for a borescope, but

Figure 2 – A surface mount 1k resistor bit the dust.

this experience certainly has me thinking differently about my need for one. While the one I was using was extremely high resolution and the tablet also has accessories to function as an automotive OBD-II reader, less inexpensive ones with lower resolutions that strictly have cameras on them can be found for under \$100 and are likely perfect for applications like I was using it for at Tarrant.

Besides the work I created for myself by dropping the fuses, the actual power module needed to be gone through and checked with a meter to see where it was having issues. With Cris' guidance and Nautel's troubleshooting write up in hand, I found that several of the modulator and RF MOSFETs were blown along with both a 1k resistor that had grown to infinite and a capacitor that had an obliterated end.

After raiding the NX50's spares box and a quick Digikey order, all of the measurements are back in spec, and when I have an open window between thunderstorms, the module will be put back into service. I think

I take a

Romans 8:28

(...For we



Figure 3 - So did a surface mount capacitor.

know that in all things God works together for the good of those that love Him and who have been called according to His purpose) approach to things like this. The fact is that I don't get an opportunity to see our transmitters break that often. Do I like dead air, a piece of equipment not working, or Microsoft mucking around with Wireguard through a software update? Definitely not! But every time something breaks I am better prepared for the next time that such an event occurs.

Keep looking for the good that God is working out in your situations and may He bless the work of your hands.

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

We have definitely had some ugly weather lately. Cris tells me that Denver has had it just as bad, and if the news can be trusted (always an iffy

proposition nowadays), we've had severe weather over most of the country for the past few weeks. My power has popped on and off, my Internet service has gone in and out and – worst of all – my poor cats are convinced that I'm just not doing everything possible to stop all the Loud Noises. Mean daddy!

Fireworks are legal in Alabama, and the rednecks here will seize any excuse to make their own loud noises. On Memorial Day, even

as the rain was coming down in sheets, the thunder was augmented by the occasional "BOOM ... hisss" as they turned their NAPA hats backwards and yelled, "Hey, y'all, watch this!" I kept hoping the rain would quench whatever they were using to light the things, but my wishes were not fulfilled.

Ah, life in the South. I grew up in North Carolina where fireworks were illegal. Naturally, everyone I knew just drove into South Carolina, where they could be purchased quite easily. You loaded the trunk with your choice of bangs and booms, then headed back into NC for the festivities. The local police had a time getting a handle on it, because the kids would set a few off, then sneak to another location. Holidays, especially July 4th, were kind of comical: boom, bang, rockets streaking skywards, and patrol cars cruising around hoping to catch someone. They rarely succeeded.

Then again ... God bless them, when I was growing up, our small town's law enforcement wasn't exactly top shelf. An alarm once went off at the local hardware store. One cop parked on the street out front and headed around back; another policeman started in the alley behind the business and walked toward the front. They met in the middle of the parking lot on the side and proceeded to whomp the daylights out of each other. They never did catch the criminal.

But enough of that: another severe storm has just passed through, and given that I still have power, I shall report on the month of May.



The HVAC Controller

Cris has posted pictures of his A/C controller in these pages. It's a beautifully simple

concept, and one that we will probably adapt to other facilities. Today's solid-state transmitters don't run as hot as the honking, snorting BE and Continental tube types that we used in years past, but they must still be kept cool. Cris and Amanda set this one up at the KLTT site in Denver. If the main AC unit should fail, a thermostat will note the temperature rise and tell the Pi, which then switches to a backup. We use SNMP to "talk" with the controller

(Figure 2).

I helped with the SNMP code for this, starting with simple command-line "scripts" to turn relays on and off (see Figure 1). I became still more familiar with the Python programming language as a result, and I have mixed emotions about it. There are things that are easier in Python, while other things that I used to write with a yawn in old-skool C or assembler are surprisingly difficult and picky. stephen@StephensPI38:~/executables \$ S8/getstatus.sh

stephen@StephensPI3B:~/executables \$ S8/on1.sh
stephen@StephensPI3B:~/executables \$ S8/getstatus.sh
1
stephen@StephensPI3B:~/executables \$ S8/off1.sh
stephen@StephensPI3B:~/executables \$ S8/getstatus.sh
0

## Figure 1 - Playing with the relays via some simple BASH scripts.

For example, the default for a typical network "socket" (i.e., the thing that actually handles the network data) is to "block:" – the program stops at that point and waits ... forever, if need be. Most people don't know this, but (without getting needlessly technical) the original Apache Web server actually blocked while waiting for new connections. It then "forked" a copy of its program code to handle each new connection(!).

Python supposedly makes it easy to work around blocking with something called "socket.select()," taken from an older C/C++ concept that has been used for decades. You put your socket stuff in the main program loop. Select effectively "polls" the socket, and if it can read or write, you take advantage of it. Otherwise, the program skips over the network stuff and continues the mission until the next loop-around.

That's the principle. I simply couldn't get it to work the way I wanted. The program would read incoming from the Burk just fine, but sending a reply back to the Burk was hit-or-miss. I finally came up with a kludge: I split the non-blocking stuff into one program and the blocking into a second one. It works (see Figure 2 again), so I backed away slowly and breathed a sigh of relief.

Display mode:	Graphical	▼ Bank:	Channels 33 - 48 🔻 📢 👂	_
				Reboot BridgelTXtra
				Reboot Omnia 9
			Lower Ch 35	Raise Ch 35
			Lower Ch 36	Raise Ch 36
	Main HVAC On		Backup HVAC On	Main HVAC On

Figure 2 - The Burk talking to the Pi at the KLTT transmitter site.

#### More Thoughts on Python

According to the Experts – capitalized with reverence – Python is currently the most popular language, ahead of C, C++, Rust and all the others. (Yes, there is actually a programming language called "Rust." It was started as a side project by an employee at the Mozilla Foundation and has now grown to the point that it's even in parts of the Linux kernel.)

Python is great if you need to crank something out in a hurry. But it has its quirks! The latest versions of Python are quite strict about "typing" and "scope:" the former refers to how you define variables and values (as an integer, floating point number, text string, etc.) and the latter is where in your code a given variable can be accessed. Two examples: First, if you create a number variable, say, "thisnumber = 1234" and then later try to use it as the text string "1234," you might get an error. You'd have to say, "str(thisnumber)" to force it to become text. Second, the Neck Beards hate variables that can be accessed outside of a block of code (so-called "global" variables).

If you have a project containing thousands of files and millions of lines of code, yes, it's important that File #145 doesn't sneakily change a value defined in File #2. But given that I started programming in assembler on tiny little microprocessors with 256 bytes of RAM, and given that my programs are mostly short, single files and relatively simple, I've resorted to what I've always done: I just define the variable outside of all the code blocks, making it accessible to everything.

#### More to Come

Of the many good things that came out of this project, the fact that we now have a bunch of tested, working and reliable SNMP code is one of the best. In the future, we can move back to the original impetus for all this experimentation: retrofitting older transmitters with network capability.

(Cris doesn't know it yet, but I've even thought of adding support for analog values like forward and reflected power, too, so that we can monitor them from anywhere via an SNMP monitor like PRTG. But don't tell him.)

The POR system is now three years old and definitely needs some fresh attention. The longdelayed mail server rebuild is now on the burner again. I just finished building a virtual machine for it. Man, I've been spoiled by solid-state drives, though. The old-fashioned magnetic disks in that Dell server feel as slow as molasses now!

But that's enough for this time. Until next month, keep praying for this nation!

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

#### Zetta/GSelector

As you have no doubt read in recent months

in these pages, Crawford Broadcasting Company is moving from the NexGen playout system to Zetta, both RCS Works products. Additionally, we in the Chicago market are also making the move at the same time from Selector music scheduling software to GSelector. Both also are RCS Works products.

The Chicago cluster is the last of the Crawford markets to make this transition. While I am always chomping at the bit to try out new products, I know it was the right choice for us not to be the Guinea pig on this important transition. We have a larger pool of people to train and make

this work, so we have the benefit of the other Crawford clusters hitting the issues before we do.

I have been blessed to obtain my Zetta certification and the Zetta for Engineers certification. This was through RCS Works Academy with online training. While this has been good, I know I won't really get a great handle on this until I sit down in front of a Zetta workstation and begin the work.

I also realize after taking the Zetta training and then some training in GSelector, I am going to have to learn how to be very proficient in GSelector. When GSelector and Zetta are integrated, the clocks for the station's playout logs are coming from GSelector and no longer in Zetta.

This will be a very different way of working as in our current setup NexGen and Selector, the



clocks are in NexGen and we just send a "flat file" from Selector to load the music in the logs that are

> generated from the NexGen clocks. For the most part, engineering personnel are the only ones who touch the clocks. Our programming personnel don't really have the knowledge to make the clocks work, especially when it comes to things like satellite automation elements.

With GSelector/Zetta combination it will open up the programmers to work on the clocks. Admittedly, this leaves me with a little trepidation as it might be easy for one of them to copy an hour over the hours with satellite programming. This even occurred in NexGen recently when one of the programmers was trying to re-

make the clocks after they got deleted somehow.

It leaves control freaks like me with a bit of anxiety as I am losing a bit of control with this situation. However, I am convinced that the change is worth some of the growing pains we might experience. With this change we will be able to work way more efficiently and be able to take advantage of the mobility that Zetta and GSelector offer.

We begin the transition in earnest this month, but have already been dipping our feet into scheduling the music into NexGen from GSelector. This has not gone smoothly at this point, but we are working out the issues with RCS Support. At the time of this writing, the Zetta installation is taking place on the new file servers that will be used for both applications.

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

This last month we completed our conversion to Zetta. In preparation for the conversion, we installed the new server for Zetta.

One concern I had was that the new server has some really loud cooling fans. They only come on periodically, but when they do it sounds like a 737 spooling up for takeoff. The server is

located between our studios in an open closet area in the office. I was afraid that once running full time with Zetta, it might run a lot more often or even continuously.

In preparation for that, I ran a dedicated CAT6 cable to our transmitter room in case the server made too much noise for the office. As it turns out, the server only runs the fans for about 30 seconds a few times a day, not a big deal.

Other preparations included improvement of the network. We replaced our old 10/100 NexGen switch with a new gigabit switch. We did some rewiring to remove any daisy chaining of switches. We replaced the CAT5 wiring with CAT6. It was a general upgrade of our network infrastructure.

We also replaced several aging computer monitors with new, larger monitors. This really helped with the comfort level of operations in the studios and preempted the inevitable monitor failures lurking down the road. When it came time for the actual switch to Zetta it all went very smoothly. A great part of our easy transition was due to the work and help from



Samantha Johnson from RCS, who was on-site for a week. She was awesome at getting us switched over smoothly and provided us with several days of really good training. Her knowledge and understanding of Zetta is outstanding.



Samantha Johnson of RCS at work on the KCBC Zetta conversion.

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

#### California

Last month's California trip was a success. My dad and I spent a few days at KBRT in early May to assist in the Zetta conversion. We hit the ground running after our flight was

delayed going out there.

Samantha Johnson, the field tech they sent out for the conversion, was a rock star. She had already spent a few weeks working on things for the California stations to help make the transition easier. We all had our jobs. My dad worked on EAS wiring and Wheatstone. I helped with various issues that we

found, like getting computers to rename. I can't even say what all we did, but it was a marathon. We were able to flip the switch and get KBRT on Zetta the afternoon of Tuesday the 6th.



#### Samantha Johnson and Todd Stickler in the KBRT TOC waiting on something to happen with Zetta.

While at KBRT, my dad and I were able to step away for part of a day and drive up to the transmitter site. I love that site. Todd has done a great job at keeping it looking good. Plus, it has beautiful views all along the road. It was wet, unfortunately, but still an enjoyable time to get out there and take a peek at it.

#### **Computers are Irritating**

We have had issues with one of our traffic computers in Denver for months now. It started with

the last computer the person had. When she would log in to Visual Traffic, at times it would immediately produce a "Runtime Error 217" and a bunch of letter/numbers. Sometimes it would start to work after closing and trying it a few times. Other times, it'd take a reboot.

Both traffic computers were at their 5-year limit, actually over it, so we opted to

replace them. I set them up on the workbench, side by side, and went through the process of getting them set up, only copying documents over.

Within a month, this same person started having the issue come back. We had Marketron support look at it and after many attempts, they finally said they don't know. I kept at it, using Google as my guide. Then one day, I was looking and noticed BitLocker was turned on. I went to the Office Manager's computer (the other traffic computer I set up) and noticed BitLocker was turned on. I quickly deactivated it on both machines, and I have had no more reports of the error coming back. It's crazy how something so simple can cause major problems.

#### **Traffic Autoload**

In Denver, we are finally about ready to start testing Zetta with importing traffic. It has been working great with KLVZ from the beginning, but the other stations weren't set up for it. It took a lot of effort from both our wonderful traffic person and the ops managers. We will start testing it on June 2, and once we confirm it all looks good, we should have all our Denver stations set up to import traffic automatically.

#### **Holiday Woes**

I don't think I had a day off over the long holiday weekend. Saturday, we had severe weather



move through early in the day. I will typically monitor things and noticed KLZ went down. Thankfully, our backup internet kept us on the air, but we had no microwave link. After looking at the radar I figured it was a rain squall. But it never came back. I tried several power cycle resets, but no joy.



#### Me at the KBRT transmitter site looking at something. I can't remember what. We had the backup XL12 running into the dummy load.

These same storms caused each of our stations' microwave links to lose their connections, but thankfully, the rest came back with no issues.

Sunday, I started getting texts from our station manager about one station or another being off. I found that the Wheatnet PC driver wasn't being seen by the system. It took a simple service restart, and it came back up, but one after another all four went down.

Then on Monday, there were issues with satellite switching, causing a wrong program to air. Despite all this, it was still a good holiday weekend. I'd rather work from home, or my mountain home, any day over having to go to a site or to the office. I am incredibly grateful for the ability to be able to do this.

#### **Coming Up**

As I write this, I am sitting up at our Lookout Mountain site. Comcast Business is supposed to be up here this morning to replace our modem to upgrade our service. I hate the waiting game. I am grateful they give a two-hour window rather than four. Hopefully, they show up.

We have had several wet days in Denver. It started back the Sunday before Memorial Day. As noted above, we had some severe weather move through and it even produced some tornadoes. One video my husband found on TikTok was recorded in my parent's neighborhood. This person had a great view. Another photo was sent to me by my sister-inlaw, who got it from her coworker. The coworker was landing at the Denver airport (DIA), looked out the window, and saw the tornado.

Then Memorial Day weekend, we had evening showers that were rather heavy. I think one day we had close to an inch of rain in an hour. This has caused the ground to be saturated. It also means growth season is officially here. I have been spraying weeds as I'm able. At KLVZ I had to get a shovel and knock a few down that were a couple of feet tall because they prevented our gate from opening. At KLTT I have already mowed with the riding mower once and already need to mow again. The ground is too wet to do anything, though, so now it's a waiting game.

I am waiting to hear from a tower crew to see when they can climb the tower at KLZ. We hope the issue is a failed power supply, but are programming our spare radio just in case the tower mounted Cambium radio is done for.

At KLTT I also have issues to deal with. When out there recently, I noticed the Wi-Fi was not working consistently. After another trip, I put in another Wi-Fi access point and figured out the various things connecting could not resolve the DNS. If I manually input the information, the device would work. Unfortunately, not everything allows this. So, I need to figure out why devices aren't getting the correct information.

There is a thermostat I need to replace as one of the connector pins broke when power cycling it to try and get Wi-Fi to work. And finally, on this same trip I found the AM-IBOC for the backup ND-50 was not happy with the LAN. I did what troubleshooting I could and was unable to get it to resolve so I am now waiting for Nautel to help me figure out the next steps.

I am glad summer is unofficially here. It means weekends away at our mountain home, and it also means more outside work. For now, at least while I wait on Comcast Business, I'm busy getting the VX150 transmitter software updated, along with all the Burk items that need to be updated. I hope to get the Wheatstone upgrade for Navigator 5 soon too.

That covers it for this edition. I pray you all stay safe and well. Don't forget to wear sunscreen when you go outside, and maybe some bug spray, too!

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/100.7 MHz, 5 kW-U, DA-1 KLDC • Denver, CO 1220 kHz, 1 kW-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 • Brighton-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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