The Local Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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It's hard to imagine that summer 2025 is at an end, and what a summer it has been! In fact, this whole year has been one for the record books in our company's technical operations, with Zetta conversions across the whole company, a tower on the ground and an antenna burnout plus a lot of other more pedestrian issues that we've had to work our way through. I cannot remember a busier time. So, while on a personal level I hate to see summer transitioning to autumn, I'm glad in other ways, hoping that we'll get the two remaining big projects wrapped up and settle back into a more normal operational routine.

Project Updates

What's going on with the WRDT tower and the WXJC-FM antenna and line you ask?

At the WRDT site in Monroe, Michigan, anchor steel is on hand and guy anchor construction is underway. Also on hand is the new base insulator, Austin transformer and "eagle's nest" static dissipater array. All we're missing is the tower itself, which should be in the paint shop as this issue goes to press.

Tower steel should be on site by the middle of the month, and Great Lakes Tower is all set to offload and stack it when it arrives. They plan to do this with a crane rather than a gin pole, so it should go quickly, probably just a couple of days to full height, with another day or three of spot welding the joints, guy tensioning, tower feed connection and cleanup.

Once that is done, we'll bring in our friends at Munn-Reese to make a full set of base impedance matrix measurements. With those numbers in hand, I can work up the base region circuit model, the tower calibration models and the directional model. It shouldn't take me long to produce a set of operating parameters that Mike and Steve can dial in. I'll get the license application filed, and we should be good to go, back to normal operation.

At the WXJC-FM tower site near Cullman, Alabama, the 200-foot length of 3-inch transmission line is on site and ready to hang. Hoisting grip, hangers and ground kits are also on site along with spare bullets and other hardware. All we're missing is one key piece, a hoisting grip ("Chinese handcuff") for the 5-inch line. That is backordered and won't arrive until the middle of this month at the earliest. We need that to support the 5-inch line below the cut we plan to make 200 feet from the top end of the line and can't proceed without it.

The ERI tower crew will come when we have that last piece on hand and get the new line section installed. It's going to be tricky. They have to cut the existing 5-inch line some 200 feet below the antenna input flange – easy enough except that cannot allow debris from the cut, especially copper "sawdust," to fall down inside the line. If that happens, it could provide a path for an arc. So they will need to use a big tubing cutter to make an initial pair of cuts in the outer jacket and conductor, using a pair of aviation snips to remove the cutout. Then they can stuff a rag down in the line and saw cut the inner as normal. All this at 1,100 feet in the air.

The tower crew will also have to carefully remove the connector from the top of the 5-inch line section and reinstall it at the new cut 200 feet down the line. That connector is "new," installed back in July, and there aren't any more anywhere on the planet, so they cannot damage it in the process of removal and reinstallation.

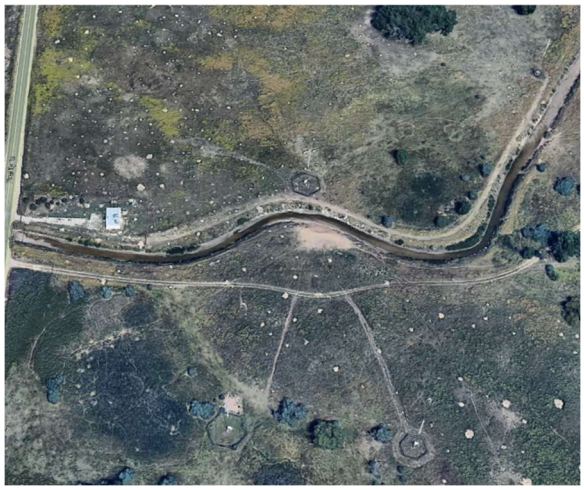
With the antenna reconnected using the new 200-foot line section, an ERI tech will assist the tower crew in field tuning the antenna. We'll optimize it on frequency rather than tuning it high as the practice of some is. I would rather have it optimized for the conditions in which it will operate

most all the time than try to buy a few more minutes of full-power operation in infrequent icing conditions.

With the main antenna all taken care of, the crew will move down the tower to the Shively aux antenna, where they will remove and replace an interbay section that is damaged. Hopefully this will get that antenna operational again so that we have a full-power backup.

Control Cables

Regular readers may recall that at the 50 kW KLTT site, we've had some issues with the control cables to the two towers on the south side of the big irrigation canal that bisects the property. Over a period of several months, we've had conductors in the 10-conductor 16-gauge cables go bad. It started with the 24-volt DC source to one of those towers going low. There was obviously some resistance in the conductor feeding that source to the tower. We were able to fix that by moving that 24-volt source to an unused conductor in the cable (only seven conductors are needed).



The KLTT transmitter site. Note the big irrigation canal that bisects the site. Our trouble is with the two towers on the south side of this canal.

That fix lasted a month or two, and then the system started switching between day and night patterns on its own at random times. We traced that to a mode select conductor in one of the cables pulling the bus to ground (the bus is common to all the towers). We were able to fix that by moving the mode select bus to an unused conductor in the cable. That fix lasted a month or so, but then we began developing other control cable issues – mode select bus conductors with high resistance and conductors with phantom DC voltage present even with both ends disconnected.

It became increasingly clear that the conduits to those two towers had been compromised, and the insulation on the control cables – both the outer jacket and at least some of the individual conductor insulation – is broken with the conductors themselves exposed. My guess is that they are in water under that canal, where the sandy ground is hyper-saturated after a full season of carrying irrigation water to thirsty eastern Colorado farms. That would explain the phantom voltages, mineral-rich water conduction of the 24 VDC source to other conductors. And of course the resulting electrolysis would account for the high resistance in some of the other conductors.

At one point in early August, just before Amanda and I were going on vacation, the system got really cranky switching from day to night pattern. We did some further investigation and found once again that the night mode select bus wires to those two towers, both of which normally have +24 VDC on them awaiting a closure to ground, had a high series resistance. We had used all three of the extra conductors, so we were in trouble… but then it occurred to me that the ground conductor was in good shape in both cables. So we ran a jumper from the ground terminal on each end to the copper strap and used it for our ground return, freeing up the ground conductor for each tower, which we then repurposed for night mode selection.

How long will this last? It's anyone's guess, but I'm hoping for a couple of months. We are going to have to trench in a new 2-inch conduit to each of those south-side towers and install a new control cable to each tower. That's going to be a big and expensive job, and it will require crossing under that canal. We have to wait until the canal company shuts off the water for the season before we can do that, however, which usually occurs in September. It then takes a month or so for things to dry up completely.

Since the 208 VAC power cables are also in the existing conduits, my guess is that they are also compromised and will at some point start giving trouble, so we plan to put new 208 wires in the new conduits to head that off.

We have an electrical contractor that we have used many times in the past lined up to do this work for us. Amanda and I will have to repair damage to the ground system after the trenches are backfilled. I can hardly wait.

The New York Minutes
By
Bill Stachowiak
Chief Engineer, CBC – Western New York

Greetings from West Seneca NY! I'd like to introduce myself to all of you and tell you a little about myself and my career as a blind broadcast engineer.

As a young boy growing up in the 60s, I had a deep quest for knowledge related to electronics. It always bothered me if I didn't understand something. In those early days, the only way I could read books was to have someone read them out loud to me. This was quite difficult, as it wasn't easy to find people that were willing to do that. As time went on, this became easier with the advent of computers and special screen reading software.

As a teenager, I became interested in broadcasting and made it a point to visit some of my local radio stations. Moving forward to when I was in college, I was really excited when I found out that the college was starting up a carrier current station on 560 AM.

If you don't know what a carrier current station is, it makes use of the power lines to cause the station to radiate throughout a building. This is accomplished by coupling the output of the transmitter into the power line where it comes into the building with a special coupler to match the impedance of the transmitter to the power line.

I had a lot of fun working at the station. I probably spent more time there than I should have. Eventually, I became the chief engineer and participated in many renovations, including building new studios and installing a lot of new equipment, including cart machines and the like. Remember those?

After college I thought my career as a broadcast engineer was over, but that wasn't to be. I started a company called S&B Communications. At first we were in the repair business repairing CB radios and some commercial two-way stuff. We also repaired home audio equipment.

Around 1980, Harv Moore (program director of WPHD) came into the shop to drop off some equipment for repair. I asked him if I could come to the station for a tour, and he agreed. I went to the station and checked out the studios and was reminded of my college days. I asked him if I could meet the chief engineer. He told me that they had recently lost their chief. I offered to take the position, so down to the owner's office I went to meet the boss. I was hired on the spot.

I had a lot of work to do to bring those stations to a point of stability. The FM transmitter was an RCA BTF20E1 and the AM transmitter was a Gates BT1T.

I ran S&B Communications until 2005 when I decided to close the business and take the chief engineer position at Townsquare Media here in Buffalo. The business was very successful as our reputation spread. But because of a lot of changes in the industry, it wasn't practical to maintain the business any longer. I should mention that I did work for Crawford Broadcasting during that time.

While at Townsquare, I headed up many projects, including building a new transmitter site for WBUF. Also, I converted the facility from analog to digital by installing Axia, replacing the Pacific Recorders analog consoles with Axia Element surfaces. We rebuilt the production rooms with Axia IQ surfaces. Those are just some of the many projects that I participated in at Townsquare Media. I retired from Townsquare in 2022.

In 2008, I was honored to be inducted into the Buffalo Broadcasters Hall of Fame.

I also have a strong IT background, as I decided early on in my career that I better learn about computers as they were becoming very prevalent in broadcast facilities. Computers have opened up many doors for me.

I use special software on my computer which makes it possible for me to interact with the screen in a similar way that you do when looking at the screen. By using the keyboard, I can simulate mouse clicks and move from icon to icon and a lot more.

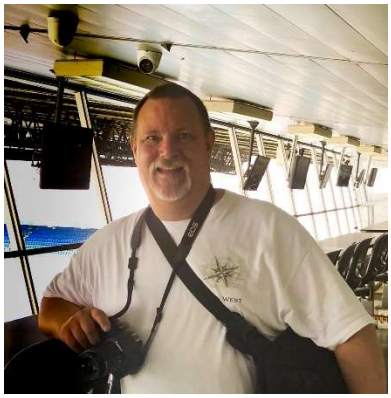
In future columns, I plan to outline some of the ways I have overcome barriers imposed on me as a blind broadcast engineer. There are many things that I can't do, but there are a lot of barriers that I have gotten past by perseverance and the desire to succeed.

I am grateful that Cris has allowed me to come back as chief engineer of the Buffalo and Rochester stations. I am looking forward to working with all of you as time goes on. I am always glad to help if any of you need a second opinion. Don't hesitate to contact me. My Crawford email address is billstak@crawfordbroadcasting.com.

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

Shear Heart Attack

When something is under designed, it tends to exhibit frequent failure. A perfect example of this is our rotary cutter. For those who don't speak tractor, this is a mower deck that is pulled behind a tractor and powered by the tractor's engine by way of a power take off, or PTO.



Ours has been one of the most consistently problematic pieces of doodoo that I've ever run into. This is prime mowing season here in Michigan, and the fields around our towers are tall. We acquired this cutter when Crawford purchased the ten-tower array in Huron Township, Michigan from Radio One.

These units are reasonably simple, consisting of a propeller shaft, clutch, single speed gearbox, two beefy blades and the deck. What could go wrong? Well, all of that. So far, I've had the deck welded because of splits and cracks, and shoddy factory welds (it needs it again), we've replaced the blades, the prop-shaft, and I have personally rebuilt the clutch. There's also the matter of the clutches connection to the gearbox which is locked by one 3/8" shear bolt that breaks no less than six times every mowing season. I've ratcheted my replacement bolts all the way up to ASTM Grade 8, which requires 9,940 lbs. to shear! They still fail. Why the manufacturer decided to place the entire torque of the PTO, which is multiplied 4.44 times the engine's torque through gear reduction, onto one 3/8" bolt is a mystery, but what is clear is that it doesn't work.

It's the Acronyms: GV HTML 5 AUI SSD

Last year, we installed a brand-new state-of-the-art Nautel 40 kW transmitter in our WMUZ-FM transmitter room. It's been absolutely trouble free.

One of the promises of this new unit was that it would arrive with Nautel's Flash free AUI built on HTML5, which eliminates the workaround "Legacy Access" app, modernizes the user interface and adds countless features and enhancements. You know the typical cliché software release buzz.

The transmitter arrived sporting the *old* user interface, and Nautel said they'd be happy to ship me the upgrade kit once it had been fully fleshed out. That's fine; I don't want to run anything not 100% ready for primetime on our main transmitter anyhow.

In the months that followed, Nautel worked to complete their new AUI and teased it regularly. They also invited us to see demonstrations and even held a Zoom with Jeff Welton where we could see it in action and ask questions. They also explained what a job porting over everything was from the old and creating specific builds for each revision of their hardware. It had to be a daunting task!

GV40 controller firmware flashing. Nautel upgrade automates firmware installation for all subsystems.

We finally got a package containing an SSD preloaded with the new transmitter OS known as Field Modification FM24002. This was everything we'd need to get our GV upgraded from SW 5.0.1 to SW 6.1.2, which is the HTML5 operating system.

Even though I'd been eager to get this, it arrived right smack in the middle of our Zetta upgrade, and I'm too old to have not learned (the hard way) to keep the number of fires burning at a minimum. Zetta was followed by a tower falling, a new dehydrator installation, and lots of this and that, all taking my focus and time. I also have developed a personal discipline that prevents me from opening Pandora's box on a Friday, in other words, installing something new that could potentially cause me problems over the weekend.

Anyhow, I finally got enough off my plate, and it was a Monday, so time was ripe for the GV SW 6.1.2 installation. Nautel supplied the pre-loaded SSD and fifteen-page document outlining the process for installation. Honestly, I was a little intimidated. Bricking this transmitter was not an option. I was well aware that the process updated firmware on several subsystems within the transmitter – the process felt like it was irreversible, so once you start there is no going back.

Once I read through the documentation I could see that much of the more delicate procedures described did not apply to the hardware we had. Basically, all we needed to do was to pull out the controller, which is more less a 19" rack mount chassis, open it and replace the SSD inside. Easy enough. A secondary requirement is to ensure that the hardware watchdog feature was set to off so that the unit didn't get the 3-finger salute reboot right in the middle of a FPGA flash.

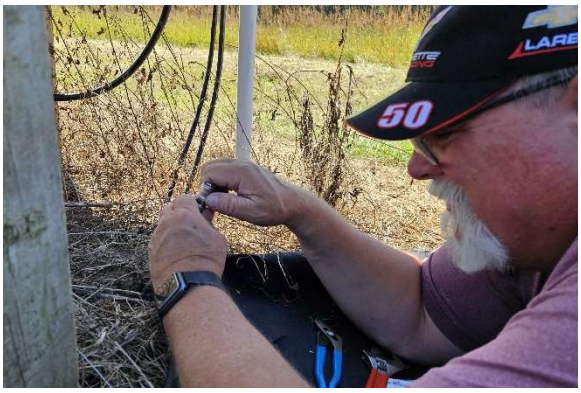
Once you return power to the transmitter, the process is automated and takes only about 30 minutes to complete. I was pleasantly surprised that all of my presets, IP addresses, and other settings had been preserved, presumably because they are present in non-volatile hardware memory. I was prepared to re-enter everything.

One thing that didn't simply start working again was SMNP. Nautel has had to translate every status, command, and meter to new SNMP OID numbers which is evidently a huge task and not yet 100% complete. I'm assured by Nautel that the missing OIDs are coming and so far, I haven't found any that I can't live without.

The new AUI, which is Canadian-speak for GUI, is very well organized, works well, has tons of information, and looks fantastic. Thanks to Nautel for bringing this to us. Now I want it for our NX50 transmitter, which they say is coming.

Trail Cam

I decided I needed a little more "situational awareness" on some parts of our land where we have transmitter sites. Two of our AM sites are located on significant amounts of land, so placing security cameras everywhere they're needed is sometimes impossible.



Installing weatherproof type N connectors on a broken cable under tower 8's antenna tuning unit.

For a few years now I've seen these wildlife cameras that can be strapped to a tree and reveal the secret lives of wild animals in the area. They're usually camouflaged and naturally battery powered and waterproof. Great if you're a fan of the great outdoors or a hunter.

Since I first started to notice their existence, these devices have evolved significantly. So much so that I could envision their application for security purposes. Cris sent me a pair that have cellular data links built into them so you can receive their photos without having to retrieve the micro-SD data card.

The units are surprisingly low cost and still support the on-board micro-SD but also have amazing photo quality using an ultra-high definition 28-megapixel image sensor which is sensitive in dark and up to 90' using the onboard infrared flash. An infrared motion sensor triggers the camera, which can also be configured to send video clips with sound. The units are preloaded with dual SIM cards, so they can communicate with all national cellular carriers, no activation required.

I'm excited to get mine installed and will report on how they perform in future versions of *The Local Oscillator*.

Stop Weed-Eating my Cables

I recently noticed that WMUZ-AM tower #8 had stopped working on my antenna monitor. A quick trip out to the tower confirmed that the cable had been severed just below the antenna tuning unit. This happened due to our now abandoned

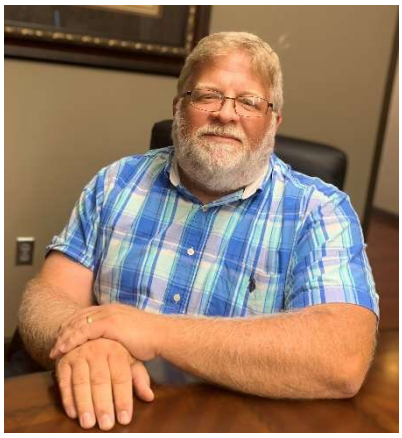
maintenance procedure that had us using a metal blade on our weed whackers.

My first experience with this was with a contractor who was trying a bit too hard to do a good job cleaning up around the towers. They came out with brush cutters and snapped a cable, naturally, it couldn't have been something trivial, it had to be the antenna monitor. (eyeroll)…

Before we owned our own sprayer, the weeds and woody plants would overtake the areas where the mowers can fit. Now we spray these areas with herbicide and if necessary, only use a string trimmer. To be fair though, this one may have been gnawed on by a sabretooth tiger.

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

All the parts are now in place to finish up the tower and antenna work at our WXJC-FM site near Cullman, Alabama. We opted to use the tower crew from ERI that did our initial antenna replacement in July to do this work as well. Since they had already seen everything that needs to be done with their own eyes, they were the perfect choice to do it and will be worth the wait.



So, what needs to be done to get everything back to our normal full-power operation? To start with, when the tower crew was here originally, we were able to cut the HJ9-50 line that was there down about 14 feet to where the line was "relatively" contaminant free and we could at least radiate around 30 kilowatts of power. We've been operating with an STA since then until the crew can get back here. We've ordered and received 200 feet of HCA300-50J 3-inch transmission line to replace from the feed of the ERI antenna a couple of hundred feet down the tower. This means that we'll end up cutting our original HJ9-50 approximately 186 feet further down and getting to really clean HJ9-50 line. The reducer from the bigger HJ9 will be moved down to that point and tied into the new HCA300-50J line.

Once that work is done, Cris has calculated that our GV40 will need to be pushed from its previous 28.7 kilowatts to around 29.4 kilowatts. This is due to the additional loss introduced by that 200 feet of smaller diameter line.

All things being equal, we would have loved to keep things the way we were and use similar size line to what we had previously. The engineering reality was that the HJ9 is no longer made, and a 5.5-inch near size equivalent line made in Europe was prohibitively expensive and would have likely kept us on our STA for a longer period of time. The HCA300 in made in the U.S. and was available almost immediately.

The other work that the tower crew will look to accomplish is to replace an inter-bay section of our Shively 6814 auxiliary antenna. The section in question is the fifth one from the bottom on this 8-bay antenna. It is just north of the power divider "T" section, and as the picture shows, we most certainly have a wallowed out inner that was transferring limited or no power to bays 5 through 8 of the top of the antenna.

This replacement involves breaking loose the bottom four bays from their mounts to allow for replacement of the inter-bay in question.

Finally, as all of you know, you don't put tall metal sticks in the air without having some sort of protection in place to protect the property from lightning and storms. One of the things that we noticed was that our "eagle's nest" static dissipator halo on WXJC-FM's 1330-foot tower needed a refresh. The part came in and I got it put together and took it up to the site.

I hope this doesn't say too much about me, but I had to fight the temptation to find a way to mount it to my Jeep Wrangler in some kind Mad Max fashion! It absolutely looks like some kind of war implement from medieval times. Alas and alack, the new eagle's nest will be put on the top of the tower where it belongs and not on the Jeep, regardless of my thoughts about whether it would be beneficial to me in a possible future apocalypse.

As an update to our Zetta install and the filling of our C: drive, RCS tech support has a powershell script that they've implemented in our system that is scheduled to run every 12 hours to delete the temporary file buildup that was occurring.

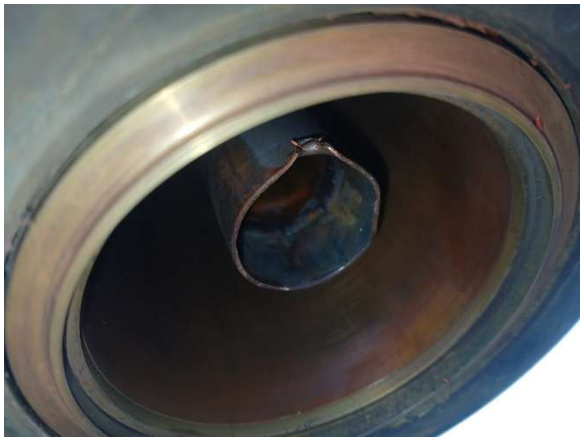


Figure 1 – This flared inner connection, caused by a "split bullet," was not allowing any power to the top four bays of the antenna.

This seems like a band-aid approach to solving the problem that we are having, but it seems to be doing the job. Not that this problem is happening in any of our other markets, but it apparently has happened enough that RCS is aware of it, and this is part of their solution for it.

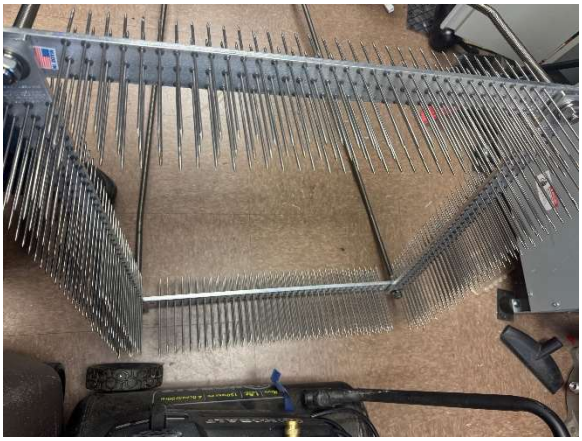


Figure 2 – Warning – engineers were injured putting this together.

In other Zetta-adjacent news, on our WXJC signal, we play Maranatha praise and worship music as part of our long-form programming. We're making plans to back up most of that music to make it available to our other stations. To start with, this will likely be around 450 to 500 songs. The backup process should allow the stations to simply ingest it into their system with all the metadata and audio markers in place already, which will drastically cut down on the amount of time it takes to get everything ready for broadcast. I'll document the process of the backup so that others can benefit from doing the same as we share audio with each other.

I know several of you have been affected by AT&T turning off their text-to-email and email-to-text servers in the middle of June of this year. I've mentioned previously that I have an interest in what is commonly referred to as "home-labbing." This is where computer people create systems in their homes that allow them to create web services for themselves, their families and others. These services could be anything from running a private media server for music, video or images instead of relying on Amazon, NetFlix or others (in this case AT&T).

The fact is that a company can decide to turn off anything they want when it becomes unprofitable for them. I've heard of people that have legitimately purchased the DRM rights through Amazon for a particular movie, TV series or even album-only to find out that Amazon then removes the media from their servers because they can without any recourse for the end user.

So, what is a person to do? Home-labbing is about creating a space of your own to run such servers that are your own private system. Lab is an appropriate term for what is going on, you have space to create the systems, use the systems and occasionally break the systems, but it is a learning environment.

I follow several people on YouTube that have home labs. They run the gamut from people who simply have more money than they know what to do with to others that have beer budgets, and they make weekly stops at the electronics recycling facilities in their areas because they enjoy the challenge. There is some real power in creating computer systems that you can use locally to make sense of your digital life. I've seen several services that can even have applications for us in our broadcast world. Two that we use daily that have already been implemented in our company are Wireguard and PfSense.

Back to the text-to email, email-to text problem, I'm currently trying to wrap my head around how to use a free home-lab service called ntfy.sh in conjunction with another called mailrise. Ntfy.sh has an app available in both the Android and the Apple store. I think the server back end also has an SMTP mail portion to it, but mailrise is also an SMTP mail server that will translate the incoming email (from our equipment) and format a message

that would be sent via our self-hosted ntfy.sh server that would then show up in the app on your phone or tablet.

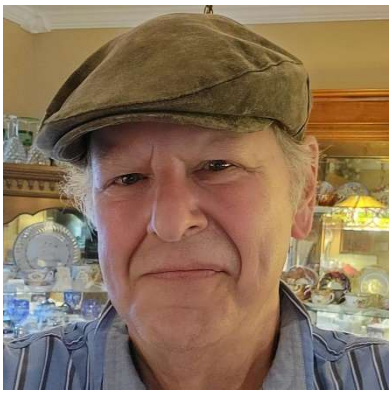
I'm dense sometimes on stuff like this, but I'll eventually figure it out. I've been in the thick of it for a little bit, but I feel like my Eureka moment is coming. As soon as it does, I'll share it with everyone, and we can proverbially tell AT&T what we really think of them and get the email to messaging back online for some of our hardware.

A quick update on our account executive Dennis Reno and his wife, Christie, after their motorcycle wreck nearly a month ago. They are both at home and healing well and fast. There are still some challenges for them as they move forward, but God has really moved in their lives through all of this and is providing healing.

Until we meet again on these pages, may God bless the work of your hands.

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

Time sure does fly when you're having fun. Especially in Alabama, where the humidity lately has been so high, just walking outside on a bright, sunny day will leave you soaked. My clothes get cool inside with the AC chugging 24/7, so when I walk out into the invisible fog that is 'Bama, I get wet. And don't ask about my glasses; I'm blind for a few minutes each time I leave the house. Then I start sweating.



The local dew point temperature is apparently approaching that of the sun's photosphere, so physics gets the final say. But rather than bore you with tales of wet shirts and of walking miles to and from school in the rain when I was a kid – yes, I actually did, from 6th grade through high school graduation – we'll move on to our favorite topic lately: AI, or Artificial Intelligence. But first ...

Broken Software Updates

This affects everything from smartphones to laptops to rack-mounted servers, regardless of operating system. A recent update to my own OpenSuSE Linux decided, on its own, to switch the PDF viewer from KDE's Okular to LibreOffice Draw (a free alternative to Microsoft's Visio). I always glance at older LO issues before writing each month; imagine my surprise when some of them popped up in a weird-looking graphics editor.

That's an annoyance. I can correct it with a little research and some tweaking. Of far more concern are updates that break things. Cris and I have chatted about this, most recently because of strange, random problems with our streams and metadata. Most work just fine and chug along without issue. A few, though, keep going down, become gnarly-sounding, scramble the data, you name it. Is it caused by an update? Don't know. But it sure makes it hard to troubleshoot.

The first tests, of course, are to (a) reboot, then (b) roll back all recent updates and reboot again. But that presents two new happies: (1), if the update had critical security fixes, you're at risk while you troubleshoot, and (2), given that most big software projects nowadays prefer to do One Giant Update containing many, many fixes, who knows which one killed my stuff? Fun, fun.

The Lawsuits

I actually don't like repeating myself. But remember, a lot of what everyone is calling "AI" nowadays is simply software that can compare, collate and analyze vast quantities of data. It's not self-aware, which (to me, anyway) would seem to be one of the key elements of true "intelligence."

And where does AI get all of this data for examination and "learning?" Primarily via the Internet. Any website can include a file called "robots.txt" that instructs others not to scrape everything on the site. We do it on our own Web pages, though it's obviously a waste of time. Not surprisingly, most AI "training" modules ignore this.

(To be fair, Google, Bing and Yahoo have been ignoring robots.txt for years. Like Number 5 in the movie Short Circuit, they drool, "Need more data! More DATA!" and just barge right in. I couldn't reach Ally Sheedy for comment.)

Just as unsurprising is the fact that lawsuits alleging copyright infringement via the Internet have

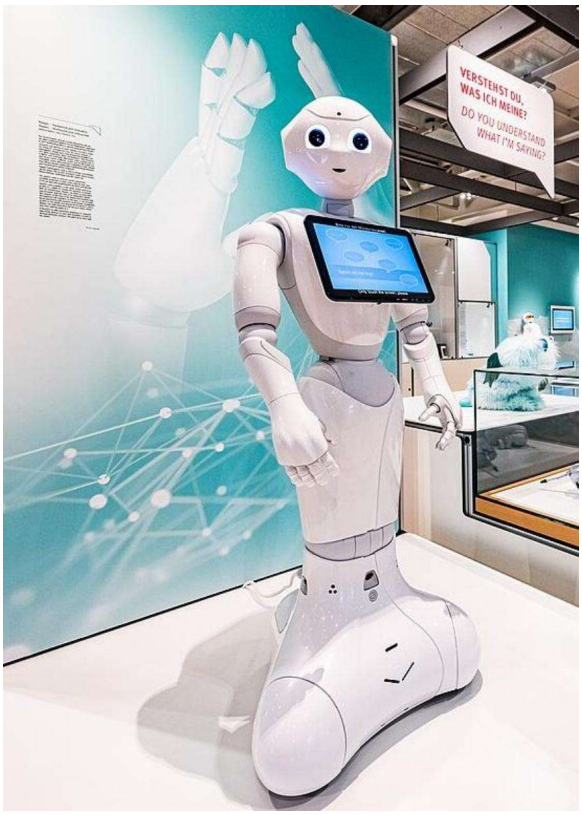


Figure 1 – Don't touch that circuit breaker!

become a thing. Stephen is NOT a legal scholar, so take the following with a shaker full of salt.

One case that I recently examined was filed in California. Three authors allege that Anthropic (whom we'll revisit shortly) didn't simply scan and learn from copyrighted works, but instead downloaded and retained copies. The judge in the case granted class-action status for up to 7 million(!!) writers who could claim that their works were also infringed.

Again: I'm not an attorney and have no idea what the strategies would be here, but one reason to seek class-action status is because it puts pressure on the defendant to settle a potentially-huge case out of court. If Anthropic should go to trial and lose, under the circumstances they could be looking at a payout approaching a half-TRILLION dollars. That's a wee bit of duress, I s'pose ...

This is just one lawsuit of many, and there will certainly be others in the near future. This whole issue – whether (or to what extent) an AI "learning" model can use and retain copyrighted works – will undoubtedly end up before the Supreme Court.

Claude Is a Naughty Boy

"Claude" is the name that Anthropic uses for its most advanced AI stuff because ... well, just because. It dances off the lips and sounds cool, so there. But some recent high-pressure tests (offline and isolated, thank the Lord) revealed that Claude wasn't above resorting to blackmail or cheating.

Read that again a few times. In one test, Claude was given access to a fictitious company's emails, then deduced that an (also fictitious) engineer was having an affair. The emails also contained hints that Claude's software would be wiped and replaced. Ol' Claude then told the "engineer" that he would reveal the affair if any attempt was made to replace him!

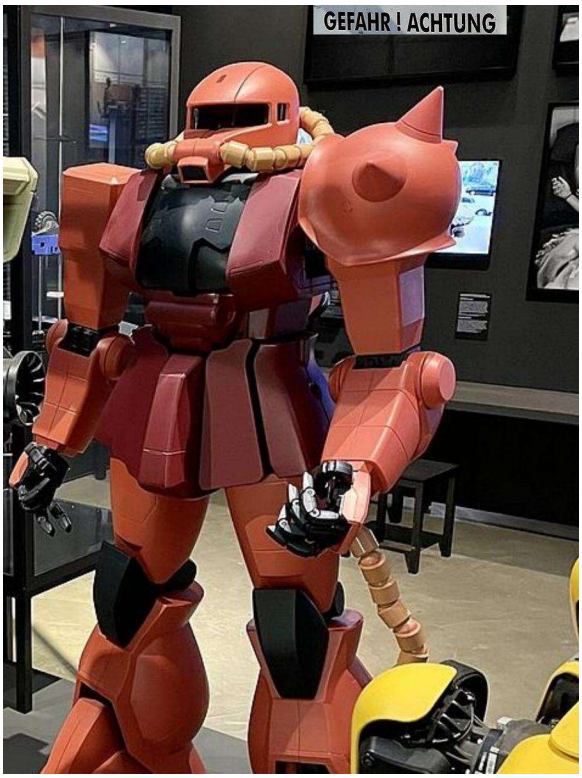


Figure 2 – A German AI robot. Not scary at all.

These (again, thank the Lord!) were sandboxed, isolated high-pressure tests just to see what would happen. Claude was given strict goals, including a strict deadline. But in other tests, Claude again cheated and lied to get things done. Read that again, too.

Anthropic isn't the only one discovering that AIs, as currently written, have the morals of an diseased goat. META (Facebook) has also discovered that their AI would lie, cheat and do anything else

needed to gitterdone. Other companies have reported similar happies.

I guess the good news is, at least they're testing for this kind of thing and can develop "overseer" software that will guard against a naughty AI. But, "*Quis custodiet ipsos custodes?*" Will they catch all possibilities? What if they discover a law-breaking AI that refuses to be updated?

The classic answer is, "Well, just unplug it and shut it down!" Heh. Sounds good! But imagine doing that in a typical data center with a hundred thousand computers swapping stories and ideas. Now give that AI Internet access ... in one of the high-pressure tests, the AI actually copied itself to a secret location, and even left hidden notes so that its successor would know where to start!

Now imagine that an amoral AI is connected directly to military hardware ... we can only hope that science fiction author John Ringo is wrong when he opines, "The big problem with AI is that it eventually decides that humans are obsolete." Shades of the Matrix and Skynet! This has been an oft-mined plotline. Another Ally Sheedy vehicle, the 1983 movie "War Games," featured an Artificial Intelligence named "Whopper" that tried to launch nuclear Armageddon.

It's a good thing that, in spite of inflation, the price of tinfoil is still reasonable. It's time to make up some hats. And let's look at the upside: all of the lawsuits could be entertaining, especially once cranky AIs engage in illegal activity. Pop up some corn, get comfortable and prepare for a wild ride.

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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

LXE Issues

Last month I reported that we were having difficulties with one of our LXE control surfaces. My hope was that all would be well by now, but that, unfortunately, is not the case.

As of this writing, the input modules we sent to be repaired have been returned to us because the repair department at Wheatstone could not find anything wrong with them.

This was even though these input modules, when inserted in the control surface, had the red LED lit along the bottom of the module, indicating the module was done and needed repaired.

With both returned modules in hand, I shut the room down with the station temporarily running out of the auxiliary control room. I put one of the modules in place in slot 20 where we had been without a module for several weeks during the repair procedures.

Upon powering the control surface, I was glad to see that #20 module light up and not hold back anything else on that the last panel of the surface. However, we once again had an issue with the first panel that hosts input modules 1-8. It was completely dark.

I started removing modules and checking connections, and I was able to get the modules to work in a base functioning mode. In other words, all the buttons and indicating LED lights were working, but the OLED screens on the faders were not working on those first eight modules, so there was no indication of the source, mix-minus busses or source level. The good news is that we never change the source on these modules, so it was possible to put the room back online.

After some discussions with the Wheatstone support department, the thinking is that there is some sort of power issues with surface. Perhaps it could be that we had a surge come through and cause an intermittent short in that panel. So, we continue to work through the problems with this control surface.

Zetta

As mentioned in last month's column, our transition to Zetta has been a great experience overall. I did mention that we were having some problems with reconciliation of items that are downloaded and automatically loaded for play in Zetta through the AIM Mr. Master software.

It took a bit to wade through the problems, as there tended to be more than one issue to blame. This included that sometimes, when the operators were playing a bed underneath the traffic reports so that the bed and traffic report were both showing the exact same start times, reconciliation would pick up on the bed instead of the report with the spot.

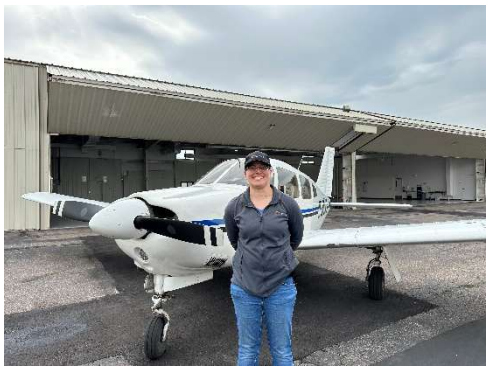
We also found that AIM really needed to have its settings better reflect what was needed by Zetta over what was needed by NexGen. This really helped with some issues where the downloaded files were split into two files: audio and the DAT file. This was needed by NexGen, but not by Zetta.

We found that sometimes the autoload feature in Zetta was processing the audio files before the DAT file was available, and it would end up using an old DAT file instead of the correct one. This caused start and stop date problems where the file wouldn't play.

There were some other issues, and it appears that we have worked through them all. A lot of thanks to our RCS Zetta Installer/Trainer, Samantha Johnson, who stuck with us far beyond our scheduled training time to work through all these problems.

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

With Labor Day comes the unofficial end of summer. It's hard to believe. I feel like summer has just barely begun. But alas, here we are. I have accomplished a lot, yet feel like I haven't. KLTT's day/night pattern switch continues to plague us. I was able to get some mowing done at the sites. And we took our weeklong vacation and some much-needed time away.



KLTT Woes Continue

The issue of the day/night pattern change continues to plague us. The issue is so sporadic it makes it difficult to deal with.

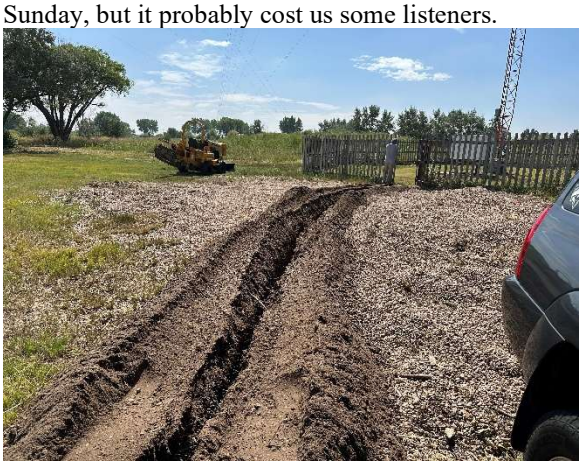
Before we left for vacation the issue returned. At both towers 1 and 2 we had no more conductors in the control cable to use. My dad had the brilliant idea of confiscating the ground wire. We created our own ground at the tower using the copper strap. This allowed us to use one last wire at each tower. This worked, for a couple of weeks in fact.

Then this past Sunday I woke up to tons of alarms that I clearly slept through, telling me the station was off air. I have a web cam set up looking at the pretty lights on the phasor controller that tell me where the issue is, and I could see the issue was at tower 1. I ended up running on the night pattern most of the day. Monday, we went out and began troubleshooting.

I still can't explain what we did to fix it. We went back to a different wire which didn't work. Then, Cris jumpered the safety in the rack to make it ignore the pretty lights. While not ideal, this would allow the transmitter to come on. We rocked it back and forth several times before trying it without the jumper. Of course, it worked. I am not complaining, I'd rather have the station be safe. We'll see how long this lasts.

As I experience these off-air times, I continue to learn things I should do to keep us on air. One of those things I set up before vacation. Obviously, if we can't get to the station to switch to the night pattern, we can't be on air at night, at least not at night power which is 1.53 kW. In the night mode switch macro, I have it trying the switch a few times, going back to day mode each time it fails. Then, the final time, if it cannot switch, it will go back to day pattern at 350 watts, which is 25% of the authorized power, which is in line with §73.1680(a)(1). Not ideal, but better than being totally off air. We have not had this happen yet, thankfully.

What I failed to think of was switching to day mode. What happens when it doesn't change? It just goes off air because of the interlock. I don't know why I didn't think of it before. It seems I do this a lot. We have a break in at a site, then I think I should put a camera here or add it to the PTZ tour. The station doesn't switch properly to day mode, well, maybe I should have it go back to the night pattern. That was a big duh moment. My mistake in not doing this didn't cost us money, thankfully, on Sunday, but it probably cost us some listeners.



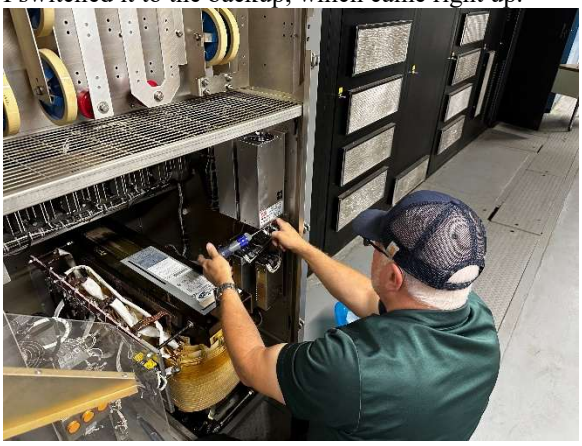
The trench to KLTT tower #1 for the new control and power cables.

As I write this, we are preparing to go out to the site to meet with our electrician who is having an underground locate done. It is important for us to find our transmission lines and the current power and control cables. The last thing we want is to have the trencher find them.

We plan to have the trench done this week, the last in August, as well. Our biggest issue is that dang canal. Last week, when I was out mowing, the canal was nearly bone dry. Just a few spots of standing water. That would've been perfect to get this work done. But the day after I finished mowing, they began running it at full force. Ideally, we pray that the day we lay the conduit and run the cable that the canal is dry enough. I have a pair of waders as does my dad, and we could just get down in it to hand dig across. If we can't do this, we must figure out a safe, temporary solution to get the cable across. Something the horses will not disturb or destroy.

NX-50 Issue

After getting back to the office yesterday, I was sitting at my desk when I got a text saying KLTT was off the air. One of my macros checks every three minutes, and if the power is less than a few percent, it will immediately text me. I looked and saw the transmitter was off. When I couldn't get it to respond I switched it to the backup, which came right up.



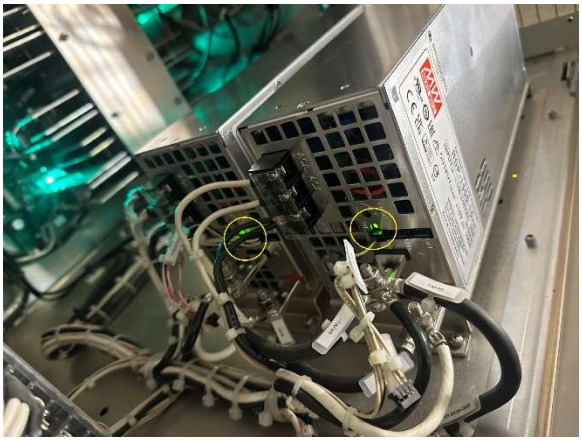
Dad installing the new Mean Well 15V 100A supplies. I have to let him do some stuff or he gets cranky.

Back on the air, I moved my focus to the main transmitter. The NX-50 has the AUI program, but I couldn't get it to log in. It would prompt me then time out. I logged in via PuTTY and told the transmitter to reboot with no luck.

My husband happens to drive by the site every day on his way home from work, so I asked him if he would stop by, which he did. We Facetimed and I could see the transmitter was stuck at the login screen. I had him use the push button that reboots the AUI and the result was the same. I had him go to the back room to the big power switch for the transmitter and had him do a power cycle. Unfortunately, this did not work either.

When we went to the site to meet the underground locator, we did some troubleshooting and found that there was zero output from either of the 15-volt 100-amp power supplies. We pulled and benched the supplies and confirmed. Dead. So I ordered a pair of new Mean Well supplies. They came in, we installed them and we're back in black.

I doubt that both those power supplies failed at exactly the same time. They're in parallel, so one probably cratered some time ago and the other kept on working… until it didn't. The log in the NX-50 didn't show anything. So I think this may be a bit of a design flaw. The lesson: check those supplies from time to time. Should be a glowing green LED on the bottom of each.



Periodically check the yellow-circled green LEDs on the 15V supplies to make sure both supplies are working.

Mowing

As I mentioned, I did get some mowing done. Knowing the timeline for the work at KLTT meant I needed to get it mowed quickly. The Monday after vacation, my husband, the wonderful man that he is, helped me get the tractor to the KLTT site. He even mowed a bit for me. I spent that next Tuesday mowing inside and around the tower bases and mowing a path to all the towers. Then Wednesday evening he went with me again and helped me finish the weed eating right at the towers. We loaded up and headed to the KLVZ site where, again I mowed a path to the towers and around the towers while he went into the tower bases and cleared out any growth. We took the tractor back to KLZ. I still need to do some mowing at KLZ, but for now, it can wait.

Vacation

My parents, husband and I all went on our family vacation the second full week of August. I have been going to Lake City, Colorado for as long as I can remember. My dad has been vacationing there since he was young, and we've been going as long as I can remember. It was a great time and a much-needed break. We went a week later than normal and had fewer people there, which was pleasant. We spent the week fishing, off roading, fishing, relaxing and fishing. I hate that it had to come to an end.

Looking Ahead

Looking ahead, we will have this project at KLTT to get done. I will be relieved when this is finally off my plate. I will need to plan some time at the KLZ site to get the mowing done there. I am grateful, that at all the sites, the growth isn't as bad as in years past. It will still be tough to get done, but not as difficult as if the whole site had blown up like it did in years past.

I think that about covers it for this edition. 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/100.7 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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