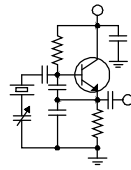


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

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Online Public Files

We went live with our online public files on schedule of June 24. Logins were sent to the designated public file contact at each station on that day along with instructions, which included a mandate to immediately put a link to the online public file up on the home page along with contact information for someone in the station who can assist disabled persons with the file.

Our people are busy uploading material, which at this point primarily includes all the quarterly issues/programs lists and annual EEO reports. Anything filed with or generated by the FCC is automatically linked, so we don't have to mess with a lot of stuff. New political file material along with quarterly I/P lists and annual EEO reports will be uploaded at the appropriate time.

Our attorney pointed out something to me that I mentioned in these pages several years ago when the idea of online public files was first being considered. Uploaded documents are time stamped, so it is immediately apparent to anyone, including and especially FCC personnel, exactly when a document was uploaded.

For example, §73.3526 requires that "The list for each calendar quarter is to be filed by the tenth day of the succeeding calendar quarter" - If the FCC looks at a station's public file and finds that an I/P report was uploaded on the 11th day of a

succeeding quarter, that station is busted and will be fined with no defense.

The same can be said for missing documents. If a required document is not in the file, its absence is de facto evidence of an FCC rule

violation, and "my dog ate the EEO report" won't get you anywhere with the FCC. Our attorney told me that television stations, which have been dealing with online public files for some time now, have found this out the hard way.

That means that we are going to have to be *hyper-diligent* about getting required documents generated, proofed and uploaded on time from here on out. We (Corporate) will be watching to the degree possible, but the responsibility is on the local station managers and their designees.

The good news is that there is nothing hard about any of this. We've just got to do it.



The crew from Mauna Towers wraps up the KLDC-FM antenna upgrade on Lookout Mountain. Yes, the 8-bay antenna on the adjacent tower does employ mechanical beam tilt.

A Home Run

God has blessed me with a string of successes throughout my career (40 years this summer!). I give Him full credit for these because after all, I'm just a guy

from the panhandle of Texas - what do I know? Any success I have achieved has come from His hand. I am grateful for this and honored to have been used in this way in the Kingdom.

Amidst these successes, there have been a few standouts. As a lifelong baseball fan, I think of these as "home runs." Last month, I was blessed with

an out-of-the-park, ðsee-ya-later,ð over the wall, ðit ain't comin' back!ð home run.

We put the KLDC 95.3 MHz translator (K237GG) on the air last April with a horizontal-only antenna. We did this because we were in a hurry and I wanted to file a ðsafeð application that would be granted without objection by spectrum neighbors. We got the grant, put the station on the air and immediately went to work to improve the signal.

It was immediately apparent that we needed some vertically-polarized signal to make the station really work, which is no surprise. I filed an application to add vertical elements to the antenna with a 60/40 horizontal/vertical power division. The FCC granted the application within just a few days and I ordered the antenna. The good news was that we were able to keep the existing antenna and simply add the vertical elements, power divider and cables, thus protecting our initial investment. The bad news was that mounting this would require some field engineering and tower work, including a crane.

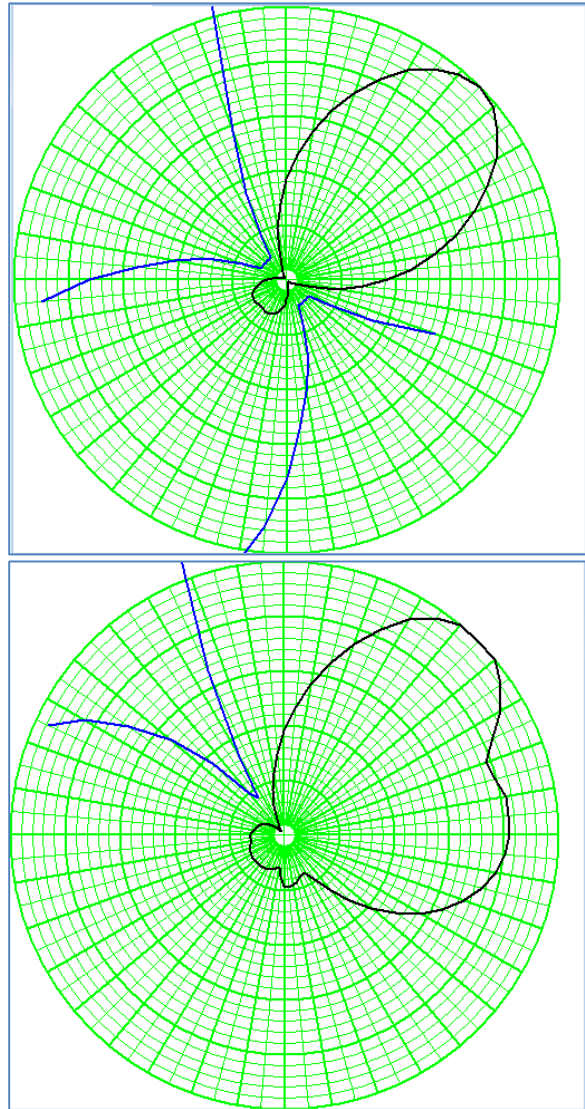
On June 7, the Mauna Towers crew arrived with the crane. It took them about three hours to do the work. They took the existing antenna down, removed the existing mast, installed the existing and new antennas on a new mast as it hung from the load line, then reinstalled the whole array on the frame. We fired up the transmitter, adjusted it to the new ERP and headed down the mountain.

As Amanda and I drove back to the office that afternoon, the improvement in the signal was immediately apparent. It was *solid* all the way back. Before the antenna work it had been anything but.

Over the next few days we drove the signal and found it to be pretty close to full-market. I can hear it on the CCrane radio in my basement well east of Denver. Everywhere you drive in Denver, Aurora and even in many of the north and south suburbs you can hear the station, and in most locations it is solid. I can almost hear the ball whistling in the air as it sails over the outfield wall!

That signal upgrade is a game changer for KLDC. I don't know what our long-term plans are for that station, but it's already having an impact with some real billing and listenership. People have taken notice of the new signal.

There are a couple of issues with the signal up north, both of which are out of our control. One is



Original H-only (top) and modified H&V (bottom) patterns for the KBRT-FM antenna. Note that the V power is offset (85 degrees).

that there is an LPFM CP in Louisville, which is just south of Boulder. It's unclear what the long-term disposition of this LPFM will be. Its site is a city ball field complex down in a hole with a negative HAAT. It could be that if that ever gets built out we would be able to show terrain obstruction in the contour protection study, which might allow us to let the pattern out to the north. Our more immediate problem

in that direction is a house just north of the site that we must protect with a 118 dBu contour.

The other issue is a pirate station up in Boulder on our frequency that operates with considerable power and no fear at all of the FCC. Our friends at the local field office have located the pirate and are working to get him shut down, but we have been advised it will be a long process. In the meantime the pirate continues to play anything/everything (no radio edits) on this station) with liners that claim, "Pirate Radio 95.3" and it's legal! We get listener complaints about this pirate up north. Once he is shut down our coverage in that area should improve.

Other Translator Happenings

The new 100.7 MHz antenna for Denver is scheduled to ship on the 18th of this month. That antenna is a Propagation Systems PSIFML-1A-DA single-bay directional, modeled to the exact mounting environment, namely a Rohn 45G tower section. It's unclear what improvement the new antenna will make to the 100-watt signal. What I do know is that the existing stainless steel, broadband antenna is not working properly. We can hear the signal where we shouldn't and we can't hear it in many areas where we should be able to. The new antenna will provide for a verifiable directional pattern, and the brass/copper tuned construction should be considerably more efficient.

We doing essentially the same thing at KBRT on 100.7 MHz as we did in Denver on 95.3 adding vertical elements and a power divider. As in Denver, we initially went horizontal only there as a "safe" application. Once we had it on the air I found that we could do an offset H/V antenna (see the graphs on the previous page). The additional vertical array has arrived along with power divider, cables and hardware, and all is slated for installation on July 6. I don't expect the kind of quantum improvement there that we got in Denver, but it will provide a significant improvement.

Exporter Repair

The Nautel Exporter Plus units that we upgraded to a few years ago have been dropping like flies. The symptom is that they will simply shut down. When you try to turn one of the units back on, it will stick on the "initializing" screen and after a couple of minutes will shut back off.

The problem is that several electrolytic capacitors on the single board computer inside the unit go bad. They are identifiable by a bulge in the

top of the can. These are 1,000 uF 6.3 volt radial electrolytics.

John White described the replacement procedure in his column a few months ago, and I referred to that write-up as I undertook the repair of one of our Denver units. I wanted to see for myself what the repair process was like.

In short, it's not too bad. I had to replace five capacitors, which I believe are used in voltage inverter circuits. I heated the through-hole pads from the rear with a 700-degree tip while pushing the capacitor so as to pull the lead from the hole. I had no trouble getting the caps out that way.

After cleaning up the holes with solder wick (some cleaned up and some would not), new caps were installed. On some holes that would not clear I had to heat the pad from the back while inserting the lead from the front. A helper to support the board is a big help here.

I was pleased when I reinstalled the SBC, powered up the exporter and saw it boot normally. I was even more pleased when I put the exporter back in service and HD was restored.

If you run into an exporter failure with the same symptom, don't be afraid to replace the caps yourself. Mouser has them (Mouser p/n 667-ECA-0JHG102) for 24 cents apiece.

Online Public Files

We have started the migration to online public files. The links are up on our station websites, and our people are uploading quarterly Issues and Programs reports, annual EEO reports and political file material. Our goal is to have all this done by Friday, July 29.

One thing we just learned is it seems this process is somewhat fluid at the moment is that the FCC will require us to maintain a local paper backup of political file materials, so the procedure will be to scan, upload and file. There are other options, such as an online backup on our own website, but that's too much trouble. A paper backup it will be.

EAS Test Reporting

Another new FCC requirement is online EAS test reporting. I have all our entities registered, and now I need to file "Form One" for each station. I have requested the needed information from our chief engineers and will complete the form for each station as soon as I receive it.

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

Hello to all from Western New York! Summer is here, and along with it comes the heat, storms, and critters! Now is the time to perform preventative maintenance on your air conditioning units to avoid any down-time when the air is needed most!

At the beginning of each summer, I ensure that the A/C units are operating properly by performing a thorough check-out and cleaning. One of the most overlooked replacement items is the filter, which helps to keep your plant clean and dust free. I generally purchase a case of the filters before summer begins, and replace them every thirty to forty-five days.

Keeping the coils clean and debris free will help insure that air will flow freely through the condensing unit. A clogged condenser will result in poor efficiency and in some cases, the evaporator coil will freeze up due to the lack of air flow. If you don't have water and a power washer available at your site, a good air compressor and a stiff nylon brush will aide you in cleaning out the fins around the coils. If possible, place a drop light on the inside of the coils and go outside and look into the condenser unit. You should see ample light showing through the fins if the unit has been cleaned properly. If you notice areas where light does not shine through, use the nylon brush to remove any debris that has accumulated between the coils and then blow out any loose dirt with the air compressor.

Another item I check on the A/C units is all of the electrical connections, especially those that attached to relays and contactors. Vibration and regular use can sometimes loosen connections, causing faulty operation or even burn-out of the component. In areas where there is a lot of cottonwood fiber flying about, I have found that placing a piece of R/V metal screening attached with magnetic tape on the outside of the condensing coils will help considerably in keeping the fibrous seed out. The fibers will build up around the coils as it is drawn in by the fan, and after moisture from the coils

gets it wet, it will harden, and is very difficult to remove. A little preventive maintenance will save you a lot of time later, and help keep your transmitter plant running cool and clean.

Another item that I recommend checking is your AM tuning houses. If you have the cabinet style, check to see that the air inlets are intact and not cracked or missing. A missing inlet is an invitation for mice and wasps to set up residence in the cabinet. Also check to see that the foam weather-stripping around the doors is in good condition around the door. This will keep

moisture and critters out if you have a good tight seal around the door. Placing small containers of moth balls in each cabinet will also deter any unwanted guests. A small jar with holes punched in the top will do the trick. Remember to check them monthly and replace as necessary.

The biggest nuisance I have (and HATE!) is snakes. They will find a way in to bask in the hotter temperatures of the tuning houses and transmitter buildings. Again, I place moth balls around entrance doors and any other orifice they could possibly squeeze into. They do not like the odor and will shy away and look for some other place to shed. There are also other snake repellants on the market that can be sprayed around buildings and cabinets that will repel the reptiles. These also work well, but several applications throughout the summer must be done for it to adequately work.

Spraying of the weeds in and around the tower base areas and buildings will also help keep critters away. They like to hide in tall grass/weeds and are reluctant to reside in areas that have no protection from predators. I keep the grass around my buildings cut low, and I spray ground clear around all fences, cabinets and buildings. This not only looks nice, but makes mowing and trimming much easier and gives the property that well-maintained appearance.

At the beginning of June, we experienced a power surge at the WDCX-FM transmitter site that



took out the Burk ARC Touch-Plus remote interface. For some reason, the interface was not plugged into the surge protector/UPS and sustained substantial damage. After sending the unit to Burk's service department for evaluation, they deemed the unit a total loss and had to replace the entire board in the unit. We do not have a UPS that can handle the electrical service of the entire plant, so we must rely on numerous APC UPSes placed into service on critical components to our operation. Perhaps in the future we can look at the viability and cost of a system-wide UPS that will protect all of our equipment in a singular unit.

It never fails. Each time I schedule vacation time, right before I take off, the wheels seem to fall off the cart. June was no exception. I had planned to take off the last week of the month for a little R & R and to do some work around our new home. Right before my vacation was to begin, our phone lines into the air studio went berserk, resulting in numerous hours in troubleshooting and re-wiring of the phone lines. Just days prior to this incident, I had Verizon in to troubleshoot a noise problem on one of our call-in lines. Somehow, we had several lines cross-punched and feeding the wrong ports on the hybrid. Once I got this resolved, I thought, I'm home free, but this was not the case.

Early the next morning (Saturday, 6/25) I

received a call from the transmitter that the generator had gone on line. This presents a problem when it is hot and the air conditioning is running full bore, due to the fact that our generator is under-rated for the power demands of the plant. I do have a preset programmed into the Nautel that will reduce output by 20% when the generator is on, but if the A/C is running in stage 2, the amperage draw exceeds what the generator can put out, so the genset will shut down then restart, numerous times. This presents a problem to the equipment due to the excessive in-rush current each time the generator restarts. The power brown-out was due to a blown 200-amp fuse in the main disconnect, one that has blown out before. It is obvious that we have a problem with the balancing of the amperage draw on our service, and when I return to work at the beginning of July, I will dig into this problem and come up with a solution. In the interim, we are utilizing the 24-inch wall fan with filtered/dampened air intake to keep air moving through the facility. This is not best solution, but it keeps the air temperature inside the building a few degrees below ambient. I'll have more on this next month as I work towards a solution to this problem.

That about wraps up another month here in the Northeast. Until we meet again here in the pages of *The Local Oscillator*, stay cool, and happy engineering!

The Motown Update
by
Joseph M. Huk, Jr.
P.E., CPBE, CBNT
Chief Engineer, CBC – Detroit

Law Day Remote

As I mention last month, we put a lot of time into planning our big Law Day remote. It is now in the history books for 2016. Everyone who attended felt that it went well. Our production director Pete Presnel worked with the Goodwin Law firm to change up the look of the event and make it more appealing to the general public and better for the staff. This year our stage area was located under the garage co-located with the law firm's office facilities. This provided shade from the hot sun and provided rain protection for the participants as well as the



broadcast equipment. We used a pair Ubiquity 5 GHZ IP radios to provide a network bridge for the Telos Z/IP and talkback communications. It worked perfectly!

The time we saved in running 350 of cable from the law office on the 3rd floor to the main event in the parking lot (4 hours) was spent providing a better quality production. We brought a 24-channel mixer, two wireless mics, five cabled mics, an equalized PA system, and other production equipment. We hosted a gospel choir and a contemporary Christian rock band as well



WMUZ Law Day Remote

as and our home improvement show, the Inside Outside Guys. We provided the mixdown for the gospel choir, and the contemporary Christian rock band provided us with an audio feed. The balance of our programming for the event consisted of interviews with the bands and the executive members of the Goodwin firm.

Our station and the law firm gives back to the community every year during this event to provide free legal advice, safety tips, and food, fun and games for the kids. Many thanks go out to Pete Presnel, Vito Faletti and Steve Cuchetti for an outstanding job and support, for this event!

NV40 Front Door

I was investigating a minor issue with our NV40 transmitter last month involving the AUI or graphic web interface that provides control of the



NV40 Door Latch Mechanism

transmitter. The current level of software has issues with logging into the transmitter. After a call to Nautel's expert, Nelson Bohorquez, he indicated that there is an issue with the NV40's software. You can get around it by changing the language in the pull down log in menu and then changing it back. After that, you can put your name and password in and away you go! He told me to wait a couple of weeks and a new level of software will be

released for the NV40 which includes this fix.

Since I was trying to eliminate my internal LAN from being suspect in the early investigation of this issue, I plugged my laptop's Ethernet connection directly into the transmitter. Once I finished with the investigation, I needed to close the transmitter door since the direction connection is internal to the transmitter's enclosure. After I shut the door, I forgot that I wanted to make sure I plugged the LAN connection (RJ45) back into the controller's jack. I went back to open the door and found that the knob or lever just went around and around with no stop!

At that moment, my stomach dropped. I was thinking, "How am I going to open this door without damaging it or any of the wiring?" I called Nelson back and explained the issue. He replied that Nautel has never seen this issue happen before. At that point, my stomach really didn't feel good. Nelson was very helpful. He sent me some pictures and diagrams and informed me to try to push on the knob as I turned it to see if I could get the door to release. I did try to do that, but in the process, I also tried pulling, which I know now is not the thing to do. The plastic lever subsequently broke.

Nelson also said to try to take off the hinges and see if the door would release. Unfortunately, when the door shuts, a latching mechanism pulls the right hand half of the door in very tight to press the finger stock up against the cabinet to provide a good electrical and mechanical (air) seal. So, after some thought, the only direction that we felt we could go with the door was up. For this process, I rounded up our expert operations manager, Vito Faletti, to help me raise the door. When the hinges are removed, the door will slide down on the right. In order to slide it up, you must keep the door square. We used a crow bar for leverage at the bottom and very carefully rocked the door up. In our case, the top of the door released first, then the bottom released. We were so relieved.

So the only thing that was damaged was the lever, something which could have been avoided. The lever has a set screw that has a little bit of what appears to be some Loctite. I believe that the Loctite must have degraded over time and the screw loosened so that the lever could not rotate the mechanism.

I hope this never happens to you. But if it does, there is a way a safe way out!

Until next time, be safe, and if all goes well, we will be reporting to you from the pages of *The Local Oscillator* next month. Best regards.

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

Ah, Alabama! I've been on the road a good bit lately, traveling all over the countryside to various transmitter sites. The 92.5 tower in the middle of nowhere is a special treat. The flowers are in bloom, the birds are chirping, and at least one farmer apparently has a cow with buck teeth: I can hear a faint moo as I merrily glide past the meadow. (Or maybe it's the farmer; I have had neither the time nor the courage to investigate.)

I've made many a trip to the WYDE-FM site in Cullman as well, finishing up odds and ends with the new transmitter that was installed in April. That little city has grown exponentially since I moved to this state; in fact, there is a new Wendy's restaurant right at the intersection with I-65 that has caused me to add a few unwanted pounds. It's a beautiful drive through the hills of Alabama.

But the best news is that I don't actually have to travel far to enjoy a pastoral scene now. The WDJC transmitter site is located in Red Mountain Park right in the Birmingham metro. The Park has added a goat farm because, well, I guess it just



Cantankerous goats (and an equally-cantankerous dog) near WDJC.

seemed like the right thing to do. In addition to collapsed mining shacks, endless rocks and lots of weeds, visitors who hike through the park can enjoy

these ill-tempered creatures. There's also a dog inside the fence whose assignment is to bark and threaten anyone who might get too close.



Note that the hiking trails also include the road that I must traverse to reach the transmitter. So: anytime I visit the WDJC site, I must (a) dodge hipsters in Spandex, who glare at me as I drive (slowly) past them to get to the site, and (b), listen to goats and a dog cussing me, said hipsters, and life in general. When you add in the melodious sound of crows cawing and screeching at anyone who interrupts their

hearty meal of festering road kill (of which there is plenty in Alabama), well, it's just a wonderful thing. All in all, I prefer the 101.1 tower site. At least there's a Wendy's.

Lots of NexGen Work

As I write this, knock on wood (Stephen taps his head), the WDJC audio server seems to be doing fairly well. But we've been in NexGen a lot lately, helping to work around the loss of several employees, which I mentioned last time. Most of the logs had to be overhauled, because we sometimes cross-promote shows on different stations. The macros had to be thoroughly parsed for outdated material as well. A special thanks and tip of the hat goes to Todd Dixon, who did his usual thorough job on this. (One reason why I've been going to transmitter sites more than usual is to free Todd and Jack for just this purpose.)

However, there have been other annoyances. Right in the middle of this madness, we had to upgrade the traffic software and one evening, just past closing time, Melodye was unable to load the inventory for the next day. To get us through the morning without losing revenue, I took printed copies of the logs home and manually dragged in the commercials via VNC.

We managed to find and kill the random

popping noises in production (we found a bad network cable), but very occasionally, things like these come back for no apparent reason, then disappear. If you read the manuals for this gigabit equipment, it will say that CAT6/gig cables require great care in construction, and we are indeed finding that to be the case. That's fine; I have a network analyzer and by golly, I'm not afraid to pull it out.

As our industry transitions more and more to an all-digital infrastructure, random problems like these are going to rear their heads. This will especially be true in those (hopefully rare) cases where a signal must be ferried over the public Internet. Getting a solid, guaranteed-bandwidth channel over the Internet is going to become more and more difficult in coming years.

The telcos like the idea of overselling capacity, based on the theory that most people won't use a given system at the same time. It's more efficient. They can make more money. As a result, I strongly suspect that some of them will, without telling you, quietly limit or throttle a connection whenever that entire network segment becomes busy. The reason I can suspect this is because the neck-bearded geeks who monitor these things say that they have good evidence that this does in fact occur. More with some ISPs than with others, but it definitely happens.

Ah, what's life without a few challenges?

The Golden Eagle Monitor

An Audemat Golden Eagle HD monitor arrived at our studios several weeks ago. We installed it and managed to get it working, but only a bit of serious head-scratching.

First, as is typical with anything labeled "Audemat," the documentation is terrible. To start with, the name of the unit has apparently changed; it's now called the "Audemat FM Monitor" (even though the front of mine says, "Golden Eagle"). Once you find the desired manual, the available info will be sparse, at best.

Let's say you want more information on the "Weebleglarbö" button. You search for that term (and if you're lucky, you find it) ... and the sum total of the assistance offered is something like, "Click here to adjust the Weebleglarbö." Ah. Thanks for pointing out the obvious; I wouldn't have thought of that.

To all manufacturers: I've said this before, and I'll repeat it. Before introducing your new product, hand it to a reasonably-skilled end user who has never seen that unit before, along with the available documentation. Then just sit back and watch. *Do not help them personally.* Just watch. See

if they can navigate their way through your device using only what you provide. Each time they hit a snag, make a note: that's where your documentation needs improvement. THEN ... improve it. That's really not so much to ask, is it?

You might respond: "People can call us around the clock with any questions, we're here to help (and stuff like that)!" Sure, and I'm glad you have that support line. That's nice of you. But waiting for a callback for something that could have been made intuitive with a little extra work on the documentation is both annoying and time-consuming.

OK, back to the Golden Eagle. Second, once we finally got it working, we discovered that the manufacturer wasn't kidding about the FM signal levels. When we first tried it, I almost passed out when it showed that WDJC was modulation over 300%(!!!). The problem was a low signal level and a new antenna (custom-built by Jack for the purpose) fixed that.

For accurate readings, the RF must be within a relatively narrow range, from 60dbu to 80dbu. In real life, you will encounter signals that are all over the place. For example, in our case, the signal from 92.5 at Pumpkin Center (see above re: remote location, cows with buck teeth, et. al.) is much weaker than the one from WDJC, just a few miles away. If I install an attenuator to bring WDJC down into range, 92.5 will be too low for accurate monitoring. This kind of makes it difficult to use the thing as intended, namely, as an "off air" monitor for all of our signals here in Alabama.



The Golden Eagle doing its thing. (Finally.)

Don't get me wrong. It's a very nice unit with lots of nifty features, including a spectrum analyzer that seems to be quite accurate. But it takes more work than I expected to configure it just the way we need. (Unstated bonus: it also provides another chance to use Audemat's horrible "ScriptEasy" program, which makes Burk's Flowcharts look like intuitive genius.) Finally, same as with the Inovonics receivers and monitors, it's

very sensitive to multipath. But we'll make it work.

That's enough. Same as where you are, it has been very hot here, and we've also had the usual storms; no need to recount every time we've had to replace fuses, reboot a gadget or reset something. We

also had to replace the other AC unit at WYDE-FM, and are looking to replace both AC units at the WDJC site in the weeks to come. That's all just part of the deal. Until next time, keep praying for this nation! (Seriously.)

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

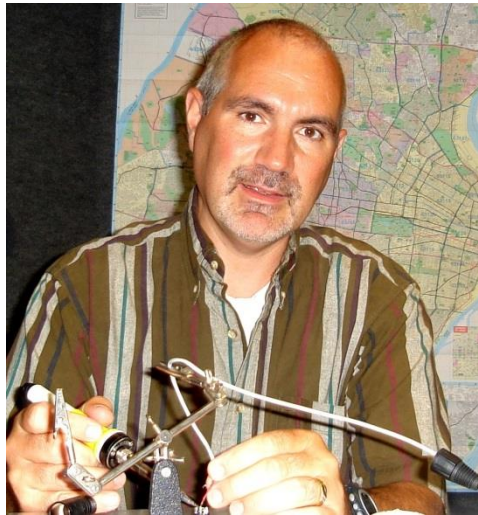
Managing a complex technical organization that takes a lot of different types of expertise can sometimes be overwhelming. A modern radio facility has a lot going on in terms of the various equipment that is now becoming standard at most stations.

Most businesses of any size now have their own network with at least one server and many workstations. Now let's add to that studio equipment, most likely using some kind of routing or AoIP. Most of us have to deal with some kind of automation network for audio. Add another couple of layers for microwave transmission technology and satellite reception. That's not even mentioning the very complex facilities that the typical transmitter site has become. Also, many who are not leasing facilities have to add building maintenance to the equation.

Often times when I am giving tours of the facilities, people are often surprised at the complexity and amount of equipment we are maintaining. A common question is, "How do you know all of this?" That's a very good question. We are required to know a lot. Not just in general knowledge. Not just in specific knowledge of each piece of equipment. But we also have to keep track of the various settings of this equipment and all of the interconnections between them.

It used to be common for radio engineers to keep everything in their head. They could even get away with not labeling and diagraming the wires. It was often called "job security." I know that won't work for me with the complicated facilities I have to maintain. If I have to go back to something three

months later and I didn't document it well, I am usually asking myself out loud, "Now what did I do here?"



In my first post as Chief Engineer for KJSL and KSTL in St. Louis, I could get away with, for the most part, keeping stuff in my head. The station's facilities weren't that complicated. Just having the punch blocks documented sufficed for the most part. When I then took the Chief Engineer position at Clear Channel in St. Louis, with six stations, HD stations and numerous file servers for different aspects of the business, I was in for a bit of shock.

I went from a rack room with two racks to one that contained over 20 racks of equipment. There was a lot to learn. My supervisor told me it would take six months to learn everything. That was probably an understatement. A big part of the problem was not just learning, but sometimes re-learning the same thing months later because of the space of time involved between the encounters with the same pieces of equipment. I would take written notes, but keeping all the info handy and organized was a big issue.

My frustration level at my inability to catch on quickly enough was really getting to me after a few months. There was nothing that I felt I couldn't understand; it was just the amount of all that info that kept my head swirling. It was at this point that I spoke with my supervisor about how to make this easier. He suggested we use one of the apps available for note recording and sharing. We chose Evernote because it had a free version and it could be easily shared between everyone in the department.

I got busy taking everything we already had for documentation and putting it into Evernote. The documentation that didn't exist became my challenge now to create as I had time. The very act of doing that made everything easier for me. My stress and frustration level went down immediately. I gained confidence that I would be able to remember everything I needed, at any place and time, because I had most of what I needed quickly available on my phone, iPad or laptop.

The nice part about using this method was not only the sharing capability, but the fluidity as well. Need to know a free IP address on one of your subnets? Just open that note to find out. But not only find an open IP address, but change the note so that it shows that IP address has a computer or piece of equipment residing there. It keeps another engineer from grabbing the same address later that afternoon.

This type of note-taking was just the beginning. When I took the position as Engineering Manager at the Crawford cluster in Chicago. I knew that we would be implementing Evernote immediately. In my first meeting with my staff, I had them download the app to their phones and then their computers and tablets.

Getting the place organized was my first task. Too much of the information was in someone's head or private written notes, certainly not available

for all to use. It took a while to change the culture, but they soon embraced it. And after a while, I began to see new notes showing up in my shared folders that I had not generated.

We took the next step and began using it not only as an information recording and sharing mechanism app. We began to organize tasks and routine maintenance requirements. We created lists with check boxes that could be checked when the task or normal maintenance item was completed. We even can set deadlines and send reminders when something is due.

An example of organization that we use is a note that has all the information for all of our UPS units in every facility. I can immediately look at this note and see when we last changed the batteries in any given UPS and make sure we are not letting these batteries get to the age where they could take us off air.

I am sure there are other good note-taking apps out there, but I obviously am a big believer in Evernote. No, I am not being paid to write this. Of course, like most things in life you get out what you put in. The more you document and keep the documentation updated the better it will work for you.

I like to think of it as, "everything I need to know when I need to know it."

Valley Notes
By
Steve Minshall
Chief Engineer, KCBC

As I write this, the temperature outside is steadily rising and we will be in the 100+ degree range later today as we have been for the last several days. Fortunately, the air-conditioners at KCBC are running well after a difficult time of repairs.

We had a failure of the Exporter Plus recently. I replaced all of the bulging and suspect capacitors on the motherboard, and that seemed to fix the motherboard, but there were still problems. I did a lot of parts swapping with another Exporter Plus, but it put up quite a fight and in the end it won and I had to send it in for repair.

I have a couple of pictures to share. The first is an "antenna" that I saw on the counter at a restaurant. Being an antenna guy I found it quite funny.



The second picture is an XLR adapter that I threw together. It is just a pair of male and a pair of female XLR connectors all wired in parallel. Sometimes I find I need to split audio or AES signals for a temporary lash up. This does that job no matter what direction the signals are flowing. I keep a pair in the shop for those odd times.



Steve saw this "antenna" on a counter at a restaurant. Any ideas?



Steve keeps this "universal XLR adaptor" in his magic bag of tricks. Very handy!

The Portland Report
by
John White, CBRE
Chief Engineer, CBC-Portland

Oh, the fun of being at the end of a power grid! A long one at the top of a mountain. Power bumps are a way of life, one I thought I had under control.

In addition to power dropout problems, power surges and power spikes have been a major ongoing problem. The power system at Mt. Scott is rather unusual. The primary power supply to the building is 277/480 three-phase. Upon entering the building, three old-style adjustable autotransformers condition the power to bring the supply voltage to a nominal value. The backup generator for the building is also 277/480 three-phase, removing an additional complication to the build power system.



Once conditioned power is delivered to the building, two banks of three-phase step-down transformers provide two 240-volt three-phase distribution sources to power the transmitters, the main on one supply and the aux on the other.

Additional transformers are used to create 120/240-volt single-phase power for the building. By the time power hits the local wall outlet, it has passed through several transformers that tend to smooth out power hits and surges. That's somewhat helpful to condition and remove power glitches.

Over the years, I have installed UPS protection for most of the mission-critical equipment at the station. We use selected systems that include

primary surge protection in addition to power backup on surge or power loss. Even so, I have occasionally found equipment locked up and in need of power reset.

In many of the mission-critical areas, I have the UPS service supplied via a bypass switch that allows the UPS batteries to be replaced without disrupting service.

About two weeks ago, I got a call that the on-air console and other equipment was down with UPS alarms sounding. A power hit had taken down several items, including one of the transmitters in the building. We proceeded to power reset several items, bypass several UPS systems and reset others.

The console power supply was another matter. As expected, cycling power produced no useful return to life. A second look indicated that primary power was available with an open fuse indication. Replacing the fuse returned the console to operation.

The fuse, a 4A time-delay fuse, was very black, indicating a significant power surge. And this was behind several power transformers and industrial grade surge protection and UPS. Fortunately, replacing the fuse returned the power supply to operation.

Of course that wasn't the only problem. A computer that appeared to have survived became unstable, eventually becoming impossible to boot. Computers, you've gotta love 'em. They eat up hours demanding attention and pointing out

problems such as missing passwords that aren't saved or recorded in a safe place, which requires major efforts to recover.

And then there is the password file, or what I thought was a password file. Well, it was a file folder. The contents were mostly sticky notes with no clear provenance and doubtful value. And so the computer rehabilitation course: "May you live in interesting times."

And then a week later we missed an RWT from our local LP2 station. Turns out that receiver is dead. The display is working with no audio output. A power cycle was no help. Another victim of the power surge.

At this point, I am asking what the situation would be like without the surge protection measures that have been added over the years.

On the NexGen front, I have heard a few minor bobbles and had others reported, mostly transients and unexplained missing or garbled audio. In checking over the system, I found very little free drive space. A half gig on the database and less for the C drives. Obviously not a good or stable situation.

With a bit of research, I killed off a number of files that were six years old with no apparent value. Deleting 111 GB of these old files increased open space to more than half of total drive space. A great improvement. Just proves a bit of spring cleaning is useful.

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

Lookout Mountain Update

Things at Lookout Mountain are finally looking up. We were finally able to get the T1 installed and working. Comcast also got things working well also. Now with SureStream on the two FMs, the station is staying on the air. It is nice not having to plan a trip each week to the transmitter site. If I'm lucky I won't have to go up there for an issue for a while longer.



Dropped Packets

Just when the issues at Lookout Mountain wind down, KLTT starts acting up. I noticed one day the audio stuttering. It was not for long, but long enough for some people to call in. Of course as soon as I began digging into it, the issue fixed itself. Things were fine for several days, then they weren't. While working in our engineering room I kept hearing a clicking noise. I recognized the noise from Lookout Mountain. It was

the sound of the Worldcast Horizon unit going into alarm, then out of alarm then backí for several minutes. I immediately began digging into it. First, putting KLTT on ISDN so audio would not be lost. The studio Horizon kept getting a Sync Alarm. No rhyme or reason to it.

We thought if it were a network issue weød see an issue somewhere else. The other stations were fine, all the other equipment showed no errors. We switched out the Horizons, NanoBridges, wires and network switch on the tower, no change. Stay tuned for an update on this issue next month.

Microwave

With KLVZ being off air until next fall, I donøt go to the site nearly as often. I also donøt have to look at meter readings. All I care about are the tower lights. We were having the fences replaced at the site, so I decided to bring up the security cameras. I left them up on the computer most of the morning. I went into engineering to deal with our issues at KLTT and noticed the KLVZ horizon in alarm. This was weird. All had been fine. I quickly found I could not communicate with the site. The studio Trango was not seeing the transmitter Trango. My dad ended up going to the site while I had tower work done at KLTT to deal with replacing the cables and switch on the tower. He found he could see the NanoBridge on the tower, but he could not log into the Trango Apex out there, leading us to the conclusion that the Trango is dead. We are making KLTT the priority for now and will deal with KLVZ when we get things figured out.

Exporter Issues

We had gone to the KLZ transmitter site to pick some stuff up when we noticed the exporter was in alarm. We put the transmitter onto exciter B and brought the exporter back. That problem seems to be going around. I guess company-wide, these Nautel exporters are all about the same age, and one by one they are getting stuck in a reboot cycle. We are finding that capacitors are drying up. We decided to try to repair the unit ourselves. Ordered the proper

capacitors, replaced the three that we found needed to be replaced and it now works!

Mowing

We were finally able to get out to one of our sites to mow. Thankfully, we didnøt have the major flood waters like last year, so the growth isnøt too bad. We also decided to try something different. It seems that every year we have to plan around loading the tractor first thing in the morning, mowing for a while then having to load and take it back to KLZ for storage. We have tower bases that are large enough to store the tractor inside the fences, it so we decided to remove a fence panel and drive the tractor in. The gates are on the alarm system, so at least if someone gets in that way we will find out. This also allows us some freedom. We are able to store the tractor overnight, allowing us to mow for multiple days. I think this will allow us to be more efficient with our time. Iød be able to mow and Keith will be able to go out as well and mow. I will be spending more time at KLTT this year knocking down prairie dog holes with the front-end loader on the tractor. The last couple years they have gotten out of control, making it nearly impossible to drive to the towers. This will allow me the time needed to break them down and somewhat smooth out the areas where we drive.

Upcoming

I pray everyone has a wonderful and safe Independence Day. I will be spending a long weekend with my husband up in Grand Lake. In the coming weeks, I plan on getting most of the mowing done at the sites, at least for now. It should get hot enough that the growth will stop, but you just never know. I am hoping to have the issues at KLTT and KLVZ fixed early in the month. Most of all, I will be counting down the days until our annual vacation in Lake City, Colorado. As of right now we are at just over a month away.

That about covers it for this month, so until next timeí thatø all folks!!!

The Local Oscillator
July 2016

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, 550W-U

KCBC • Manteca - San Francisco, CA
770 kHz, 50 kW-D/4.3 kW-N, DA-2

KKPZ • Portland, OR
1330 kHz, 5 kW-U, DA-1

KLZ • Denver, CO
560 kHz/100.3 MHz, 5 kW-U, DA-1

KLDC • Brighton - Denver, CO
1220 kHz/95.3 MHz, 660 W-D/11 W-N, ND

KLTT • Commerce City - Denver, CO
670 kHz, 50 kW-D/1.4 kW-N, DA-2

KLVZ • Denver, CO
810 kHz, 2.2 kW-D/430 W-N, DA-2

WDCX • Rochester, NY
990 kHz, 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, 5 kW-U, DA-1

WDJC-FM • Birmingham, AL
93.7 MHz, 100 kW/307m AAT

WEXL • Royal Oak - Detroit, MI
1340 kHz/96.7 MHz, 1 kW-U, DA-D

WRDT • Monroe - Detroit, MI
560 kHz, 500 W-D/14 W-N, DA-D

WMUZ • Detroit, MI
103.5 MHz, 50 kW/150m AAT

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 • Cullman - Birmingham, AL
101.1 MHz, 100 kW/410m AAT

WXJC • Birmingham, AL
850 kHz, 50 kW-D/1 kW-N, DA-2

WXJC-FM • Cordova-Birmingham, AL
92.5 MHz, 2.2 kW/167m AAT



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