The Local Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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A Good First Month

After signing on the air the last Monday in September, KNSN had a good first month of operation. The equipment, including new transmitter, processing and remote control, was stable and trouble free.

We did have an antenna problem, however, one that apparently existed prior to our sign on but which had not manifested itself during our testing. In the last couple of days before sign-on, as I did quick transmitter and equipment checks, I found that the power would wander around, showing high on the transmitter but low in terms of base current. The issue would come and go. The tower ownerôs engineer identified the problem as a loose safety climb cable in the near vicinity of one of the KNSN skirt wires. There were evidently also some broken or missing standoff insulators on some of the skirt wires. The landlord took care of all this in early October and all has been well ever since.

Signal reports have all been good, except for one odd-duck report we got out of the Oceanside area that said when KNSN went on the air, the listenerôs reception of KBRT tanked. His problem is very likely something local, some kind of RF noise source like a CFL or whatever, since the KNSN sign-on had no impact on the KBRT signal.

Welcome Aboard!

We have a couple of additions to the CBC corps of engineers this month. In San Diego we welcome Dick Warren, who is the new contract engineer for KNSN. Dick comes on the recommendation of our good friend Bob Gonsett, a well-known and well-respected Southern California consulting engineer. We very much appreciate the referral and introduction, and we are delighted to have Dick watching the store at KNSN. Dick also works as contract engineer for KURS, the station we diplex with at the KNSN transmitter site, so he is very familiar with the site, the diplexer and the operation.

We welcome Angella Thomas to our CBC-Chicago engineering team. She joins as IT Coordinator/Staff Engineer, essentially filling the gap left by Brian Bonds when he moved up in the structure. Angella comes to us from FEMA and brings a considerable skill set. We very much look forward to getting her up to speed in the operation. This addition fills the organizational chart for the department. Itôs great to be back at a 100% staffing level there.

AOIP, ASERV and Satellite

After a few months of living with Wheatnet-IP in our Denver facility I am wondering how we got by without it all these years. It is truly a marvelous infrastructure that provides tremendous flexibility.

This was brought home in a big way last month when we did a software update to our Denver bridge router system. We had to take the bridge router down during the update, so it had to be bypassed. With the Wheatstone IP Blade system, this was a very simple matter indeed. We physically patched the AES program bus output of each stationôs ASERV blade to the input of the STL codec for that station. The connection was a quick click-click-done, and the blade system still left us with the ability to mix and switch satellite feeds and audio servers to the program buses. When we were finished with the bridge router upgrade, another click-click-done cycle and everything was back to normal. It could not have been any easier.

No doubt about it, this is the broadcast infrastructure of the future, and the future is here now. Broadcasters have several platforms/manufacturers to choose from, but the end result is the same ï outstanding audio quality,

ridiculously simplified wiring infrastructure and unparalleled operational flexibility.

With that in mind, I never considered going with a conventional sound card as I began working out the details for a new audio server and distribution chain for KNSN and KBRT in Southern California. We plan to provide for some limited separate programming in San Diego early next year and we plan to feed that programming from our Costa Mesa studios. We'll add a "slave" ASERV at KBRT that can come on and run during the split out, and we'll use a PC blade and IP blade to handle the audio, switching and mixing chores (no sound card). All this has been ordered and will be in Denver shortly where we will configure and test it.

One other new thing that we're doing with this installation is using a 1RU server platform as an audio server. I ordered a Dell R220 PowerEdge blade server with no OS. We have a W7-64 license that we will load, and since it already has two gigabit NICs we should be good to plug in the Nexgen USB key and go. Assuming this works out, this is the direction that I intend to go for all audio servers going forward. That platform will provide for a very rack space economical installation – 3RU counting a 1RU spacer/filler panel between server and IP blade. Compare that to what we're doing now with the HP audio servers and Broadcast Tools switchers (and don't forget the waterfall of cables out the back of the ASERV or the break-out box that soaks up another 1RU).

Another aspect of the sometimes separate feed to KNSN will be a new Extreme Sat uplink and receiver package. We will replace the 1990s-vintage uplink equipment we now have with a new multi-channel uplink that will give us the ability to transmit two (or more) separate audio streams with the one uplink antenna and RF package. We will feed one stereo audio channel with KBRT program (and EAS) and the other with KNSN program (sans EAS, which is inserted locally at the KNSN transmitter site). This will allow us to have full satellite STL backup at the KBRT transmitter site, it will provide for program feeds to KKPZ and KCBC (both of which take program elements from KBRT), and it will provide for a separate program feed to KNSN.

New receivers will also be provided for KBRT, KNSN, KCBC and KKPZ. These are really nice QBit MCR-10x DBR units, 1RU in size and a lot cooler to operate than the old ABRs we have used in their various iterations since 1994. I hope to have the satellite equipment on hand shortly and we could have it on the air some time in December.

ABIP

I have long had mixed feelings about alternate broadcast inspection programs (ABIP) that many state associations participate in. It's not that I don't think they provide a valuable service, but instead I have always thought that we pay our chief engineers and managers to keep our stations and sites in 100% compliance with the rules and those folks do a good job, so why should we pay someone else to confirm this? We are doing our job, right?

Last month, I decided to give ABIP a shot in Michigan, and the experience was an eye opener for me.

First, the inspector was Dale Gehman, an engineer out of Pennsylvania that I know and greatly respect. Knowing that he would be the guy doing the work gave me some confidence going in.

Dale was indeed thorough. I'm happy to say that he didn't find any big issues other than a small tower coordinate discrepancy that we are now investigating. Most of what he reported was more along the lines of good engineering (and other) practice, things that we had not thought of. This included additional signage warning of RF burn hazards on our AM towers and the need for personal RF monitors for authorized climbers of our FM tower. Dale also provided some recommended forms to use for quarterly tower inspections and EAS logs.

What I took away from this experience is that it is indeed useful to have a second set of eyes look everything over periodically. Working in a facility day in and day out, we see things that don't register that someone coming in fresh may pick up on. Those overlooked items could well result in a notice of violation following an FCC inspection. The cost of an ABIP inspection is a fraction of the cost of the base FCC fine, so it is good insurance.

With a whole new outlook on voluntary inspection programs, going forward I plan to start participating in ABIPs in some key markets. I'll give our people plenty of notice so they can be ready. My bet is that in every case we will find things we never thought of.

One final thought on inspections in general. Many years ago an FCC inspector in Colorado told me about the "fifteen minute inspection." His point was, if he didn't see some glaring issue in 15 minutes, he wasn't likely to dig until he found something. Another way to look at this is that if a station or site looks clean, well maintained and well organized, chances are it is in compliance. This is as good a reason as I can think of to keep our sites in inspection-ready condition at all times.

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

Hello to all from Western New York!

For years I have been putting off the need to purchase a new cellphone. I have used the same model of Samsung flip phone for the past six years or so, and just couldn't justify the need to spend hundreds of dollars for the newest gadget available. Heck, all I wanted is a phone, a means to call and speak to someone when the need arises. I did not even use the text option with my phone plan. When I needed to contact someone, I called them!

Those days are over. I finally realized that this is the future, and if I wanted to keep up with technology, I'd better join the millions of Americans now enjoying the wireless age. After looking at a half dozen phone models and plans, I finally decided on the Nokia Windows phone. It operates with a Windows 8.1 platform, and is very similar to a Windows computer, making the learning curve much easier for this old buzzard.

While new broadcast technology excites me, a new phone just doesn't get my juices flowing. Still, there are some things I really like about the new phone. One is the data storage. With a 32 Gb SIM card it can store up to 20,000 photos or up to 78 hours of music and movies. That's something my old flip-phone couldn't do. I'm sure that there are many apps available that will expand far beyond my needs of what this phone is capable of doing, but for now, I can at least check my e-mail from anywhere, get a current weather report, check the remote controls at our transmitter sites or even look up a service manual when in a pinch– and I can send a text message instantaneously to anyone in the world, if I could only find it in the menu!

October was a pretty busy month in getting everything prepared for the coming winter season. Weather forecasters have been predicting a very cold winter with above normal precipitation for the Northeast region. If this holds true we are in for some pretty nasty weather this year, with significant snowfall amounts and the polar vortex making its appearance several times throughout the winter season. Last winter we experienced two blizzards, something that has not happened here for almost 80 years. Total snowfall for last year was measured at 129.9 inches at the airport, but areas south of the city, such as where the WDCX-FM transmitter site is located, received close to 17 *feet* of snowfall last year! Current weather models are pointing to a much colder and significant snowfall amounts beginning in early 2015, with snow accumulations that could break records set as far back as 1880.

We have finally finished all of our big outdoor projects for the year. Last month, Don Boye completed the tower painting at WDCZ, and this month, American Masonry repaired all of our concrete tower bases at the WDCZ transmitter site. The concrete pylons were cracked and crumbling due to age, and if we didn't make these repairs soon, we in all probability would have to replace the footings entirely. This would be extremely costly, as the towers would have to be un-bolted from the footings, jacked up and a support frame constructed to hold the tower in place while the concrete bases were replaced.

While the masonry crew was busy with the repairs, I inspected the entire ground system for this five-tower array and found numerous problems with the existing ground system. Most of the problems detected were broken ground straps, and almost all were at or near ground level. I suspect that the damage was caused by whoever was contracted to perform mowing services by the previous owner. Repairs to the ground system are underway, and I hope to have everything in top order by month's end, if the weather holds off long enough to get everything done.

At the WDCX-FM transmitter site, the only problem noted was a dead battery on our standby power generator. I was unable to start the generator

on a recent weekly maintenance visit, so I pulled the battery and had it tested at a local battery shop. They found that five of the cells were dead, so replacement was warranted. I check my records and noted that this battery was replaced almost six years ago, so it was time to replace it. Better now than when its 10 below with waist-deep snow!

On Sunday October 12th, Don Boye of Western Antenna and Tower was called in to replace all of the lamps on tower #3 at the WDCX (AM) tower site in Rochester. We first suspected a problem with the photocell, as the lights would work for a spell, go dark for several days, then work again. After checking all the components in the lightning system (photocell, flasher etc.), we determined that the bulbs were indeed bad, so Don made the climb and replace both beacon and secondary lamps.

While Don was on the tower, it provided me with the opportunity to check everything in the networks for this tower, electrical and RF connections along with a good cleaning and lubrication of the tension spring in the RF switch. The remaining five doghouses will be cleaned and checked out in the next few weeks as time permits.

The only project I have yet to complete is the installation of a new Potomac antenna monitor at the WDCZ transmitter site. I want to have the ground system repairs completed before I begin the installation of the monitor to insure that the readings are accurate. I will dial in the array to (exact) licensed parameters on the old monitor, then hook up the new digital monitor and compare the two readings. If any differences are noted, the new readings will have to be filed with the FCC as the new operating parameters. Also, the monitor points will be measured and submitted with the new readings to insure that the array is performing as licensed.

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

The Motown Update

By
Brian Kerkan, CBTE, CBNT
Chief Engineer, CBC–Detroit

Fall has been a busy season at CBC-Detroit. From parking lot paving to PA modules, plenty of projects are underway.

I took the opportunity to check our Nautel NV40 from top to bottom during a recent power supply failure. I inspected every module and found several that had solder joints between the reject load and combiner that were separating.

This transmitter had a past history of heat-related problems, and some of the issues may have been caused by an HVAC problem in the past.

I checked all 16 modules and repaired the bad solder joints by reflowing them. Below is what one of the modules looked like before being repaired.

Nautel offered to look over our transmitter and to make sure it was optimized. I had tried to do a IPA balance which failed. Once I upgraded the firmware, the IPA balanced worked properly and I was able to get the transmitter operating much more efficiently.

With the help of Nautelôs engineering crew, we were able to increase the efficiency of the transmitter by 17%. The change resulted in the transmitter running much cooler and we will save about $4,000.00 a year in electric cost.

I am in the process of installing fiber optic transceiver boards on the WRDT(AM) towers. The LED lights were not properly detected by the previous CT sensor relays when a beacon failed. Cris designed a PC board for the transmitters and receivers.

WEXL had an issue with the ND-1 AM main transmitter. The choke in the power supply failed causing the PA volts to drop below the threshold and causing the carrier to drop. A replacement is on its way.

Our air staff likes our new Wheatstone M-series microphone processors. The processors

provide a wide range of control, and can be setup using an application across the network. Once setup, the front panel controls can be disabled.

We are in the process of repaving our parking lot, and upgrading our storm drains, and we have installed the new ASR signs at gates to comply with the new FCC rules.

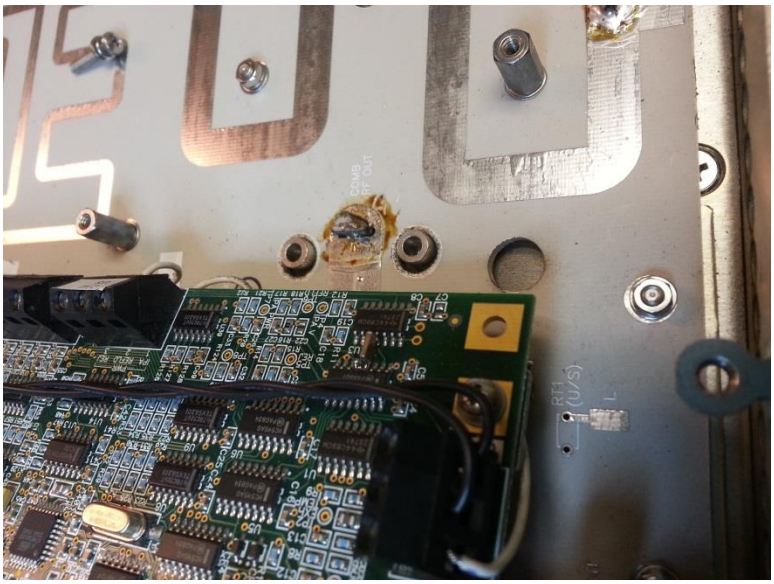
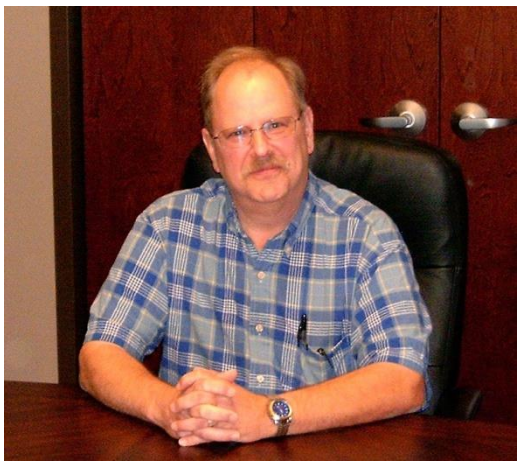


Figure 1 - Note the bad solder joint on the RF out connection.

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

The new STL link between Birmingham and the WYDE-FM site near Cullman, AL has been in service for over a month and weôre delighted. Weôve canceled the T1 line with ATT and are all microwave, all the time. Itôs a beautiful thing.



There are several groups online for broadcast engineers. One that I frequent is a Facebook group called ñI Take Pictures of Transmitter Sites.ò When I posted some pictures of the work in progress a few weeks ago, it was intriguing how many of my fellow engineers questioned whether this link would work reliably. After all, this is a 6 GHz double-hop. The jump from the WDJC-FM transmitter site in Birmingham to Mount High, near Warrior, AL, is about 27½ miles. The second hop, from Mount High to WYDE-FM, is about 17-odd miles. A couple of engineers who work in Alabama told me that one big problem is the shape of the storms that come through here: they tend to move in waves from West to East (see Figure 1). This is very hard on a north-south link.

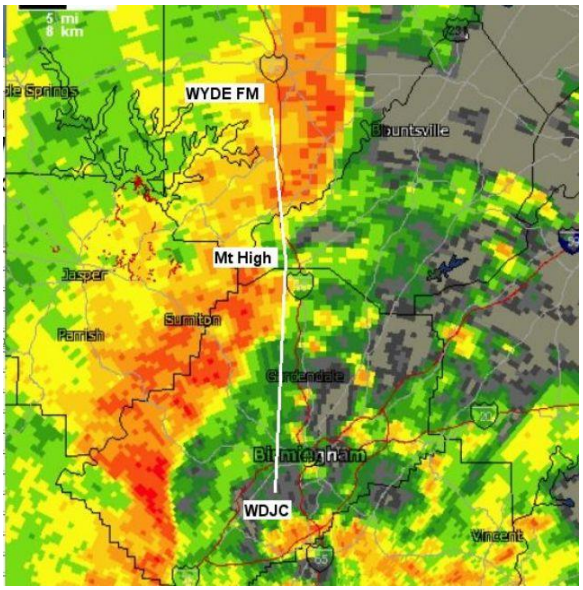


Figure 1 - A typical severe storm system. The WDJC-WYDE FM path is shown.

They had a point. With these long, extended waves, weôd have a lot of heavy precipitation passing through the path for several hours at a time. But Iôm pleased to report that it never failed. The WDJC-to-Mt. High link, the longer hop, dropped from a normal RSL of about -35db to -50 at the worst of the storm shown in Figure 1, but stayed up throughout.

I think there are some reasons for this. For one, Cris designs our links to have plenty of headroom against weather fades. For another, the technology has improved dramatically. Someone who bases his/her opinion on experiences with, say, an older Canopy running at 5 GHz, might indeed wonder if itôd be reliable. But these things use a number of techniques, from reducing overall bandwidth temporarily in poor signal conditions to very robust error correction. Whatever theyôre doing, it works, and Iôm very happy... so happy that I even dragged (drug?) out the old Optimod at WYDE-FM and put it in the rack just to fill the hole formerly occupied by our Intraplex.

Itôs a beautiful thing. (Being T1-free, not the Optimod.) We will continue to use WDJC-FMôs HD3 carrier as a backup for the 6 GHz link. Todd is even working on a way to use a Raspberry PI and some free VOIP software to eliminate the old POTS line up there. Weôll be all-wireless and thatôll be even better than beautiful.

Figure 2 - The old Optimod filling a hole formerly occupied by an Intraplex.

Problems at WXJC-FM

The huge and happy metropolis of Pumpkin Center, AL, doesnôt get a lot of traffic. However, we have fractionally increased that statistic in the past few weeks, driving to and from the WXJC-FM site to repair some line damage caused by a (later) storm similar to the one pictured above.

We inherited the existing Andrew transmission line and connector from Queen of Peace Radio, the previous owners. Whoever put the connector on that coax didnôt do a very good job. The rubber seal at the back of the connector was torn. Even worse, with air pressure, it would spread out slightly, permitting very little air leakage. But in a severe storm, if we lost power, the compressor wouldnôt be operating. With leakage, the pressure would eventually drop to a point that the torn rubber seal relaxed. This is pure speculation, but I think extended power outages, coupled with very heavy rains, allowed water to seep into the line. It pooled at the bottom of the drip loop in the coax, finally resulting in an SWR trip on the Nautel transmitter.

Anytime youôre off the air, youôll be thinking about what it might be as you drive to the site. Once you get there, especially if itôs a non-routine problem, youôre going to wonder whatôs going on. When I first arrived, I at first thought that lightning had killed the IBOC combiner/injector and possibly the dummy load. But when we broke open that connector on the line, water poured out.

Naturally, being highly skilled engineers, we immediately said, ñah, ha!ò and focused on that.

A new piece of coax was ordered. We had some spare connectors here, but I needed a gas-blocker, and ordered that as well. RF Specialties did their usual good job and sent the parts right out. We

cut the old coax well up on the tower, trying to get above the water damage, which had obviously been happening for some time (Figure 3). The inner still looked OK, but the outer conductor was almost black. This reinforces (but again, does not prove) my theory that line has probably been leaking for some time during power outages.

Figure 3 - Part of the old coax section, obviously damaged by water.

But go back to Figure 2. If youôre familiar with the BE FM-30 series, you might notice that thereôs a second dark-colored panel below the exciter. Thatôs a little SWR trip detection circuit that I built, using the old Bird Wattcher on top of the right cabinet. This type of thing isnôt needed with a Nautel solid-state transmitter. The SWR trip on that thing is *lightning* fast.

The precise designs will vary between AM and FM, of course, and Nautel has improved things over the years. But as a general rule, their usual approach is simple: if the transmitter senses a fault condition, you donôt just blow a fuse, trip a breaker or open a contactor. Their transmitters will literally ñcrowbarò the drive to force a circuit to stop operating as quickly as possible.

Itôs not just how fast you can *detect* a dangerous condition; what really matters is how fast you *respond* to it. The Wattcher can actually detect a problem very quickly, but itôs still an order of magnitude slower than Nautelôs approach. If we were to continue using tube-type transmitters, weôd probably consider looking into a way to starve the drive to the IPA or PA with a fault, to de-energize as quickly as possible. Even the fastest mechanical contactor needs many milliseconds to drop open, and unfortunately, thatôs more than enough time for considerable damage to be done.

But in this case, the FM5 reacted so quickly, there was no damage whatsoever. I was extremely happy about that. Nautel continues to earn its reputation for battleship reliability. Iôve loved their products for as long as Iôve been using them, and that FM5 at WXJC-FM has done nothing to reduce my affection.

The repairs being finished as you read this; Lord willing, weôll have some pictures next time. I might even include a shot of Jack wearing his black fedora ...

Spam Woes

Ah, another month ... and more spam. Itôs very, very annoying for all of us. Not a week goes by that at least one of our coworkers wonôt email me or Todd and ask, ñIsnôt there anything we can do?ò

The problem, as Iôve discussed before, is stopping the spam without killing legitimate email. Itôs a real problem, too; for example, I increased the scoring on ñ.usò domains a while back, only to discover that many businesses use these domains for their ñclick hereò links (TigerDirect, to name one good example). I had to literally put in exceptions for these legitimate businesses.

Another approach is to block any dynamic DNS domain name, or a mail domain that doesnôt have reverse DNS configured. Unfortunately, many small businesses are guilty of both. We have to be careful not to block an email from an important client.

To help address the problem, Iôve requested that we include a Dell spam filter in next yearôs budget. It has excellent reviews, and Iôm hoping that will help. In the meantime, remember these common-sense rules.

1. Be very careful about giving your email address to anyone online. Many online chat groups and forums want your email address. Be very picky about this! In spite of what their user agreement might seem to say (read the fine print!), if at all possible, they will sell your email address to other businesses. This is where the legitimate-looking spam comes from ï work-related, such as transmitter sales and streaming companies, for example.

I also suspect, but cannot prove, that some of these companies will sell your email address in spite of the fact that they *supposedly* promise not to do so. Again: read the fine print. They might say something like, ñWe will only use your email for our purposesò (thatôs nice and vague!), or ñWe may share it with our partnersò (ah!).

2. Donôt post your email address in the clear

online. Spammers routinely use robots to scour the Internet, looking for email addresses on Web pages. Always do something like, ñspoole at cbc.com, where ócbcô is short for ócrawfordbroadcasting.ôò Make them work at it.

3. If at all possible, donôt open a spam email. This is a real problem nowadays; if you receive email on your mobile device, for example, it will open email ï including images ï by default. Spammers will sometimes send out ñscattershotò emails to as many addresses as they can think of. The instant you open that email, if thereôs an image or other link in it, their server notes it and they know that your email address is legitimate. They can then sell that email address to other spammers and the cycle continues.

Oh, and hereôs the really good part: if you click ñunsubscribeò in a true spammerôs email, that just confirms that youôre there as well. Rinse, repeat, sell email addresses all day long.

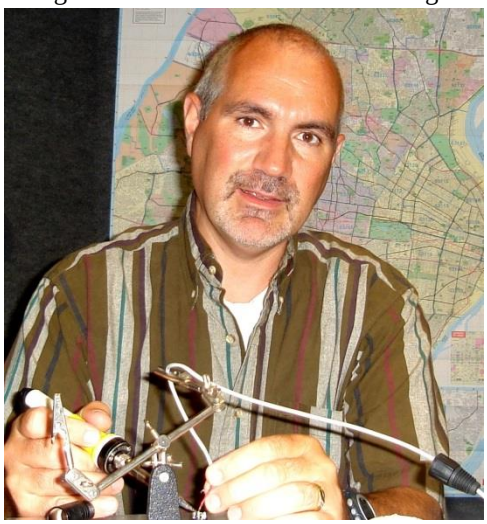
Personally, I think that email, while great, is beginning to reach the end of its usefulness. For every legitimate email that you see in your inbox, itôs not at all unusual nowadays to receive 10 spam messages. There has to be a better way and I keep waiting for someone to come up with an alternative ï for example, paying a tiny amount per message. The total wouldnôt amount to more than a few dollars for month, even for heavy users, but it might discourage random spammers from blasting junk all over the Internet.

But thatôs enough for now. Until next time, DONôT FORGET TO VOTE ... and keep praying for this nation!

The Chicago Chronicles

By
Rick Sewell, CSRE, CBNT, AMD
Engineering Manager, CBC–Chicago

I would guess most of us have dreams that are work related. I remember as a disc jockey that I would often go through the ñdead airò nightmares. The station would be silent and I would attempt to get something on the air. *Anything* on the air. But every time I go to hit play on a machine it wonôt work. Even when I would try to turn the mic on and go live, that wouldnôt work either.



It was interesting that the control room in my dreams would be an amalgamation of different control rooms I worked at over the years. So none of the equipment made sense being together. But I guess thatôs what you would expect in a dream.

Years later, as an engineer, I now have experienced the same type dream but in a different role. This time I am at a transmitter site. The station is off air and no matter what I do I canôt get it back on air. Hit the filaments. Hit the plate. Go to the backup. Nothing works. When I wake up, predictably I silently give out a, ñWhew, it was just a dream!ò

I am normally a pretty good sleeper. I guess most of us have our bouts with insomnia every once in a while. Mostly I have what I would call ñinsomnia by non-auxiliary.ò Inevitably if one of a stationôs transmitters goes down and we only have one transmitter at our disposal, I get that restless sensation that I need to get it fixed *now*. I hate putting my trust in just one transmitter.

Now, I have been through periods with a station where we didnôt have a backup transmitter for years. It didnôt bother my sleep then because that was just the way it was and there was nothing I could do about it. If the main transmitter went off the air, we were off the air until I could get the transmitter fixed. Fortunately, we had a very reliable main transmitter and were hardly ever totally down.

Despite that experience, even when I am in a situation with two transmitters that are very reliable, I still have trouble being at peace when one transmitter is down. This is why I hate to wait for parts. You get that helpless feeling that if the other transmitter goes down, youôre dead in the water.

I can remember a few years back while I was at Clear Channel, that the main transmitter went

down on our highest-rated, highest-billing station on a Saturday morning. We of course quickly switched to the auxiliary transmitter at our aux site. We took a look at the main and realized we needed a new power supply for the IPA. The repair was going to have to wait until Monday for the power supply to be sent from the manufacturer.

As I said, we had the auxiliary transmitter up and going and it had always been very reliable so we could hopefully play the waiting game for the parts to show up. However, a little after 10 pm Sunday evening we get the remote control calling and that transmitter was off the air. This got us scrambling again and we found the PA cavity had taken an arc of energy and would have to be completely rebuilt. Again we would have to wait for parts when the manufacturer was open on Monday.

So it was time to go back to the main. We found that the IPA power supply was good for about 90 minutes and then it had to rest for two minutes with the power completely removed from it. Once that rest period was done you put the transmitter back on air and then wait until it tripped again and start the cycle all over again. Needless to say this was not a great cume building time for the station.

So I have been through one of those most dreaded times for a broadcast engineer, when both transmitters are not working. So I guess that is part of the reason I always lack peace when I have one transmitter not working for a station, because I know it is very possible to be in that position when you are completely dead in the water.

I am hoping that kind of event ï no working transmitters ï is a once-in-a-career event and I have had mine already. No doubt there are some engineers out there who have been through that more than once. That is why when our highest-rated, highest-billing station here at CBC Chicago lost its auxiliary transmitter recently I once again was reminded of that event front a few years ago.

In this case we ended up late on a Friday afternoon figuring out that we needed more parts but we would have to wait until Tuesday morning for the parts to arrive. Not the way you want to get some rest over the weekend.

The good part is that we got the transmitter going again and I can have peace of my mind because I have an auxiliary I can go to if the main goes down.

I am not sure this will do anything for the next time I have that ñnothing worksò dream.

The Portland Report

By

John White, CBRE

Chief Engineer, CBC–Portland

I must admit surprise when recent industry news included yet another report of misuse of EAS alert tones. After the recent publicity, fallout and fines when a commercial included the alert tone sequence, I wondered what brain-dead idiot would use alert tone in any non-emergency on-air situation. And that includes syndicated radio shows aired on flagship stations and distributed other stations around the country.

The suggestion of setting ñstrict timeò may or may not prevent the proliferation that we have seen in the most recent event. And strict time wonôt stop the broadcast on the station carrying the syndicated program and will only prevent propagation to other stations. My own thinking is we need discipline, and when tempted to use a real sound effect we must simply not do it.

To illustrate how seriously I take the ñmust notò principle, I have been working on preliminary efforts for a broadcast emergency tabletop exercise. As part of the exercise I have planed to have several interruptions with new events to be addressed. I had planed to introduce them in an EAS-like manner. In a non-broadcast environment, I could have used actual EAS ñduck quacks,ò but I chose not to. Instead, I have located actual duck quacks to use. EAS tones are to be used for EAS, *period*.

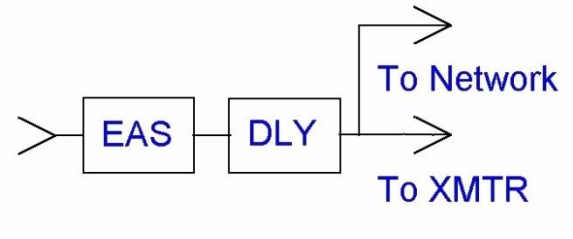


Figure 1 - Typical flagship station audio path.

There are likely other ways that EAS elements can be unexpectedly propagated onto network-distributed content. Here in Portland, we have observed that Internet codecs are opening the practicality of small regional networks. Most syndicated radio programming is originated at a local flagship station, which produces the program and forwards the finished audio to the syndicator for distribution. I would be willing to bet there is potential for many of those flagship stations to unexpectedly pass on EAS elements. Here is why.

At local station producing local talk programming, a must-have is the profanity delay, at least 7 seconds and preferably longer. At those stations, the staff will insist that the EAS be placed first with the delay later in the chain. They will tell the engineer that order is a must to allow properly coordinating other program elements with the pre-delay EAS.

Then one day the program is syndicated.

Now the engineer is faced with the need to feed the program to the syndicate, usually with not much prep time. Of course the obvious and wrong choice is to pick off the signal as shown in Figure 1. What may not be apparent is that this choice for network content will also contain the local station EAS.

Switching the position of the EAS encoder to post-delay wonôt be acceptable to staff. And eliminating network audio profanity delay wonôt be acceptable either. That leaves two profanity delays as the only choice ï see Figure 2. [*This is exactly what we have done at our Southern California stations, where separate delays are used for the common feed to both KBRT and KNSN –Ed.*]

As I write this we have just finished several

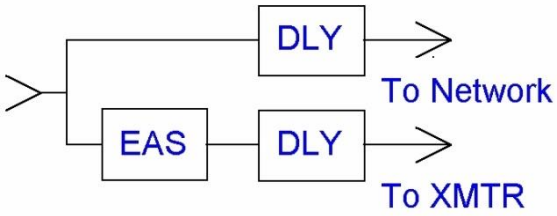


Figure 2 – The right way to do it.

days of pre-winter storms. At the end of last week and over the weekend we experienced a series of rain and wind storms which caused numerous power bumps and outages. We experienced a series of ñsmallò problems, and as a result, that kept me busy going from one to the next.

Fortunately, the worst damage seems to be the loss of a satellite receiver. At the moment things seem to be under control and I am working through the cleanup stages now.

One thing is very evident: even with a backup generator, the reliability of UPS supplies to keep equipment operating is a key factor. So I am back to that UPS battery life problem once again. At the moment I am thinking that replacement with a different make and model UPS may be the solution.

Some other engineers in this area have reported similar problems. One solution suggested by a local engineer is replacing the small individual units with a 5 or 7 kW full-time UPS supply. Overall, the cost is lower to maintain a single, high-power UPS than it costs to maintain batteries of many small units. Unfortunately the cost of additional power circuits to several locations adds to the initial capital expense.

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

Recertification

At the end of September, the moment method recertification for KLZ popped up on my calendar. The last two years really flew by. All the paperwork needed to be done by the 10/12, so we got on it. Thankfully it wasnôt that difficult of a job. It took us right at half a day to get things done, including the field measurements. The good news is that everything checked out okay and seems to be working like it should, which is what we want.

Server

I am about to have my first experience with setting up a Dell server with Windows 7 Professional. This server will be used as an audio server for KNSN at the KBRT Studio. I will be getting it set up first as a computer, then getting all the NexGen side of things installed, and then getting the Wheatstone drivers installed for the blade system they will be getting.

NexGen Update

Before I could install NexGen on that new audio server, I first had to update our NexGen system. We needed to be on the same version as KBRT so that when they get the new ASERV, it will all work without confusing the system. KBRT was on v. 2.13 and we were on v. 2.12. I spoke to the wonderful support people at RCS and scheduled the update for a morning. I wanted to do it before any live shows were on the air, mainly because with all the moving parts of these shows, we really needed full control of NexGen at that point. NexGen wanted me to prepare for half a day, so I did, along with everyone else around the studios. I was surprised when an hour into the update, RCS called me and informed me that everything was done and told me what I needed to do to finish the update. Todd Stickler also updated the KBRT system and as far as I know, it all went well. So now we are both on the same 2.14 version, and when they plug in this ASERV into their system, it wonôt freak out.

Canal Work

Out at the KLTT transmitter site, we have a commercial irrigation canal running right through the middle of the property. We are supposed to maintain this canal, something we agreed to when we built the site to keep the canal people from ripping up our ground system, but unfortunately we know very little of what is required. We have had controlled burns over the years, but that doesnôt seem to be keeping the canal people happy, and while those do clear out some of the vegetation, they donôt do anything for the silt that builds up in the canal.

After getting some phone calls this year and actually getting someone from the canal company on the phone that could help us, we were given some guidelines for remove the silt. This silt was the cause for so much water standing at all times in the canal and it not allowing us to burn fully. The vegetation in the canal would never dry out enough to completely burn.

To deal with the issue, weôve asked the folks at Kilgore Construction to take on the task of cleaning out the canal.

The first step is to get a utility locate. Weôll have them hook into a couple of the tower base ground straps to find the copper straps that go through the canal so we know what to avoid with the excavator. Then Mike Kilgore will come in the excavator and dig it out, removing vegetation and silt. Weôll have to hand dig where the straps are buried.

Itôll be a project thatôs for sure. But once itôs done hopefully no more serious maintenance for another ten years or so.

RF Contactor

We finally got the last rebuilt RF contactor installed at KLTT. Tower 2 was the last tower that

needed it done. We began this project last year, and then winter came. Once things warmed up this year, things got busy, mainly with me being out of town most weekends at our cabin, so I decided to wait until fall. We installed it on Saturday the 25th. While I installed this at the tower base, my dad had work to do inside the phasor, replacing some wire duct that was damaged when a capacitor cooked off earlier this year.

We only had a limited amount of time to get work done, so he stayed inside, replaced the capacitor and some other things that were damaged. Thankfully all of this work only took an hour, which was less time than we had expected.

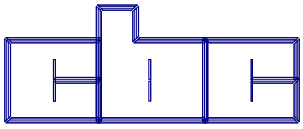
Holidays

With November comes the start of the holiday season. Thanksgiving will be upon us soon, then all the commercials will start just in time for political ad season to end. I don't know what's worse, watching political ads or Christmas commercials. Either way, I'm thankful to have a DVR so I can fast forward through these commercials. I hope to have the canal work done before December. Other than that project, for once we don't have a whole lot going on. That can all change in a minute, but for now, I'll take it.

So until next time… that's all folks!!!

KBRT • Costa Mesa - Los Angeles, CA
740 kHz, 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, 5 kW-U, DA-1
KLDC • Brighton - Denver, CO
1220 kHz, 660 W-D/11 W-N, ND
KLTT • Commerce City - Denver, CO
670 kHz, 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, 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, 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

CRAWFORD
BROADCASTING
COMPANY



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