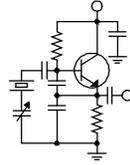


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

FEBRUARY 2012 • VOLUME 22 • ISSUE 2 • W.C. ALEXANDER, CPBE, AMD, DRB EDITOR

CP At Last!

In late November of 2010, we were wrapping up the allocation engineering for the relocation of KBRT to the new mainland transmitter site in Orange County, California (Oak Flat). I had spent years on the project, which was way outside anything considered normal because of the large areas of overlap with co-channel KCBS in San Francisco and second-adjacent channel KFMB in San Diego. We could not simply protect the 0.5 and 0.25 mV/m contours of KCBS and the 5 mV/m contour of KFMB, some of which extend far into the KBRT coverage area.

Instead, we had to take a different approach, essentially using the existing KBRT 0.5, 0.25 and 5 mV/m contour locations to calculate the maximum inverse distance field (IDF) all the way around from the new site I used a spreadsheet and calculated the coordinates of the five-degree points of the KBRT contours as well as those of KCBS and KFMB, then worked backwards, applying measured conductivity data from the new site to determine the maximum IDF in each direction.

We also had to protect co-channel KIDR in Phoenix and third-adjacent channel KSPN in Los Angeles. KIDR wasn't much of an issue, but KSPN required some work and in the end, became the final piece of the puzzle. You may recall that in October of 2009, we erected a test antenna at the site and with FCC experimental authority in hand, made some conductivity measurements along the path from Oak Flat to KSPN and beyond (all the way to the shoreline).

With the allocation picture thus developed, we knew what would be required in terms of both protection and coverage from the new site, and I used that to design the four-tower directional antenna that would achieve both the required protection and the desired coverage.

It was with that preliminary directional antenna design that I went to the FAA for approval and then to Orange County Planning. FAA approval did not take very long, and we received Orange County approval last October.

So I handed the project off to the rock stars

at Hatfield & Dawson in early 2010, and they checked and double-checked the allocation work and then refined the directional antenna pattern to take care of that final puzzle piece, the 25 mV/m protection of KSPN. The pattern was finalized, the application was assembled, and we filed it on December 1, 2010, fourteen months ago. And the wait began.

When we got our county approval last October, the fact that we still did not have our FCC construction authority started to bother me a little bit. I knew that an objection had been filed by the folks at KFMB, and that, I later found out, put our application on the blocked list. The KFMB

objection really had no merit, as what they were objecting to had nothing to do with anything contained in the application. Further, the new facility would do nothing but benefit KFMB with reduced overlap and interference from KBRT, but for whatever reason they opted to get in our way. I had hoped that the FCC would simply dismiss the

United States of America
FEDERAL COMMUNICATIONS COMMISSION
AM BROADCAST STATION CONSTRUCTION PERMIT

Official Mailing Address:
ELIZABETH, MD
PO BOX 1003
BURN BELLS VA 24622

Facility ID: 34588
Call Sign: KBRT
Permit File Number: RP-20101201AAA

Authorizing official:
Sue Rippen
Supervisory Engineer
Audio Division
Media Bureau

Grant Date: January 24, 2012
This permit expires 3:00 a.m. local time, 36 months after the grant date specified above.

Subject to the provisions of the Communications Act of 1934, as amended, subsequent acts and treaties, and all regulations hereunder or hereafter made by this Commission, and further subject to the conditions set forth in this permit, the permittee is hereby authorized to construct the radio transmitting apparatus herein described. Installation and adjustment of equipment not specifically set forth herein shall be in accordance with representations contained in the permittee's application for construction permit, except for such modifications as are presently permitted, without application, by the Commission's Rules.

Commission rules which become effective on February 16, 1999, have a bearing on this construction permit. See Section 4. Other: Streamlining of Mass Media Applications, 98-43, 13 FCC RCD 2304, Para. 73-20 (December 23, 1998); 47 Fed. Reg. 7029 (December 24, 1998). Pursuant to these rules, this construction permit will be subject to automatic forfeiture unless construction is complete and an application for license to cover is filed prior to expiration. See Section 73.3538.

Equipment and program tests shall be conducted only pursuant to Sections 73.3410 and 73.1425 of the Commission's Rules.

Hours of Operation: Daytime with Secondary nighttime
Average hours of sunrise and sunset
LOCAL STANDARD TIME (800-ADVANCE)

Jan.	7:00 AM	5:00 PM	Jul.	4:45 AM	7:00 PM
Feb.	6:50 AM	5:10 PM	Aug.	5:20 AM	6:45 PM
Mar.	6:00 AM	6:00 PM	Sep.	6:20 AM	6:00 PM
Apr.	5:15 AM	6:35 PM	Oct.	6:00 AM	5:25 PM
May	6:45 AM	6:45 PM	Nov.	6:10 AM	6:45 PM
Jun.	4:45 AM	7:00 PM	Dec.	6:45 AM	4:45 PM

FCC Form 351 August, 1997 Page 1 of 5

objection as moot, and while that eventually may have happened, with time running out we simply agreed to what KFMB wanted. That agreement had no impact on the new facility. The good folks at KFMB then withdrew their objection. And the wait continued.

On Thursday, January 26, I received the granted KBRT construction permit. When it spooled off my printer, I came as close as I ever have to turning a handspring right here in my office, my urge tempered only by the possibility of crashing through the glass and falling to the pavement twelve floors below! What I did instead was thank and praise God, who has been completely faithful throughout this whole process.

So where do things stand now with the overall project? Actually they are moving right along ó at least in some areas. We have filed all but one of the permit applications, and those are in plan check at the county right now. Our hydrologist and civil engineers met with the plan checkers at the county when they filed the applications and went over the plans in detail with them, and no red flags were raised. This really is a simple, straightforward project that should require very little from the county processors. But we know how things so often work, so there may be some changes required here and there. Still, we hope that stamped, approved plans will start coming out of the county building department shortly. The one application that has not yet been filed should be submitted this week, putting it about two weeks behind the rest of the pack.

While I am waiting on the county, I have been pursuing getting power to the site from Edison. We have had the easement from the adjacent landowner for this for a couple of years now, so it would seem to be a simple matter to get the Edison design completed, hire a contractor and start trenching. But like a lot of utilities and government agencies, these things tend to move at a snail's pace. With actual construction at the site set to begin in April, I am beginning to apply pressure from the top down at Edison to get power to the site by that date. Hopefully we can quickly break whatever logjam is holding things up and get this part of the project on track.

And also while I am waiting, I will very shortly go ahead and order the phasing and coupling equipment from Kintronic Laboratories. KTL has agreed to go ahead and manufacture it while things are slow and then warehouse it for us until we are ready for it. The timing is critical on this. The phasor cabinets will not fit through the door in the concrete block wall around the transmitter building or through

the corridor between the building and wall, so they have to go in before we complete the wall. I do not want the construction at the site held up while we wait on the phasor cabinets to be delivered, so having them ready to ship on demand is the best (and only) way to go.

Lord willing, we hope to have the project wrapped up sometime this summer and begin operating from the site. It is a big project, and in addition to the buildout at the new site we have to vacate the old site, relocating (aux) transmitter and ancillary equipment to the new site and otherwise getting everything off the island. It's going to be a lot of work, but when we are done, KBRT will be set with a new, state-of-the-art facility that should serve the station well for many years to come.

MDCL Update

We now have two full months under our belts with the KCBC Modulation Dependent Carrier Level (MDCL) operation, which we started in late October. For both November and December of 2011, our energy usage was reduced by 21% over the same period in 2010.

In recent weeks, we have begun MDCL operations on three other stations: WXJC, WYDE and KLTT. WXJC is another 50 kW AM, and Stephen Poole performed the required firmware update on the AM-IBOC HD exciter to enable the MDCL option. We look forward to gauging the energy savings at that station starting here in a month or so.

Stephen wanted to try MDCL on 5 kW WYDE as well, not so much for the energy savings but as a means to simply reduce stresses on the transmitter. As with WXJC, all it took was a firmware upgrade and enabling the MDCL option.

Once we learned how, enabling the MDCL option on the new KLTT NX50 was a piece of cake. As with KCBC, WXJC and WYDE, this station is employing the AMC algorithm, which reduced the carrier with modulation (the carrier returns to full power during low or zero modulation). I have had the opportunity to evaluate the effects of the MDCL operation on the signal firsthand andí wellí I haven't detected any! The signal is strong and robust, maybe even louder than before, and the digital performance is outstanding (we get a digital lock in about one second on most receivers).

One thing that occurred to me as I was thinking about all those power savings is that if we operate our aux transmitters at KLTT or KCBC (where we have full-power auxiliaries), in about 15 minutes we will produce a peak demand that is the

same as it used to be, something that will really hit us in the wallet.

At KLTT, it's not much of an issue. The ND50 aux is driven by a two-year-old AM-IBOC exciter. We were able to do a firmware update to the AM-IBOC and enable the MDCL option. So now both the main and the aux operate with AMC with 3 dB of carrier reduction. We can, if we need to,

operate the KLTT aux at full power (including digital carriers) without much of a power cost penalty.

KCBC's ND50 aux is a different story. It is driven by an older NE-IBOC exciter which is not updatable to provide the MDCL option. So for the moment and until further notice, if we have to use the ND50, we will operate it at 25 kW to hold the peak demand down and avoid the utility bill hit.

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

Hello to all from Western New York! Whatever has happened to customer support? It appears that many broadcast equipment manufacturers have severely cut down on their product support department personnel.

I recently contacted one of our vendors for technical support on a major issue with a piece of broadcast equipment. I was unable to get past the receptionist on the telephone but was told that a service representative would get right back to me. After waiting for over 2½ hours at the transmitter site for a callback, I gave up.

When I returned to the studios, I emailed the technical support department with the problem, but began the missive with an account of my feelings on how much their telephone support stinks! I'm sure this is NOT the best way to obtain help, but I was frustrated for having to waste several hours waiting for a callback that never happened.

As the equipment was located at the transmitter site, I felt it best to call when I was in front of the equipment so I could better assist the customer support person with any questions. I quickly received a reply with apologies that they were short staffed and had an unusually high number of calls that morning. That's fine, I can accept that, but I should have been told this when the initial call was made. Instead, the receptionist told me that they would get right back with me.

In my e-mail to the technical support

department, I detailed the problem I was having with the equipment and what I had done thus far to get back up and running. The major problem I was having was the touch screen would go blank and freeze up, and nothing short of unplugging the

equipment would help. Additionally, I would have to plug/unplug the unit several times before it would work properly again, a process that took several minutes, taking us off the air in the process.

The tech support person explained that this was a known issue, and a software upgrade would probably take care of it. My question is, if this was a known issue, why

weren't we contacted prior to experiencing this problem that there were issues with the software and a fix would be forthcoming? This was a very expensive unit, and for this company to all but ignore this issue tells me that they either are way understaffed or just don't care about the product after it leaves their facility.

As of this writing, I am still waiting for the software upgrade that will supposedly fix this problem, and I am sure that they will get the problem resolved in time. This is not the first such encounter I have had with this particular company, and I suspect will not be the last, but I can honestly say that I would not ever buy from them again if given the opportunity to purchase elsewhere, and they will never obtain my recommendation to other broadcasters to buy their equipment based on the



experiences with the technical support department.

We at CBC deal with a number of vendors, and most are top-notch companies that provide us with a personal touch of quality service on every level. I am reluctant to name this company here, but I'd bet you have a good idea, and I'd further bet that your experiences rival mine.

WDCX-FM – Buffalo, WDCX (AM) / WLGZ-FM – Rochester

Last month, I reported on our antenna project for WDCX-FM and the reception problems we encountered after the installation. There was an area on the Canadian peninsula between Lakes Erie and Ontario where our coverage was diminished considerably after replacing the antenna. It was not clear as to the cause of this, and several engineers were consulted to try and determine the cause. The only variable that had changed from the original installation was the mounting of the new antenna and our TPO was approximately 1 kW less.

ERI had determined through range testing that optimum vertical reception would be obtained in the Toronto area if we mounted the antenna on the tower leg, instead of the tower face. The degree of orientation did not change, nor did the overall height of the antenna. After the initial installation, reports indicated that we lost completely the coverage area between St. Catharines and Hamilton Ontario to a co-channel Canadian station operating on 99.5 out of Kitchener, Ontario. It is also worth noting that they were granted a power increase by the CRTC from 3 to 5 kilowatts, and have a directional antenna with three main lobes, one being directly south/south east, in the St. Catharines/ Hamilton areas. We are not sure when this took place, whether the power increase was

implemented co-incident with our project or not.

In the meantime, it was discovered that a portion of the WDCX-FM feed line that runs up the opposite leg of the antenna, was not included in the mock-up for range testing of the new antenna. It was thought that perhaps this portion of feed line would make the tower leg appear fatter, and along with a couple of guy wire segments that were in part of the antenna aperture, had skewed the pattern somewhat from the original pattern mapping.

To obtain our original baseline, we had Great Lakes Tower come back and move the antenna back to its original face mounting position, and we adjusted our TPO for 23.1 kW. After making these adjustments, Nevin and Brett Larson drove the affected areas and reported that we had returned to our original reception conditions we experienced before the antenna move.

One thing to note, however, is that reception in and around the Toronto area appears to have improved with the new antenna, with a clearer, more robust signal than we had before. After seeing the condition of the old antenna, I can see why. I noticed a lot of soot in the inner bay sections from arcing on the bullets located in the T-blocks which connect the antennas to the inner bay sections. Also several of the T-blocks showed some cracking due to flexing of the antenna on the tower. It was only a matter of time before we experienced a major breakdown in our 32-year-old antenna, so its replacement couldn't have come at a better time.

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

The Motown Update

By
Joseph M. Huk, Jr.,
P.E., CPBE, CBNT
Chief Engineer, CBC–Detroit

WMUZ Tower

Last month, we completed our next phase of lightning mitigation for the WMUZ tower. The tower riggers came out at about 9:00 AM on a Saturday morning and begin their climb up the 500-foot structure. Since we had paid programming until 11:00AM and could not power down until then, the tower riggers started working on the lower set of arrestors first. Originally, we had planned on having the brackets of the static arrays CAD weld bonded to the tower. Upon further examination by the tower riggers, it was determined that the bracket would not tolerate excessive heat needed to complete the bond. In addition, there was not sufficient surface area for a #0 AWG wire connection. The Stati-Cat arrays come with a mechanical lug that will accommodate a # 6 AWG wire connection. The existing installation already had #6 wire running up each tower leg from the ground system at the foot of the tower to each Stati-Cat array. Since the existing installation from a little over 10 years ago worked great until recently, the existing wire was used for this rebuild. Each connection was cleaned and mechanically bonded to each bracket.

Once we cleared 11:00 AM, the transmitter was shut down and the tower riggers continued their climb to the upper sections of the tower to complete the rebuild of the suppression system. Once the top section was replaced, the tower rigger started straightening out the nails or pins on the arrays. One thing that I was not aware about was the way these arrays are hand carried up the tower in bags, the pins must be bent so that they can be easily stored. These bags move around easily, so the pins could also injure a tower worker. Therefore, there is the added task of making sure each pin is straight after installation.

My understanding is that these arrestors drain static charge off of the tower to make the tower

less attractive to a lightning strike. Our new ground system should hopefully provide a low impedance path to ground to allow any current from a lightning strike go directly to ground and not take a sneak path into our building. Going forward, I am going to examine all the known weakness in the broadcast chain and put extra attention, in regards to suppression, on these items.



The Zip One Saga Update

Last month, we had been working with Telos on the resolution of connectivity issues with our client's Telos ZIPOne codec. Since I last reported on the incompatibility issue between the ZephyrIP and ZIPOne, Telos has come out with a beta version of software for both the ZIPOne and Zephyr IP.

After loading the new software revisions to both units, I noticed a big improvement to connection instability

issues. The only visible issue I noticed was that the telemetry data being transferred between the two units was not being decoded reliably. The symptom manifests itself with a blank transmit or receive quality indicator on the codec's front display (please see picture). Other than that, the improvement was noticeable and gives me confidence that Telos is headed towards a reliable production fix.

I would like to thank the Telos group for all their support in regard to our current, and yes, future Telos Codec users. Two of our other long time VIP clients are ponying up to Telos codecs too. I know our air sound continues to get better with the advent of these fine products.

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.



New ZIPOne Screen

News From The South

By

Stephen Poole, CBRE, CBNT, AMD
Chief Engineer, CBC-Alabama

Man, we've been busy!

On January 23rd, two days before my birthday, another line of tornadic storms came through Alabama. This wasn't as severe as the weather that we experienced in April of last year, but it was bad enough. The communities of Center Point and Pinson, AL, were hit by an F3 tornado that brewed up on Pawnee Village Road just north of Tarrant.

If that road name sounds familiar, I've probably mentioned it here before. That's where WXJC's five-tower directional array lives and once again, we dodged a serious bullet.

The tornado that devastated Tuscaloosa last year dissipated just before hitting the site. This most recent storm was still forming as it crossed over 850's tower field. Pawnee Village Road was impassible because of downed trees and WXJC lost power, but thank the Lord, there was no damage to the facilities.

If that tornado had tracked a bit further south, Birmingham itself would have been hammered, including our studios and WDJC-FM's transmitter site on Red Mountain, which is STL Central for most of our other stations. Truly, we dodged a bullet. Again.

Shortly afterward, Mr. Crawford sent us a nice email, pointing out that God is obviously sparing that station for some reason. He said that we should dedicate ourselves to making it even better than ever. I believe it!

Disaster Preparedness

Naturally, once it became obvious that WXJC would be without power for a while, I thought of Agility Recovery, the company that we're using for disaster mitigation. My first experience with them follows. There was some good and some not so good.

The good is that they were there as soon as we called. I think they were aware that Alabama had suffered from another round of severe weather and

were ready and waiting. We told them that all of our facilities were intact, but that we had lost power to 850 AM in Tarrant.



At that point, the bad (or at least puzzling) appeared: Todd made the call and was surprised when the nice fellow at Agility asked for all of the same generator information that we had faxed to them several weeks before. That was a bit irritating; what was the point of filling out those forms at their Website, and faxing in that additional info, if we'd have to repeat it when we called?

But at the end of the day, we are responsible for keeping us on the air, so I

chalked this up as a learning experience. Providing the information to Agility last fall made us aware of just what we'd need to stay on the air and in business. This more recent experience showed that we should keep a copy of all critical info handy in our vehicles, if nothing else.

But give credit where due. Agility was there, they answered our call instantly and they began searching for a generator as soon as we hung up. They called back a couple of hours later and offered to have one there by that evening. As it turned out, the power came back on soon after dark, so we didn't need it.

All in all, I have to say that it was nice to have someone to turn to, and I could easily imagine that they'd be invaluable if a real, widespread disaster were to hit our facilities in Alabama.

WYDE-FM: The Burnout

Early one morning right after New Year's, I received that most dreaded of text messages from Byron, the producer and board operator for the Michael Hart show on WYDE-FM: "101 is off the air."

I connected to the remote control myself from home and noted that the transmitter would come up for a moment, make it to about 60% power, and then shut back down. Not good.

Jimmy was on his way in to work, so I had him stop by the transmitter site. He called and said, "The VSWR overload light on the transmitter is on." Double not good. I arrived shortly thereafter and confirmed his diagnosis—sure enough, something had happened to the main antenna. We scrambled and plumbed the main transmitter over to the auxiliary antenna. Then we plumbed the HD transmitter into the main line and set it for reduced power in FM-only mode as a backup.



Burned out T-block from the WYDE-FM antenna

Southern Broadcast Services came to investigate and discovered that the bullet on bay #4 had burned out, damaging part of the matching section... including (of course!) the T-section and the elbow at the feed point. We called ERI, asked them to overnight what we needed and called it a day.

Have I ever told you how much I love FedEx? Several times now, they've botched our deliveries. In this case, it was split into two packages: we got one, but the other was still sitting in Memphis when I pulled up the tracking information online.

When I called FedEx, I got someone who barely spoke English. I asked, "Will we get a credit for this, considering that we paid for overnight priority?"

"Oh, I am sorry," said the lady in a heavy accent. "I cannot be giving credits."

Ah. Thanks. FedEx cost us a lot more than they think by delaying half of that shipment, because it delayed us for one critical day. Immediately afterwards, the weather turned horrible and stayed that way for *weeks*. That lost day cost us several additional days of starting work, then having to stop because another storm would roll in. One day in particular (January 20th), the crew had made it halfway up the tower when they had to turn around and climb back down. Remember, this is a 1326-foot

tower. It takes *hours* just to climb the blooming thing.

At length, however, repairs were completed and we started thinking about how to purge that line. It had been sealed with plastic plugs and tape, but as humid as it was, I didn't want to put power in it until I felt like we could safely do so. After discussing it with Cris, I ran to a local supplier and picked up three tanks of nitrogen and a regulator.

That's a HUGE line (1350 feet of 5-inch coax). It took hours to get all of that nitrogen flushed through the system. When they sealed it back up, it was holding pressure, so we crossed our fingers and powered up. Thank the Lord, it worked!



Hoisting the replacement bay up 1,380 feet of tower at WYDE-FM

Trango Woes

No doubt Cris will have something to say about this as well, because he also dealt with it from the Corporate angle. Our new Trango link from Red Mountain to the 1260 AM site on 1st Avenue suddenly stopped working in early January—right after we diagnosed the problem at Cullman. Triple not good; that's all we needed!

At first, we thought it was the power supply, but I bought a replacement from a local supplier and tried it; no joy. We called in Southern Broadcast Services to troubleshoot.

We're using the Power Over Ethernet (POE) method, and we suspected that a junction in the line might be the problem. But we checked the line all the way up and the short was definitely at the radio on the tower. As soon as they'd unplug it, the power supply would come right back up to nominal voltage. Something in that Trango was loading the power supply.

We had them pull down the radio. We took it to the studios, where I connected it with both POE

and the separate power jack on the unit. In each case, as soon as it was plugged in, the power supply would act like it was driving a dead short: it would shut down. We had no choice but to send the radio to Trango.

It was then that we received an unpleasant surprise. Trango charges \$600 (plus shipping) if they think the unit has no problem. They claimed this in our case and sent the radio back along with an invoice. I connected the unit on the bench in engineering to the same test rig that I used before and it worked fine. The power supply never glitched and all the blinky lights were green.

As I write this, though, we are still operating on a backup (WDJC-FM HD2 and an HD-R receiver). Almost constant rain keeps pushing this one back.

A Final Suggestion: Check Your VSWR Protection!

Most modern transmitters are heavily biased toward staying on air, rather than shutting down in the event of a fault. This is a good thing... and a bad thing. Obviously, we want to stay on the air, but not if that means melting the antenna system trying to do it!

The problem is defining an unsafe level of reflected power. Transmitters typically don't begin reducing power until the equivalent VSWR reaches about 1.5 to 1. Considering that our ERI antennas are

carefully tuned to present an almost-perfect match when they're installed, I personally think that's too high. The way I look at it, unless there's a logical reason for it (such as antenna icing), I don't want to see *any* reflected power. All of our systems barely move the needle on the meter when things are working normally, and that's as it should be.

The VSWR overload trip point on our BE FM-30T is set by default to 2.8 to 1, which no one in their right mind would consider a safe point. If it's that high, something is badly wrong with my antenna and I need to take immediate action! Cris points out that our problem is magnified by the length of our line, which tends to mask and delay the returned power from an arc-over event. This is another good argument for lowering those thresholds, if you can.

I've built my own reflected watch circuit that will instantly react to any *sudden increase* in reflected power, switching off the transmitter and reporting the fault via remote control. If you have a Bird Watcher or something like it, I strongly suggest that you check it and confirm that it works properly as well. Crank the threshold down as low as you dare. Ideally, you'd set it so that it reacts at a point just above that at which the transmitter begins power fold-back. That's my recommendation, anyway.

That's it for this time. Until next month, keep that disaster information in a handy place, and keep praying for this nation!

Catalina Tales

**By
Bill Agresta
Chief Engineer, KBRT**

Greetings from Santa Catalina Island!

Here on the island, the production of stupid has somehow gotten bumped up and it is spilling out everywhere. I only wish that stupid hurt, but in this society it only seems to be accepted and many times even rewarded. The thing is, I'm not sure I want to get anymore into this past month than to say what I have already said because anything I say or do only seems to make matters worse here. Instead of two steps forward and one step back, this



place seems to step back more often than forward.

The city of Avalon has many growing issues, too many to write about, and our operations here on Catalina Island are made tougher with each one of them. It is nearly impossible to find good contract labor here, and most services in town are extremely high priced yet provide very poor service, if any!

I am sorry to have begun this month's article like this, but the situation here has just really blown me away over the past month. We know that

things are getting ugly all over, but here most of the issues are due to just plain stupidity and laziness.

As long I remain present at the KBRT Ranch transmitter site, the XL12 main transmitter runs great. Since our last electrical power issue that occurred while I was off the island, things have been stable. This is typical, however, while I am here at the plant, but just wait until I try to make my next trip to America!

Through all the chaos I deal with here on the island, one thing is for sure, God has His hand on our operations here and He has posted some big angels to protect me! With all that continues to happen here, KBRT rarely misses a beat and the Word of God continues to be broadcast to all of Southern California.

I am still awaiting the arrival of our generator service tech and I am preparing to redesign our generators and start pedaling soon. Unfortunately, with all the increasing rules and regulations here in Los Angeles County, I am sure they will decide that all that pedaling will affect climate change and we will have to begin paying fines!

The good news, though, is that we did get our propane tank topped off. As long as the generator remains in working condition, we've got fuel to run it.

Until next month, the Lord bless you and keep you; the Lord make his face shine upon you and be gracious to you; the Lord turn his face toward you and give you peace.

The Chicago Chronicles

By

Art Reis, CPBE, CBNT, AMD
Chief Engineer, CBC-Chicago

Friday the 13th: Living Up Down to its Reputation

This year, Friday, January 13th sneaked up on me. I'd paid no attention to the fact that it was coming until the day before, when the fun started early. Stephen Poole called. His Trango STL was down (he'd tell you why, I'm sure), and we went into scramble mode to make sure we got our own spare Trango 6B0 unit out the door on FedEx First AM delivery for the next day.

First thing next morning, I called Stephen to see if he'd gotten it. He had, was about to put it up the tower.

Sometime later, he called me back. Our unit didn't fit his antenna! It had a different mounting configuration from his. Cute. And that was just the beginning.

We've been having trouble with our Rockford station WYRB going to dead air at just before 9:00 AM. This is not an engineering problem; the cause is actually the folks at Tom Joyner Show, who refuse to run any audio past 8:58 AM or so, leaving us high and dry until our own automation kicks in at 9:00. But we in engineering get the alarm calls from remote control, every weekday. Looks like we're going to have to start a dead roll to cover until the top of the hour.

But this day, it was different. There was no

call from the silence sensor at 9:00 AM. Instead, it happened at 9:40 AM, a totally wacko time for that event. Upon getting the alarm, I checked the remote control, and yup, the transmitters were up but the audio was down. So I had assistant engineer Warren McFerren check the audio at the console. Same at the audio processors, the switcher, and the audio card on the Intraplex. All clean and green there. Then, we found the problem: The Intraplex's Alert light was on, which usually means a line outage. A loopback

check on the Intraplex confirmed that the studio box was fine. But there was no loopback happening on either the line or through the Kirkland box. Bottom line: We were dead in the water.

Next, a call to the emergency desk at Comcast/Cimco alerting them of the trouble. By this time, it was after 10:00 AM and we'd been down about a half hour. Comcast got on it right away, but getting the various parties at each end involved was slower than it should have been.

To make a long story short, we were down on that T-1 circuit for around seven hours. The cause, as related to me by the technician from Frontier Telephone (which recently acquired the phone utility



in Kirkland, the nearest town to the WYRB transmitter site) was an auto accident. No, the car didn't hit a utility pole. Rather, the car, which had to be either one massive auto or was speeding on the street outside (or both), apparently went into one massive skid on the icy Kirkland streets (the first big snowstorm of the winter had hit all of Northern Illinois the day before) and just creamed the front side of the Frontier Telephone central office building, taking out a bunch of equipment inside including, apparently, our own T-1 service. Not normally manned, the emergency repair crew took time to get in there and repair the damage. They got it mostly repaired by 2:20 PM, but as it turned out, the damage wasn't confined to the CO. In our case, when our T-1 CO equipment was hit, a pulse of some sort went right up the line and wiped out our transmitter site's T-1 Smart Jack. We had to put in a second call to Comcast/Cimco to get a Frontier field tech out to the Ault Road site to replace our ruined Smart Jack. How weird is *that*?

The story doesn't end there. Let the record show that in all of our previous T-1 outages, the loss was to both our Lansing and Hammond T-1 lines simultaneously. Not this time. Had we known then what we know now, we might have been able to shorten or completely prevent the outage. As of last October, we had most of the parts we needed to do just that. This included our new Trango system for WSRB, with its three full-response stereo, bi-directional audio paths; and the custom audio switching system out at Kirkland to allow switching to said backup feed in a split second. We had also recently received some additional Intraplex cards from Amanda Alexander in Denver, which would have provided a backup MP2 path for Power 106 to Kirkland. The only things missing to complete the project were two sets of backplane connectors for the two Intraplex boxes, which would have allowed those cards to work. As of Friday the 13th, those are now ordered. That project will be completed and tested as soon as the parts arrive. Trust me.

However, for *this* Friday the 13th, it wasn't to be. We all hate for our stations to be down for one second, and frankly, this isn't the worst outage we've ever had. About ten years ago, WYRB was down once with a T-1 line failure that took Verizon (the former phone utility) three *days* to find... and the problem turned out to be 150 yards outside our transmitter building door! WYCA was down for a day last year when both Com Ed *and* our emergency power generator failed at the height of the big February 1 blizzard, and I got stranded out there trying to fix it.

Still, that's more than enough of the drama, already. None of us needs that sort of disaster. I know I don't. Especially on Friday the 13th.

Left over from the New WYCA Transmitter Installation

After we went to press on last month's issue, we ran into a situation at the Beecher site which merits a mention. The new Nautel VS-2.5 came on the air all right, as I related; however, an odd thing happened when we tried to put the older Nautel/BE team into a shortened hard-line coaxial connection to its antenna. It wouldn't work, instead putting the transmitter into a "Reflected Power" fault. But the Bird Wattmeter which is also in the line wouldn't show me any reflected power at all, not even a flicker at start-up.

Thinking that the issue was the way in which we had put together the hard line, I proceeded to dismantle the line, one segment at a time, checking for split bullets and non-connections. I found one that I judged to be iffy, but fixing it didn't do the trick. The transmitter still wouldn't come up.

Then I got an idea. Why not check if the BE digital rig would come up? It did, and that changed the focus of the fix. I went back to the Nautel and disconnected the Reflected Power connection between the detector and the control circuit. The rig came up and the Bird meter showed no reflected power on it. The problem was in the transmitter. I reconnected the Reflected Power detector and exercised the contact a few times, then turned on the rig. Voila! The problem had disappeared.

To be honest, I've never seen this exact problem before, but if your Nautel, or other VSWR-protected transmitter gets this sort of issue, maybe it's time to break the De-Ox-It out of your arsenal and stuff a little into the coax connectors on both sides of the reflectometer sensing circuit.

Putting the Convenience into Arbitron Compliance Testing

As anyone who has a station on Arbitron's PPM system already knows, one of the occasional but annoying chores associated with these boxes is having to have them periodically certified by Arbitron, once when they're installed, and, apparently, every so often after. The procedure is pretty pedestrian: You must call Arbitron during business hours, put the phone next to the speaker of a convenient radio or mod monitor for anywhere from three to five minutes, and see if the Arbitron Customer Service guy can decently decode the Arbitron data. And this must be done for each and

every Arbitron in each and every station. Furthermore, anyone with experience in these things now know that it's best that you be at the transmitter site to switch boxes if you don't already have the means to do it remotely. Sometimes the process works, and sometimes, well, not so well. If the Arbitron place is having a busy day, you might have to wait until the next day or later to get that chore off the do list.

Well, maybe not. What if you could do such testing on *your* schedule, not theirs? If you own an iPhone, you can. And it may be true for other "smartphones" as well. The beauty of the Apple for this application is that it has a record feature which has, as a spec, full 50-15k audio frequency response. That may also be true of other "smartphones" as well. Check to see if yours does.

Simply use the iPhone's voice recording feature, usually reserved for taking short notes for additions to your do-list et al, and make your Arbitron compliance recordings that way. Take about three or five minutes of audio, whatever suits your fancy or Arbitron's. When done, bring up the voice recorder menu and select "Share this recording," or whatever the "command" is on your phone. On the iPhone, another menu will pop up: select "E-Mail" or "E-Mail This Recording." An email form will pop up. In the address line, just put in your Arbitron contact's E-mail address and fire it off. That way, you do the compliance bit with Arbitron without compromising your schedule in any way. And they get a really *nice* recording to work with.

The email addresses I use are for Seth Vininsky (seth.vininsky@arbitron.com) and Keith Ege (keith.ege@arbitron.com). If you don't have any other contact at Arbitron's Maryland HQ, start there.

Finally...

I just had to pass this along. It was sent to

me recently by a friend of mine, Mary Ann Seidler, who is Vice President for International Sales at Tieline. For a number of years, her best friend and mentor was Gerhard Stoll, who was, she tells me, the lead scientist in the development of the MPEG Layer 2 codec (aka Musicam) in Germany. Mary Ann went to Germany specifically to work with him during that project, and she garnered a treasure trove of knowledge about codecs at the feet of *the* master. Sadly, Gerhard passed away suddenly in April of 2010, just before NAB, of an aneurism, a true loss for both the world of digital audio, as well as for Mary Ann. She recently sent me an email in which she included the following as a kind of eulogy to her friend:

"Well, if you have noticed, since April 2010, the audio quality of thunder has really improved. That is because God now has Gerhard working on it. It was probably the first thing that happened when he showed up. He told St. Peter that they needed to redo the thunder system and he has been hard at work ever since. At this point they are probably wondering if they could send him back to us because he probably has things ripped up and is asking for more engineering help. It's really gotten loud! Typical Gerhard."

Whether all this is true or not isn't really the point; I think that it's still a fitting little remembrance for Gerhard from someone who loved him and who knew the value of his work. For my part, I knew of Musicam quite early on, and I too saw it for the great contribution it was and still is to the state of the digital art. Musicam is of course now a worldwide standard, and I have to say that I envy Mary Ann just a little, for having availed herself of the experience of knowing and working at the feet of Gerhard Stoll. All of us who consider ourselves geeks should be this kind of blessed.

Until next month...

The Portland Report

By
John White, CBRE
Chief Engineer, CBC-Portland

I felt like a drowned rat. I know, I know. That sounds like an excuse – this is Portland after all. It does get wet. Yet there I stood, looking at the gully washer. Having grown up in southern Idaho, that's farm for a real heavy rain.

We just had to pick this day to check the detuning on a cell phone tower near KKPZ. That seems to be an ongoing project as there is very little indication of any slowdown in the future. Of course that means standing out in the rain, going through the detuning adjustment to insure it's correct before making any field measurements.

We did put off the detuning and field measurements for a day, if for no other reason than protecting our measurement equipment. That evening Johnson Creek at the foot of Mt. Scott was at flood stage. 24 hours later the weather was much better.

A few local engineers have wondered why I make such a fuss over detuning of potential reradiators. The thinking goes that it's no big deal as

long as the monitor points are in. The problem is, that misses the real goal, providing coverage in a predictable way. That includes all the radials that aren't monitor points. Those are likely to be in the direction of the listening audience.

Over the years, Cris and I have put in a sustained effort to improve the KKPZ signal in the metro area. Redoing the ground system is just one of those steps. But an interfering close-by tower can undo all that work in an instant.

So a word to the wise: keep a close watch and monitor new and modified towers. At Mt. Scott I have seven (!!!) towers less than 1,000 feet from the station. Six are detuned and one is a Part 90 installation that is not subject to the same AM antenna protection rules as other towers (it is owned by a semi-public agency). Until we can get that tower detuned, we can't get our pattern into compliance. The result is a "permanent STA." I guess that's a new definition of "temporary."



**Rocky Mountain Ramblings
The Denver Report**

by
**Amanda Alexander, CBRE
Chief Engineer, CBC - Denver**

Oh what a month and a New Year January brought forth! I think it would be anyone's hope to have a quiet January. If the start of the New Year is quiet, chances are the year will be a quiet one. For me, it started off quiet, fine tuning the new NX50 transmitter at KLTT, as well as fine tuning the NE-IBOC for the KLVZ night transmitter.

It was about 2:00 AM on January 12 when I woke up to my phone ringing. I saw it was Security Central, the alarm monitoring service for our transmitter sites, and my heart moved to my throat. They informed me there had been a front door alarm at the KLTT transmitter site.

I decided in that moment not to dispatch just yet, mainly because my first thought was false alarm. As I woke up a little bit and my brain started working more, I realized I had *never* had a false alarm at KLTT. I immediately called the Adams County Sheriff's Department and had them dispatch, I also called Keith Peterson and we met out at the site at around 2:30.

Upon arriving, we found someone had indeed attempted to break in. The front doorknob was on the ground and our "realor box" in which we keep a door key for the HVAC service people and others who may need inside was missing. The key that was in that box was in the deadbolt and the deadbolt was unlocked. Whoever did this did not realize they would need the key to first unlock the bottom lockset before breaking off the door knob. My guess is the scumbag(s) who did this messed with the front door long enough to trigger the alarm which then scared them off.

As the police did their work, we found the chain had been cut and that the perpetrators had left their bolt cutters at our gate. After securing the building as best we could, we all left at around 4:00 AM.

Later that morning, we headed out there again. We called a locksmith to come replace the locks and began looking at the damage. We noticed

damage to our back door in the daylight that we had not seen in the dark. Whether this was done at the time of the attempted break-in or later that morning it was impossible to tell. I could not believe how much getting locks replaced would cost.

I am very grateful that whoever did this did not get inside our building. \$1,000 worth of damage is acceptable when the alternative could have been tens of thousands of dollars in damage. God really looked out for that site for us.

Now that the KLTT site, where we have never had any security issues in the past, is "on the radar," I have begun taking precautions as we have done with the other sites when something of this type happens. We have a new security light in front of the building that is really bright and floods the whole area. This is the same type of light we installed on both the front and back of the KLZ barn.

We are also planning to update the alarm system at the site so that it includes our tower bases. We looked into getting a light installed out by our gate, but the cost would be great going through our electric company (the light would be on their utility pole). We may revisit getting a light by the gate in the future, but for now, we will wait. I have not had any more alarms since the first one, although I keep waiting for another phone call. As I noted, we are "on the radar" now for copper thieves.

Other than this big event, things have been quiet. I have been able to catch up on a lot of the work I got behind on while we were busy working on getting the new NX50 transmitter installed. As I spend the last week of January sick with a cold, I can only pray that February brings better health for me as this whole cold thing is getting old. February brings forth two new servers to install here in Denver. This will be the last of our servers to be replaced, so I am thoroughly looking forward to it.

That about wraps it up for this month, so until next time! That's all folks!!!



Digital Diary
by
Larry Foltran
Corporate Website & Information Technology Coordinator

Phishing, Vishing & SMiShing

For years now, the term "Phishing" has been part of the vocabulary for the world's experienced computer users. As internet and computer usage has grown, cyber criminals have found it easier to trick users into providing their passwords, account numbers and other vital information simply by creating an illusion that their accounts have already been compromised. Some attempts are laughable, but I have seen others which were extremely well done. Let me now introduce you to phishing's more recent relatives, "vishing" and "smishing." No, I haven't been spending too much time with my Dr. Seuss books. But I can see the battle between the cyber criminals and the IT "Good Guys" echoing the turmoil between the Yooks and the Zooks in *The Butter Battle Book*. Before I start reciting verses from *Green Eggs and Ham*, let me dive into the world of Vishing and SMiShing.

Vishing is a combination of the terms Voice over IP (VoIP) and the well known term Phishing. Although they've been around for a few years now, advances in VoIP and computer technology in general have resulted in a rise in the number of attacks. Prior to VoIP, phone scammers were easier to catch since landline numbers could easily be traced by the phone company. Aided by VoIP technology, these criminals can easily disguise their phone numbers from caller ID, spoof a different phone number or change phone numbers within seconds. Criminals have also been turning to vishing scams because a phone call is typically more trusted by the general public than an internet pop-up or email. Further, the elderly population is a scammer's prime target as it is generally more accessible via the phone rather than online.

This type of scam targets telephone users by using computer software to dial a range of telephone numbers within a specified area, a technique referred to as War Dialing or the term attached to the practice after the movie *War Games*. Once a person answers the phone, the dialing computer plays an automated recording, alerting of fraudulent activity on the person's credit card or some other type of scenario

that would require immediate attention. Further, the message directs the person to call a specific phone number immediately, which of course is not to the actual credit card or bank they are purporting to be.



Once the victim places the call, he or she is guided through a series of menus essentially requesting account numbers, PINs, social security number and other information that the criminal will have a field day with. In some cases, they are transferred to a "customer service representative" who collects the information verbally.

In many cases, the vishing scam is very sophisticated. The criminals take the time to create an automated menu system that can mimic what you are accustomed to encountering when legitimately calling your credit card company or bank's main phone line. The systems are socially engineered to convey a sense of security to the victim by explaining the request for the account information, PIN, social security number and other personal information is for the caller's protection.

Also keep in mind that not all vishing scams are related directly to a credit card or a bank. In some cases the scam will be in the form of an automated survey that claims you will receive a specific amount of money for your participation. At the end of the call, you will be asked for your banking information so they can "transfer" the money to you. In other cases, victims are told that they have a tax credit due to some previous error. Again, later in the call, the victim will be asked for their bank account information.

Smishing, on the other hand, utilizes SMS (Short Message Service) technology, commonly referred to as texting, to convince the victim into sharing their vital information. Similar to vishing, text messages featuring an urgent warning or message are sent out directing the person to contact a certain phone number or web URL. As an example, here is one message I recently received

"This is an automated message from Chase bank; your ATM card has been suspended. To reactivate call urgent at 866-XXX-XXXX."

The red flag instantly went up for me because I don't have an account with Chase nor do I use an ATM card. But victims are still being fooled into disclosing all of their information and the numbers are growing.

I recently read that one documented case of a successful smishing scam resulted in a cloned debit card being used overseas within 30 minutes of the victim providing the information. In another case, messages were spoofed to appear to be from a specific credit union. Recipients were instructed to immediately call the number provided to resolve a problem with their individual accounts. Those who provided their personal information later discovered that a significant amount of money have been withdrawn from their accounts within 10 minutes of completing the call.

So what do you do to protect yourself from vishing and smishing scams? Aside from disconnecting from the world, you essentially need to be as vigilant with phone calls and text messages as are you are with emails and web pop-ups. Always be suspicious of callers claiming to represent your bank or credit card provider. It's better to spend the extra time calling the number on the back of your card or on your account statement to verify the issue than it is to be "transferred" by the person on the phone. If legitimate, the problem with your account will be on the system accessed by the next customer service representative you'll be holding for when you call

back. *"And will you succeed? Yes indeed, yes indeed! Ninety-eight and three-quarters percent guaranteed!"*

The same goes for URLs provided through text messages or email messages for that matter. Don't click on the URL itself, but rather type the company's primary domain URL and work your way through from there. If all else fails, simply call them. You should also never respond to text messages from an unknown or blocked number, especially in our world of smart phones.

Also be vigilant for scams utilizing combined aspects of phishing and vishing, such as an email directing you to call a specific phone number. Make sure to report these scams to the FTC via their website at www.ftc.com. *"We've GOT to make noises in greater amounts! So, open your mouth, lad! For every voice counts!"*

As communication technology improves and becomes more sophisticated, we can easily expect the criminals to follow suit. Further, with more and more of the population utilizing texting and web browsing to conduct their financial business, the lines between legitimate messages and smishing messages will continue to blur - requiring a greater amount of vigilance by each user. What's ironic is the more technology we utilize to become better connected with others, the more suspicious we need to become when others try to connect with us.

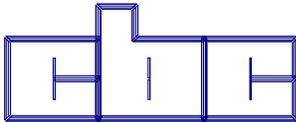
í until next month!

The Local Oscillator
February 2012

KBRT • Avalon - Los Angeles, CA
740 kHz, 10 kW-D, DA
KCBC • Manteca - San Francisco, CA
770 kHz, 50 kW-D/1 kW-N, DA-1
KJSL • St. Louis, MO
630 kHz, 5 kW-U, 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
KSTL • St. Louis, MO
690 kHz, 1 kW-D/18 W-N, ND
WDCX • Rochester, NY
990 kHz, 5 kW-D/2.5 kW-N, DA-2
WDCX • Buffalo, NY
99.5 MHz, 110 kW/195m AAT
WDJC-FM • Birmingham, AL
93.7 MHz, 100 kW/307m AAT

WEXL • Royal Oak - Detroit, MI
1340 kHz, 1 kW-U, DA-D
WLGZ-FM • Webster - Rochester, NY
102.7 MHz, 6 kW/100m AAT
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



Corporate Engineering
2150 W. 29th Ave., Suite 300
Denver, CO 80211

email address: crisa@crawfordbroadcasting.com