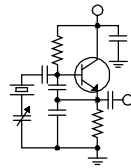


# The Local Oscillator



## *The Newsletter of Crawford Broadcasting Company Corporate Engineering*

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FEBRUARY 2016 • VOLUME 26 • ISSUE 2 • W.C. ALEXANDER, CPBE, AMD, DRB EDITOR

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### **Translators!**

When I got back to work the first of the year after ten days or so off during the holidays, a surprise awaited me in the form of a public notice from the FCC announcing a pair of AM-only translator windows. This was welcome news, but it was a mixed blessing in that the FCC set it up differently than a normal filing window.

Instead of allowing everyone to file during the window and then processing all the applications, the FCC made this one a race, with earlier-filed applications receiving priority over later-filed apps. Thankfully they set it up so that time filed doesn't matter & precedence is set up on the day filed.

So starting on January 4 my challenge was to find translator CPs or licenses for sale at reasonable prices within 250 miles of the class C and D AM stations in our company, run studies to see if I could find a place to put those translators (frequencies, directional patterns, etc.), make deals with the translator owners to purchase them, get contracts signed and the transfer applications filed, complete the engineering for each to move them to our sites or towers in our markets, and have everything ready to file on the morning of January 29, the day the first window opened.

As you can no doubt imagine, it was a very challenging month, but by God's grace we got it all done & the final piece fell into place the afternoon of January 28. On the 29<sup>th</sup> we filed applications for translators in four markets: Detroit (WEXL), Birmingham (WYDE), Denver (KLDC) and Los Angeles (KBRT). We may still file something for San Diego but that market is a real challenge for translators because of its proximity to the Mexican border & there are very few translators in that market for that reason.

As of this writing, we await the placement of applications in the FCC's CDBS database so we

can see what, if any, applications were filed in competition with ours. In those big markets there are very few frequencies where a translator can be shoehorned in, but there are also few class C or D AM stations, the only facilities eligible for translator filings in the first window. So I really don't know what to expect.

If we do wind up mutually exclusive (MX) with other applications, it will be up to the competing applicants to either engineer their way out of the MX situation (by frequency, site or directional pattern changes or a combination of these) or else settle among themselves.

This whole process was a real learning experience for me. I have for many years done contour protection for FM stations, so I am certainly familiar with the underlying principle, but the translator rules are different in many respects from those that apply to full-power FM stations. Second- and third-adjacent channel stations, if otherwise short-spaced, can be ratio-protected as long as there is no population within the ratio contour. 10.6/10.8 MHz IF short-spacings can be ignored if the translator ERP is kept below 100 watts. The usual 15 dB front-to-back and 2 dB/10-degrees limits on FM directional patterns do not apply to translators. And translators can be operated in vertical polarization only. Erik Swanson, the translator guru at Hatfield & Dawson, was very helpful in educating me in all this and checking over my work before filing.

I will let you know, to the degree that I am able, what is going on with these applications down the road. It is our hope that we will come away with FM signals for each of these four great AM stations.

### **AM Revitalization**

The comment deadline for the AM Revitalization NFPRM is not until March 21, but I went ahead and filed our comments in January. I am

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not going to change my mind on any of the issues, so there was little reason to wait until the last minute.

If you're interested in seeing what we had to say, you can access it online at <http://apps.fcc.gov/ecfs/comment/view?id=60001380622>.

One thing that a friend pointed out that I hadn't picked up on was that there was nothing in the NFPRM that would raise the 1 kW power cap for class C stations.

Class Cs are the old class IVs, what we used to (and still do) call "locals." They operate on the "graveyard" channels. They were originally allocated at 250 watts maximum and were designed in the allocation scheme to serve a local community and nothing more. Then in the mid-1980s the FCC gave them an across-the-board power increase to 1 kW, day and night. Because there are so many of them and they are so closely spaced together geographically, these stations beat the heck out of each other day and night. I remember when I was first learning how to do AM allocations that Charlie

Gallagher told me if you calculate the RSS night limit of a class IV station and it's below 20 mV/m, you did something wrong. Enough said.

When the FCC gave then class IVs the blanket power increase to 1 kW, that effectively changed the protected contour value to 1 mV/m (four times the power equals twice the field strength). Now, the FCC is proposing to raise the protected contour value of class B, C and D stations to 2 mV/m. That will allow class Bs on adjacent channels to hammer class Cs with interference, shrinking their interference-free coverage areas to a fourth of their current values (not considering conductivity).

With all that in mind, I proposed in our comments that the power cap on class C stations be raised to 5 kW. Most stations could then go to 4 kW and still protect everyone else, and some out west where stations are more spread out could go to 5 kW.

I have no idea if the FCC will go along with this, but it makes sense to me. It doesn't seem fair to give everyone else a boost but give class Cs a kick in the seat of the pants.

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

Hello to all from (snowless) Western New York! What a difference a year makes. This time last year, we were experiencing daytime high temperatures at or near zero degrees. This year, the last day of January saw temperatures in the 50s. Although I have gone on record as being a "winter bunny" (or one who likes the snowy, cold weather), as I get older, I hesitate to venture out when the weather turns cold unless I have to.

In my younger days, I did a lot of tower climbing, which creates a lot of wear on your shoulder and knee joints. That, coupled with years of studio and transmitter installs that have degenerated the joints in my hands, and the colder weather tends to aggravate the arthritic joints and causes stiffness and pain. One item I have found that offers relief is a Tens Unit, which supplies an electrical impulse through conductive pads placed on the affected area. The amount of "shock" can be



adjusted to the pads, providing just the right amount of electricity to the nerves to help deaden the pain. I used to hate getting shocked, but these days, I sometimes can't wait to get my dose of electrical bliss!

On the home front, my family and I are preparing to move this month to the suburbs of Buffalo. We have been looking for some time now for a multi-family dwelling where both my children and grandchildren could be with us. After about a year of patient searching, we have found the ideal property to house the entire Cunningham clan! It is truly amazing at what prayer can accomplish. The Lord has blessed us with a two-acre plot with a large home, three-car garage, a cottage and apartment, plenty of grass to mow and trees aplenty with leaves to rake. Hopefully by March 1 we will be in our new home and enjoying the suburban lifestyle!

I have a friend who has been a broadcast

engineer for about as long as I have, and recently he participated in a job fair in his hometown. He hails from a southern city with close proximity to a major college and a top 50 radio market, and this job fair was to enlighten upper high school/college entrants to successful careers in the communications industry. It was estimated that over twelve hundred young men and women attended the two-day event, with practically ZERO interest in broadcast engineering, either radio or television! Not one person out of 1,200 or so showed any interest in becoming a broadcast engineer!

Folks, where are our replacements going to come from when it's our time to retire? If the good Lord is willing, I plan on working well into my eighties that is if my mind and body hold up that long. But after my retirement, who will take the reins? The answer most heard from the job fair participants on why the lack of interest in this field was money, followed up by a too-demanding workload.

Now I can't answer for you, but I didn't get into broadcasting for the money, or the notoriety of being on air, but because I love doing what I do, and I was fortunate that my career was helped along by many different people who saw my desire to excel in all aspects of engineering. Desire, which is something you can't teach in a classroom, and no amount of money can justify the satisfaction of resolving an elusive problem using your skills.

In the past couple of years, I have had my two grandsons shadow me for a week during summer vacation to see if becoming a broadcast engineer would be appealing to them. Not withholding anything, I exposed them to the good and bad we experience as engineers. The oldest grandson, after the second day of shadowing, determined that engineering was not the ideal field for him, but my youngest grandson showed a lot of interest in studio

and transmitter plant construction. He is not sure if "hands-on" engineering would be right for him, but the aspect of designing facilities has tweaked his interest. Perhaps, when the next big installation project comes around, I can actively involve him in some aspect of the project to see what exactly he is interested in doing. I couldn't think of a greater legacy than to have one of my grandchildren follow in my footsteps.

There is not a lot to talk about engineering-wise from either the Buffalo or Rochester markets this month. Aside from the normal week-to-week maintenance tasks, there has not been much activity, aside from the failure of a couple of Wegener Unity 4000 satellite receivers. Both receivers failed within a week of each other, and as we have backup for both, there was no immediate danger of losing programming. The receivers were boxed up and returned to Wegener for repairs. We'll get them back into service as soon as we receive the repaired receivers back.

February is usually the month I set aside for the required yearly occupied bandwidth measurements for both our AM broadcast stations. I am hoping that the weather stays mild for the next couple of weeks as I attempt to get the measurements, along with monitor points, completed for both Rochester and Buffalo. Both arrays are relatively stable, and aside from the normal pattern of drift we experience from summer to winter, I do not expect to see any surprises once the measurements are completed.

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!

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**The Motown Update**

by  
**Brian Kerkan, CBTE, CBNT**  
Chief Engineer, CBC–Detroit

Greetings from CBC-Detroit. It's been a mild winter so far here in Michigan, and that gave us an opportunity to get our NRSC measurements done on the AM stations without too much discomfort. We are preparing for our upcoming NexGen file server conversion. The new server has been installed, and I have been testing NAS options for backup storage.

I have been using the Western Digital EX2100 4TB NAS drive and have been pleased with its performance. The EX2100 is small, and portable, and has two drives in a mirrored configuration. I have been rotating the two drives, keeping one onsite and storing the other outside of the building. Since the NAS is self-contained, it offers flexibility in a disaster recovery situation. It is pretty much a plug and go device. It provides two Gig Ethernet ports for network connectivity offering improved throughput.



**Figure 1 - Western Digital EX2100**

Our Nautek NV-40 has been suffering some

fan failures as of late. Most have been spinning since the transmitter was installed in 2008. I am in the process of replacing the fans as preventative maintenance.



This month we have had a number of Windstream-related T-1 problems. I have a set of IP based codecs that I use as an emergency backup STL. It is frustrating that the local telcos aren't maintaining their copper facilities much anymore. We are exploring options to move to a RSVP IP connection utilizing fiber that has been run to the property. I am encouraged with the initial pricing I have received.

It's amazing how far Ethernet has come. I remember back in 2000 working with a company based out of San Jose. I had the privilege of working with Bob Metcalfe, one of the original inventors of Ethernet and the CSMA protocol used for Ethernet. We were at MIT with a team of engineers that setup a live broadcast of an ATSC High Definition broadcast over Internet2 to a trade show in Vegas.

I had dinner with a group of engineers that helped write the RFC specs, and Bob mentioned how he never could have imagined how far things would have gone with the use of Ethernet for multimedia applications. Fast forward to 2016, and the use of Layer 3 switches, intelligent routing protocols, and network hardware that can provide end to end quality of service. QOS can provide the quality and reliability that circuit switched connections did.

Interoperability between vendors was the big issue as the technology matured, but today RSVP ó Resource Reservation Protocol based networks are becoming more common place. More information of RSVP can be found here [http://docwiki.cisco.com/wiki/Resource\\_Reservation\\_Protocol](http://docwiki.cisco.com/wiki/Resource_Reservation_Protocol)

Basically, RSVP networks classify traffic based on how rate- and delay-sensitive it is. It prioritizes the IP traffic based on traffic types. There have been a lot of exciting developments in

broadcasting engineering as it relates to AOIP networks, including the AES67 standard. The good thing about all of this development is the interoperability and cooperation of equipment vendors to adhere to a standard.

Since we have been in the process of converting more and more of our facility to digital, I decided to acquire a digital audio tester called the dBBox2. So far I have been very happy with what this box will do.

The dBBox2 is handheld and provides testing for digital or analog signals. It features a built-in speaker for audio monitoring and has a microphone that can be used for talkback. It a handy device in the rack room to verify signals. It also has a tone generator, and D to A, and A to D converter that could be used in an emergency. I would recommend the dBBox2 based on my experiences with the unit so far. More information can be found at the manufacturer's website (CTP Systems): <http://www.ctpsystems.co.uk/dbbox2.html>



Figure 2 - CTP Systems dBBox2 Audio Analyzer

I know that a large number of the engineers that are reading our columns are hams. I just purchased my first DMR radio for \$110 with shipping. The Tytera DMR-380 is an amazing radio for its price. I was unaware of the global DMR network that exists. There are many repeaters in my area that are linked via a C-Bridge system that connects them through IP networks and the Internet. It's a TDMA based network that makes use of the Motorola Mototrbo protocol using the AMBE voice codec.

There are many talk groups available, including World Wide, North America, Statewide, and Local. There are also channels dedicated for local events and emergencies. For \$110 dollars, I could not be happier with its capability and performance. It is definitely worth picking one up. Until next time, 73!

Brian W8FP

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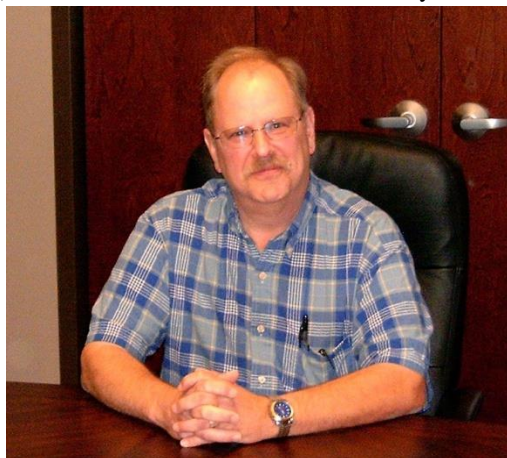
**News from the South**  
by  
**Stephen Poole, CBRE, AMD**  
Chief Engineer, CBC-Alabama

Well, January was certainly a busy month. In addition to the usual bad weather (when does Alabama NOT have bad weather?), the fun started when we switched ISPs the first of the month.

Our new ISP is AireSpring, which is giving us 20 megabits, less about 1.5 for our PRI. Windstream was providing 10 megabits (less a PRI), so the new service is about twice as fast. To our pleasant surprise, the actual switchover was fairly painless. We simply unplugged Windstream and plugged in AireSpring; within a few minutes, the phones started working again. There were some glitches (there always are) but Todd worked with AireSpring and quickly got them straightened out. We were happy.

Special thanks to Cris, Todd and Stephanie

Crawford for making sure that the pre-order was done properly. I have no doubt that this was the reason why the switchover was so painless. It was as close to plug and play as you can get.



**New DNS Records**

While Todd was switching the phone service, my job was to change the DNS mapping on our mail servers here in Birmingham. We have two that are used company wide. The first is a simple Scalix server that exists solely to allow EAS machines and transmitter sites to send email. The second is our full-blown

corporate Zimbra server that handles email for most of our stations nationwide.

I've mentioned this here before: if you're going to run a serious mail server, you need to have

the reverse DNS (or DNS, if you're cool) set up on your IP address. In other words, if someone looks up your mail server through DNS, they'll get the usual IP address number (12.33.50.158 in our case). But if they do a lookup back the other way on that IP number, it should match the name that was used to obtain it. Whence the term, "reverse DNS" (also called an "rptr," or "reverse pointer").

AireSpring had the rDNS done before the switchover date, so there were no worries about that. But when I changed the DNS on mail.crawfordbroadcasting.com, it would work for a while ... then stop working. It would work again for a bit, then stop working. A little digging showed that the owner of that domain name was an old ISP that we had used in Denver several years ago. Thank the Lord, a quick call to their customer service got that straightened out and the mail started working normally.

That is, until we had ...

### The Great SPAM Breakdown

My birthday is January 25th. This year, it fell on a Monday, and the Internet decided that I needed a present: sometime over the weekend, our mail server landed on several SPAM blacklists. By Monday morning, people all over our company were having problems with email bouncing, or not being forwarded.

For those who don't know, a "blacklist" is just as the name implies: if your server is guilty of sending a lot of unsolicited email, it's likely to be put on the "naughty" list. Other mail systems around the world check these lists regularly and if they see "mail.crawfordbroadcasting.com" on there, they'll refuse our email. Figure 1 shows what a blacklist check looks like; this is after we got everything cleared up - nice and green. But when we checked it that Monday, there were several red "o" marks on there. Not good.

Todd and I started digging, then compared notes. We found a user in Chicago who was sending out tens of thousands of email messages per hour. Disabling that user's account stopped the spam, but then we had to wait for all of the blacklists to clear. Some require that you actually contact them; others are totally automated and will drop you after a few days of no more spam. Basically, all we could do was to hurry up and wait.

Incidentally, one of the blacklists was Barracuda's (the "b.barracudacentral.org" link near the top left in figure 1), which is exceedingly ironic:

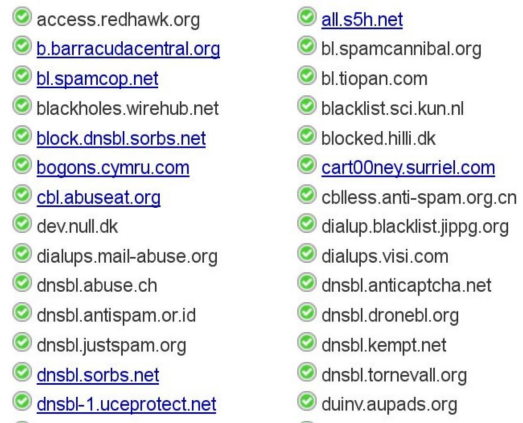


Figure 1 - Blacklist check. You want green, not red.

we use Barracuda's Spam Firewall on incoming (but not outgoing) email! They were the first blacklist to remove us after I contacted them. (Heh.)

The blacklist checks slowly started turning green, but we weren't golden yet. Comcast still wouldn't allow us to send mail through their system. Apparently, Comcast (and some others, including Verizon) will block you forever if they see you on a key blacklist. Simply dropping off the lists isn't enough. You have to contact them, hat in hand and specifically ask to be removed.

There was one other worry: the administrator's panel in Barracuda and Zimbra still showed a bunch of deferred messages, this time, from another user in another market (see figure 2). You'll love this one. After a bunch of digging, Todd and the guy in that other market figured out that it was Marketron (!!) that was sending the spam. I suspect that it tried to send some email reports while we were blacklisted and then continued to resend them over and over. (Maniacally. Non-stop.)

### Don't Be Hacked

In the Chicago case, unfortunately, we believe that the user was initially hacked or infected via his home computer, while using a torrent. For those who don't know (I say that a lot, don't I?), torrents are one of those things that sound like a good idea until you really think about it. The way it works is, someone makes a file available by torrent. You download it, and implicit in the torrent agreement is that you then allow others to download that file from you. (Re-read that sentence a couple of times, then shake your head.)

This is a way for free software to be distributed without the need for expensive, dedicated servers... but surely you can see the problem. It's twofold. First, you download a file from heaven-only-knows-who on the Internet. Then you then agree to turn your own computer into an ad hoc server that is exposed to the Internet. Very double un-good.

We have users now who obtain music through torrents, through downloads and even from YouTube. It's not my place to make company-wide policy on stuff like this, but we need to do something. I sent an email to all of our engineers last week showing them how to block torrents in the ClearOS firewall. That's not a cure-all, though. In this case, as I said, we think the user was hacked on his home computer. His password was compromised, then someone elsewhere began using his account to flood the Internet with spam.

Change your passwords. Stay off of public free WiFi networks. If it sounds too good to be true, it's probably too good to be good. Don't play with high explosives. Use common sense.

#### Final Note: NexGen Update

I've also mentioned this in previous issues:

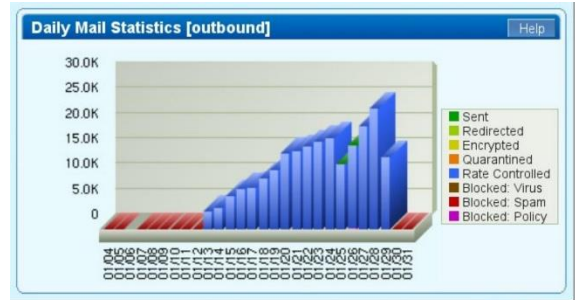


Figure 2 - A screenshot from Barracuda.

WDJ's audio server hanging at random. As I write this, restarting the NexGen software every night seems to take care of the hangs and lock ups. We haven't given up on this one, but for now, that seems to be the cure. I simply go in with VNC every evening, close NexGen, then restart it.

Another clue is that one evening I forgot to do this, and when I checked it the next evening, the audio server was acting very sluggish. It took quite a bit of patient clicking to finally get it to restart (and thank you, NexGen, for that stupid "you must enter a reason" dialog; we can't automate this!). This kind of confirmed the issue in my mind.

Until next time, keep praying for this nation!

### The Chicago Chronicles

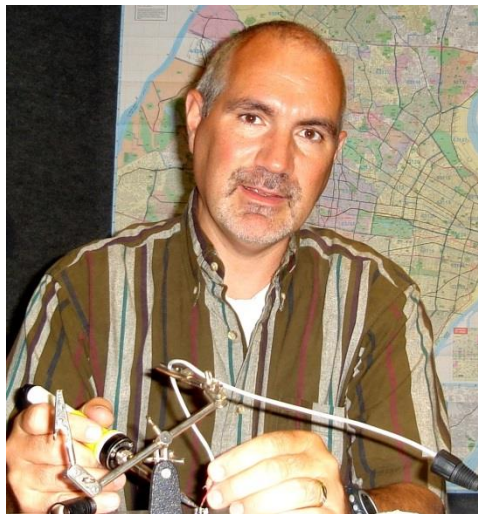
by

Rick Sewell, CSRE, CBNT, AMD  
Engineering Manager, CBC-Chicago

We just finished with most of the control room renovations that were planned since I took over this position in 2014. The last major improvement was completed at the end of January. We just had mini split auxiliary air-conditioning installed in each control room, the idea being that we would have air conditioning available when the main system is down. Plus, we would now have much better control of balancing the temperature across the four rooms.

The situation here with the four control rooms is very different for each room. While most of the equipment is the same, the dimensions of the rooms are very different. Two are significantly larger than the other two. So, having one

system supplying all the rooms with heat and cooling just doesn't work that well.



The engineering staff has been doing a balancing act to keep everyone happy which means, in the end, no one is happy. One of the control rooms is actually on the same heating and cooling system as the production rooms and it is also very small with a lot more equipment than the production rooms, so it has always run very hot compared to those rooms.

This worsened after we switched the production rooms over to the WheatNet system. The rooms were using Mackie mixers that have those rack-mounted power supplies that essentially act as heaters on the staff's legs. So with

WheatNet, the heat load of the equipment went down considerably. That just made the situation worse between the very small control room and the production rooms with less heat load. There were times I would walk into that particular control room and see the thermometer in there riding in the mid-eighties, not an ideal situation for the equipment or personnel. On the other side, I would see production people wearing hats and gloves while working.

The installation just wrapped up a couple of days before this writing and I am pretty sure we will have to put lock boxes on the thermostats. If you give people something to play around with, they will and I have seen these already moved to extremes. The good part is that it has made the small control room described above now tolerable. We have never seen the thermometer in that room down to the lower seventies as we do now.

### Ice on the Towers

The upper Midwest has so far had a relatively mild winter, and I would not be one to complain about that. However, the down side of that is that we have winter storms that would normally bring snow that are now, instead, those sloppy mixes of rain, snow, freezing rain and sleet. That's always tricky for drivers and can also sometimes be problematic for FM antennas.

We have had all four of our sites affected by ice on the antennas at some point during this winter so far. While we might expect this to happen early and then again later in winter on a normal basis, this year has been different. It seems like we have had a forecast almost every week for some sort of icy precipitation, the price to be paid for a warmer winter.

When we do get ice on the antennas, I always remind the staff of the dangers of falling ice



**Ice damage to the A/C condenser unit at the WYCA tower site. The tower is several hundred feet east of this unit.**

from the high spots on towers. If you get hit by an icicle off a ten-foot roof line it might hurt a bit. When it comes from 400 feet up, it could seriously hurt or kill you, an important thing to keep in mind when working under such circumstances.

We had a good reminder earlier this month when we found a damaged air conditioning condenser unit at the WYCA transmitter site in Beecher, Illinois. The photo here shows damage to the top of the unit. While the holes are in plastic, this was not exactly thin cheap plastic. You can see by the three holes that are in line that this was a very large ice spear.

I am thankful this didn't hit something very critical, or a person. The damage could have been much worse. The good news is that the plastic kept the coils below it protected and so far no refrigerant leaks have been detected.



**Valley Notes**  
by  
**Steve Minshall**  
Chief Engineer, KCBC

A couple of items of interest have taken place at KCBC during the last few months. The first was the resurfacing the driveway and parking lot. It is not a terribly exciting project but it was a necessary one. The old asphalt was looking like it needed some rejuvenation lest it start to fall apart. The resurfacing has made it look new again and should extend its life considerably.

You may note the center line painted on the driveway. This is not to separate traffic, it is there to navigate the driveway under conditions of dense fog. Yes the fog has been that dense in the past.

The big excitement for many months has been the installation of our new phone system. The physical implementation was quite simple however the logistics of getting it set up was another matter entirely. I won't even try to explain how ridiculous the process was, I just know that I am glad it is finally up and working. I now have a whole new respect for acronyms and buzzwords.

Our new phone system is VOIP and should save us some money and provide tremendous features and versatility. We are keeping one copper pair POTS line for the day when the SIP line goes down.



**The resurfaced KCBC driveway. The white stripe is to help land planes...**

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

I am beginning to think I need to add space for an automatic comment about tower detuning in this column. What was that song again? 36<sup>th</sup> verse same as the 35<sup>th</sup>? This is getting to be a really, really boring song.

In last month's episode of the soap opera, "Days of Our Detuning," the tower owner was retrofitting the tower base to accommodate additional antennas to be installed by a tenant. They had also received a lengthy detuning extension due to a misaddressed notification letter. We were told that the work should be done some time in January, although no one seems to have a schedule. I couldn't get in to check the tower visually, although the base retrofit seems to be complete and from outside the compound, I see no work or skirt on the tower. I asked local vendors about any possible skirt work for a schedule only to learn that no one knew of a schedule.

We understand that a tenant has extensive antenna work planned at the tower, which was the reason to do the tower base upgrade. I haven't seen that activity yet. It doesn't seem unreasonable for us to expect some kind of schedule for the work to be done.

On another front, local Oregon broadcasters are moving forward with our credentialing program. In late January, broadcast engineers met with the Deputy Director of Oregon Office of Emergency Management, Laurie Holien, who said that she was completely on board and did not need to be sold on the value of the program. Laurie noted that local broadcasters fit within the Emergency Support Function (ESF) structure. Of the ESFs, we would fit in ESF2 for communications, ESF 14 for Public

Information, and ESF 18 for business and industry.

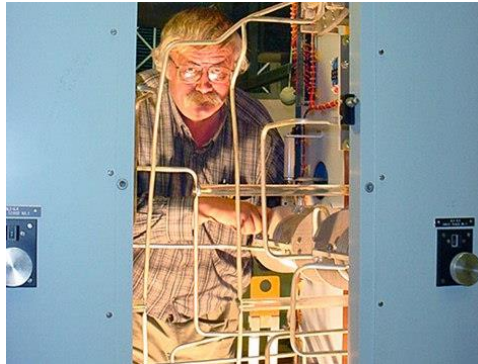
We had a good discussion about what happens at an incident and checkpoints and whether

the credentials be effective. We concluded that we didn't expect the engineer credential to be 100% effective. We can use other procedures to back up the credentials, such as contacting the Incident Command or Emergency Coordination Center to gain access. The credentials are important to minimize the interruptions of IC operations or the ECC. We need to develop a

relationship with the ECC, so that the ECC is comfortable with broadcast engineers. The training process and working with local emergency managers will be a critical component.

We discussed the need to develop a program that provides training about what to do when coming to a checkpoint or what to do, who to contact and how to be prepared. Personal Protection Equipment (PPE) is an important component for anyone entering a restricted zone. When escorting someone, they must be prepared as well. OEM will assist with the training resource.

We also reviewed the draft working document. The draft was intended to serve as the starting point for discussions. OEM would like to see branding of the procedures document, for example, by adding OAB and SBE logos to the document. The branding needs to extend to the Broadcast Credentials Committee name, and we need to enhance specificity in some areas of the document. Now that we have completed the initial evaluation of the working document, the next step is to include the updates based on OEM suggestions and forward that back to OEM for review.



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

**Telos**

For several years, at times, we've had issues when having two or more callers on air at the same time. Typically the audio will get very low and callers could not hear each other. Since we rarely had more than one caller on air and no one was ever complaining, I didn't think much of it. Recently, however, we've had some programming changes and some of the hosts are now having more than one caller on air or a guest on one line and callers on the other.

I initially thought the whole project to fix this was going to require adding more wires to the Telos NX12 in each control room. After doing some more research, I found it was a simple software issue. All I had to do was log in to the unit with a web browser and change a setting or two and there it is.

The left side of the Telos call director unit is either handset pickup or Telos 1 on the Wheatstone control surface. The right side is Telos 2 on the surface. This gives the board ops a way to control levels separately so if we have a low caller, we can turn them up independently of the other caller.

This original change was a little bit difficult for the board ops to get used to. They've done things a certain way for so long. The biggest thing to remember was mix minus. We made Mix Minus 1 (MM1) for Telos 1 and Mix Minus 2 (MM2) for Telos 2. So we have to remember to put Telos 1 into MM2 so Telos 2 can hear Telos 1, Telos 2 into MM1 so Telos 2 can hear Telos 1. Confused yet? So am I, but it is working and people are happy.

**Off Air Alarms**

I finally took the time to finish wiring up the last of the control rooms to have the Enberg unit light up when the station is off air. We hadn't really used the "Off Air" light since we moved to the new

studios. At the old studio, an array of RDL silence sensors would trip the "Off Air" indicator in all the rooms if any of the stations went silent, so it was anyone's guess as to which station was off air. I was

able to use the DaySequerra M4.2S remote out to trigger an alarm. I just ran a DB connector from the unit to the Enberg unit and set the M4.2S to trigger after 15 seconds of silence. I also made it so that it would only light up in one room. This way if your station is off the air, it will light up off air in that control room studio.

**DaySequerra**

Speaking of DaySequerra, we are still having issues with the M4.2 unit from the KLDC studio. It seems this studio hates DaySequerra. We are constantly dealing with it losing the signal to the station. We have sent the unit back numerous times, and we even upgraded to the M4.2Si, and we are still having issues. I finally switched the unit with one I know works from the KLZ studio. This is my big test to see if the issue follows the unit or stays in the room. If it's something in the room, I don't want to keep bothering DaySequerra about it. They are a huge help in troubleshooting, but I am sure they are getting tired of hearing from me.

**Cleaning**

I plan on taking the first part of February and cleaning the studios. It seems that if I don't do it, no one will. How anyone can stand working in a dirty environment is beyond me. The rooms have gotten dusty, dirty and just plain disgusting. I plan on vacuuming as much equipment and other things as possible, and disinfecting everything in hopes of keeping our Denver studios healthy and just making things look good.

That about covers it for this edition, so until next time! That's all folks!!!



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The Local Oscillator  
February 2016

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**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*



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