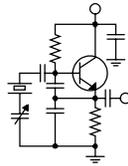


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

FEBRUARY 2011 • VOLUME 21 • ISSUE 2 • W.C. ALEXANDER, CPBE, AMD, DRB EDITOR

EAS/CAP

By now all of our stations have received their new Sage Digital Endec EAS/CAP units. When the stack of boxes arrived in Denver, I worked with Amanda to get them configured and installed so that I could learn everything about them that I could.

No doubt about it, these are quality units that are head and shoulders above the old TFT EAS911 units. Not only are they CAP-compliant, but Sage has clearly learned from their experiences with prior-generation units. Add to that the fact that the new units have an integrated web server and permit just about all programming via a network connection and these new units move from the “necessary evil” category over into “love it!” Who would have thought someone would say something like that about an EAS unit, of all things?

Hopefully our engineers are moving through the installation process without issue. For those who have not yet gotten them installed, the process is straightforward:

1. On the unit itself, set the IP address mode to static, set the IP address, subnet, gateway and DNS addresses.
2. Enable the web server and restart the unit (power cycle).
3. Install the ENDECSetD program on your PC (from the Sage website).
4. Set the remaining configuration parameters in ENDECSetD and save to a file.
5. Go to the unit’s IP address in your browser and click Restore Settings.

6. Browse to the ENDECSetD configuration file you saved and send it to the unit.
7. Install the unit in the studio, connect power, audio and relay (or loop program audio through the unit).

There was one peculiarity that we found when installing in Denver, and I suspect that it will

also be a factor in Chicago and Birmingham where we also use Wheatstone bridge routers (and in any other



installation where an AES feed is taken from the unit). “Simulcast” must be enabled for the digital output to work. This was not clear in the manual, which seemed to indicate that if the digital output was enabled you would be good to go. We quickly found that the relay would generate a program interrupt in the bridge but no header/message/EOM would be transmitted. Enabling “simulcast” fixed that.

Aside from the ability to completely program the unit from a PC via the network, there are several other things that I really love about the new unit. One is firmware updates over the web. FCC rule changes, new codes, etc. can be implemented into the unit immediately and easily. There are no more paper tapes to mess with. You can pull the whole week’s log off the unit’s web page on Monday morning and consolidate them onto a single sheet of paper. If you’re “old school” and want one “receipt” per test or activation, you can set up a network printer and direct the unit to that printer. Tests can be run with one click from the unit’s web page, and audio sources can be viewed/streamed from the web page, enabling the

engineer to verify that the unit is getting good audio feeds right from his or her desk.

You can also program the unit to email a list of people anytime there is a test or activation. How handy is that?

Once the CAP infrastructure begins to take shape (presumably next fall), we will need only to "point" the unit to the proper CAP server. Those alerts will then come in just as if they were another monitored audio source.

I for one am glad that we're well ahead of the pack in getting ourselves CAP compliant. When the time comes (in September) for everyone to convert, we can sit back, relax and watch the show.

Issues/Programs Lists

Many reading these pages are aware that CBC is engaged in a renewed effort with regard to its public affairs programming. We take our charter as stewards of the airwaves allotted to us very seriously and desire to serve our communities well.

As I read weekly FCC releases of enforcement actions against broadcast licensees, I am continually amazed at how many do not take this responsibility seriously. I suspect that many view it as a necessary distraction from the important business of playing the hits. How sad, both for the communities that those licensees are designated to serve and for the rest of us on whom the irresponsible actions of these folks reflect.

Why should our engineers be concerned about public affairs other than in the general sense that we want our stations to succeed and comply with the FCC rules? It's because you are the nominal stewards of the public file. You are the ones who we look to in order to be certain that the file is complete, orderly and up to date. It's part of your job description. And the one part of the public file that

seems to give us the most trouble is the quarterly issues/programs lists.

The rule is simple: once each quarter, no later than the tenth of the first month of the subsequent quarter, each station must place in the public file a list of community issues and the programming that provided significant treatment thereof. The list must include topics, dates, times and duration of such programming and it must remain in the public file for the term of the license (until the next renewal).

As you are making your regular inspection of the public file for each station in your cluster, make certain that there is one such list in the file per quarter since the last renewal. Immediately report any missing lists. Look at the content of the lists and make certain they meet the requirements. Too often we find that the information is sketchy or missing key elements (usually exact dates, times and durations).

One thing we're trying to get across to our managers is that they are to first identify issues, then develop programming to address it. So often things are done in the opposite order, i.e. we look back at what our programming was and identify the issues that we addressed. Things are going to be different now, and I would encourage each of you to participate at the highest levels. If you become aware of an issue, report it by memo to your station manager or program director. Include if you can who the players are, folks that we can possibly line up to interview regarding the issue.

Some on the FCC are making noises about raising the bar for public affairs programming. The industry argument is and will be that we already do a good job of this. I'm not certain that is universally true, but we are going to make it true in the case of each of our stations. To succeed, we need our engineers to be a part of the process.

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

Hello to all from Western New York! This February 7th will mark my 42nd year in radio! It seems impossible that so many years have gone by, and at lightning speed! I can recall, almost as if it were yesterday, my first week in broadcasting. So much has changed since that time, with technology being the hands-down winner in changes. I have experienced so many good times in this profession, and I still look forward to each and every work day. I cannot imagine doing anything else. This profession has been good to me, and offered opportunities way beyond anything I could have imagined 42 years ago. A lot of the people I worked with in my learning stages, the “old guys,” are gone now, but I have fond memories of the lessons they taught me, and all the good times we shared together. Throughout the course of years, there have been many people who have taken a chance on me, and to those, I am forever grateful. But most importantly, I give thanks to the Lord, who makes everything possible. It is my prayer that He will give me at least another 20 years or so, so that I can become one of the “old guys” with a lifetime of memories of people I have worked with, things I have accomplished and lessons I have learned. Perhaps in the future I can even give a little advice to a newcomer in the business.

**WDCX-FM Buffalo; WDCX(AM) Rochester;
WLGZ-FM Rochester**

There is not a lot to report on from the month of January. We have had our share of snow and cold temperatures, but luckily, no major breakdowns or malfunctions to pass along.

As is the case with several other CBC engineers, we have been going over plans to replace our file servers in Buffalo and Rochester. To Stephen

and Todd in Birmingham, what a great job guys! I know you both have spent many long hours getting this figured out for the rest of us, and your diligent planning will no doubt save us a lot of time and headaches when we undertake the server replacements in our respective markets. Knowing that we have a sound knowledge base to call upon if needed is truly a blessing. I pray that this and the rest of our server projects will go smoothly and without incident.

The only other project going on is the installation of the new Sage EAS/CAP units. I have gone through each of the units and have them programmed and ready for installation. In Buffalo, I still need to run new wiring for the Sage audio ins and outs, post delay, from the rack room into the studio. I hope to have everything completed and installed by early February. In Rochester, it will be mostly “plug-and-play,” as the EAS unit is located in the air studio and no changes in wiring will be needed.

If any of you are wondering about the printout from the Sage units, I have found a two-port automatic printer switch at Tiger Direct. It is manufactured by IOGEAR and is PC and MAC compatible. If you are interested, the model number is GUB231 and the cost is a little over \$25.00 The Sage unit is compatible with most all models of HP printers, that is, except for the one we use in the air studio. Luckily, we kept a few laser jet printers when we changed from local to network printing, so no cost would be involved in replacing the printer in the air studio with one that will work with the Sage unit.

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 and happy engineering!



The Motown Update

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

CBC-Detroit IT Facility

As I mentioned in the LO last month, Larry Foltran (our IT manager) and I were making improvements to our Internet and internal intranet infrastructure. Larry will inform you in detail about how our efforts have breathed new life into our LAN facilities.

One of the things I wanted to mention is little helpful indicators that may help you identify cabling in your LAN when you are in frantic fire-fighting mode. In the photo below, you can see a couple our data switches. We added some labels to identify not only the cables entering the switch, but the port position of the individual cables. This way, when months go by and this project is not fresh in our minds, we can glance at the labels and know instantly the cables' identifications and port locations. This may be a small detail, but it really eliminates confusion when you're under pressure.



In addition, we put strain reliefs on the cables. We have found that many RJ 45s will release if too much force is applied to the cable. This will prove to be valuable in an environment where daily handling of the equipment is common.

During the process of configuring and installing our new SAGE Digital Endec units,

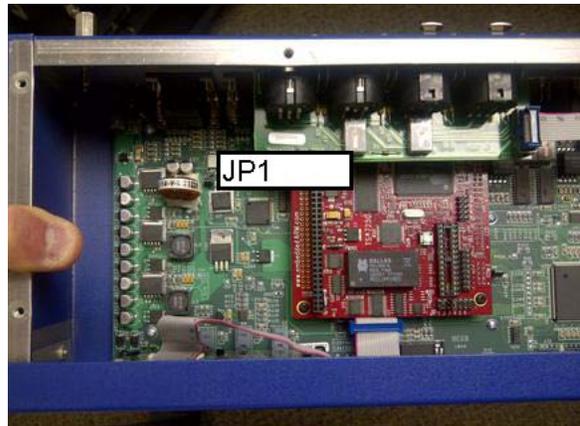
differences between the units became apparent. My first thought was that the new Sage EAS encoder/decoders were going to be plug and play if your original installation contained cabling for a legacy SAGE unit.

In my particular installation for WRDT, I require the accessory voltage that appears on pin 9 of the COM2 port of the SAGE to provide audio feed switching to my Wheatstone bridge router during and EAS event. What I found was that you must first move jumper JP1 which is located at the rear interior of the unit. The jumper in the legacy SAGE was behind the internal printer and accessible without removing the

cover.

Second and most important, I found that the accessory voltage was only available on ports COM3 though COM6. It was not available on COM2 like with the legacy SAGE. This was uncovered by some measurements with a DVM while simulating a weekly test.

Last, I found when programming the email addresses where you want your alert documentation sent, one must insert a semi colon after each address. Otherwise, the device cannot differentiate between each email address. I have two more units to install where TFT EAS units are installed. My new SAGE



units are programmed and ready to go. However, I will most likely have another set of nuances with those installations.

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

News From The South

By

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

We had yet still another snow in mid-January, as well as a light dusting on the evening of my birthday (January 25th). The obligatory picture is included below.

The one that I wrote about last month wasn't that bad; we received about 1/2" of snow that soon melted. This time, though, we first got rain, then sleet. This froze into an icy sheet. Then we received 1-4" of snow, depending on location. Alabama's not wired to handle this sort of thing, so everything just shut down. The Highway Patrol closed several roads, including I-65 into Birmingham, and told everyone just to stay home.



Snow ho ho... right here in Dixie!

You folks who live where 6" of snow is considered a "light dusting" probably wonder what the big deal is. Well, if you're an engineer, you already know about cost-effectiveness. States like Alabama simply can't justify spending the money for mountains of salt and dozens of snow plows in every per county. In fact, were a politician here to even suggest such a thing, you can believe that his/her opponent would make an issue of that in the next election.

Snow's not really the problem. I can certainly drive in snow, having done so back in NC

and while I worked in Richmond, VA back in the late 70s. But when we get a layer of ice on the roads, we're in trouble. The Highway Department mostly spreads sand on the ice, which helps somewhat. But during the day, the ice will melt and then will refreeze in the evening, causing an even bigger mess.

And besides... I'll share this story... Back during the big snow of 1994, I was driving up to Kalamazoo, MI to do some contract programming work. Now, I will admit to this much unpreparedness: my windshield washer fluid froze solid as soon as I crossed the WV-OH line and stayed frozen until I crossed back into WV when I was returning home. The washer fluid that the oil-change joint in NC had used obviously wasn't up to sub-zero temperatures.

But as I was driving north on I-77 through Ohio, taking my time and taking it easy, this local guy with Ohio tags whipped around me. He sort of glared at me as he passed, and I could imagine what he was thinking: "Silly southerner, go home until you learn how to drive on an icy road!" Heh. He passed and headed up the road a ways ... and suddenly, I saw the front of his car exchange places with the rear. He must have spun around 3-4 times. Thank God he wasn't hurt, and he managed to get the car straightened out and back in the main lanes, but I can assure you, when I passed HIM a few minutes later, he didn't even look at me, and there was a halo glowing dimly around his (mucht-chastened) head!

You may consider me very virtuous. I merely nodded at the fellow, eased in front of him, and continued toward Akron at a nice, sedate 35 MPH.

Cottage Industry, or Cottage Cheese?

Maybe it's not entirely fair to refer to broadcast equipment makers as a "cottage industry," especially some of the giant conglomerates. But there's some truth to that assertion, especially when you're dealing with the smaller guys. It is also true that a good deal of the equipment that we use is

purpose built in small batches; mass-production just doesn't apply.

Many of the brand names that we've come to know and love started as very small operations: an engineer looked inside a transmitter or a mixer and said, "I can do better than that!" Or, maybe the guy or gal had a problem that needed a solution, and nothing was available off the shelf. He or she developed and started selling it to others.

The one big difference between the older "cottage industry" suppliers and the new ones, though, would have to be the documentation. Years ago, if you ordered a Gates transmitter or a Marti RPU, the manual that came with the thing included detailed schematics, a theory of operation and servicing information. Nowadays, you're lucky to get a CD with a badly-written PDF or DOC file that leaves out a bunch of stuff. No schematic to be found anywhere; "to service," in their lexicon, means, "to ship back to the factory so that we can tell you that it was hit by lightning and is thus not worth repair."

Even if they include a written service manual, it's likely to leave out a host of details that you might need in an emergency. Gone are the detailed specification sheets for every single input and output. For example, you might decide to connect a small relay to the "HV ON" remote output in your transmitter. But will it be able to handle the current? The manual doesn't say. When you call the manufacturer and ask, you're likely to hear, "I'll have to check on that and get back to you." They don't know, either! (More than once, I've looked at the schematic and have gotten the numbers of the ICs that are driving the outputs and have looked up the specifications myself online. It's quicker than asking them.)

One of my favorite companies is Broadcast Tools. They have a well-deserved reputation for building reasonably-priced "problem solvers," but in truth, they often forget to provide these details in their manuals. Better yet, it seems like each time they run another batch of boards for production, they make changes. Their manuals are somewhat infamous for containing lines like, "If your unit has a serial number greater than 1000, the outputs are different."

We've had a lot of trouble with our WVRC-8 remote control units and have sent them back for repair more than once. They had changed the Euroblock plugs on the back! We had pulled the old unit and had left the Euroblocks, still wired, hanging in the rack. When we installed the replacement, the plugs wouldn't fit; we had to rewire the whole thing!

And that's a good segue into ...

The NexGen Saga

By now, those of you who are replacing your NexGen file servers should have received the instructions that Todd and I developed via several weeks of tinkering and experimentation. I mentioned this earlier, but it bears repeating: it is absolutely amazing to me that NexGen doesn't make it easier to replace the hardware in the field. They should provide a way to easily and reliably back up the entire system *while it is still in operation*. They should then provide a way to easily and reliably move that backup to new hardware with a minimum of fuss and effort.

While I wouldn't call RCS NexGen a "cottage level" company, it has become pretty obvious to me that, like most specialized suppliers, they tend to reuse the same code and the same approach over and over. NexGen originally used Novell for the central file server, with simple and typical Windows folder sharing/mapping on the workstations. When they changed from Novell to Windows servers, they simply duplicated that same functionality with the new server OS.

As for the code, consider this: Windows has long since added system calls that will allow a program to discover its own IP address; some NexGen modules still require that you tell them what it is. Windows has long since added system calls that will allow you to change most settings (including network parameters) on the fly, but NexGen still requires a reboot. If you're running down a problem with your Export settings into an HD transmitter or a Web stream, you already know this. You make a couple of changes, then have to shut down and restart NexGen (and each time, the silly window comes up that demands to know *why* you are restarting the Aserver! I always answer, "Because you people don't know how to write modern code. Yeah, that's harsh, but it IS annoying.")

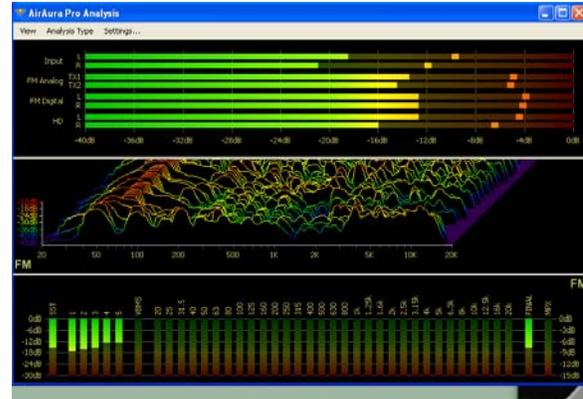
The Wheatstone Air Aura

Have I been enough of a curmudgeon yet? I'll finish with some positive news. We had already planned to get a Wheatstone Air Aura processor for WDJC when, in one of life's enjoyable coincidences, Radio World asked me to review that processor for them. I've received the unit, and all I can say is... wow! It's a 31-band, multiple-DSP processor that simply has to be heard to be believed. (No, I haven't heard the latest Omnia yet; I've been told it's amazing, too. I'll let Art tell me about that one.)

This goodie has a number of features that have impressed me. For example, you know that

most newer processors include some type of “blend” control that lets you reduce separation to help with multipath. Well, the Air Aura lets you do this in a *frequency-selective* way. Simply put, if you think most of your fuzz and distortion from multipath is occurring at high frequencies, you can “blend” the analog more at the higher frequencies than you do at the lower ones. A screenshot of the “audio analysis” monitor is shown in figure 2.

But that’s enough for this month; you can read the full review when it appears in *Radio World*. That’s it for this time!



The Air Aura's analysis window with 3D time-domain selected

Catalina Tales

By
Bill Agresta
Chief Engineer, KBRT

Greetings from Santa Catalina Island! The mud has dried but the island issues continue. This month I am once again dealing with a broken water main, but unlike the times past where the main was broken by landslides or buffalo, this time I found tire tracks leading to the broken pipe. I’m not sure how or why someone would be traversing our hillside in a vehicle, but now the focus is on getting the pipe repaired and restoring the water to our transmitter plant.

Our driveway and tower field roads have been graded and are now passable after receiving an enormous amount of rain that washed most of them away. Some minor repairs also had to be made to our ATU “doghouses,” but other than lots of mud, we received no major damage from those unusually large storms. Even though we continue to deal with the “island factor” on a daily basis, it is evident to me that God has His hand of protection on us no matter what happens.

As God continues to protect our existing operation on Catalina Island, He has also opened many doors as we proceed to move to our new proposed transmitter site to the mainland at our new site at the head of Black Star Canyon. As we move forward with this project, we find that the new site also has some issues that need some dealing with.



While Cris proceeds to make great progress with state and local officials in regards to meeting the regulatory criteria, I have been working with our good neighbor, Larry Boothe, to remedy security issues (Larry owns the parcels adjacent to our new site). Since the property went un-policed for so long, we have been trying to deal with the group of thieves and vandals who continue to frequent the property. We recently drove up to survey the site after the heavy rainstorms and though we did find some damage caused by those storms, we also found cut fences and gates.

One gate looked like the trespasser simply drove his truck through it and neither Larry nor myself could believe someone would do such a thing to their vehicle. We had driven steel T-posts deep into the ground along the fence line to discourage anyone from cutting the fence and driving in at the old main point of entry. Larry witnessed one recent incident where a woman ran out of gas near our property, left her car overnight and upon returning found it smashed to pieces.

I know we have our job cut out for us here, but at least I can say that this is easy stuff compared to most of what we deal with on the island. At least in this situation we face an identifiable issue that has

plenty of resources available to remedy it in its entirety. I have found several companies in the area who secure everything from vacant lots to construction sites and many offer guaranteed results. We will also continue to repair and maintain our existing fences and keep signs posted in an attempt to discourage these trespassers, vandals and thieves. We hope to make it clear that we will not permit this activity to continue on our site and hopefully make this message clear before we begin to construct our

towers and transmitter building.

The nice thing about dealing with this issue now is that we have a neighbor who shares our goal and is driven to deal with this issue sooner rather than later.

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

Project Scheherazade

Our last month's question was, "In standard 110-ohm digital audio cable, the red and black wire colors (for '+' and '-', or 'phase' and anti-phase', respectively) have been replaced by the colors blue and white. Which wire color is used for which polarity and which XLR pin? (Shield still goes to pin one, of course.)"

The answer is: Nobody knows, and thus nobody will tell us. We called both Belden and West Penn Wire about this question some time back, and neither one of their tech support departments could actually tell us which was 'phase' and which was 'anti-phase'. We just decided that we'd arbitrarily answer the question ourselves, so in our operation here in Chicago, the white wire is 'phase', and the blue wire is 'anti-phase'. So, it's white to pin two, and blue to pin three. Got it?



presses, and upon reading my mild little rant, he decided to stick in his two bucks worth. I had no trouble deciding that it's worth printing. So, here it is:

"I just finished reading your *Local Oscillator* article on hard drives and just wanted to note that the current Exporter (HD Generator) technology doesn't use hard drives at all. I know we've been shipping these since September 2009; I believe Harris has been shipping theirs for about a year now and not sure if BE is shipping one yet." [I checked with BE regarding this as we went to press, and their spokes-lady said that their embedded HD exporter will be out sometime in the near future.

– Art] "Oh, and I'm quite certain that Continental is also shipping the latest generation. In addition, we went a step further and provided the same upgrades to our Importers, so no hard drives there, either. At the moment, I think (but am not totally sure) that we are the only manufacturer who has removed all hard drives from the equipment. Operating systems are stored in the units on flash disks and can be "re-flashed" from an external thumb drive if need be... so yes, we saw the weak link and replaced it!" End quote, Jeff Welton. So, there you have it: one less reason to not get on board with HD Radio. Thanks, Jeff!

So, my information needs updating! Fine, that's what I have YOU for...

In our last episode, I was enjoying a mild rant or so on the issue of designing broadcast equipment around technology (the PC in particular) which has such a short half-life to obsolescence. I bemoaned the fact that the entire concept runs counter to the time-honored principles of accounting, regarding depletion rates and stuff like that which, in turn, becomes one factor in preventing so many smaller broadcasters from taking a serious look at HD Radio as an enhancement to their operations.

Jeff Welton, the Nautel sales engineer for the Midwest (including us) was paying attention the day that *The Local Oscillator* rolled off of the virtual

No such thing as "co-incidents"...

Just on serendipity, I went out to our WYCA Beecher transmitter site recently to look at the tower light situation. One middle beacon of the two was out, which seemed to be a strange situation to me. I had other things which might have been considered to be more pressing, but I chose this particular assignment because... well... because. After all, this

is potentially an FAA issue, and for that reason, Cris had asked me to up its priority level. Okay then.

When I got there, I was attending to the tower light problem all right (burned wires, actually), when I noticed that there was water poking through the top of the wire trough mounting holes under my feet. What's up with that? Well, I lifted the trough cover and found..... it was *full of water!* There is no water at the transmitter room end of the building, so I headed toward the back furnace room, where the water comes into the building from our well, and that's when I heard.... the rushing sound. Water. The incoming well water pipe had broken, and our well was in danger of going dry! I quickly returned to the transmitter room electrical panel and shut off the well pump breaker, stopping the water flow.

But the fun was just beginning. The water wasn't up to the level of the floor anywhere in the building. Almost, but not quite. But it had to go *somewhere*. One place was into the furnace, which is located right next to the broken water pipe. I quickly called our local HVAC guy (he'd installed that furnace) and got him out there muy pronto. He snooped around and pronounced it okay. I called a local plumber. He was reticent to come out so late in the day, promised to come out the next day, then called and begged off until the day after that. Suffice to say he never did get there.

I stuck the shop vac hose into the wire trough and sucked out as much water as I could, taking the full canister and emptying it out the front door, again and again. I quickly realized that such an effort was not going to be enough. I called Mack and yelled for him get down there ASAP with a much bigger shop vac. Once there, we both went at the job of pulling the water out of the troughs using both vacs.

Where else could the water go? Well, the forced air heating/cooling ducts are all embedded into the cement floor, so I pried off some of the vents and found all of the duct work to be full of water. I went back to the transmitter room and checked the wire troughs. The water had already started to drain out of them. Funny: how did the vents and the wire troughs connect? I still don't know the answer to that one, but I'm glad that they do, especially since there are a bunch of wires carrying 110 VAC down in those troughs! I left the wire troughs open to let them dry out.

When the HVAC guy came out and re-started the furnace, including its blower, I witnessed for the first time white caps in an air vent trough. There was so much water in there that we couldn't get it all out with two shop vacs before Valentine's Day. That's when Mack remembered the sump pump, which we use at Burnham to provide water to clean the air conditioning unit fins there. I went to Burnham, picked it up, and took it back down to Beecher. The next morning, Mack came in, attached the local garden hose to it, turned it on, and had the

vents emptied of water in a little over an hour. About 200 gallons, maybe more, had been in those vents by our estimate. At least we don't have to worry about static electricity in Beecher this winter. Rust, maybe, but no static E!

There's another point to all this: I didn't *have* to be in Beecher on *that* particular day. Even though Cris had told me to make the tower lights a priority, there really were other, more important work assignments on my plate that I might have been doing. But I kept just *wanting* to go down there anyway, to fix a relatively minor tower light problem. I'm convinced it wasn't just me wanting to. It's was Someone Else, the still small voice if you will, that was telling me to just go, that I would be doing something important. And it was so.

You'll never convince me otherwise: There is no such thing as co-incidents, just God's Incidents. Or, just maybe, the boss is always right, after all.

Caveat Emptor, et al (or something like that)

Our first crisis of the year involved CD recorders. In the last six months or so the use of our CD recorders in the control rooms has mushroomed as more and more clients want their air product recorded on the spot for archiving and later rebroadcasting. And the machines, most of which are more than two years old, tend to age prematurely when pressed into industrial service such as broadcasting.

So, I called our friends at ProAudio.com (Crouse-Kimzey) and asked about prices and availability, and in the process I got a rather rude shock. What seemed to be the best CD recorder bargain for our needs, the one with the most bang for the buck, turned out to be the Fostex CR-500, and it was on back order. But it wasn't just that. *Every* item in their catalog was, and is, back ordered until the end of February. I wonder what's going on there. I really don't know. We suspect that their Chinese manufacturing facility (yes, the Japanese also use China for a manufacturing facility) may have encountered serious problems, but that's only speculation. If I come up with anything, I'll let you know. Anyone who knows can drop me a line through the LO, or contact Cris.

One other thing you might want to know: Some manufacturers are making it very difficult for local electronics repair shops to obtain parts to fix their products when they need repair. Chief among them is Sony, which won't sell the parts to just anyone, and who from what I'm told doesn't do repairs itself. There are a lot of stations using a lot of Sony equipment out there. I can't believe that one of the biggest manufacturers of studio source equipment is apparently trying to tick off some of its best customers in this way. We have a number of Sony products in our house, particularly CD players and recorders, and we can't take them to our local guy for work anymore, nor can we do the job ourselves, for

the same reason he can't — no parts availability. Our 'out-of-town' repair shop, which shall remain anonymous, can still get Sony repair parts to fix our machines, but they have to resort to some serious back-door sneakiness in order to get what they have to have. With the huge readership this newsletter has around the industry, I don't feel that it's in anyone's best interests to disclose the identity of our little out-of-town repair shop, lest Sony, by way of a reader snitching, or through a Google search, find out about them. What a sad state of affairs.

And Sony isn't the only one with this problem, either. Denon is equally hard to get parts from. That is a fairly recent development. Far as I'm concerned, the question of the reparability of a given brand's equipment is as important a consideration in the purchasing decision as is cost and life-expectancy. But not everyone thinks to ask about that. We will now, in any future equipment buys, and hopefully, after seeing this, you will, too. Next month: maybe, just maybe, I'll have transmitter installation pictures from our NV40 project. Until then, blessings!

The Portland Report

By
John White, CBRE
Chief Engineer, CBC-Portland

New Meets Old

The new house of Congress is has begun its work following the State of the Union address. Lots of new people and changes. Some of the new faces even seem to know how to sign the front side of a paycheck. Oregon Representative Greg Walden made an announcement in an unusual way.

Was it unusual that he made the announcement on Twitter? Not at all – Twitter is all the rage. Was the announcement itself unusual. Not really. The unusual nature of the tweet was the universal language Greg chose to use for the announcement. The announcement is below.

..- . .-.. ..- / -.- ..- .- .. -./ -.- --- - - - / .- -.- ..- / - .-.-
.... /- / --... ..- / .- -... .-.- ..

At the Hill News, the result was scratching of heads. Following blank stares some one finally said that looks like Morse code. Or as the Hill put it, Walden made the announcement "...using what appears to be Morse code."

The Hill continues: "Using a handy (in some very rare instances) online Morse code translator, that equates to this: 'WILL CHAIR COMM AND TECH SUB 73S W7EQI.' The Hill needed help on the last part, and a Walden aide came to the rescue: '73s means best regards or a similar sign-off. W7EQI is



his [amateur radio call sign],' he said. Walden has a long history in the radio business where he picked up the lingo."

For those that may not be aware, Greg and his father Paul have a long history in small town broadcast radio. Paul owned KIHR(AM), later adding KIHR-FM in Hood River Oregon about two hours east of Portland.

A short story here is useful. Until recently, Greg continued to operate KIHR while serving as an Oregon congressman. A few years back, the FM in Hood River was down and they needed to borrow a frequency-agile exciter to get it back on the air. Greg called looking for help, and I was happy to lend an exciter that I had. I waited while someone drove to Portland to pick it up. That someone was Greg. As a congressman, he could easily have had someone from the station play gofer. That he made the trip himself raised my respect for him about 4 notches.

Insulators

A while back, I mentioned some tower insulator problems we have at KKPZ. At the time I didn't go into much detail. However, given current trends in paints, a general warning is necessary. First, some background is necessary.

We don't give it a second thought, but ask the question why doesn't rain cause problems with tower insulators? That answer is in the nature of

precipitation which is essentially distilled water. Distilled water or DI water (de-ionized) is a non-conductive insulator.

Here I will pick up with a narrative of what happened. The day prior, the bottom red and white bands of KKPZ tower #3 were being painted. The weather was 80 degrees and clear. The schedule was to bring Disney's 1640 (which duplexes with KKPZ on that one tower) back up at 3:00 PM. The crew was not able to complete the painting, so they prepared to clear the tower for the day. Because of some paint overspray on the insulators, I asked the crew to be sure to wash down the insulators prior to returning 1640 to air. The crew then wiped down the insulators.

Early in the morning of the following day, fog rolled in. I arrived at the transmitter a little before 8:00 AM. Lee, one of the painters, was already there. Again, the weather was heavy fog, and winds were calm.

I spoke to Lee for a few moments when he asked, "Should the tower insulators be steaming?" Lee's truck was parked between me and tower #3 (the northwest tower), so it wasn't until I walked past the truck that I saw that steam was in fact rolling up from the insulators. I also noted a blue electric arc at the base of the southwest insulator on tower #3. The arc at the bottom of the insulator was clearly visible nearly 100 feet from the tower and had every bit the look of an arc welder. I immediately switched 1640 to night power and the arc extinguished.

With 1640 at lower power, the visible arc stopped and upon closer inspection, I could see fog dew from the tower steel structure trickling down to and across the surface of the insulator. Once on the



Arc tracks and cracks are visible on the surface of the insulator

surface of the insulator the water began to sizzle and steam. I could also see contamination tracking marks on the insulator surface.

At this point it was clear we had significant surface heating and contamination on the insulator, which was conducting current across the insulator. I got a natural bristle brush and we brushed down the surface of all of the insulators. This stopped the sizzling and also exposed cracks in the SW and NE lower insulators.

The combination of fog dew and paint contamination started a surface arc. The evidence indicates significant heating and hot-spotting. At this point, my examination shows that thermal hot-spot heating caused the cracks in the insulators. The arc I observed was bright blue and easily visible some distance from the tower.

I have an example of what caused the arc from everyday real life. Some years ago we bought a humidifier for my daughter's room. Due to problems with overheating, this new humidifier had an automatic off feature that engages when the water chamber is dry. The arrangement was quite simple. Two electrodes connected to 110 VAC would pass a current through the water resulting in heating and steam.

I connected the humidifier, filled with Portland's Bull Run snow melt water. After an extended period, no steam. Here the instruction book suggested a pinch of baking soda, illustrating how little contamination is required to create conduction.

The insulator conductive contamination is visible in the photographs and is from the top to the bottom of the insulator where dew flowed down the insulator surface.

So here is the warning. In the past we have been used to oil-based tower paints, which because of the volatiles are being forced off the market. Oil and rain don't mix, so no problem. The replacements, acrylic and latex, are water-based. That creates water-soluble contamination that turns water into a conductor.

A heavy rain, of course, will wash the insulators clear. A light rain or fog, however, will simply keep the insulator surface wet with contaminated water. Contaminated water conducts RF current across the insulator. In this case, 1640 is 10 KW day, so lots of RF heating potential exists.

A word to the wise: When painting AM towers, if any chance exists for rain or fog exists, the best course is to bag the insulators. Be cautious, not sorry.

**Rocky Mountain Ramblings
The Denver Report**

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

What a month January turned out to be! The first of the month we went ahead and ordered some items that were needed in our Denver cluster. These, of course, were the new Sage Digital ENDEC EAS/CAP units that were ordered by Cris Alexander for all our stations. The second item was a couple of XDS satellite receivers to replace the aging and soon to be obsolete StarGuide units.

EAS/CAP Units

The first things that came in were the EAS units. As you all know, there is an informal contest... whoever can get the units working with NexGen first wins (the prize is bragging rights). The problem... NexGen doesn't even know how to get their system to "talk" to the new Sage units. So we are all in a holding pattern to win this great prize we have all been told about. I think the greatest prize will be in the spring, taking one of the old TFT units to our Brighton tower site and putting some new holes in it!

I knew there was some work that needed to be done before installing the new Sage units. First, I had to purchase some 5-port network switches for three of the four stations. This way we could keep them on our NexGen network instead of the office network. I ran some CAT5e cable to get this ready. I also had to run an AES cable so we could utilize the digital output on the unit. All this took less than half an hour to do for each station. This made it easy for me to just remove the old TFT unit and insert the new Sage unit.

Before installing the new units in the studios, we bench tested them. We set the IP addresses and programmed them up for each station. One of the things that I like about the unit is the programming. While some has to initially be done on the unit itself (IP addresses), most of it can be done with a configuration program provided by Sage. How nice is this? I love the fact that we have access to these units from any NexGen computer. If I remember late on a Saturday night to check the logs

for each unit and I see that a station hasn't sent out the required weekly test, I can easily send it with the click of my mouse.

The installation of the unit was simple. I just transferred the cables over. I then ran a test. In some studios we had a few issues, but we quickly figured them out and were off to the races.

It's been two weeks as of this writing and it's been great. I can easily monitor each unit from

my cubicle. I originally thought with the email that the settings for messages received is for all messages, however it is only for the messages that might be auto forwarded. This would explain why I haven't received messages when we receive the weekly tests from LP-1 KOA and LP-2 KYGO.

I have one issue with KLZ's unit. As you know, we have four stations in this cluster. They all listen to the same feeds. The other three stations received both KYGO and KOA tests. However, KLZ only received the KOA tests. I listened to the monitor and KYGO was there, loud and clear as it is in all the other studios. There is no real way for me to troubleshoot the problem. Sage wasn't too helpful. They just said to reboot the unit. I did that and am waiting for KYGO to send their test for the week.

I am very happy with the units all in all. I'm sure you all will enjoy them as well. They just seem to be so much easier to use that the TFT units we had.

Satellite Receivers

As some of you may know, the StarGuide platform is going away. That's right, as in bye-bye, adios, hasta la vista. As of June 31, 2011 they will be no more. Almost everyone has moved to the XDS platform.

These units are not cheap by any means. However, the units I ordered have four ports, perfect for our setup. These units differ from Starguide in a much better way. With Starguide, you program up Port A for the channel with the show you want to carry. Port B, C and D are each programmed to their



desired channels. If you want to add another channel, you have to get a new receiver, get it authorized and then program it up, run more wires and then it might work.



New XDS receivers installed at the KLZ transmitter site

With the XDS platform, you can schedule your shows (as opposed to channels). Yes, you can still broadcast certain “channels” 24/7 in real time. However, if you have a show that airs at one time on the weekdays and another time on the weekends, you can easily tell the unit to switch on the weekends to the different time. Or, even better, you can completely switch the program. Obviously if you have too many programs, chances are they will overlap as ours do.

The unit also has an internal flash memory bank for you to record a show for play later. This is helpful if you have a show that airs 3-5P M M-F and you have another show that comes down starting at 4 and runs until 7. If you want the show to run start to finish without having to join it in progress and air that first hour later, you can tell it to delay playback by an hour (or more depending on your needs). All this is done through a website where you register the unit.

One thing to remember, something you don't realize if you use Starguide. Port A is the only one that comes authorized for this scheduling. They can have the same call letters on two ports only. So you have to be creative. Thankfully, we have four stations in Denver, that's four call letters to choose from. I have heard rumors that Citadel does not like to authorize all four ports, but be persuasive and I'm sure it won't be an issue.

The audio wiring pinouts and connectors are the same from the StarGuide to the XDS, so you should be able to just switch the unit out. If I

remember correctly, even the relays are the same, although there is just one mappable relay port for all the audio ports on the receiver (as opposed to the old dedicated relay ports of the StarGuide). If you use Netcues, you will have to switch to the relays.

Finding the programs is no problem. Instead of having to find the satellite service, there is a drop down menu wherein you choose the show name. Be careful, though – this can get confusing as there are sometimes several instances of the same show. I found this out with Healthline. I thought I chose the correct Healthline program, but when time came for it to air, it was silent. Thankfully I was able to log in to the receiver and change it to the other feed and it came right up.

I'm knocking on wood here, but I have not had any technical issues with the units since receiving them. I am very happy with how they work.

Transmitter Stuff

Keith finished up the shelving at KLZ and I must say, it looks great. The next step is to get the workshop looking great again. On the cabinets in that room there is a ton of loose hardware left over from the Ed years, possibly from even before then.

We are hoping to get some help from a Nautel friend with taking apart our aux transmitter (AMPFET 10) to fix a problem down in the very bottom of the rack. We have to remove the guts in the bottom of the thing to fix it. We also need to replace a fan. For years I have noticed a fuse holder cap missing in the back panel. I ordered some new fuse holders and just took the cap of one, placed the correct fuse in it and plugged it in. The fan came on after years of not running and I think I know why the fuse was taken out. The noise was horrible. It sounds as if it is going to just break off and go flying and kill someone, like a “Final Destination” scene. Thankfully, it's contained inside the transmitter, so this really wouldn't happen. I bought the replacement fan, which had a hefty price tag for something so little and light. We decided we'd wait until we take apart the whole thing before installing the fan.

Self-Inspection

I have been studying up on FCC self-inspections. One thing I learned from my dad recently is that not everything in the FCC-provided checklist has a rule that goes with it. For instance, under the antenna registration part it states that you have to have the ASR number posted on the tower. It also states that if you have to enter through a locked

gate to view the towers, you must post the number on the gate as well. The second part is not a rule, just the first part. I plan on going through this checklist and begin making sure everything is as it should be. I am sure things are correct but having this list will help me to remember everything.

Not too many major projects are ahead in February. Hopefully the work on the aux transmitter can be done. As I write this, the main project just

walked in the door. We ordered the new Telos nX12 on-air phone system for KLZ and KLVZ to replace old 1X6 units. This will leave KLDC with the only 1X6 in the place –the unit in there isn't quite old enough to be replaced yet. I look forward to setting this up. I pray it will be an easy task, a task without major problems.

So, until next time...that's all folks!!!

Digital Diary
by
Larry Foltran
Corporate Website & Information Technology Coordinator

Don't Just Sit There!

Seemingly an eternity ago, I was told that folks in an IT position should never become complacent in their skills and knowledge. Quite honestly, at that time I had my eyes set on a long career in the auto industry despite my aptitude for things related to computers in general. I'm thankful that my career path took a sharp turn into the thick of IT and that the very accurate statement about complacency in skills and knowledge settled into my brain. I quickly learned that regardless of what industry I was in, I would end up being neck deep in computers, IT, networks and programming. I consider that a good thing.

That statement long ago came from a Computer Science instructor who described the early part of his career and his advanced skills in FORTRAN and COBOL. Since that time, he explained that he had learned an additional 12 to 14 different computer languages to simply keep up with technology. Technology changes faster and faster as time goes on. What was the accepted standard yesterday will assuredly be out the door tomorrow.

Thankfully I love what I do. I truly enjoy working with computers, software, hardware, and everything related. As a result, you will often find me with my nose between the pages of a tech manual or the beginner's guide for one of the many "in" computer languages of the year. It's a necessity to simply keep up with what is out there and to know what can be done with the technology available to you. Beyond purely new languages, it's necessary to keep up with new versions of old programming

languages and standards. HTML5 is around the corner, which should provide us with numerous new opportunities. CSS has been around for quite some time, but we soon will need to be familiar with CSS3.

You get the picture.

I am also extremely thankful that I've been blessed with the ability to learn new programming languages and tech concepts rather quickly. I feel I excel when it comes to independent learning. I love to read and do it often whether it be a manual, online article, magazine, or anything else I can

find. Each month I read several PC-related publications along with numerous articles online. Do I glean information specifically relevant to what I'm involved with every single time? Absolutely not. But on numerous occasions, I've had a problem come up that triggered the memory of something I had read in the past which ultimately helped solve the issue. This is one of those cases where more information is better than not enough. I suspect if I fill my brain with enough information, it will be useful at some point in addition to making me better at what I do.

I often get calls from stations throughout the company regarding one computer related issue or another. People look to me as to be the answer guy. I enjoy that not only because it gives me an opportunity to help someone, but sometimes results in another learning experience. Like everyone else, I wasn't born knowing everything. But I certainly want to learn as much as I can which in turn provides me the opportunity to help someone else. In some cases, that knowledge has been critical to keeping the station on the air or reducing the amount of time we



were off the air. I consider that a huge plus.

A Bit of Tech House Keeping

January 23rd marked my 5-year anniversary with Crawford Broadcasting. I can certainly say that it has flown by. January also marked the completion of a project that has been on my radar during many of those years but never made it up the priority list, simply because there were numerous other critical items that needed attention first.

The primary hub of Ethernet activity for the office side of our network and the location of our firewall appliance has been in one of the station's main hallways, above the general office printer, ever since I came onboard with CBC. Located on a shelf, this area consisted of a 24-port Cisco switch, a wireless router, the aforementioned firewall appliance and a recently installed print server. Although not the most visually esthetic setup, it had served the station without any issues since before I arrived. The squeaky wheel will get the grease and this wheel wasn't squeaking... until a couple of months ago.

Whether a result of a lightning strike or some other type of power surge, the network equipment in the hallway began to act "flaky" for lack of a better term. After a series of software reconfigurations and then ultimately replacing the suspect wireless router, many of the problems went away and all was well in Whoville.

After approximately a month, Joe Huk and I began noticing some other issues relating to the network, which was now affecting both the office and



production sides. We tackled the symptoms as they popped up to ensure everything kept moving along while looking for the root cause of these issues. We again took a closer look at this area of the infrastructure and made some changes to the Firebox hardware firewall and to the wireless router. What further hindered us was the lack of proper labeling and tracking in terms of where the Ethernet cables went. Out of approximately 20 cables, only five or so

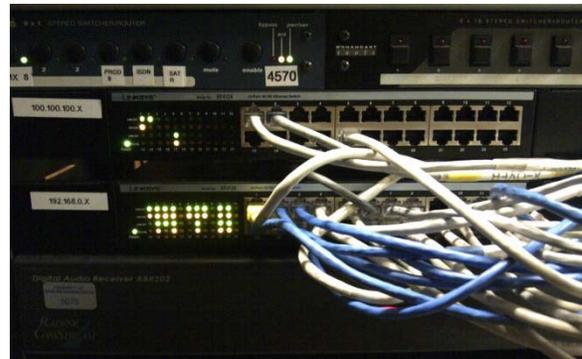
were labeled properly.

Late in 2010, we were scheduled for installation of a new Internet line into the station to help alleviate some of the bandwidth issues we were experiencing, especially with the increase in uploading of programming that had become a daily responsibility for several members of the staff. After discussing the situation with Joe, we came to an easy



agreement that it was time to reconfigure the station's general office infrastructure.

The plan consisted of adding two new 24-port Linksys switches to our telco room and away from everyday foot traffic. We worked hard to develop a strategy that would minimize Internet and network downtime throughout the station while achieving the targeted goal. Our plan included connecting the new cables to the old cables, already running to the specific offices and computers, utilizing straight-through couplers. We felt that this would be the path of least problems and, if set up properly and with care, would work well.





Joe did an outstanding job of installing the new switches, setting up a PVC pipe to organize the cables, and then running the bundle of CAT5 cable from the telco room to the main hallway. Once complete, I began installing the RJ45 connectors on the cables and labeling the CAT5 cables. We opted for a general numbering convention (Telcom 1, Telcom 2, etc) labeled on both ends with shrink plastic coated to prevent peeling. The couplers were also labeled according to the specific cable number and, to further aid in troubleshooting down the road, each CAT5 cable was connected to the corresponding numbered port on the new switch. This provided a method of easily tracing a cable from the connected computer, through the connecting coupler, and ultimately to the Linksys switch.

Once the connectors were complete and I had confirmed that every cable was set up correctly, we worked to track down where the old cables were going. Using Joe's "Fox & Hound" cable tracer truly helped with this process and allowed me to track down several cable runs by myself when Joe was

attending to other more pressing items around the station and at the transmitter sites.

Our advanced planning and preparation allowed us to complete the final steps of this project relatively quickly. With all of the cables connected through the couplers, labeled properly and documented on a master spreadsheet, it was time to move the bundle of Ethernet cables into the ceiling, hopefully to never be seen again. We did have some issues with bad connections, but the labeling system helped us solve these issues rather quickly. The final step was to secure the equipment that remained in the hallway, which Joe did using hook and loop strips and plastic ties.



All in all, I'm very impressed with the results and it was a true team effort. We've had some minor issues since then, but troubleshooting the connections has been very easy. I just goes to show that having a proper strategy ahead of time helps immensely. Each side of our network now has a dedicated Internet connection, each provided by a different ISP. In the event of an Internet outage at the ISP level, we can quickly feed both sides through the same connection until the outage has been resolved.

...until next month!

The Local Oscillator
February 2011

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

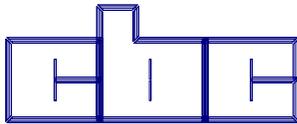
WYDE • Birmingham, AL
1260 kHz, 5 kW-D/41W-N, ND

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