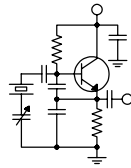


The Local Oscillator



The Newsletter of Crawford Broadcasting Company Corporate Engineering

OCTOBER 2007 • VOLUME 18 • ISSUE 10 • W.C. ALEXANDER, CPBE, AMD, EDITOR

The “IBOCalypse”

You would have to be in a cocoon over the last couple of months to miss all the discussion, rhetoric, arguments, posturing and trade press coverage of what some thought would be the end of AM as we know it. September 14 marked the date that the new terrestrial digital rules went into effect, one of those being the long-awaited authorization for nighttime AM digital operation.

Leading up to that date, some of the HD Radio antagonists really stepped up their rants, making dire predictions of skywave interference that would wipe out the nighttime coverage of many AM stations. Much of this was clearly emotional and with no basis in fact (as such invectives are prone to be), in much the same way as the global warming crowd propagates its alarmist theology.

As D-Day (or perhaps it would be better termed, “HD-Night”) approached, I couldn’t help but think about the approach of Y2K and all the dire predictions of doom and gloom that steadily built as that new year neared. I remember getting out of bed on January 1, 2000 and not being particularly surprised to find the power on, the phones working and everything just as it has been the day before. And likewise it has been no surprise to me that there has not been an apocalyptic increase in AM night interference as the digital nighttime prohibition was lifted.

My position on the AM night digital issue has all along been one of cautious optimism. I never expected the massive amounts of interference that some were predicting because science simply does not support that hypothesis. But I would be naïve to think there would be *no* resulting interference. Additional interference occurs anytime a signal is added, no matter how small. In the AM night allocation process, we understand this and take it into account, but we also realize that there is a practical

cutoff.

For the purpose of determining night interference-free (NIF) contour values and coverage, a 50% exclusion works reasonably well. It is a standard universally applied in this hemisphere. It is part of the FCC rules and our agreements with Canada and Mexico. It is the standard I apply when evaluating a facility for possible acquisition by our company. Personally, I find it to be a bit on the conservative side.

If we employ the 50% exclusion rule to the digital sideband signals in the same manner that we apply it to co- and adjacent-channel analog interfering signals, we will find that in *most* cases, the NIF contour value is not increased at all. This has been the case in every calculation I have made so far, but it is not to say that it will be the case every time. In fact, I predict that in grandfathered overlap cases (particularly along both coasts, where station densities are much higher than they are in the majority of the nation), the NIF values of some stations *will* be increased by adjacent-channel digital stations. But that will in no way be universal.

Last month, someone forwarded me a snippet of a radio list server discussion of the issue. One gentleman was taking issue with my calculation of the interference contribution of an adjacent-channel digital signal to an existing station, specifically the WABC-to-WJR case cited in last month’s issue of *The Local Oscillator*. He said, in effect, that we must treat the digital carriers individually rather than as one in the calculation. Because there are 25 digital carriers in each sideband set, he said that we must use the digital carrier level (nominally -28 dBc) plus 10Log (25) or 14 dB.

I thought about that a good deal and concluded that if that were the case, using that reasoning we should also divide up the analog sideband spectrum (0.05 to 9.5 kHz) into a finite

number of segments and somehow inject each of those into the limit calculation. Modern processing allows us to keep the RMS of our modulation very high, in excess of 90% negative and 115% positive on dense music programming, so we can reasonably use a value of -3 dBc for the analog sideband energy. Try slicing that spectrum into, say, 25 segments and applying the same reasoning as this gentleman is applying to the digital carriers and you'll find that you get a result that in no way resembles reality. That is why we don't do it in practice out here in the real world, and it's also why we shouldn't do it with digital signals. The co- and adjacent-channel protection ratios take all this into account and by and large, it works.

So, all that being said, what have folks been hearing out in the real world since the night of the "IBOCalypse"? All of the observations sent me thus far agree with my own, namely that the digital sidebands from the few stations currently transmitting in the digital mode at night are having no real impact on adjacent-channel stations.

Here in Colorado, I have listened carefully to some of the class A stations that boom in here at night that are transmitting digital signals. You can, for the most part, forget about skywave digital service. At least in this part of the world, it ain't happening. You might get the PAD scroll or just the station name/callsign, but no decoded digital audio.

I have also listened carefully to stations on channels adjacent to these digital class A's. While in some cases I can hear a slight "hiss" way down there in the atmospheric noise, in no case have I observed the adjacency's signal degraded in any way by the class A's digital signal. Reports from around the company are saying the same thing. Admittedly this is a small sample, but I believe it is representative of what we will see across the board as night digital operation proliferates.

One other observation is that both KLZ and KLTT here in Denver produce excellent night coverage with their digital signals. In my after-dark travels around Denver metro, I have not so far driven out of the digital coverage. I am hearing similar reports from other markets as well.

And finally, we have had zero interference

complaints to date from our digital night signals. I really didn't expect any.

So, is this the beginning of the end of all AM night coverage? Based on what I have seen so far, absolutely not. But we mustn't assume that no problems so far mean no problems will occur in the future. Going forward, we will have to be ready and willing to make adjustments as specific situations demand. That's clearly what the FCC has in mind. All the rhetoric aside, I would say we're off to a good start.

Another Upgrade

Last month, we finally received the new license for the KLVZ (formerly KLDC) daytime facility. The augmentation application was granted and the station returned to full power. That is something we had been waiting on for a couple of important reasons.

Over the summer, we made some conductivity measurements to the southwest, toward Santa Fe, New Mexico, where there is a co-channel station on 810 kHz. That radial path is right through the Rampart Range of the Rocky mountains south-southwest of Denver. As expected, the conductivity analyzed at about a tenth of that shown on the FCC's M3 ground conductivity map. Using the measured conductivity data and the resulting daytime allocation study, we were able to boost the power of the station (on paper) to 10 kW. The application was prepared and ready to file, but we could not file it until the augmentation license application was granted. We have now filed that application and anticipate a grant next summer.

The upgraded facility will use the existing three towers, but 15 degrees of top-loading will be added. Because of the relatively high RSS/RMS ratio of the new pattern (1.8), we will have to work hard to get the station to work well with HD Radio. We are exploring all our options in that regard.

Interesting, isn't it, how this little 1 kW daytime "peanut whistle" that CBC acquired back in 1993 will someday be our #2 facility in the Denver market with regard to power?

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

Hello to all from Western New York! As is the case with most of you, this time of year tends to be my busiest. With inventories and next year's budget requests behind me, I can now focus on installing all the new cap-ex equipment for the Buffalo and Rochester stations. Although our equipment purchases this year were rather light, I have a lot of work to do getting four new digital consoles installed along with a new Telos hybrid phone system, Potomac antenna monitor and the new transmitter building for WDCX. I have already begun the pre-wiring for the consoles and I am currently working on the documentation for the studio wiring for the new Audioarts D-75 consoles. Unfortunately, it will not be as simple as "plug & play" for the console installations, as all our current wiring is analog. We will be wiring all sources that have digital I/Os in the digital domain to/from the new console.

This year seems to have flown by. Already it is time to prepare our sites for the winter months, a time which is quickly approaching. I still have some outdoor maintenance items to take care of at the WLGZ transmitter site, such as painting the woodwork and sealing up the doghouse doors, etc. Hopefully, we still have some warm, pleasant fall days ahead of us before the winter snow flies, so I can get these items accomplished.

WDCX – Buffalo

The new WDCX transmitter building is finally here! After numerous delays with the Boston town board and the manufacturer, the Thermo Bond building arrived on site Thursday, September 19th. I can't say enough about how pleased I am with the new structure. The only problem we encountered with the offloading of the building was that the truck delivering the building was too long to make the turn into our driveway. After several attempts, we decided that the crane company we hired to lift it would have

to offload at the street and walk it into place. When the crane crew arrived on Thursday morning and surveyed the situation, they determined that the truck could back into the drive if one side of the drainage ditch were partially filled in. They went to work and constructed a "bridge" across the three foot culvert with four by four posts, which allowed the trailer to make the turn into the drive. Once the trailer was in place, the offloading and setting of the building on its foundation took less than an hour. This has definitely been a learning experience, and one that I would not like to repeat anytime soon!

Recently, I have noticed that the readings on the WDCX Continental transmitter have been creeping slowly upwards. A check of the transmitter revealed that the rebuilt Econco tube I installed back in January was failing. Looking back on my maintenance logs, I found that this tube had only been in service a little over 5900 hours. I obtained a replacement tube, installed it and sent the old one back to Econco for evaluation. Hopefully, they will be able to determine why this tube failed so soon.

While on the transmitter subject, we have been fortunate this year (or unfortunate, depending on how you look at it) that we have not had much in the way of thunderstorms. The Northeast and other parts of the country have had very little rain this summer, causing near-drought conditions. What little rain we have had this summer came in and quickly moved on. One such storm blew through the Niagara region late on Tuesday night, the 25th of September. Accompanying the rain was severe lightning, which hit around the transmitter site, damaging one of the RF PA modules in our BE FMi-106 transmitter. The remote control called me around 10:00 that evening with a low power alarm. When I got to the transmitter site, I found that the first RF module had a fault on it. I removed the module and found a blown fuse, which



I replaced and put the module back into service. Immediately, it let the smoke out! Upon further investigation, I found a shorted surface mount capacitor on the gate of one of the two mosfets that drive the amp. As the majority of the components on these boards are surface mount (and I do not have the proper equipment to work on SMT boards), I am sending the damaged board to BE to be exchanged for a working module. This replacement program actually works pretty well. They exchange the bad module at a cost of 40 percent of the price of a new one. Once you figure in the cost of repairing your bad module (shipping, parts, labor and time), you're better off just exchanging it.

Not long ago, one of my friends purchased one of the Audemat-Aztec Golden Eagle HD monitors for his station. I had him check the WDCX HD-R signal, and found that the delay was off .063 seconds. These monitors are so accurate, you can get the delay set down to .000 I had set the delay by ear and was extremely close, but the Golden Eagle nailed it down to absolute zero. One other item I did discover was that our digital signal is 180 degrees out of phase with the analog signal. The Golden Eagle checks the integrity of both, and it reported that the digital was "opposing," meaning it was 180 degrees off. This can be addressed by turning on/off the phase rotation in the Omnia, except for the fact that our version of software 7.1.0 did not have this feature. I contacted Mark at Telos-Omnia, and he is sending a new PCI card with instructions on loading the new software version 7.2.5, which contains the phase rotation feature. One quick way to check if

your digital signal is out of phase is if, when it blends into digital from analog, you hear a quick dip in audio level, the phase needs to be inverted. I did not know this; I thought this quick dip was just the receiver switching from analog to digital mode. Hey, we learn something new every day!

WRCI / WLGZ – Rochester

There is not a lot to report on from the Rochester stations. Operations have been running smoothly as of late. One item that I need to address soonest is getting the WLGZ HD configured for nighttime operation. In order to get this accomplished, I will need to adjust the night common point network for a 10-degree rotation of the cusp and install a 4-pole double-throw RF switch to remove the line stretcher network from the night pattern. I currently have the line stretcher network breadboarded on a sheet of plywood, and it is sitting on top of the phasor cabinet. Ideally, this needs to be mounted in an enclosure and mounted on the wall, in close proximity to the phasor. I checked with Kintronics to see if they had any "oops" boxes that they would be willing to sell cheap, but they had nothing that would serve our needs. At this point, I am about to manufacture one myself using 1/8" aluminum panels, so I can put this project to rest. Too many projects, not enough time and manpower. 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
Tom Gardull, CBRE
Chief Engineer, CBC-Detroit

Our QEI CAT-Link T1 terminal equipment turned ten years old this year. It was still mostly working thanks to many of my fellow CBC engineers who had sent me their old CAT-Links as they got replacements. I reused their frames and modules to keep WEXL on the air. Since it was time to retire our CAT-Link, I was expecting to see an Intralex arrive some day. Instead, I (and John White in Portland) got to test drive a new model. A Belfast, Northern Ireland-based company called APT (maker of the APT-x compression algorithm) makes a digital audio transport system called the Oslo. One showed up on my doorstep one day.

I expected it to be ready out of the box, but there were some unexpected issues. There was an odd configuration. The studio unit had all AES modules and the transmitter site unit had all analog modules. The manufacturer thought that was how we wanted it. I was told that the unit would work that way. The Oslo will do an A/D conversion for us. Swapping modules to how we wanted was easy and there were some software changes to compensate. We did want separate AES and analog paths.

There were some other problems, and it was time to talk with the factory. APT has a US-based technical rep. Rolf Taylor spent time online and on the phone helping us, but we reached a point where nothing I could do would make it work. I had installed the units on the T1 circuit and fed audio through the system, but it came out the other end distorted and crackling. Cris was involved and got Rolf and the factory to analyze the situation.

The problem came down to the old B8ZS versus AMI line coding choice for T1 circuits. We wanted AMI so in an emergency we could go back to the CAT-Link. The Oslo was ordered as AMI but the box was setup for B8ZS. The internal software gives us the ability to select between the two. But when I changed the software checkbox to AMI, we still had the problem. Somehow the AMI was not correct from

the factory. I am not sure why Oslo would have an AMI selection if it did not work, but it came from the factory that way.

The factory gave Rolf a software patch and he came to Detroit to install it. A quick fix and we were on our way to the transmitter site to put it on the air. We used our ISDN backup audio path for a short time and then switched the Oslo into the audio chain. It worked great. Our CAT-Links had to operate with a -10 dBm level, but the Oslo was a full +4 dBm. A little level

adjustment on the processors was needed to match everything. One nice feature of the Oslo is that we do not need a separate Channel Service Unit. The connection protocols are all internal. The T1 plugs in directly.

Rolf Taylor was very eager to have this work properly. It was nice to meet him. I thought with a name like Rolf and working for a European company that I might be meeting a German fellow. Well, Rolf is just a regular guy from Cleveland, Ohio who used to work for Telos. Rolf is proud of one of his ancestors. Cyrus Field, of trans-Atlantic cable laying fame, was a distant relative. We will hear from Rolf again when APT upgrades their Oslo software to make a permanent change for the AMI feature.

The new Oslo gives us an Ethernet path over the T1. We will be sending the PAD data for WEXL from the NexGen export page right to our Nautel IBOC exciter.

WEXL's Nautel NE-IBOC exciter for HD-R had some real problems last month. One night it stopped working in its analog mode, taking the ND-1 transmitter off with it. Nautel had us reload the operating system, replace the hard drive and replace the CD-ROM drive, but when they were considering replacing the motherboard, we sent it back to the factory where they replaced the RAM. We got the unit back on the morning the nighttime HD authorization went into effect. We reattached it to the transmitter, pushed on and then nothing happened;



there was no output from this exciter right out of the shipping carton from the factory. I sent it back across the Canadian border and Nautel found a bad solder joint on an IC chip on the Digital Up-Converter (“DUC”) board (supplied by Ibiquity). We got the IBOC exciter back in late September; WEXL is now

operating with nighttime HD-R.

WRDT is using its HD-R signal for early evening only. WRDT steps down its power in stages after sunset, and two hours later switches to our second site for overnight operation at 20 watts with no HD-R. Overnights are in analog.

News From The South

By

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

This month’s rant is born out of a memo that I recently distributed at the stations. In it, I discussed mic and headphone techniques; I pointed out that a true professional will practice, practice and practice until he or she can control their voice under the worst conditions. Once they’ve learned to do that, all the fancy equipment just adds to an already-polished performance.

While I was writing that memo, some thoughts kept coming to me. File this one under “The Listener Experience.” The tone of it might make me sound like an old timer, snarling at kids to get off the lawn and to stop being “whippersnappers.” But there are some timeless truths in entertainment that we should never forget and I reiterate them here.

“Entertainment?” Absolutely. Some would strongly object to me using that word to describe Christian radio, but as far as I’m concerned, that’s part of the problem. If you fail to understand this, you will fail in general. I can’t tell you how many otherwise sincere people I’ve met over the years who’ve never grasped this. Many of them had great voices, lots of talent, and faith to move mountains... but were ultimately failures.

This is true in Christian entertainment across the board, too. Are you in a band that hopes to “make it?” Well, it’s a *business*. That doesn’t mean you can’t minister. Chris Tomlin, Steven Curtis Chapman, Mark Hall and dozens of others do it every day, but they are *able* to do it for a living because they are, first and foremost, excellent musicians and... yes,

entertainers. Burger joints sell burgers, department stores sell clothing, and Signed Acts(tm) sell records and concert tickets.

The same principle applies to radio. We sell air time and, in our specific case, provide inspiration and Christian entertainment. People buy airtime to reach our listeners, and it goes without saying that we must have at least some listeners for them to reach! To get people to listen, we have to do what they want to hear. When deciding how to do that, we can always learn

from great entertainers of the past – Jack Benny, Milton Berle, those who came before them and those who have followed in their footsteps.

Here’s where I’ll sound like an old man, but... well, too bad. When I look at many of today’s up-and-coming performers, I see mixed up, narcissistic, spoiled children. They think that people love them... well, just *because*. They want everything to be perfect *for them*, in the belief that if they “feel great,” they will make their Best Art(tm) (capitalized out of reverence) and satisfy their fans. It’s all about them.

Contrast this with someone like the late, great Jimmy Durante. Millions of people remember his trademark sign off: “Good night, Mrs. Calabash, wherever you are!” What they may not know is that, after every show, Durante walked off stage to the nearest telephone, dialed “G-O-D,” and said, “Thank you!” Durante never took his celebrity or success for granted. He was deeply grateful to his dying day for every one of his fans and realized that his success



was entirely due to them.

Now look at today's so-called "celebrities." When an actor or actress screeches about President Bush and the Iraq war, *they honestly think that their opinion should carry more weight just because they're "stars."* They're surrounded by "yes" people who tell them what they want to hear and who convince them that they're indispensable to civilization. Instead of being deeply grateful to the fans that made them what they are, they think that they *deserve* their success.

If you think I'm being too harsh, consider this: One article that I read not too long ago talked about how these spoiled brats will go into a restaurant, run up a tab of hundreds of dollars, and then try to leave without paying. When stopped by the manager, as often as not, these "stars" will say something like, "don't you know who I am?"

Heh. Earth to egomaniac: I not only know who you are, I know what you are. And... hey, nothing but love for you, but if I weigh you in the scales against great humanitarians like Danny Thomas, I find you sadly and hopelessly wanting.

Do I see (or hear) the same thing in radio? More often than not, yes, and it's sad. One thing that strikes me as I listen – *even to our own stations* – is that many show hosts talk mainly about themselves: what they did the past weekend, their trips to the dentist and to the doctor and the grocery store, what their dogs and cats have been doing and on, and on, and on, ad nauseum. Then they wonder why they don't have many listeners!

Here's the best part for an engineer: These show hosts will then blame it on the equipment, or inadequate coverage area, or a dozen different things... never realizing that *listeners are willing to put up with static and fading* just to keep listening... IF they really love the show. If you do your job right, you have nothing to fear from MP3s, satellite radio or any other source of entertainment.

It's just that simple and in the radio side of the entertainment business, it translates to this: If you are making the listeners happy, you will be a success. Nothing else should matter to you. Become the listener's friend. Make each listener your number one concern. When you talk on air, imagine that you're talking to a single person, who is the most important guy or gal in the world, in a friendly conversation.

Some people think that billboards and huge, expensive contests are the only way to attract listeners. Not so! I have worked for top-rated stations that have *never* rented a billboard. The secret? Get involved in the community. Instead of talking about YOUR (rather ordinary) life, see what the local

churches and charities are up to. Call listeners and get them involved on air. Make it fun! Get local leaders to come in and chat. Focus on being an *indispensable part of the community*.

My wife Sandy is a whiz at promotions. She thinks that getting out there with the people, going to their churches, inviting their youth fellowships to come have fun and things like that are far more effective. She has a proven track record, too, so I think her opinion carries a little weight: As co-chair of the Combined Federal Campaign at the SEPSC last year, she helped raise over \$212,000 for charity – in a local government unit with only about 1200 employees!

(If you insist on billboards, here's one of Sandy's ideas: Work with a prominent local charity and you just might get it for free. "Summer Red Cross Blood Drive ... meet the gang from WXYZ!" The charity will be glad to get the additional publicity on your station and you get to form personal, one-on-one relationships with your listeners that will last for years. You can't buy that, you can only earn it.)

If someone were to ask me the biggest difference between radio nowadays and the way it was when I was coming up in the 70s, it would be this: Back then, when we hired new and inexperienced voices, we would not permit them on air until they'd practiced in the production room for several days. We would make these new hires record themselves. We'd critique the recordings. We'd do this over and over until they could keep their levels constant just by watching the meters.

And of course, we told them to practice their diction and delivery – not to sound fake and "radio," but to sound courteous and conversational. Were they saying "uhh" and "aah" too much (MAJOR listener turnoffs)? Did they slur their words? Were they annoying, or did they sound and act like a friend riding in the car with the listener?

Here's one that shocks some of the new kids in radio: We flatly and absolutely would not let them even use headphones until they'd learned how to control their voices without them. There's a reason for this: air talent has an inexorable tendency to start listening to how they (think they) sound. You can instantly spot this because it results in an annoying sing-song style of delivery: instead of "WXYZ," it'll be "DOUBLE-yewww EXXX ... why ZEEE!" No one talks like that in real life; if they did, they'd be considered a joke. So... why do announcers just assume that a listener wants to hear them talk like that? I've never understood it.

Tell the air talent at your station that *they cannot judge how they actually sound on air by*

listening to headphones. One can use headphones to get an *idea* of where they're at "in the mix," to hear callers (in talk radio) and to keep their timing right (for example, when introducing records). But if anyone thinks that even the best headphones will let them hear what the listener is actually experiencing in his/her car on the freeway during rush hour, they are deluding themselves. *Only a rank amateur tries to judge sound quality through headphones.* Recording studios use expensive, high-powered speakers in carefully-treated rooms for mixdown, and *not* headphones, for a reason.

This was true in the "good old days," before HD-R, when there was no delay and you could listen in real time to the air monitor. It's even truer today. With HD-R, we're using "fake air monitors," which do not sound like what we're actually putting over the air.

Back to the good old days. Once these new hires had learned to do it by talent alone, *then* they'd get a shiny new pair of headphones as a reward. *Having built that solid foundation,* they only got better. The really good ones would become professionals. Many of the people that we trained in small markets went on to be well-paid, top-rated talent at much larger stations.

How do I know they were successes? Not

because they made money; not because they had ratings. They were successes because *their listeners loved them.* The listeners considered them welcome friends and were glad to have them ride in the car or sit at the office with them.

Tell your people: go into production or an unused control room and practice speaking; watch the meters. Try to keep your level as constant as possible. Then record yourself and critique it severely: Do you sound "radio," or are you being conversational? Will the listener think you're an egotistical blow-hard or a good friend?

Again, I am NOT saying that headphones and monitor speakers aren't important. But they cannot replace a solid foundation in good vocal and mic technique. And nothing can replace this: The listener isn't the most important thing; he or she is the ONLY thing. Anyone who really wants to be a professional understands this and works constantly to better themselves at it.

Doing a good job in radio takes WORK. Practice makes perfect, and then good equipment helps you *keep* it perfect. And never forget: the audience can make or break you. Become their friend and you're already a long way toward "making it."

Okay, glad I got that off my chest. Now, stay off my lawn until next time!

Gateway Adventures

By

Rick Sewell, CBRE

Chief Engineer, CBC-St. Louis

In the post Janet Jackson "wardrobe malfunction" days, we find ourselves dealing with a constant delay of the actual air signal. In St. Louis, we delay both our stations by 40 seconds, giving the operators plenty of time to dump any offensive material. The big problem with that is we now have our operators no longer listening "off air." We give them a "pseudo" air monitor feed that is post-EAS switching but pre-delay. We also continue to give them an "off air" feed backhauled from the monitor at transmitter site to the studio. Of course this is 40 seconds behind what is happening real time in their studios. The operators are instructed to switch back and forth between these two



feeds to make sure they are still on the air. Operators, of course, have a "what's happening right now mindset," which is somewhat understandable, so they don't switch and listen to the actual off air feed when they should.

I have found myself having to call operators way too many times to let them know they are off the air. Worse still, many operators have had listeners call to let them know the station is down. We found ourselves with down times lasting much longer than they should have. We decided to address this with "off air" alert signs in the control rooms. We purchased two Enberg BA-6 Alert Monitors and added silence alarms on the monitor

feeds coming from the transmitter sites.

A transmitter off the air should trigger the silence alarm and thus the alert monitor's "off air" sign. In addition, I paralleled the silence alarm on the ASU (Audio Switching Unit) to the alert sign. All audio going to the transmitter site is fed through these two units and ten seconds of silence there will give the operators an alert as well.

I also have the Auto Pilot computer at the transmitter site looking for a carrier being off and sending a closure back to the studio to let the operators know a transmitter is off air. This covers the rare circumstance where a carrier is being suppressed for some fault but the exciter is still putting out enough signal to still have the monitor feeding audio back to the studio so the silence alarm there will not detect the station being off air.

The BA-6 Alert Monitors come with six available alert signs as the name implies. The great part is that they make custom labels for the signs free of charge with a simple email request. The turn around time is a couple of days. I of course made "Off Air" as my number one alert. I also had them include the call sign of each station. With the additional relay closure on each of the silence alarms, I had the call sign of that station light up. So when a station has silence on one of the monitor feeds coming from the transmitter sites, both control rooms will have the "Off Air" alert light up but additionally the call sign label of the station with the silence. I also had them include labels for "Hot Line," which will light up when either station's studio hotline rings, and an "EAS" label so that either EAS

decoder/encoder having a message waiting to be forwarded will light the sign. Last I have an "Entry" label that I want to use with the doorbell from the outside and office suite doors. However, I am still trying to figure out the best way to interface the two devices to the BA-6 so that is not being used at this point.

Since we put these signs in the studios, we have had much better success with getting the stations back on the air quickly after outages. We do have a couple issues that I still need to solve, like the "Off Air" lights coming on when we go to an auxiliary transmitter.

While I was on vacation last month, the Auto Pilot computer had a problem and gave a closure to the "Off Air" light and did not turn the closure off when the station came back on air. No one knew how to resolve the problem and so they had an off air light falsely blinking for most of the week. That's a problem because a real off air situation would not get the operators attention. You don't want the operators to get used to ignoring an off air alert.

Despite these few issues that need to be worked out, these signs have been a great way to keep our operators on their toes to off-air conditions.

The staff of both stations is very skeletal and there are many times that we have one operator in the building for both stations. If both stations are in automation, that one operator may be in a production room getting programming in for one of the stations. This is why we are strongly considering installing additional Alert Monitors in each of the production rooms.

Catalina Tales

By
Bill Agresta
Chief Engineer, KBRT

Greetings from Santa Catalina Island!

Things are becoming a little more business as usual with each passing day here at the KBRT transmitter plant. But then again, our “business as usual” has always been a bit different than what most of you are used to! Being located on an island always has its challenges, and even after being here at the plant for over seven years, I still get kicked around by that old *island factor* once in a while.



That seems to be the case with several projects I tried to complete this last month. Things that sound so simple, like getting another load of gravel delivered for our driveway (we had one delivered almost a year ago), can become a bigger deal than you would imagine. Things like road access, politics and the sheer amount of time it takes to leave town and come up here rather than just working in town seem to make things pretty tough for us sometimes.

Even though we are only about 20 minutes from town, most workers just don't seem to want to bother with making the drive and dealing with the crumbling and pothole-ridden Conservancy roads and all. This being the case, I continue to look for ways to become more and more self-sufficient.

One of the projects I planned and have begun working on is the re-roofing of our shop, living room and tuning houses. I designed this so the entire job can be done by one person (me), using easily-obtainable supplies, and be done in such a way that the finished product will work well and last a long time here in this island environment. The solution for this one was actually pretty simple. I am using a product by Henry's (the people who sell the cold roof patch) called “Aluma-Seal.” We are simply sweeping the product on over our existing roof (after cleaning it) and letting it dry. The county has used this at some of their facilities for quite some time. I am told that this stuff last 15 to 20 years and will not blow off as easily as shingles in a windstorm. I would

recommend checking this stuff out the next time any of you are faced with leaky or worn roofs.

Our Nautel NE-IBOC exciter has given me some issues over the last couple of months. After carefully examining the problem over a period of time, I discovered that the first sign of trouble is that it stops transmitting the PAD, even if I force a resend from the exciter. Once this happens, in a little over a day it loses sync with the

transmitter, allowing the transmitter to over-power then go into cut-back. I began watching the PAD on my receiver here at the plant and would simply reboot the exciter when I noticed the PAD had stopped. I ended up repeating this about every two to three days. Nautel sent out a new motherboard and wouldn't you know it, the issue seems to have disappeared as soon as the new motherboard arrived. No, I have not yet installed the new motherboard, but all of a sudden the exciter has run for over two weeks with no issues... go figure!

As you have read here in my L.O. columns, we deal with strange and bizarre things here on the island from time to time, but there is also a very serious side. One of those serious sides that has become more and more of an issue here is homeland security. Not only is this an issue for the island itself, but also for the mainland vis-à-vis the possibility of terrorists using the island to either stage or launch an attack on L.A. Many agencies from the sheriff's department, the FCC and ICoast Guard to the Marines have visited and are running or planning operations for Catalina Island. Over the past month, I have had two such agencies visit me personally here at the plant and plan for future operations here on the island. Though I continue to hear our local news report that we are way behind in protecting L.A, I have been pretty impressed by the response here on the island. Sometimes “out of sight, out of mind” seems to work as a benefit for operations such as these.

We received about 15 minutes of hard-hitting rain here on the island last month and though it only amounted to 0.8", the island has already become greener. There is now a small body of water in Haypress Lake, which has been dry for about a year, and little green plants are beginning to pop up everywhere. After the past couple years of extremely dry weather, it is nice to finally see some water where the dry lakes used to be. Those lakes and the surrounding greenery always add to the beauty of our little island and make the tours more enjoyable.

Since our transmitter plant is also along the route of the tours that travel the island's interior, it, too, must always remain pleasant to look at. This is why you read so many articles about my ongoing

cleaning projects as we continue to strive to keep KBRT shinning like the bright light it is. It always makes me feel good when someone in town tells me that they drove past our plant and were impressed at how nice and clean it looks. Unlike many other stations, many people's first impression of KBRT is what they see as they pass our transmitter plant while on one of the tours. Only then, after returning to their vehicle on the mainland, do they tune in to see what we are all about.

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

Well, there's good news aplenty on the HD Radio front this month, but first, a challenge. Try to find how many times, in this issue of *The Local Oscillator*, the news of Ford Motor Company offering HD Radio as a dealer-installed option, appears. Go ahead, try it. I'll be waiting for you back here.

Second, an interesting development is happening in the world of iPod: *iPod fatigue!* Is that happening, really? Well, isn't that just too rich? You know what I'm talking about, right? People are stating to get tired of the cost in both time and money for putting tunes into their iPods. C'mon, Americans, you can't be getting that soft and lazy now, can you? And, your sudden thriftiness is so unbecoming now... unless you were using up the equity in your home to buy iTunes and all that the equity is gone now because the value of housing is going down. Well, Americans, may I suggest an antidote for all of this? How about HD Radio? And, since what I'm about to say is only the truth, could I mention that HD Radio audio sounds so much better than does iPod audio because iPod audio is MP3 and MP3 audio throws out valuable audio data, which makes your iPod audio sound, well, gritty. HD Radio does not do that. HD Radio is better

radio. HD Radio is better radio. HD Radio: It's easy. I was having too much fun there. Sorry.

Third: So nighttime AM HD Radio is now a reality. And it seems that the main dinner course this month is crow. That's for all you naysayers out there who predicted with much gloom, the demise of the AM band as a result. Frankly, I couldn't be happier that the doom-and-gloomers were wrong on this one. Oh, does crow taste better with soy sauce or a l'orange?



AM HD Night Observations

Armageddon didn't occur with the advent of HD at night on AM, but then again, not all that many stations were on the air with it, either. Still, enough were to make some observations possible. I was out of town on the first night of the rollout, but when I got back I was immediately greeted with a very late night emergency and had to take a half hour trip each way to a transmitter site to put the station audio back on the air. Since there was almost no traffic on my route, I got to play with the my JVC HDR-1 radio, running up and down the AM band, seeing who was on with what. Funny, only one Chicago station had night-time HD on from the get-go, and that was

Tribune's WGN. It was a real joy to listen to Chicago's all-night coosome two-some, Steve King and Johnny Putman (the latter is Steve's wife, just to quell any snide ideas you may have) on the air in some real fidelity, and in stereo, no less. Thing is, that's when I got my first lesson in nighttime AM-HD.

Compared to daytime HD, night coverage is a little spottier. I'm talking fifty to sixty miles out from the big 'GN fifty kW transmitter, and there were some HD dropouts. That could be skip-zone fading (the station's own skywave interfering its groundwave signal), or it could be due to interference from either side, on 710 and 730 kHz. Neither channel has a listenable signal in Chicago. Even the classic WOR has a null out this way, but there are a dozen stations on each channel which have the potential to mess up the HD carriers, so from time to time the radio dropped back to analog. Yes, you could tell the HD-analog difference, even more so at night.

I went around the broadcast band and found on that night a couple of other stations 'doing' HD, most notably KMOX, a non-D class A station from St. Louis, and, of all stations, WRVA in Richmond, VA, which is from where I'd just returned. Both have no change in facility from day to night, so it was kind of natural that they'd be among the first AM's to do HD-R at night. The ones we'd have to wait for were the ones that switch patterns and/or power at night. A few nights later, WLAC in Nashville, which indeed has a night-only DA, came up with its HD signal, along with both WLS and WSCR in Chicago. Notable in its absence of HD-R at night was WBBM, which is another class A non-D clear channel station. Don't know why.

The thing that got me is that for all of this DX, the only way I knew that their HD carriers were on was not in the audio but in the on-dash digital display, which brought up their call signs while the radio was still trying, mostly in vain, to decode their audio. That's when I realized that unless things were really clean on the band, that HD at night was going to be pretty much a local phenomenon. I remember mentioning in these pages back some months ago that I heard KMOX in HD one night before 6 PM, and hearing them sounding like they were sitting next to me in the car was a wondrous moment. That may not be the norm, however. Apparently, just as HD signals are easily accusable of interfering with the channels on either side, so can HD be interfered with by the activity on those same adjacent channels. Thing is, with few exceptions, I could not detect that much interference to the first adjacent channels from

any HD station I was able to detect in the three nights I listened. Again, I don't know why.

This nighttime HD experience should blunt whatever arguments there were by the advocates of DRM for that standard to replace HD radio on the AM band. Besides, who's going to put a DRM receiver in their cars – hmmmmm? Now, just what kind of dessert would you nay-sayers like with your crow?

Different subject now, another phenomenon I noticed while on my recent trip. In going toward Indianapolis, I tuned into WIBC 1070 for their HD signal only to find that as I approached the station from the north, which is the null of their daytime pattern, the HD absolutely would not lock on until I went past the transmitter site, which sits right out on I-65 north of town. Then it locked on solidly for another 100 miles. Maybe I'm a little naïve, here, since I have little trouble picking up a local Chicago AM station, WGRB, in HD miles into the null of their pattern, and their configuration is similar to that of WIBC. But something about that 1070 day array and pattern just didn't agree with my radio, and it wouldn't lock to save its life. I wonder if that is fixable. I don't know. Let the record show that, on the return trip the following Monday, I tuned in again and the station stayed locked north of the site, but only for about five miles. I can see where AM-DAs and their ability to deal with HD is going to be another fascinating topic for me in the future.

Ho-Hum...

We've had a real issue lately with hum in one of our control rooms, and we can't seem to get rid of all of it. If anyone can help, I'd like to hear from you.

We just put in VoxPro in two of our studios. That program has replaced our 360 Systems Short Cuts and is very popular. We're using it in Power 92 with an M-Audio Delta 44 sound card, and no problems at all.

We installed the same setup in Soul 106-3 recently, and it worked for a few days, until we turned the cabinets around ninety degrees so that the operator would have a clear line of sight to the talk studio. Now there's this low-level hum, some 30 dB down but definitely there. The audio in the new Internet audio computer is similarly provisioned and similarly hummy.

The M-audio card has the usual unbalanced in and out audio connections, which interface to an audio 'balun', if you will, with RCA connections to an RCA-to-1/8" adapter at the M-Audio card, and direct into the balancer. XLR connections are on the

other side of the balancer. From there, the next stop is the Wheatstone bridge router. Those connections are proper and solid. We've lifted grounds, we've added grounds, we've reset cabling and rewired XLR connectors. Nothing so far has worked. Now we want to know if any of you have fought and slain this dragon. Drop me an email note if you have – areis@crawfordbroadcasting.com.

Now, we've apparently found a solution to *one* of our hum problems, courtesy of our own James Kelly. James solved the hum problem by rewiring the 3-conductor, quarter inch connectors unbalanced on both the input and output, by cutting the shields off and isolating them. That's a pretty extreme solution in my book, but it worked.

Until next month... Blessings!

The Portland Report

By

John White, CBRE
Chief Engineer, CBC-Portland

These days it seems that the more things change, the more they stay the same. That's an old trite phrase, often repeated, but it contains more than a grain of truth. What brings me to this subject is the discovery of a break-in to the KKPZ grounds, yet again, even more, further still, just one more in a series of these kinds of problems.

The break-in through the security fence evidently happened late one evening and was discovered early the next morning. Access was gained by cutting the (brand new) lock from the walk-through gate near the drive gate. Although as best I can tell nothing was taken (yet), there was evidence of considerable activity on the grounds of the building.

This break-in is discouraging mostly because of the ease with which it was accomplished. Earlier this year, I found the walk gate hanging from one hinge. Access had been gained by loosening one of the gate hinge brackets and lifting the gate to one side. I strengthened that by remounting the gate and brazing the hinge in place on the gate post. The gate is secured by a chain around the gate and adjacent post.

Just a few weeks ago, I replaced some locks around the property that had failed. RF currents seem to cause corrosion in the locking mechanisms. The walk gate had an older lock that would not latch after being opened, so I replaced that as well. So... how did they get in? Did they cut the \$1 chain? Of course not! They cut the hardened shackle on the new \$40 lock instead. I guess padlocks are just a minor delay.

Over the years, we have increased security in a number of different ways. The transmitter building now sports a total of eight high-pressure sodium vapor 70- and 150-watt lights. Activity on the grounds is easily visible from the road and by neighbors. Did that slow them down? Apparently not.

I have looked at other ways to increase security, security cameras being one of them. Readers may recall that a few years back, the Portland area was plagued by a series of tower fires. When one of the towers belonged to the Washington State Patrol, the ATF and FBI became involved. Another of the towers was owned by PGE, a local power utility. Security at the facility was very good and included a high-quality, multicamera CCTV system. The video of the 9-foot razor wire topped fence being scaled with ease and very little delay was startling.

The video was of very little help. Even with excellent quality, the usefulness for identification was limited. What's worse is a \$1,500 security camera can be defeated with a \$3 ski mask. This is not to say that security cameras have no value.

For radio stations, a major vulnerability is at the tower. FCC rules require these locations be fenced for safety. Thieves, it seems, have little concern for safety. The experience at one Jacksonville station is a good illustration. It's also unusual in one respect. A copper thief did around \$45,000 in damage and got 45 days. What's unusual about that? It's unusual the guy got caught at all.

It's not only radio stations that have this problem. Just last month, the city of Tigard public



works had a huge loss. Nearly a dozen public works vehicles parked inside a razor wire security fence had their catalytic converters removed. Power shears made the theft quick.

The normal enforcement methods aren't working. In Jacksonville, 45 days in jail is not a deterrent. Here in the Portland area, the Multnomah county jail regularly furloughs "low level" prisoners on a daily basis, this after the voters approved a \$68 million levy to build a new jail. Completed nearly three years ago, the county has never funded the staff to open its doors.

The real question is, what can be done to stop this problem? I see three reasonable approaches: Better enforcement, improved security, and public awareness.

One initiative I hope to pursue within the local broadcast community is gaining the support of the local salvage industry. If we can reduce the salability of what they take, the attractiveness of broadcast facilities will be greatly reduced.

As I envision the program, it would provide training and samples of typical materials so dealers will be able to identify stolen materials.

Copper ground strap, ground screen, Heliac and other materials can be identified with training. When dealers are aware that a theft has taken place, they can take action. They can identify the material and the individual, hold the material for evidence and report the seller to law enforcement.

Salvage dealers have a great deal of incentive to cooperate. It's typical for government to study the issue, sympathize with the problems of the perpetrator and punish the innocent. Dealers face new burdensome regulation, such as holding materials for 30 days, massive identification

requirements and restricting scrap purchases to licensed salvage companies.

It's clear we must move to strengthen security at our facilities. As is typical of many Crawford facilities, KKPZ has a mix of active and passive systems. Passive systems are fences, locks, security lights and other barriers to entry. Active systems are the fire/entry alarm system at the building. This system monitors the building and actively reports penetration.

It's clear to me that at the KKPZ transmitter site, we are at the limits of passive systems. Once the fence is cut or the lock is broken, passive systems no longer represent any real barrier. More locks aren't likely to help much.

The logical next step is to implement an active perimeter security system.

Several years ago, I investigated active systems that detect climb or cut events and found that reliability was then extremely limited. Since that time, active perimeter systems have benefited from intensive development. New systems are based on fiber optic cable which changes the light pattern. Digital signal processing techniques are then used to evaluate the result and discriminate

between real cut and climb events and false alarm events like wind or animals.

This technology is becoming reliable and has the benefit of detecting entry prior to damage or loss. As these systems have improved and become more reliable, the capital cost has been falling. These systems are now well within the realm of cost-attractiveness for multistation installations where the capital cost is shared by more than one station. Over the next few months, I plan to do further research with this technology.



**Rocky Mountain "Hi"
The Denver Report**
by
Ed Dulaney, CSRE, CBNT, AMD
Chief Engineer, CBC - Denver

It's Not Just Me!

For many years, I've complained, sometimes on these very pages, about the lack of customer support. Thankfully, some of these companies have finally "gotten it" and have moved their customer support operation out of Pakistan and India, bringing them back to the good ole' U.S.A.

So last month I noticed that Tom Ray of Buckley Broadcasting (WOR) in New York voiced many of these same complaints within the pages of *Radio World*. He gave some excellent examples of both good and bad customer support calls that he had made over the years. I know for a fact that the level of support offered by many businesses is excellent, and Mr. Ray made that observation as well. Yet there are still a few that offer substandard levels of support.

For instance, last month I was working on configuring our Barracuda Spam Firewall to accept incoming connections. You can look below for the current status of that project. I had to contact Barracuda to ask them some questions about the way that the firewall is configured. My question was very specific: How do I configure the firewall to authenticate incoming users against an existing database? What I received were step-by-step instructions on how to configure it for outgoing connections!

My reply to them specifically stated that they answered my question wrong. I needed different instructions. Yet they still responded with the same information, saying that the information that I wanted was not available! At that time I wrote them a long, strongly worded reply stating that I felt that their level of customer support was horrendous. I also explained to them that I was not willing to talk with their support technician on the phone, as I was never able to understand what he was saying!

The next day I received a call from a high-level manager of their support and development team.

I was informed that they were extremely sorry that my questions went unanswered. In less than a minute he gave me the information I needed.



Why can't this be the first level of support? Why is it that it takes someone threatening to discontinue use of a company's product in order to finally reach someone that can offer the information we need? Something is horribly wrong in this country, and it needs to be fixed!

And Now, the Rest of...

With all the CBC email users that roam around the country, we need a way to grant them email sending capability while they're on the road. The down side to SMTP (Simple Mail Transport Protocol) is that incoming connections are not only unsecured but they are also at risk for being a spam relay as well. How this works is that a spammer discovers our SMTP server is open to the entire world. He then sets his email client to use our server to relay his messages to millions of people. At that point it is Crawford Broadcasting Company that is on the hook for the messages that were sent!

That was the purpose of my call to Barracuda. I figured that it had to be pretty simple to configure our Barracuda server to check a list of valid users on our Scalix mail server using LDAP (Lightweight Directory Access Protocol). How hard could it be to have the Barracuda initiate a connection and see if jsmith@crawfordbroadcasting.com was a valid email user based upon his password?

Well, it turned out to be a lot harder than it seemed! Once I finally obtained the variable name in the Barracuda that I needed to relay to the Scalix server, the battle seemed to be almost over. But we hit a snag! Larry Foltran and I worked on trying to get things to authenticate correctly. He was accessing the server from Detroit for testing purposes while I was in Denver watching the wheels spin around.

One snag we discovered was that the LDAP

database, in some circumstances, did not have a unique index key. In Scalix everything revolves around the person's name. So my unique index key would be "Dulaney, Edward." That works great, except that there are some users in the Crawford Broadcasting domain and others in the WMUZ domain that share the same name. In other words, "Foltran, Larry" exists in both domains. When you query the database for Larry's record, it would return the one that was created first, in this case the Crawford Broadcasting account.

So Larry could log into the server using his CBC mail account, but not his WMUZ account! This became a bit of an issue. We finally found a way around that by making the last name of the person in the WMUZ account unique by adding a "- WMUZ" suffix to their name.

The problem of the unique names had been solved, but the authentication was still hit-and-miss. As it turned out the LDAP connection between the Barracuda server and the Scalix server was experiencing load issues. Between the two servers, we will see anywhere from 10,000 to 15,000 email messages processed on them per day. Adding the load of an LDAP query (which is very resource intensive) was more than the connection could handle.

So now I'm investigating other avenues for authenticating users. Those of you that want to contribute your \$0.02 are more than welcome. Right now, I'm setting up a separate SMTP server that will access the LDAP database (mirroring it periodically) and process the requests. I'm having a little more success with that, but there's still a lot of work to be done.

No More Tubes

At the end of last month, we got rid of the last transmitter in the Denver group that still used tubes. The KLDC backup transmitter was an old Gates BC-1G. It was not connected into the remote control system, so to switch to the transmitter required that someone physically go to the transmitter site and hit the switch.

That ole' girl headed out the door at the end of September. My friend Tim Cutforth, who does a lot of AM consulting work, is hauling it out to be used at one of his remote AM sites. Tim enjoys these old transmitters, and I know he'll give it a good home.

In its place will be a Nautel P400. It was recently shipped off to Nautel to be rebuilt and tuned to 1220. Amanda and I placed it on the air to test it out and I was amazed at how great it sounded. The power level is only a couple of db below the stations

licensed power of 660 watts, so it'll make a wonderful standby transmitter.

The Worst You Could Imagine

The magazine *Radio Guide* has a photo section every month called "The Worst I've Ever Seen." Sometimes I look at those pictures and say to myself, "Yep! Glad I don't work there!"

I have to admit that I've seen some doozies over the years. A couple of months ago I went to a small station in the far northeast corner of Colorado to examine their situation. They needed someone to help them get their main transmitter back on the air.

When I first arrived, I noticed that there wasn't a fence around their tower! When I asked about that, they simply said, "Nobody ever comes up this way." I don't think that'd fly with the FCC! The next thing I noticed was that the RF connection out of the transmitter and into the ATU was a piece of copper tubing that was completely exposed! It wouldn't take much of a misstep to bump into that while working on the transmitter!

After wandering around for about 15 minutes, I simply told the manager that I wouldn't be interesting in helping him get this station back on the air unless he addressed my concerns. As I expected he simply said, "Forget it!"

Every time I visit a station like this, I wonder how they can manage to survive in our litigious society! Someone with an axe to grind might simply come up to this tower, snap a couple of pictures, and proceed to sue the station for posing a danger to the public. It makes me thankful that Mr. Crawford believes so strongly in keeping our facilities in the best possible shape. Of course Cris Alexander might have a thing or two to say about that as well!

Burk's Back

We fixed our Burk AP3 problems discussed last month in my column. Don't ask me how we fixed it, though, as I'm not sure I could give you the answer!

As you may recall, the serial port drivers were causing the Windows operating system to have conniptions! The mouse cursor would dance merrily all over the screen, clicking and dragging things at random. I did the standard registry key change, which should have made the OS ignore the bogus serial data, yet that didn't stop the problem.

However, about 43 reboots later the problem just went away on its own! And now it's run for over a month without any issues whatsoever. Of course if Murphy has anything at all to say about this, there's

an excellent chance that the problem will recur. Time will tell.

Night HD Operation

I've been mostly pleased at the way the AM band sounds at night with the new rules in effect. We have both KLZ and KLTT operating in HD at night, and they sound fantastic. KLDC also operates with the HD on at night, but if you go beyond a mile from the transmitter site you lose the lock on the HD carrier. That's the biggest problem with having only 11 watts of power!

I also listened to some distant AM stations via skywave. However, as I expected, obtaining an HD lock on them is virtually impossible. Even the ones that are fairly strong will not maintain a lock for more than a second or two. Selective fading kicks in, causing the sidebands to come and go. This distorts the HD carriers to the point where a lock is impossible. Also, the delay inherent in skywave propagation will keep the carriers outside of their "box," which causes the lock times to increase as the receivers attempt to calculate the offset necessary to line them back up again.

But the biggest thing is the interference, or

lack thereof, to analog broadcasting. The "Chicken Little" syndrome that was prevailing has been proven wrong. In all but the most extreme locations, there is no noticeable increase in interference to analog broadcasters at night.

I took time to listen to a few of the class "C" channels at night. These are, for the most part, the mom-and-pop stations who stated that they had the most to lose when HD broadcasting at night began. However, most of those class "C" stations have such a high level of interference on their channels to begin with that it's impossible to tell if any more interference befell them with the introduction of HD carriers!

Yes, HD is here to stay. There are still some serious problems that need to be worked out. But we'll find ways to make things work. After all, when Henry Ford, Sr. first put his new invention on the roads, people complained that it was noisy and would never be reliable enough to replace the horse and buggy.

So when was the last time that you saw a horse and buggy on the interstate?

Until next month, press on!

Digital Diary

by

Larry Foltran

Corporate Website & Information Technology Coordinator

Car Radio Make-over

I was recently chatting with a friend of mine who still works in the auto industry. Our conversation migrated to the radio equipment in upcoming car models, specifically that of the 2008 Cadillac CTS.

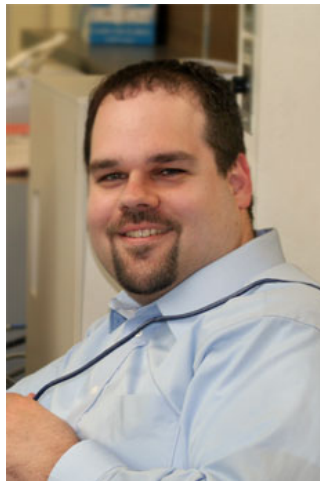
The new CTS seems to cover all aspects of the owner's listening desires. From the ability to plug in his iPod to ripping MP3 data or CD audio into the vehicle's onboard hard drive. That's in addition to the traditional AM/FM receiver and, what is quickly becoming the GM standard, the XM satellite receiver.

The feature I was most intrigued with was the radio recording system that will be available. Similar to systems

already available for the television, this system can record a straight hour's worth of audio from either the AM/FM radio or the XM receiver.

Cadillac owners will now be able to pause a radio program or rewind a song and listen to it again. Those days of sitting in your car and listening to the last few minutes of a captivating radio program may soon be gone by simply hitting the pause button and continuing when you return.

Although my friend's information relating to this equipment was somewhat limited, I was able to dig up some additional info that provided some answers to questions rolling around in my head. The main question was whether you could simply fill the car's hard drive with your favorite songs from the



radio. This would essentially create a massive iPod on wheels and eliminate the need to spend money on music. Quick answer...that won't happen. Well, at least not right now. A similar scenario is currently in litigation with Pioneer, and the folks setting up the Cadillac version are not getting near that arena. In fact, the record function on the radio saves the data to a temporary cache which is flushed once you change stations or move from terrestrial radio mode to satellite radio. Once that happens, it's gone.

One feature I would love to see, that is if I ever own a Cadillac, is the ability to download recorded programs from the cache to an iPod. This would essentially give the owner the ability to create his own personal podcasts. Although it seems as if this falls into the same touchy territory that is being

battled over in the courtroom, it would be nice to find a way for radio and the iPod to play nicely together.

Shifting gears slightly, Ford recently announced that it plans to make HD radios available in nearly every 2008 Ford, Lincoln and Mercury. Although this will be a dealer-installed option, it shows that the automakers are finally realizing the potential of HD Radio.

The radios will run about \$279 for a standard HD radio and \$299 for the HD/iPod compatible system. Installation is an additional \$50. Further, owners of 2005 through 2007 models can also have the radios installed in their vehicles. Looks like Ford is pushing the HD door wide open and inviting everyone in.

Until next month...

The Local Oscillator
Oct 2007

KBRT • Avalon - Los Angeles, CA
740 kHz, 10 kW-D, DA

KCBC • Riverbank - 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 • 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 • Rochester, NY
990 kHz, 5 kW-D/2.5 kW-N, DA-2

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

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

WDCD • Albany, NY
1540 kHz, 50 kW-U, DA

WPTR • Clifton Park - Albany, NY
96.7 MHz, 4.7 kW/100m AAT

WPWX • Hammond - Chicago, IL
92.3 MHz, 50 kW/150m AAT

WRCI • Webster - Rochester, NY
102.7 MHz, 6 kW/100m AAT

WSRB • Lansing - Chicago, IL
106.3 MHz, 4.1 kW/120m AAT

WYRB • Genoa - Rockford, IL
106.3 MHz, 6 kW/65m AAT

WYCA • Crete - Chicago, IL
102.3 MHz, 1.05 kW/150m AAT

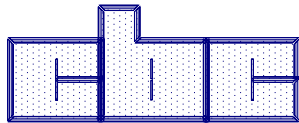
WYDE • Birmingham, AL
1260 kHz, 5 kW-D/41W-N, ND

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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