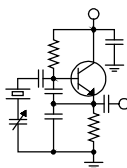


# The Local Oscillator



*The Newsletter of Crawford Broadcasting Company Corporate Engineering*

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## Interference Rules

I've got to take my hat off to Chairman Pai and the FCC. In keeping with the Trump policy of say what you mean and follow through, this FCC has done some great things in the past year and a half, following through in a timely manner on promises made.

The latest follow-through is a notice of proposed rulemaking (NPRM) reforming the FCC's translator interference rules. The chairman spoke about this in general terms in his speech to the NAB in Las Vegas last month, and on Thursday of the week following, we had the text of the NPRM in hand.

There are two major features of this rulemaking. One is a threshold of six listener complaints required to be submitted in support of any translator interference claim. Contrast this with the current threshold of one. Six is a reasonable number. Where there's smoke, there is very likely fire, and six listener complaints is a good indication of some smoke.

The other major feature of the rulemaking is a redefinition of an FM translator's change to any available FM channel in the same band for the purpose of interference resolution as a *minor change*. Currently, a translator can move only  $\pm 3$  channels or to a 10.6/10.8 MHz channel as a minor change; anything beyond that is a major change, which must wait for a major change filing window, which come along every 15 years or so if we're lucky.

In addition to these two items, there are some other things contained in the rulemaking, mostly administrative matters concerning what information must be submitted with a listener complaint, how translator licensees are required to deal with complaining listeners and how full-power stations are to calculate interference from translators. And the FCC asks some questions in the NPRM,

such as, is six listener complaints an appropriate minimum number? It will be interesting to see what responses are filed in comments.

Overall, I think this is a very good thing, both for full-power broadcasters and translator licensees. It clarifies things considerably, establishes firm policies and procedures, and gives translator licensees a good mechanism for resolving interference.

The translator proliferation of the past decade (and in particular the past two years) has really created some interesting and challenging situations. In the past, translators were, for the most part, a burr under the saddle of full-power broadcasters because of their tendency to erode fringe coverage areas, some of which are critical. That situation still exists, but more and more, full-power broadcasters are also translator licensees, and they find themselves on both sides of the interference issue.

A good example of this is Cumulus. They put on a translator in the Atlanta market on which they had a unique format ("99X"), but a co-channel station in Tallapoosa, Georgia that rim-shots into the market complained loud and long about interference from the translator. After a four-year battle, the FCC ordered the Cumulus translator off the air because of unresolved interference at *one* listener location (here's where the six-listener-complaint threshold will help).

Then in Detroit, we put a translator on 107.1 MHz, which is co-channel with a Cumulus class A FM way out in Ann Arbor, Michigan. Evidently, the Ann Arbor station has a handful of listeners in the Detroit area, and so now the shoe is on the other foot. While we could dig in and fight a four-year battle as Cumulus did in Atlanta, we opted not to do that and initially reduced power to half, then turned our new translator off altogether to resolve the interference.

We're looking for another site to the north from which we can operate without causing problems for Ann Arbor.

And the shoe is on the other foot for us in Chicago, as I mentioned previously in these pages. Moody has filed an application for a translator in Chicago on the same frequency as one of our Chicago stations. To borrow a quote from the Dude in *The Big Lebowski*, "I do mind. The Dude minds. This will not stand!" We'll fight that one to the death. Hopefully Moody will live by our Lord's command to "Do to others as you would have them do to you" (Luke 6:31).

### Earth Station Registration

With all the good stuff the FCC has done of late, there is something cooking that is, in my view, not so good. In a Notice of Inquiry (NOI), the agency, at the direction of Congress, is looking into the feasibility of sharing of the 3.7-4.2 GHz C-band for the purpose of mobile broadband and other uses. This sort of reminds me of the old "bad idea" skits they used to do on *Saturday Night Live* (back when it was good). Really? You want to share C-band spectrum, where we need radio quiet to receive miniscule signals from 24,000 miles away, with mobile broadband?

Again, the FCC is doing this at the direction of Congress, so I recognize that the agency has no choice. And we probably shouldn't expect too much in terms of what makes sense out of Congress. But still...

One thing that the FCC is doing to help us is providing a 90-day window in which we can register our receive-only earth stations without going through frequency coordination. The problem is, there is a \$450 filing fee for these registrations, so there's no way I'm going to register every C-band dish in the company. We'll just register the ones that we actively use for revenue programming.

Presumably, this will do two things. One, it will create a record of each registered earth station that will have to be interference-protected (to some degree, anyway) going forward. I'm not sure how this would work with mobile broadband, but it's

something. The other is that it would make the FCC's database of C-band earth stations more complete so that as it considers shared use of the spectrum, the impact on existing users would be better understood. If the majority of earth stations end up registered, it could even kill the proposal altogether by demonstrating how difficult it would be for a wide-area service to coexist with earth stations that are ubiquitous.

We have until July 18 to get our earth stations registered. That should be plenty of time.



### Congratulations!

We have some new airmen in our ranks. I told you last month that Brian Kerkan obtained his FAA Remote Pilot certification. In April, Todd Dixon passed the test and is awaiting his permanent license in the mail. And Rick Sewell passed his Part 107 FAA exam just before press time.

Congratulations to Brian, Todd and Rick. The Part 107 licensing process is no cake walk. One has to really study to pass the test, and it's not material that would normally be in the wheelhouse of a radio engineer.

With those three licensed, that takes care of all the big markets in terms of the ability to (legally) use drones for tower and antenna inspections.

**The New York Minutes**

**By**

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

Hello to all from Western New York! The month of April was a whirlwind month, with emphasis on “wind.” Last year about this time, we experienced extremely high winds that caused widespread damage throughout Western New York. Peak gusts were measured at 81 mph then, with sustained wind speeds a little over 50 mph. This year was not as severe as last year – we had peak gusts at 66 mph with sustained winds around 48 mph. The big difference between this year and last year was the fact that we have had a lot of moisture, which softened up the ground, allowing the winds to literally pull trees right out of the ground.

There were widespread power outages throughout Erie County, and the WDCX-FM transmitter site was without commercial power for almost three days. Fortunately, we were able to stay on the air using our standby power generator for the duration of the outage. Noco Fuel, our diesel fuel supplier, was on standby for fuel delivery if the outage extended beyond restoration expectations. We ended up having to fill the fuel tank twice, once right before the outage occurred, and the other fill up was about 30 hours into the outage. It is nice knowing that we can depend on them to fuel us up on a moment’s notice, to keep our station on the air.

In Rochester, we did not fare as well. Our Generac generator did not come on when the outage occurred there. I knew that we had ample fuel in the 1000-gallon propane tank, so the problem had to be with the generator’s engine. As I was babysitting the FM station in Buffalo, I could not immediately leave and travel the 90 miles to the AM transmitter site to see what the problem was. I had just exercised this generator two weeks prior, so I was at a loss as to what might have prevented it from starting when the outage occurred.

When I finally had an opportunity to travel to Rochester to check the problem out, I found that

the battery was completely dead. I tried a quick charge to get it up and running, but the battery would not hold enough of a charge to start the generator. A

quick trip to Home Depot about 10 miles away, and we were finally up and running! There is nothing worse than having power off at your transmitter site and the generator won’t work! When I ran the generator two weeks prior, there was no indication that the battery was failing, I guess the below freezing temperatures we experienced since I exercised it caused the failure.

Last month, I reported on a problem we were experiencing with our Nautel NV-40 transmitter at WDCX-FM. We were having problems with the Nautel NV-40 staying on the air in FM+HD mode. If you changed the output to FM only, the transmitter would stay on indefinitely, but when the AUI was configured for hybrid operation (FM+HD), after several hours the transmitter would go down with PLL loss and loss of the 10 MHz reference. This was happening on exciter A only, so that fact pointed to a problem within that exciter.

I ordered an Exgine card from Nautel and installed it in the exciter, and the problem went away. I ran the exciter for about two weeks before sending the bad card in for exchange, just in case it began failing again. So far, it has been running without so much as a burp, so I guess that repair did the trick. Aside from the occasional failure of one of the PA power supplies, we have not experienced very many failures of this magnitude in our Nautel transmitter.

Another item that caused disruption of our broadcast last month was the failure of our stream encoder computer, a Dell Optiplex 380. After checking it out, I found that the power supply had failed, and I did not have a spare to install to get it back up and running. I put the call out to the other engineers in our company to see if anyone of you had a spare they could loan us until a replacement was



secured. I also called Tiger Direct (PCM.com) to see if they had a replacement aftermarket or direct Dell replacement supply. No such luck! The request came back that this supply was obsolete, with no replacement available.

In order to get our streams back up, we removed the supply from our office secretary's computer and installed it in the stream encoder computer, which bought us a few days until Cris could get a replacement computer ordered. The failed computer was only about 5-6 years old, and it is a downright shame that you cannot get replacement parts for just about any computer that is older than five years old.

While we're on the subject of computers, Cris ordered us a new desktop computer that we will use as a gateway into the Wheatnet-IP system to remotely configure and monitor the system and audio. We previously were using a laptop for Wheatnet Navigator, but in order to remotely listen in on the system, we had to add another network card, which we couldn't do on the laptop. The new computer has been installed and remote connection has been configured and the Navigator software installed, we are now waiting on Wheatstone to send us the license key to run the software. I tried to copy and paste the license key, but that would not work. It appears that the license is good for only one MAC address and cannot be transferred between computers. Once we have the key in hand, I can finally get this little project completed.

Another issue I will be investigating soon is a very low-level hum on the WLGZ-FM program audio. The hum is not noticeable listening on the air, but you can hear it if monitoring using headphones. I have had Mark Shuttleworth perform a few tests for me to see if we could narrow down where the hum is coming from. So far, we have not been able to pinpoint the cause, so at some point this week I will take the station down overnight to investigate this problem. Hopefully, by the time we visit next month, I will have located the source of the hum and rectified the problem.



#### **Winter just won't let go of the WDCX-FM transmitter site!**

In a final note, the attached photo was taken the middle of April at the WDCX-FM transmitter site. Yes, that is SNOW from the winter that will not go away! Usually by this time of year, we are able to start our outdoor projects and get the mess cleaned up from the long winter months. Hopefully, in May we will be able to begin our outdoor projects and site clean-up!

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#### **The Motown Update** by **Brian Kerkan, CBTE, CBNT** **Chief Engineer, CBC – Detroit**

Greetings from the Motor City! April was a busy, unusual-weather month bringing with it a huge ice storm and over a half-inch of ice. Power lines were down all over the area. We had a primary line drop over the transmitter road to our WMUZ AM 1200 site.

The surge caused several breakers to trip and brought down the telephone aerial cable carrying our backup T1 line to the site. The line was wrapped around the power line that dropped.



Upon arriving at the site, I found police tape across the road. I carefully walked down toward the transmitter gate and discovered lines directly across our entrance to the site.

I found a safe way to get back to the site. As I approached, the generator was running, and once in the building, I noticed the circuit breaker had tripped. Once reset, we were back in business with our IP-based STL. It was nice to have control and audio available

even with the T1 out.



There were over a half million homes and businesses without power, and it took several days for everyone to get their power restored, and over a week to get our T1 back. We were on generator power for more than a day.

There are a few things we have done to be prepared for multiple failures, including cases where both STL paths are down. This doesn't happen often, but it's great to be prepared. I had an 1/8" stereo plug available to connect into our processing so we can utilize a laptop or smartphone for program audio. Our audio processors (Omnia.9) on several stations have the capability to load audio, including station IDs, directly into them. This can be used as a failsafe and is a great feature when everything else fails.



**A sinkhole has developed in the studio parking lot.**

At the studio, we had some roofing issues to deal with, and a huge sinkhole in our parking lot. That's what I love about engineering, no two days are ever the same.

Now that the weather is finally warming up, I plan on using our new drone to inspect our towers, and to keep record of some of the guy wire brush and tree cleanup that will be done at our WRDT Monroe transmitter site.

We have been using the Tieline Report-IT application for our remotes, and I wanted to look into options for using professional microphones. Most smartphones have decent mics, but lack directional capability and have AGC that brings the room noise

up. In a crowded environment this can cause bad audio.



**I arrived at the 1200 site to find the telco cable on the ground at our driveway and intertwined with a power line.**

The Shure MVi allows you to connect Pro microphones and provides a 24bit/48khz input to your IOS or Android device. It also has a headphone output. I look forward to giving this device a workout with some of our upcoming promotional events, but this is a tethered option. This is a link to a great product review: <https://youtu.be/6VsDR89KW8c>

I am also experimenting with the CSRA64215 chip. There are development boards available for under \$20. This chipset is programmable and provides many options. It has built in aptX and AAC, and a full dynamics section, including 10 stages of parametric EQ. The CSRA64215 has the Handsfree protocol HFP v1.6 which will provide high-quality audio back to the host device. I have ordered an SPI programmer to set the chip up with our requirements. It is unbelievable how much capability is in some of these chips.

What I hope to end up with is a high-quality bidirectional transceiver that can plug directly into a professional microphone. There will be a headphone output for talent. This will allow for untethered microphone use. I also plan on integrating this board into a portable mixer to make it Bluetooth enabled with talkback. I look forward to sharing my results next month.

Until then...73 from Brian W8FP.

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

April was a very busy, very stormy month punctuated by a long-planned vacation to see family and friends back in the Carolinas. Todd, Jack and I have all been running like madmen. But we've also gotten a lot done! WXJC-FM (92.5) has a shiny new Nautel GV3.5. By the time you read this, we hope to have finished installing our new Avaya phone system. We also have new Omnia.11 processors for WXJC-FM and WDJC-FM.

While we were in NC, Sandy wanted to see the pain specialist who has been treating her sister. We are encouraged at what she was told; the specialist wants to do another MRI of her hip area. Sandy has had both hips replaced, and the leg that's bothering her was done back in 2004. Both of us deeply appreciate the prayers. We're getting there!



**Figure 1 - Dangerous Danny bringing the transmitter down that terrible road.**

**Cullman Tower Lights**

On the downside, we have now passed one year on our NOTAM for WYDE-FM's tower lights. Cris and I have chatted about this, and I'm afraid that we will need to replace that system in the next year or two. TWR Lighting has been a good vendor, but that

system is now over a decade old and it's getting hard to obtain parts for it. They had to build-to-order the latest AOL assembly, which not only took several

months, but it cost a pretty penny. Rather than let that thing continue to nickel-and-dime us, it may be time to replace it.

The good news is that the prices on LED obstruction light systems have dropped dramatically. The technology has improved to the point that high-intensity, *non-strobe* LED systems are available now. An LED flash head that can make 200,000 candelas! To meet FAA rules, WYDE-FM's 1,380-foot tower has four levels; each has

three flash heads, one on each tower leg. At the top, a single medium-intensity AOL is used. Pretty much standard, but of course, that's a total of 13 blinky-things.



**Figure 2 - Equally-dangerous Jack prepares to demolish the crate.**

Naturally, we're having problems with the AOL. This not only means an all-day climb just to get to the thing, we have to dramatically reduce power each time. This inevitably occurs during afternoon drive. I've lost count of the number of



times (and the number of crews!) who have looked at that thing. TWR doesn't provide field service and is reluctant to recommend a tower crew. I guess they don't want to play favorites or expose themselves to additional liability, but that complicates things, to say the least.



**Figure 3 - The new GV3.5 headed into the building.**

As for why we bought it ... the older EG&G/Honeywell/Perkins-Elmer (or whoever owns them this week) flash heads that were in place when we bought 101.1 were near death. I had already anticipated this when we did the due diligence before we closed on the station: there were spare transformers, spare flash tubes, extra relays and even complete motherboards crammed onto the shelves in that tiny little building (along with a 25 kW CCA transmitter ... another long story). The previous owner's contract engineer said that they were constantly replacing stuff.

The TWR system was more reliable at first, but has slowly become less so over time. We're supposed to get two years between relampings; in the past six years, it has been more like one to one-and-a-half. At \$10,000 for xenon tubes *plus* a couple of

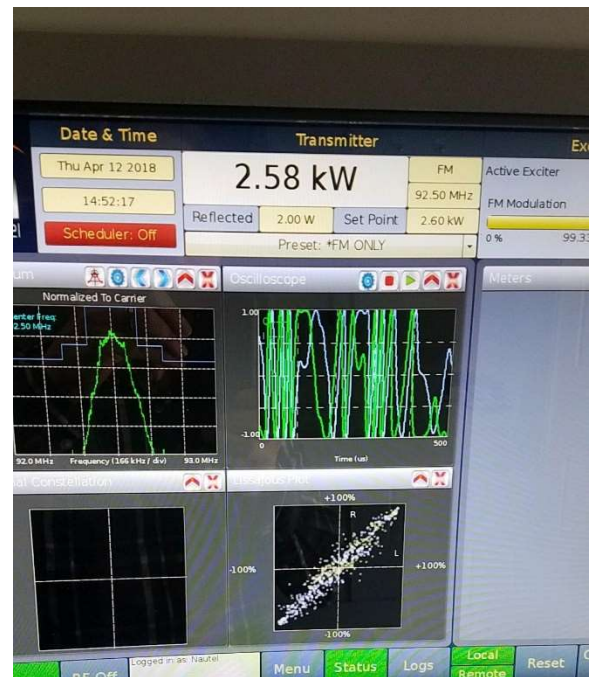
days of tower crew, it adds up quickly. More recently, the AOL at the tippy-top has been nothing but trouble. The reason we're under a NOTAM is we just cannot get the thing to sync up. We've replaced everything but the paint on the cabinet and it still no workee.

Some Googlin' found the aforementioned high-intensity LED systems (you can look up Dialight's Vigilant series for a good example). Surprisingly, some vendors are still only making strobes for high-intensity work. They'd better get with the program, or they're going to find themselves out of business. If I have a choice between a lamp assembly that will last for years, and a strobe system that runs at several thousand volts and needs relamping every year or two, which do you think I'd choose? It's a no-brainer, especially considering that (also as already mentioned) the prices have come down on the LEDs. We'll see.

As I write this, we've had to replace the entire controller (another \$2,000). I'll be headed up to Cullman, Lord willing, to install it. Again: we'll see.

### The New GV3.5

Now back to the huge metropolis of Pumpkin Center, Alabama which is where WXJC-FM's transmitter lives. We were first told that the



**Figure 4 - Our first on-air test. Look at the reflected power!**

new box would land on April 9th. We arranged for Dangerous Danny Dalton to bring his tractor and forklift to help get the new Nautel up that terrible road and into the building. Then the shipper called and said, “It’ll be Wednesday (the 11th).” Given that I was going on that long-planned vacation starting on April 13th, this put us under a bit of pressure.

That Wednesday, the transmitter did indeed arrive and we moved it into the building. After hussin’ and honkin’ the big GV40’s into WDJC-FM and WYDE-FM in the past couple of years, I have to say that the GV3.5 was a breeze. There was some confusion about uncrating it: apparently, all you have to do is remove the bolts from the bottom of the shipping crate, some screws from one side, and then it slides right off the base. That may seem obvious to Nautel and most engineers, but it wasn’t to us. We wrecked that box to get the transmitter out. Jack enjoyed himself.

By mid-afternoon that day, the transmitter was in the building. We didn’t even need roller pipes. We placed it on the slick plastic that Nautel had wrapped it with and simply slid it across the floor, right into place. Todd had it plumbed into the jack panel in no time, and then I put AC power to it and powered it up. As you can see in Figure 3, there was virtually no reflected power! Beautiful.

I had some trouble getting the HD to work. Todd had gotten it working just before I left for vacation, but we turned the transmitter off and let it stay idle while I was out of town. We had severe storms coming in and I wasn’t happy with the grounding. When I returned, I fired it up, selected the HD preset ... and no “stairsteps” appeared on the spectrum display. We had no HD.

It took some time to figure that one out, and Todd gets the gold star for this one. It turned out to be a Windows issue (surprise! shock!). The provided Lynx card in the importer/exporter has eight stereo inputs. For reasons known only in Redmon, Windows

decided on its own to default to inputs 15 and 16 (i.e., the eighth stereo input) ... and then *muted* it. DTS’s software wasn’t a great deal of help; it showed no Lynx card at all on the MPS page. The card had just disappeared.

Nautel support was helpful, but they told me that they’d never seen that particular problem. So, again: Todd gets the nod for finding that one. He doesn’t like Windows any better than I, but give him credit, he’s an absolute bulldog at finding issues with it. You can always tell when it’s getting deep, because he’ll pull up the collar on his shirt and start chewing while he mutters. But he doesn’t give up!

When will someone tell DTS that Windows 10 is a totally inappropriate choice for a system that needs to run 24/7, *unattended*, in a *remote location*? Best of all, the firewall and other security is required to be turned completely off, which makes me *itch*. Something like Linux would be far more trustworthy for this. If that was just too much trouble, DTS should consider Mac OS or something like that. Anything but Windows!

## Phones

I know that some of you have already installed the Avaya IP Office system in other markets. Todd, Jack and I are impressed with it. Lots of buzzers and bells, lots of features. The old NEC stuff that we installed back in 2006 is on its last legs, so it’s certainly time for an upgrade. We’re going to switch from a TI-PRI system to SIP, but AireSpring, our ISP, assures us that it won’t be a big deal. All of our existing DIDs and analog-equivalents should work the same.

Hopefully, we’ll be able to report success on this in the next edition of the Oscillator. Until then, keep praying for Sandy and keep praying for this nation!



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**The Chicago Chronicles**  
by  
**Rick Sewell, CSRE, CBNT, AMD**  
**Engineering Manager, CBC–Chicago**

Recently, we had our twice-annual generator inspections done. The one at our Hammond location, which is where our studios and offices are located, was found to have a radiator leak. Well, it turns out it was more than one leak. This is a very important generator in that if it doesn't work properly when we have a power outage at the studio, we have four stations off the air.

While this leak didn't show up during normal exercise, it was shown to be there when the technician put it under pressure with a pump. The reason it didn't show up was because it was at the top of the radiator. In all likelihood, it would have shown up during an outage with the generator under load, especially during a hot July day.

The initial quote we received from our service company to replace the radiator was \$5,000. This seemed very high for something that could probably be repaired. Now I confess that I'm not a

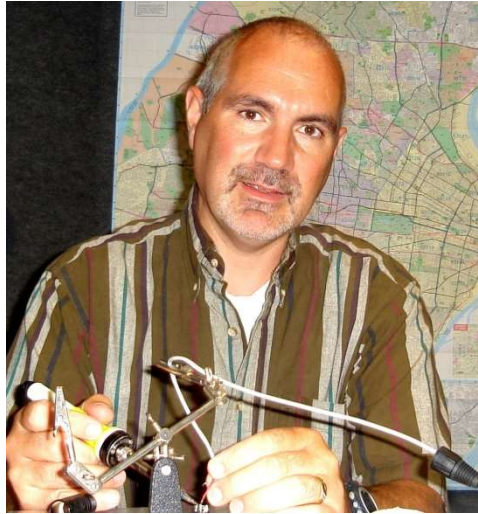
mechanic. I tried to find another service company that would come and perform the removal and subsequent re-attachment of the radiator once we took it for repair, but I couldn't find any that were willing to do this work.

Thankfully, our maintenance guy at our Hammond office, Larry Kaminski, volunteered to take this on. He did a great job. He pulled the radiator, we took it to a local radiator repair shop and they repaired it in about three hours. Larry then got it back on the generator. We ran it without load, but it was not leaking at that point. I have included a link

to my YouTube video of the radiator's initial pressure test at the radiator shop. As you can see in the video, there are about ten leaks, not just one.

<https://www.youtube.com/watch?v=EQSn6rNpeBc>

With the repair shop and necessary radiator fluid, the cost of our repair was under \$300. So, we saved about \$4,700 over the replacement cost.



**Valley News**  
**By**  
**Steve Minshall**  
**Chief Engineer, KCBC -- Modesto**

AM radio has always been a part of my life. My dad had a 1964 Ford Fairlane and he used to listen to KEEN, 1370, in San Jose all the time. It was a pretty poor radio with a weird heterodyne from the local oscillator on 1370. AM radio was the king of the airwaves back then; FM was still relegated to playing classical music and other unique formats.

I have always been an AM radio listener, even in the pre-teen years when my friends were listening to the new “underground” FM stations. I still enjoy AM radio more than I do FM. I very recently purchased a new vehicle, a 2018 Dodge Durango. I am delighted with the radio in the Durango. It has knobs for volume and tuning much like the cars of the 1960s that I grew up with had. The most amazing thing about the radio is the fidelity. It is the best AM radio that I have ever heard in a car.

The Durango radio sounds so good that had to look at it to see if it might be an HD radio. It’s just an analog radio but it sounds that good. It sounds wide open, but there is no hiss on HD stations, so it must have some very tight skirts in the passband. It does have one annoyance; the bandwidth

automatically narrows drastically when the signal level drops. I will have to give the engineers credit for making the bandwidth variable, but it’s just a bit too big a change from wide open to narrow.

I am happy that Dodge is producing a high-quality AM radio, so much better than the ‘64 Fairlane radio. I am not happy with Tesla Motors however.

I have had a Tesla Model 3 on order for over two years now. I was very unhappy to hear that they do not equip the car with an

AM radio. The decision to purchase the electric car was really a matter of economics. The car is expensive, but with state and federal tax credits and reduced fuel costs, I calculated that the car would completely pay for itself well within its lifetime.

It seems, or at least did seem, to be a no-brainer. Now the tax credits are in question – they may not be as much as they were at the time I placed the order. Combine that with several factors such as: lousy customer service, misrepresentations, delays, very poor communication, and *no AM radio*, the car has lost a lot of its appeal. I have not canceled the order yet, but I most likely will.

Long live AM radio!



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

In Oregon, we tend to have these little tests that allow us to recognize a native:

- What color is the moss between your toes?
- What is two days of rain followed by sun? A weekend.
- What is two days of sun followed by rain? Summer.  
It's funny because it's true!

Locally KDZR 1640, a tenant at our Mt. Scott site which is diplexed with KKPZ, experienced a failure at oh-dot-thirty as the transmitter went down with high VSWR. An inspection at the tower found a fractured connection between the ATU and tower. Over time, arcing at the connection did a nice arc-weld job between the brass bolt and copper tubing to the tower.

Repairs to the KDZR connection at tower three required us to remove KKPZ power at that tower. Fortunately, KKPZ has the ability to select a single tower configuration using either tower 3 or tower 1. We do have to reduce power while using tower 1, but we were able to remain on the air while our tenants made repairs.

The local radio market is changing. Keeping track of change isn't normally that big a deal. Who bought out which station isn't generally a serious change. Locally, KUIK on 1360, third-adjacent to KKPZ, has lost its transmitter site and is unlikely to return to the air. It has a complex directional pattern, and restrictive regulations make replacement land off limits.

Meanwhile, following an Intelsat discussion at NAB this year comes encroachment news as 5G wireless proponents have eyes on the of the C-band satellite downlink spectrum (3700-4200). The 5G industry is steaming ahead ignoring the nationwide broadcast distribution activities.

Coming on the heels of a major broadcast industry investment replacing satellite receivers, moving to the new satellite, and in many cases replacing antennas, moving to a KU-band feed is costly.



There is a move to register all receive locations with the idea of protecting satellite receive stations. How that could actually work is unclear as mobile users will roam into any “protected” area.

Ultimately, the registration process will place a stake in the ground to identify those broadcast stations needing compensation for yet another satellite move. Keep an eye open for updates from Chris Imlay at the SBE.

The implementation of 5G may provide individual mobile utility on a normal basis, but it has major limitations during disaster operations. The technology is highly dependent upon local infrastructure. That infrastructure itself is sensitive to solar flares, storms, earthquakes and other natural disasters. At the end of the day, it will fall to local broadcasters to fill the void to get life-saving information to the public.

Also in the news is EAS, with the release of the latest EAS report and order. Gary Timm of the Wisconsin State Emergency Communications Committee in initial comments said, “The primary task of this Order is that SECCs will be required to enter EAS plan details into ARS [Alert Reporting System].”

So the action now moves to each state to work local plans into the system. Timm observed: “Although it is said nowhere in print, it is my impression that this online submitted data then becomes the official FCC State EAS Plan, and our previous printed text plans are no longer needed to satisfy FCC requirements. We might need to retain



portions of them for our own use, but at that point it seems we can include in them what we see fit.”

Stay tuned as the broadcast industry continues to live in interesting times. Oh, wait... that’s actually an old Chinese curse.

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

**Power Issues**

We had a couple days this last month that were really windy. One day was pretty bad. On that day, I received a call that a show on one of our stations wasn’t working. We get it through the Amb-OS satellite receiver, which is located at the KLZ transmitter site. We have had issues with the show in the past, so I just assumed the issue was on their end.

A while later, I received a call that the news wasn’t coming through either. That comes down through the XDS receiver, which is also at the KLZ site. Then I knew there was a problem. I began digging into it right away and found our Harris Intraplex at the KLZ transmitter site was not responding.

I immediately headed to the site, and upon arriving, found the UPS into which the Intraplex was plugged was not working. The unit was pretty old, and since I didn’t have any spare batteries to try to get it to work, I decided to move the plug to another outlet in the rack, bypassing the UPS. This got things working right away.

While I was at the site, I noticed the lights inside the building flickering and figured that soon enough, the power would go out. Sure enough, my husband and I were not too far from the site getting dinner when the alarms began coming in, letting me know the site was on generator power.

After dinner, we headed back to the site to make sure the fuel tank was full, since the electric company had no estimate for getting the power back on. We had enough fuel in the 50-gallon portable tank we use for filling the tractor to top off the 140-gallon generator tank.

The generator ended up running for several hours before the power came back on. I am grateful for Xcel Energy for working quickly to get our power back on, despite having tens of thousands of customers all over the state out of power due to the high winds.

**Storm Damage**

During that wind event, we noticed when we arrived at the KLZ transmitter site that the chain link fence for one of the KLZ towers was leaning greatly. It was still standing, but at an angle. We will see if we can pull

it back up straight with the tractor; otherwise, we will hire a company to come repair the fence.

We also went out the next day to assess the two Brighton sites and found the small awning over the door at the KLTT transmitter site was not attached to the building correctly. The FM antennas on the towers survived, as did everything else. Keith did notify me later on that a fence panel at one of the KLVZ-night towers had fallen over, so he fixed that so it would be secure.

I am not a fan of a ton of wind. It definitely causes issues that you don’t think of. We think it may have even been twisting the KLZ tower enough that the microwave was being affected because at times, the audio on the station, had a stuttering sound, evidence of packet loss on the audio feed to the site.

**Satellite Receiver**

One morning about a week after the storm, I noticed some silent alarms coming down for KLZ. It was during the Laura Ingraham show, so I immediately tried logging into the Wegener iPump satellite receiver to make sure it was getting a good



signal. I was unable to log in and quickly determined the receiver was not working.

Upon arriving at the site, I found the receiver was in an endless reboot cycle. I pulled the power for about thirty seconds, and when I plugged it back in, it came back up okay.

I decided to go ahead and call Westwood tech support and they found that receiver was eight years old and the hard drive was failing. They overnighted us a new receiver, so we could avoid any future issues, at least until this one fails in hopefully another ten years or so. It was fairly easy to set it up – just move all the connections over and have Westwood authorize the new receiver.

### **Up Ahead**

Last month, we purchased a new brush hog to go on our tractor. The one we had was really old and just too big. It makes travelling with it difficult and because of the size, and hooking it up to the tractor and disconnecting it was truly a chore because the arms for the three-point hitch would hit the rear tires and not spread far enough to go over the pins without a lot of prying and beating.

We hope this new one will make everything a bit easier for us. The grass is greening up at all the sites, so I have no doubt we will soon be busy at each site with mowing, trying to keep the growth down, especially since fire danger is so high in Colorado right now.

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

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The Local Oscillator  
May 2018

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**KBRT • Costa Mesa - Los Angeles, CA**  
*740 kHz/100.7 MHz, 50 kW-D/0.2 kW-N, DA-1*

**KNSN • San Diego, CA**  
*1240 kHz/103.3 MHz, 550W-U*

**KCBC • Manteca - San Francisco, CA**  
*770 kHz/94.7 MHz, 50 kW-D/4.3 kW-N, DA-2*

**KKPZ • Portland, OR**  
*1330 kHz/97.5 MHz, 5 kW-U, DA-1*

**KLZ • Denver, CO**  
*560 kHz/100.3 MHz, 5 kW-U, DA-1*

**KLDC • Brighton - Denver, CO**  
*1220 kHz/95.3 MHz, 660 W-D/11 W-N, ND*

**KLTT • Commerce City - Denver, CO**  
*670 kHz/95.1 MHz, 50 kW-D/1.4 kW-N, DA-2*

**KLWZ • Denver, CO**  
*810 kHz/94.3 MHz, 2.2 kW-D/430 W-N, DA-2*

**WDCX • Rochester, NY**  
*990 kHz, 5 kW-D/2.5 kW-N, DA-2*

**WDCX-FM • Buffalo, NY**  
*99.5 MHz, 110 kW/195m AAT*

**WDCZ • Buffalo, NY**  
*950 kHz, 5 kW-U, DA-1*

**WDJC-FM • Birmingham, AL**  
*93.7 MHz, 100 kW/307m AAT*

**WCHB • Royal Oak - Detroit, MI**  
*1340 kHz/96.7 MHz, 1 kW-U, DA-D*

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

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

**WMUZ • Taylor - Detroit, MI**  
*1200 kHz, 50 kW-D/15 kW-N, DA-2*

**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/95.3 MHz, 5 kW-D/41W-N, ND*

**WYDE-FM • Cullman - Birmingham, AL**  
*101.1 MHz, 100 kW/410m AAT*

**WXJC • Birmingham, AL**  
*850 kHz/96.9 MHz, 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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