The Local Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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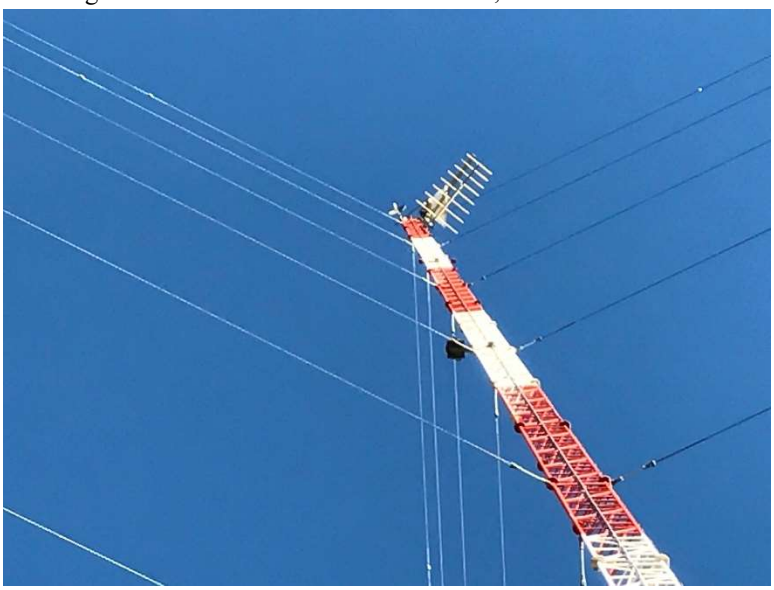
The Roller Coaster

The past years have been a roller coaster when it comes to translators, highs and lows, ecstasy and agony. The AM Revitalization translator windows have provided us with a vehicle to attach FM signals to most of our AMs. That's the ecstasy. The agony has come in battling translator interference to our full-power FM signals and trying to mitigate interference to other FMs by our translators. I can't say it's been fun, but it has been "interesting," and I mean in the Chinese proverb sense!



Right now, we are in the midst of the technical settlement filing window for Auction 100 mutually exclusive (MX) groups (May 24 – June 14). We believed that with the cooperation of our fellow MX-group applicant, Genesee Media, we would quickly be clear of the MX status in Rochester and be good to go both there and in Buffalo. But not so, said the Prometheus Radio Project et al, who filed an informal objection to both our Buffalo and Rochester translator applications along with about 1,000 others.

I've read the Prometheus objection and am still shaking my head. They say that the FCC has totally ignored or forgotten about the requirements of the Local Community Radio Act (LCRA) since 2014 and allowed a "giant spectrum grab" by translators to the detriment of possible future LPFMs. I could paraphrase the gist of the objection with the playground rant, "Not fair not fair not fair!" The objectors seem to believe that parity between the number of authorized translators and LPFMs is a requirement of the LCRA. Really? Next thing you know, these LPFM folks will be insisting that they should get kilowatt power and waivers on adjacent-channel protections.

While I haven't always agreed with FCC lawyers, I do believe they are sharp and on top of their game, and I cannot believe that they simply forgot about the LCRA. This belief is further borne out by the recently released NPRM dealing with translator interference resolution (MB Docket No. 18-119), where the LCRA is mentioned in the discussion therein.

We'll have to wait and see whether this objection throws a monkey wrench into the works or whether the FCC will dismiss it. Hopefully it will be the latter. My sense is that Prometheus et al want the FCC to unwind every translator grant since 2014, including all from the AM Revitalization translator windows. (Not fair!!)

On another matter, last month we filed a formal petition to deny on Moody's Chicago 106.3 MHz translator application. If allowed to go on the

air, that translator will impact a large area where we currently have listeners in northwest Chicago. Our petition included a list of listeners that we had identified internally who live and listen in the overlap area, and I did an undesired-to-desired study on each, showing that none of them would get anywhere close to the -20 dB ratio required for interference-free reception of our station.

Of course Moody filed a response, asking the FCC to defer action on our petition until the new translator interference resolution rules go into effect and then deal with any actual interference under those new rules. The trouble is, while we know what has been proposed, we don't really know what those rules will be. The 54 dBu threshold is much in debate and will (hopefully) be changed before the NPRM becomes law.

Besides that, we don't want the Moody translator to come on the air at all, because that will without a doubt cause a bunch of interference and could well impact some PPM data that will hit us right in the wallet.

We're on solid ground here, so we fully expect the FCC to follow its current rules and keep this translator from coming on the air. Still, it's an irritation to have to deal with this, especially from an entity that should be practicing "do unto others" as a matter of routine.

Transmitters and Processors

We are right now in the midst of a wave of equipment replacement/upgrades, including two transmitters in Detroit and audio processors throughout the company. We also just replaced the main transmitter at WSRB in Chicago and at WXJC-FM in Birmingham.

The difference in the on-air sound at WSRB was reported to be very noticeable, a big improvement over the way the 2003-vintage BE solid-state digital transmitter. No change was made in the audio processor at that site, so the improvement was all transmitter. We normally don't associate audio improvements with transmitter replacements, but clearly the Nautel GV5 sounds better than the BE FMi703. A lot of that is likely the exciter, but there is evidently also some improvement in the PA/combiner scheme as well, as the station covers better with the new transmitter (a more solid signal in fringe areas).

The jury is still out in terms of improvement factors on the GV3.5 at WXJC-FM in Birmingham. That transmitter replaced a 2004 Nautel FM5 with the NE50 exciter. We also replaced the audio processor there with a very top of the line unit and fed its output to the transmitter using AES192 digital composite, so there were several improvement factors in play that we cannot really separate out (transmitter, exciter, audio processor and interface). I can say this – that station is as good as it can possibly be right now. We expect great things from it.

We are in the process of replacing our 2003-vintage Omnia5.EX and Omnia6.EX with Omnia.9 top-of-the-line audio processors for AM and Omnia.11 processors for FM. These are amazing units. In the past few weeks, we installed Omnia.9s in Denver and Los Angeles – with amazing results!

We started all this several months ago when we installed Omnia.9s at all four AMs in Detroit and on WDCZ(AM) in Buffalo, also with amazing results. Brian Kerkan developed the processing presets that we are using at KBRT, in Detroit, Buffalo and on the talk stations in Denver. Our corporate hat is off to Brian for this!

In Birmingham, we also upgraded the audio processing on WDJC-FM and WYDE-FM with Omnia.11s, also feeding the digital exciters for those stations with "Omnia Direct" AES192 digital composite. Stephen Poole was impressed, and if he's impressed, I am impressed! All three FMs in Birmingham now have the latest-greatest and have set the bar for the whole market. Try and catch us!

By this time next month, we should have all the AM processors that were slated for replacement swapped out.

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

Hello to all from Western New York! What a difference a month makes! Back in mid-April, we were still experiencing snow in Western New York. This month, we've had the extreme opposite, heat, and lots of it! Just before this report went to press, we had several days in the 90s with oppressive humidity to go along with the extreme temperatures. I realize that to our compatriots in the southern states, this is no big deal – they live with excessive temperatures months on end. In the Northeast, we aren't geared for this kind of weather, and when it happens, bad things occur.

In Rochester, at our AM station, we lost commercial power due to excessive draw on the power grid, in all probability due to large numbers of air conditioners trying to cool down homes and businesses in the area. Once power was restored, the AM transmitter would not stay on at full power. It would fold back power with a VSWR fault. In low power (night mode, at half power), it would stay on with no faults occurring. I will shortly be heading to the WDCX(AM) transmitter site trying to find the cause of the faults. Hopefully, it will not be a major component failure, I'll report on my findings in next month's report.

Along with the above issue, the A/C unit at the WLGZ-FM transmitter decided it no longer wanted to cool the transmitter plant, and shut down, causing temperatures inside the building to soar upwards of one hundred degrees! The issue turned out to be a failed compressor, thankfully under warranty. For a while, the station staff manned the transmitter site around the clock so we could leave the door open and use fans to help evacuate the heat.

A couple of years ago, I installed a roof-mounted fan that would help evacuate the heat build-up in the attic of the transmitter building. It has worked well for the past two summers, but during this issue it also decided to call it quits. It is thermostatically controlled, but it refuses to come on, no matter how high you set the thermostat. In all probability, the motor has failed, but I won't rule out a broken drive belt. In either event, it will be an easy fix, and will help immensely with evacuating heat from inside the transmitter building. For the moment, while we await replacement of the compressor, I have a borrowed portable A/C unit running in the building.

Last month, in both of our markets, we experienced some very strange behavior with the Nexgen automation. It would randomly stop at the end of a spot break or voice track element. You could start the next item in the log; it would run fine for hours, and then halt again. That's not a big deal while someone is manning the control board, but it was a big issue when it happened during overnight hours when no one was there. Nexgen technical support spent several hours going through the logs, trying to find the cause of the stoppages. To make a long story short, the cause was found to be a Windows automatic update that dealt with time management. I am not sure of the logistics of the update, but it conflicted with Nexgen's procedure for updating time to all the audio servers and workstations.

Cris had ordered a new Omnia.9 for WDCX(AM) in Rochester at the beginning of April. At the time the order was placed, Omnia.9s were in short supply, and the expected arrival time was several months away. Last week I received a call from Lee Edwards at ProAudio.com that our new processor was scheduled to be shipped very soon. I can't wait to get the new processor installed in Rochester. It really made a significant difference in our air sound on the AM in Buffalo, and I have high expectations that it will make our Rochester AM really stand out.

That about wraps up another month here in the Northeast. Until we meet again here in the pages of The Local Oscillator, be well, and happy engineering!

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

Out with the old, and in with the new. Last month, we received new audio processors and transmitters for WCHB and WRDT. We have been busy disconnecting and moving the old transmitters out of our way. We made room for the new racks by removing the old Harris at WRDT, and the still dependable but tired Nautel AMPFET at WCHB.

We had the surge protection panels installed, and the new racks were put into place. The new Nautel J1000 transmitters were very easy to install. We configured them for HD operation by changing the required jumpers and relocated the exciters and exporters to the new racks.

The J1000 transmitters were equipped with NXLink, which provides enhanced control and monitoring via the network via a web page interface, or SNMP. It was nice to eliminate a bunch of cable, and to clean up the racks.

We installed Omnia 9 processors for every AM site in our market, and what a difference it has made! The overall sound is clean, loud, and consistent. The Omnia.9 provides flexibility that no other processor offers. It processes the main program audio, HD and studio audio, and can serve as an internet streaming encoder processor as well. The Omnia.9 also has several built-in tools for analyzing your audio, including a scope and loudness meter. Best of all, it does not have that sharp-grungy-chalky sound that some processors have.

WMUZ was out and about broadcasting live at two events last month. We participated in the Home Plate event at Comerica Park with the Detroit Lions, and in Flower Day in downtown Detroit. There was a great turnout for both events, and we had many listeners stop by and say hi. We used the Tieline Report-IT on an iPad 4, which has a built-in Verizon LTE. We used the Shure MVI audio interface to connect microphones. The MVI has an XLR input and a high-quality microphone preamp. The iPad solution is easy to set up, and comparatively lower in cost than other solutions.

Both events were a success, and the quality of the audio was exceptional. The talent loved it too. We were able to cut down on the equipment we needed to bring to the remote site. They had full headphone monitoring with mix-minus and studio talkback.

One of the challenges in the setup was the lightning interface on the iPad. Since the Shure MVI is powered off of the iPad directly, we needed a solution for charging the iPad while using the Shure MVI interface. We were able to find a solution to this problem with the assistance from Shure technical support. Apple has a camera interface that provides charging and USB. The Apple lightning camera to USB adapter Model# MK0W2AM worked like a hose.

I have had a little time for hobby experimentation last month. I am in the process of reviving a Hymotion plug-in hybrid kit for my Prius. My Prius has 317,000 miles on it and it's still going strong with its 45 MPG. The Hymotion kit was at one time an $11,000 add-on. Several years ago, the company that manufactured it went bankrupt. I had an opportunity to pick one up for $400.00. I have been having fun restoring it. I was able to harvest some newer cells from a battery pack that was used for buses.

The pack has a battery management system that uses a DC/DC converter for step up and recharging. I am planning on reworking it and upgrading the FETs. When I complete it, I will be able to plug in my Prius and get double my normal MPG to 80 to 100 for up to 40 miles. I could buy a new car, but making this work is too much fun.

Until next month, '73 from Brian, W8FP.

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

As I write this, subtropical depression Alberto has come and gone, but it was by no means the only storm in May. In fact, we've had a storm almost every day since the first of the month. It has been fun. We've had water getting into things that have never seen water before. There are sinkholes in the dirt and potholes in the roads. The rivers are running over their banks. We B Wet.

During Alberto, a tree fell across the road to the WYDE-FM transmitter site, ripping down the AT&T phone line to the building. I discovered this when I drove up there to check the fuel in the generator. I saw in last month's issue that Brian Kerkan had a similar event up in Detroit, but I think mine is prettier (see Figure 1). What wasn't pretty was me hauling my 62-year-old self up that road on foot. I took my time and took plenty of breaks, but between the bugs trying to haul me off and sweat running into my eyes, it was no fun.

Alberto

Todd missed Alberto because he was on vacation, so it was left to Jack and me to keep things cooking. We had a ton of rain, some trees were knocked down, and the power went out in a few areas, but believe me, we've experienced worse. Thank the Lord, of our transmitter sites, we only lost power for a while at 101.1 in Cullman. In fact, the Cullman generator had run for several hours in an earlier storm, several days before Alberto even formed. We're going to schedule a refuel on that generator as soon as the weather clears.

With Alberto, the studios were a different story. Around 7:00 AM on the morning when he came through, we had the type of power event that I dread: a "stuttering" flicker that rapidly pulses, on, off, on, off. By the time the generator had come up, we had lost the G6 control surface and bridge router satellite cage in the WDJC-FM control room. Audio wasn't making it to the transmitter site because NexGen had the console switched to air – no console, no audio.

We also had no telephones or Internet, so I was unable to go in with VNC to look at things. Jack and I both rushed in to the studios. Fortunately, this particular issue resolved itself while we were driving in. The problem was with our ISP. We had no signal at the demarc. As a result, we had no phones, building-wide, and no Internet until AireSpring resolved things on their end.

Back to WDJC-FM, which was celebrating a brand-new morning show with a dead control surface. Not a happy-making thing. We switched the audio server directly to air and they voicetracked to get us back on air. We rebooted the bridge and the surface a couple of times, but it still wouldn't come back up. All of the meters were pegged and we had "No Source" on every channel. The diagnostics in the X-Point software were all green; they said everything was happy. So why no control surface?

Figure 1 - A tree falls without making a sound, but not without killing the phone line.

WDJC-FM popped off a couple more times while we were investigating the control surface problem. I had forgotten that Nexgen is rather insistent about using the "default source" that is set

by a macro. It kept switching back to the console, because that was the last "default source" that had been set. I fixed that by firing our "Console Bypass-AServe Direct" macro and returned to the control surface.

We had seen this before, but I couldn't recall how we fixed it. I pinged Amanda (who, as it turns out, was having UPS problems of her own out in Denver!) and she couldn't remember, either. I called Wheatstone support and waited for the return call. Once they called back, the fix was simple and I wanted to hit myself: you go into the X-point software and select "Diagnostics > Reset Switch." Once we did that, the control surface came back up and we moved back to live operation in the WDJC-FM control room.

Everything else held in the studios held pretty well through the power glitches. I guess that UPS in WDJC-FM – which is by no means overloaded, mind you – just got confused with all of the power flickering. That in turn confused the bridge router and control surface for our older G6 system, and we were off air.

Alberto: The Aftermath

Later that same night, as Alberto was heading into Tennessee, WYDE-FM lost audio and was making dead air. I went in remotely and noted that the input to the Nautel had changed. We're using the MPX over AES option with our new Omnia (more on that in a moment). I had been in there earlier, and to be fair, I might have bumped it, so I'm not blaming this one on Nautel. I changed the audio input, SAVED the preset again and everything was happy.

Finally, Todd returned to work on Wednesday the 30th and hit the ground running. He had a Sage ENDEC update for all of our EAS machines, and some other issues at our transmitter sites. The internet service that our tenant uses at WDJC-FM's tower site on Red Mountain was out; AT&T scheduled it for repair, but warned that it might take several days. (They said the same thing about repairing the aforementioned tree-kilt line at WYDE-FM in Cullman.)

But there was some good news: the generator at WDJC-FM's transmitter site still had 3/4 tank of fuel, so that told us that it didn't run much during the storm. We need to service both Cullman and the studio generator, though, after all the runtime that they've experienced recently.

Later that afternoon, WYDE-FM's Dragonwave microwave link between Red Mountain and the Mt. High relay died. We're still troubleshooting that one; WYDE-FM is on backup as I write this. Todd is going to rig up his Raspberry PI as a relay via the Internet service at Mt. High so that we can at least get in to control the transmitter.

New Omnia.11s

The first station I worked at had a Gates Sta-Level and a Volumax for processing. That was it. It would duck, pump, pop, honk and sing "la-la" at the drop of a hat. At my next gig, they didn't even have that, just a single tube-type compressor (I think it was an RCA). They weren't worried about peaks, because the 2000-year-old RCA transmitter couldn't make them, anyway. Free clipping, and no annoying adjustments!

As the years passed, things improved. I had my first Dorrough DAP and my first Optimods at my next jobs. These were an improvement, but seriously, to an old timer like yours truly, it's just flat amazing what processors can do nowadays.

WDJC-FM has been using a Vorsis (Wheatstone) AirAura3, and it has been plenty good. It has a really neat stereo enhancement section that increases the separation on softer passages, but then blends it back on strong separation. It makes a big difference with multipath.

But we recently installed new Omnia.11 processors at all of our FMs, and I have to say that I was impressed again. The default presets have always been a little too bottom-heavy for me; that's just an Omnia thing. I usually have to go in and knock it back a bit. Omnia has also tickled and annoyed me with their cutesy-pootsy names for some of the adjustments.

Look, guys, forget about the "Phat" and the "Solar Plexus" stuff. I'm an engineer; I'd be fine with meaningful names like, "low-mid bass" or a band specification like, "100-300Hz."

But that said, I have to be honest: I've been *very* impressed. I don't think Frank Foti even knows how to make a bad-sounding processor, but he and his gang have outdone themselves this time. The SSB on the stereo subcarrier makes a *huge* difference in multipath. The presets are very good. The sound is loud, clean and – well, the only term I can think of is "silky." It just shimmers and sings. WDJC-FM is a new station (again) with that new processor. Well done, guys!

More Thievery

On Saturday the 26th of May at about 3:10 PM, I received a call from ADS Security: we were getting an alarm from the WXJC transmitter site in Tarrant. All of our transmitter sites are prone to false

alarms on the motion detectors, so I pulled up the cameras and checked. Yes, daggone it, the back door was open. Someone had been in there. Todd had already left for vacation, so I called Jack and we met at the site.

The video shows a young white male yanking the back doors open (see Figure 2). That portal has served us well since the site was built, but it's a double door, and has the same weakness as most of these. You generally have one door that opens with the handle while the other is latched and only opened if needed. The problem is that the latch was mounted on the metal door with simple machine screws, and it didn't take much to pull them out of that old metal door.

Figure 2 - If he'd only go straight, he'd be a great pro wrassler.

I had added a chain to help hold the doors closed, but this kid, who is apparently kind of strong, was able to rip the hasp off of the door. The sliding stop-latches on the other door had ripped off as well. Worst of all, the threshold had been weakened by all of the rain water (more on that in a moment), and it probably wouldn't have held that sliding bar, anyway.

You could see the kid running frantically as the alarm sounded. He grabbed an old telescope that I bought at BigLots many, many years ago, scrambled around for a moment looking for anything else "of value," and then ran back out the door. He even dropped that old spider-web-encrusted telescope in the grass, so he got absolutely nothing for his trouble. As you can see from Figure 2, he's wearing a mask, and the Sheriff's office wasn't able to identify him, but he did manage to cause a good bit of damage (not to mention ruin my Saturday afternoon).

We've called Sunbelt Builders, who originally constructed that building for us in 1999, to come look at those doors. We also need to do something about water getting into the building. It has been a minor nuisance in the past, but with the constant heavy rains lately, it has become critical. Sunbelt helped us stop a similar problem at our 120 Summit Parkway studios a few years ago, so I'm anxious to meet with him. I'm sure he can come up with a cost-effective solution that will keep our floors drier. (And he can replace the doors. And the thresholds.)

If only the rain would end ...

New Vent For 92.5

The "big" transmitter sites – WDJC-FM, WYDE-FM and WXJC(AM) – all have emergency vent and fan systems to pull outside air through the building if the A/C fails. The other two, WYDE(AM) and WXJC-FM, do not. Given that A/C units have a tendency to die at the worst possible time here in Alabama, I've long since wanted to do something about this.

WYDE (1260 AM) could use a vent, but we've had A/C failures there before, and it just doesn't get that hot if we reduce power and put a fan in the door. WXJC-FM (92.5), on the other hand, gets hot enough to cook breakfast. Ergo and therefore, I gave him priority. 1260 will come later.

When we had the roofing at 92.5 redone last year, the roofers installed a vent fan, but there was no way for return air to get into the building. If the vent fan was run with the door closed, all we accomplished was to suck the door closed even more firmly. Sunbelt also constructed this particular building, and they made it *tight*.

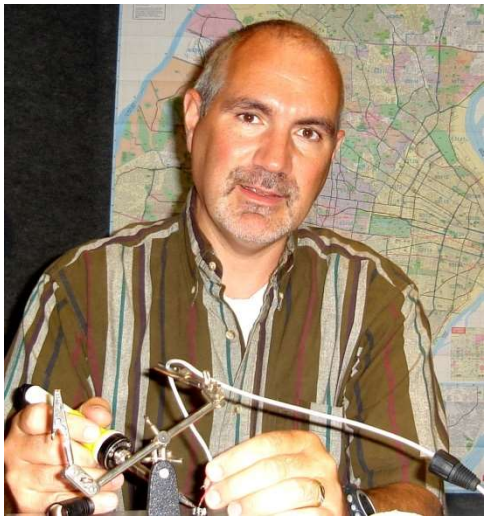
In my spare time and between storms, I've been working on installing a motorized vent that will open when the roof vent comes on. I made a hole in the cinder blocks while Jack crafted a nice plywood mount for the vent. I've got it bolted in place; now, once the rain finally permits, we need to caulk, paint and clean up. I also want to add some bolts across the top and bottom to keep the wood from flexing.

That's it for this time. Until next month, keep praying for this nation!

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

Never Miss an RWT Again

We've got enough on our plates. So, when you go through the weekly inspection of logs and you see that one of your stations has missed a Weekly EAS Test, the last thing you need is time spent chasing down the reason the test was missed.



The usual suspects are a board operator "forgetting" to run the test. I have also found that the Traffic Department will sometimes not renew the yearly schedule to place the test on the log. The worst part is that you now have this "black eye" on your operating log for the next two years.

I have discovered a way, using a feature programmed in the Sage Digital ENDEC, to never miss an RWT again. Okay, never is a strong word, but with a little bit of effort you can certainly ensure that most weeks you will have an RWT running on your stations.

The feature is the Random Weekly Test feature in the Sage Digital ENDEC. I can hear the alarm bells ringing right now – this will sound bad on the air and programming and sales will not put up with the interruptions. The assumption is that if you turn this feature on, it will run a test at any time of the day. The understandable fear here is that it could interrupt critical programming and especially commercial advertising or block programming that could result in loss income.

If all you did was turn on this feature and do nothing more, I can guarantee that will happen. You may or may not have known, though, that you can actually create a schedule in the Random Weekly Test feature of the Sage. Which kind of makes the feature a misnomer.

A little-known aspect of the "randomly scheduled" or "scheduled random" Weekly Test is that it won't necessarily run even though it is scheduled to do so. The Sage ENDEC is pretty smart in that if it sees any other activity run earlier in the week, it will skip the scheduled random test. So, if you have a Monthly Test, an actual activation or even a Weekly Test prior to the time when the random test is scheduled in the week, it will skip the random test.

Knowing this, I used the ENDECs software to schedule the entire year of Random Weekly Test. My schedule was not very random in that the entire year of tests were set to run each Saturday at 11:59 pm. The last possible minute that the test could run and still be in the given broadcast week.

Now, keep in mind that we don't want this test to run if at all possible. This feature will not replace the normally "scheduled" weekly test we have on our program log and is run by the board operator or automation system. Think of this as a failsafe for your weekly test. If you see that it does run, then know you have a problem somewhere that still warrants your investigation. So, it may not save the time needed to figure out why the intended Weekly Test didn't run, but it will hopefully save the "black eye" on your operating log.

Since we have been using this method, we have only had one instance where it actually ran on the station. We had to track the reason why the normally scheduled RWT didn't run, but I was glad we had this backup in place and we didn't have a red flag on our log of a missed test.

Something that I need to note here is that if you don't actually create a schedule for the Random Weekly Test, the Sage ENDEC will, and it will not be in some place you want it to occur. So, if you choose to do this, you will need to be diligent in making sure you keep this up to date. For me, I have chosen to do it at the beginning of the year and I put in my calendar a reminder to create a new schedule for the year. The nice part is that if you have multiple ENDECs, you can export the schedule from one to the others, saving a lot of the mundane typing.

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

Out, damned hot! Out!
(With apologies to William Shakespeare.)

At KKPZ, the transmitter space at the facility has been "cooled" by an intake fan bringing outside air into the building. The air intake works well when the ambient temps outside are cool, but this arrangement is considerably less effective during hot weather. An appropriate analogy would be using a fan to suck hot air out of an oven in order to cool the kitchen.

When it's 90 degrees outside, an intake fan doesn't help much to cool a 100-degree interior, particularly when other parts of the building are air conditioned. With outside temps at 104, the fan becomes a heating source. To remedy this, at least to some extent, we have just completed an upgrade which disconnected a high-volume intake fan and installed a new exhaust fan. With this now in operation, the temperature in the transmitter room is much reduced. I am looking forward to better temperature control through the coming summer.

New exhaust system at KKPZ.

Sage Update

At press time, Sage Alerting Systems has announced a new firmware update for the Sage Digital ENDEC model 3644. You must install this update to allow your ENDEC to continue to receive EAS CAP alerts from FEMA. This release also updates the SSL certificate roots that your ENDEC must have in order to download alert audio files from state or county alert originators.

The installation process is straightforward, as is described in the release notes. Installing this update will not change any of the settings on your ENDEC.

There is a national PEP Test scheduled this fall. It will be a PEP delivered test using the legacy analog EAS system of daisy chained radio and TV stations. Oregon Public Broadcasting will be responsible for delivering the test throughout the state and locally in Portland. Stations in other markets should review the functionality of their existing analog daisy chain EAS infrastructure in preparation for the PEP test.

Emergency Preparedness

In Oregon we have looked at public safety communications needs during a disaster. Prior to an emergency, broadcasters serve as a link between local warning points and the general public. Warnings can be treated as one phase of informing the public. Prepared information must go out with the initial warning.

Emergency public information also follows up with what is happening and what the public should do for its safety. Emergency public information can feed preparedness information into an established media-public link and give updates to the media and the public after impact.

During pre-warning and warning periods, the local police, fire, and medical dispatch and the local 911 center will often be responsible for issuing warnings to the general public. The broadcast emergency alert system (EAS) is designed to complete the link between warning point managers and the general public. These facilities will normally be equipped to issue and transmit the EAS messages.

Emergency public information also follows with a description of what is happening, what responders are doing, and what else the public should do for its safety. For some hazards (e.g., an

earthquake), there may be no useful warning. The hazard event itself gets the public's attention, and emergency public information follows.

Following an event, local emergency managers will typically establish an emergency operation center (EOC) or emergency coordination center (ECC). The ECC may be near the local police, fire, and medical dispatch and the local 911 center and is separate from the 911 / warning point.

At the ECC, the emergency public information function gives the public accurate, timely, and useful information and instructions throughout the emergency period. This information initially focuses on the dissemination of information and instructions to the people at risk in the community. Depending upon needs, the local ECC may organize a Joint Information Center (JIC) with the responsibility to disseminate public safety information.

An important point is that after the initial disaster event, the significant public information source shifts from the 911 warning center to the emergency response housed at the local ECC.

As a practical matter, any resilient emergency broadcast communications links at a warning point will not be available to the ECC or Joint Information Center. When the ECC/JIC is not co-located with the local warning point, resilient emergency EAS communications links will be unavailable during a critical need for emergency public information.

Congested, high-density metropolitan areas present a further impediment for resilient emergency broadcast communications links. Within high density metropolitan areas, the multiple jurisdictions increase the need for resilient emergency broadcast communications links and complicate usage coordination. In the Portland metro area, broadcast engineers developing a draft broadcast disaster plan have identified eight jurisdictions needing communications links.

The Portland area draft disaster plan provides a framework which broadcast engineers can use to keep broadcast signals on the air and providing vital information to the public. Part of that plan includes resilient communications links using RPU and ENG equipment.

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

I think it's safe to say that spring has sprung here in Colorado. Trees are green, flowers are blooming and we've already hit 90 degrees. Now keep in mind, this is Colorado, which means there could be a blizzard at any given moment.

Tower Parameters

We still have issues from time to time with the KLTT antenna monitor readings. A ratio or phase for a tower will go way out of whack, but everything else at the site looks normal. Little to no reflected power, the other half of the parameters on that tower are okay, the other three towers look fine. Did I mention this only happened on the night pattern?

The first few times this happened, we found it was a calibration issue with the ARC Plus Touch we currently have at the site. I would fix the calibration, and the next day it would be out again. We didn't have this issue with the older ARC Plus (you might remember Burk sent us a loaner unit until they could get some bugs worked out of the firmware for the ARC Plus).

We checked sample voltages and messed with cabling and all seemed fine. Then a few weeks later, it came back. Same issue – the antenna monitor was indicating correctly but the ARC Plus was not.

This time around I took some Deoxit to the phoenix connector on the antenna monitor to clean that connection well and unplugged the ribbon cable that goes between the IP-8 and the Plus-X unit, and I reset the Plus-X interface. I should have cleaned them with the Deoxit as well, but I did not. However, since doing this, all has been working flawlessly at the site. Is the issue fixed? I do not know, and only time will tell. I know I do hope it is, because having the issue come up and wondering if it is real or not gets old.

AM-IBOC Exciter

Despite the site being well taken care of, KLTT is our problem child. While at the site dealing with the antenna parameters one day, as we were leaving the site, we noticed a red light on the AM-IBOC exciter for the ND-50 (aux) transmitter. When we walked in the door, everything was green, so whatever happened, happened while we were there.

We took the AM-IBOC out of service, set the ND-50 to the "B" exciter and set a lower power to save on energy costs if it did run, since it is the backup transmitter (the AM-IBOC generates the MDCL for the aux transmitter). We brought the failed unit back to the office, and while we knew the issue was the exgine card, we ended up sending it off for repair.

After getting it repaired and it sitting for a month (at the manufacturer), we finally got it back and reinstalled it. We immediately noticed the GPS light on the Exporter Plus was red. We have been told in the past by Nautel, to do an extended power cycle to clear bad data out of the GPS cache, so we powered it down, unplugged it for ten minutes and plugged it back in and turned it on. At that point, it got stuck in a reboot cycle.

I know many of our engineers will remember a past *Local Oscillator* issue where it is mentioned that replacing certain electrolytic capacitors on the board in the unit will fix this issue. Well, we did just that. Several were bulging, and the symptom we had was a sign of this. However, when we powered it back up, it did not power up.

The one thing we did not do when we got to the office with the exporter was power it on. I believe it is possible it would not have powered up. It is also possible that in the process of replacing the capacitors that something got shorted out (circuit trace on the multi-layer board). Regardless, we had no power from the switching power supply.

After talking with Nautel for a while, we were able to sweet talk them into just sending us what we needed to get this unit back up and running. I am still waiting on the parts to ship, but I do hope that once we receive them it will be an easy process and all will work as it should.

Evaporative Cooler

Every summer, we are always surprised to show up at the KLZ transmitter site to find it hot. The belt on our evaporative "swamp" cooler inevitably doesn't last long at all and breaks. We've had the company who installed it out several times a year to work on it, and for whatever reason, these belts just do not last.

I am working on a way to monitor the temperature at the site to help avoid going days, even weeks, without us realizing the issue. We have a temperature monitor at KLTT and KLVZ transmitter sites but have never had one at KLZ. I've looked into some that we would be able to use with the Burk ARC Plus, but that would cost several hundred dollars. I had an idea come to me, though, about AcuRite. I have an AcuRite weather station at home. It's a fun weather unit that is mounted on the roof of my house and will tell me temperature, rainfall, wind speed and so much more. There's a display in my house I can look at and an app on my phone that talks to a hub I have set up in my basement. Through the app I can set up various alarms that will come through on my phone.

This got me thinking: if it works at home, why not at a transmitter site? I have put in the request to purchase the smart hub and a display that has a sensor. My hope is that I can set it up at the site and the RF won't be too much for it. What a difference it will make not having to make special trips just to check on the temperature of the building.

Upcoming

We have been avoiding taking the Kubota tractor to any of the sites just because grow season isn't over. If we can avoid having to haul that thing

multiple times to a site, all the better. Thankfully, the growth hasn't been too bad so far. Nothing a small John Deer riding mower and a weed eater can't handle. I have no doubt June will be the month of using the tractor with the brand-new brush hog.

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

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
KLVZ • 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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