The Local Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

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Satellite Change

The change from AMC-8 to AMC-18 in Denver went pretty well last month, but it was not the slam-dunk that I had hoped it would be.

Amanda and Keith got a little help from local engineers Rich Anderson and Jack Roland. We had the Anritsu Spectrum Master and connected it using a power-pass/power-block splitter.

I calculated the new azimuth and elevation and we first dialed in the new elevation. With that set, it should have been a simple matter of rotating the antenna east to the new azimuth ï and it sort of was. As we got the antenna pointed more or less due south, the L-band jumped up and we peaked the antenna in all three axes. Amanda checked the XDS and iPump receivers for a lock and found there was not one.

Wondering if we were on an adjacent satellite, we rotated the antenna farther south and found another bird. We waited a few minutes and then checked the receivers ï still no lock.

And so we tried again, continuing to rotate south ï and found yet another bird. Keep in mind that this was the third satellite we were able to resolve with this 3.7-meter Patriot antenna without changing the elevation.

Third timeôs a charm, or so they say, and we found we had a lock on the iPump receiver but not the XDS. Before doing anything else, we peaked the signal in all three axes and then moved inside to look at receivers.

Jack Roland, Keith Peterson and Rich Anderson move the Denver Patriot antenna while Cris Alexander watches the spectrum.

The iPump had worked as advertised ï a secondary carrier frequency had been programmed in with an update, so when we swung the dish onto the new bird, it was able to lock on its own. The XDS was a different matter. Amanda had to manually change the L-band carrier frequency to the new value, which is 1,040,500 kHz. Once she did that, we had a lock.

It was clear right away that we had way more L-band than we needed, to the point of overload. We had to install 16 dB pads at the inputs of both receivers. The new satellite is a lot hotter than the old one. With the pads in place, all was well.

In retrospect, we sort of went about this the hard way. I treated it as a de novo acquisition when I really didnôt need to. Steve Minshall reminded me that since we were starting at a known, fixed point, all we needed to do was calculate and dial in the differentials.

Using Steveôs method, you calculate the look angle of the antenna where it is now, then calculate the look angle of the antenna for the new satellite. Simple subtraction will yield the differentials in the elevation and azimuth.

Using an inclinometer (or the compass/level function in your iPhone), first adjust the elevation for the differential in that axis. Since you are going for a differential (say, up 13 degrees), you donôt have to adjust for the specific elevation. This takes errors out of the equation and allows you to reference on any surface that moves in the elevation plane (a flat surface on the back of the antenna that is more or less perpendicular to the aperture will work just fine).

Next, using a cloth measuring tape, determine the circumference of the mounting mast on which the Az-El mount rotates. Divide by 360 to get the inches of circumference per degree. Multiply that by the azimuth differential.

Now make a mark on the Az-El mount and a corresponding mark on the mast to denote the current location. Then measure in the correct direction (east in this case, or to the right on the mast) the value calculated above and make another mark on the mast. Rotate the azimuth so that the mark on the Az-El mount lines up with the new mark on the mast. You should be there.

Steve said he used this method and had an EbNo of 15. It sure beats hunting for a Volkswagen-sized satellite up in the sky some 24,000 miles away!

The rest of our XDS/iPump stations have until the end of June to get this done. Donôt wait until the last minute. If your antenna is not 2-degree compliant, we may need some time to order, ship and install a new one.

AM Improvement

The last two years, the AM band has gotten some love from the FCC in the form of rulemakings in its ñAM Revitalizationò effort. These changes have been well documented in these pages, and they include elimination of the ñratchet rule,ò loosening of the requirements for principle community coverage by existing stations day and night, relaxation of minimum antenna efficiency standards, and of course we got two AM translator windows. Then recently (becoming effective early this month) the FCC loosened siting requirements for AM fill-in translators.

One might say that the FCC took action on the non-controversial items, the ñlow-hanging fruit.ò Not that we donôt appreciate it. In fact, this was exactly the right course for the FCC to take ï clear out the easier items first to get AM stations some immediate benefit, dealing with the more difficult issues later.

Still under consideration is a laundry list of proposals addressed in the original NPRM and the subsequent order and NFPRM. In a recent *Radio World* interview, chairman Pai gave some indication that the FCC would be dealing with these remaining items, many of which are controversial, at some point in the future. While it would have been good to know a timeline, at least we know these items are still on the agenda.

The big item, of course, is the fate of skywave service protection to class A stations. Itôs the most controversial item in the NFPRM, and itôs also the one with the most potential to help local AM stations. Crawford is, of course, a strong proponent of either elimination or reduction of these protections.

There is also a proposal to change the normally protected (daytime) contour to a higher value to reflect increased noise levels. I think this is wise, but it has the potential to reduce the coverage areas of some of our higher power stations. You take the good with the bad, so to get increased power for the weak sisters we may have to take some encroachment on the big guns. No so different than in the big picture for the class A stations, is it?

You can bet that weôll be watching for movement on AM improvement going forward.

NAB Convention

Many of you are aware that I am still recovering from two leg surgeries I had in late March. Right now, I am working with my leg immobilized and elevated, and thatôs the way it will stay until the fifth of April at least. After that, hopefully I will be out of the brace but you can bet I will still have some restrictions. Those and simple physics will keep me from attending the NAB spring convention this year.

This will be my first miss since the mid-1990s. Itôs going to be weird being back here in Denver while the rest of the world is at the convention.

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

Hello to all from Western New York! Just when I thought things couldnôt get any busier than they were in February, March roared in like a lion, and for a while, things got pretty hectic in the Buffalo-Rochester markets. We had several weather-related incidents, and when you mention weather in Buffalo, you immediately think snow, and besides, what else could we be famous for? Well, this time it wasnôt snow that brought things to a halt, it was hurricane-force winds!

On Wednesday evening, the 1st of March, we had a significant windstorm blow through the region, taking out power lines throughout Western New York. We were unfazed here in Buffalo; however Rochester took the brunt of the windstorms, knocking out power throughout the region. Our transmitter sites were not affected by the outages, only the studio location was without commercial juice.

Earl and Mark managed to get things up and running using the portable generator, powering only the necessary items to get us back on the air. Both stations came on operating in automation mode, with the assistance of NexGenôs technical support team. At the same time all of this was going on, I was having dinner with the wife up in Niagara Falls, but was able to consult them in the process of getting back on the air. Mark and Earl did a remarkable job in getting us back on, and itôs comforting to know that there are competent people in place in the event of an emergency.

So much for that episode. Round two began late in the day on Wednesday the 8th, when winds again converged in the region, this time with peak gusts measured at 81 mph! Needless to say, widespread power outages were experienced, the winds taking down power poles throughout Buffalo and Rochester. We lost power at both FM transmitter sites. In Buffalo, we have a standby 50 kW diesel generator, which ran flawlessly throughout the outage.

In Rochester, we called upon R.B. UôRen to provide us with a rental generator to get the transmitter plant back up to full operation. Prior to getting the rental, I loaded up our portable generator from Buffalo and ran over to get at least our STL up and running so programming could continue on the AM station, which had commercial power. Not knowing how long it would be until power was restored; we made arrangements for regular fuel deliveries at the WLGZ transmitter site.

Buffalo has a 325-gallon tank, so we knew that we would have enough fuel to run it at least 24 hours. In all, Buffalo was on the generator about 28 hours, Rochesterôs power was not restored until early Saturday morning, almost three days after the storms blew through.

This episode taught me that preparedness means everything in determining how quickly you can get back on the air after losing commercial power. Having your fuel tanks maintained near full level is a necessity, so you can run without worrying about running out of fuel before you can make arrangements for a delivery. In widespread outages like we experienced, everyone with standby power is looking for fuel at the same time. Itôs good to build a solid relationship with your fuel and rental generator provider. If not for having friends at Noco fuel and R.B. UôRen equipment rental, we could have been in a world of hurt with no fuel or generator to rely on.

The Buffalo Wheatstone and remodeling project has gotten off to a slow start due to numerous emergencies and other maintenance issues throughout the month. All of our Wheatstone E-6 surfaces have arrived, along with the blades and ancillary equipment to get the digital system installed.

The renovation of the former talk studio is completed, and beginning Monday the 3rd, Tom Dozier will begin tear-out and remodeling of the old control room, converting it into a much larger and up to date talk studio. We are hoping that Tom will be

able to complete the remodel by weekôs end, then the fun begins!

WDCX-FM E-6 ready for installation.

I will be installing and programming the Wheatnet system, the first I have ever done. I am so thankful that Cris has provided me with a ñchecklistò of sorts of steps to installing this system, also providing support of all CBC engineers that have already completed installation of the Wheatstone equipment. I have some experience with the Axia system, but the Wheatstone takes that platform and expands upon it, adding features that are not available on the Axia. It will be a learning experience for me, but I am anxious to uplift our Buffalo facility to being fully digital!

The only other news to report on is that on Tuesday the 28th, National Grid updated the electrical service to the WDCZ 970 AM transmitter site. They installed a new feeder pole, along with new transformers and supply wiring to our service entrance. The old feeder was in pretty bad shape, so they figured that it would be better to go ahead and replace it now, instead of waiting for it to go down by either lightning or wind damage.

In Rochester, you may recall that we had significant issues with our fiber optic STL path from the studio to transmitter site last month. I am happy to report that since Frontier Communications has rebuilt our circuit, it has worked flawlessly! Due to the amount of trouble we had with the previous circuit, and the lost air time we experienced due to the outages, Frontier has built us a standby fiber circuit in case our current one goes down. The best part is in the fact that they are not going to charge us for any of the installation or maintenance costs of the second circuit, as an act of goodwill. The one good thing that came out of all the problems we were having is that I have direct and immediate contact with Frontierôs best fiber technician, and have the option to call him with any problems at anytime! And, the best part of this is in the fact that any services we request will be escalated to Top Priority, which means they basically drop everything to attend to our problem above all others! I hope we never have to put this to the testé .

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!

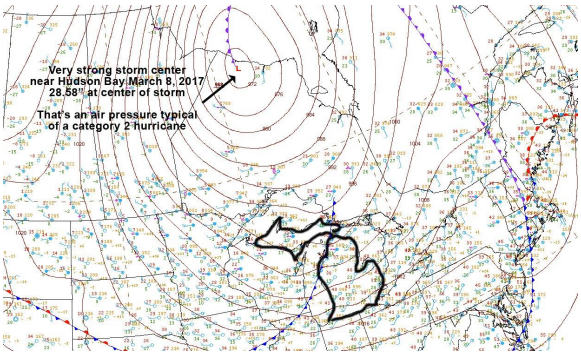
The Motown Update
by
Brian Kerkan, CBTE, CBNT
Chief Engineer, CBC–Detroit

Greetings from the Motor City! This March was one of the windiest months in Michigan history. We had what some people are calling a ñpure windstorm,ò with wind gusts up to 68 mph. The storm had air pressure typical of a category 2 hurricane. The wind lasted two days, and affected a million DTE energy customers.

There were several brown outs, one that damaged one of our main APC UPS systems. We were able to run on generator through much of the storm. Since power

failures were widespread in several large areas, DTE called in crews from surrounding states to help restore service. Some areas were without electricity for several days.

The storm exposed a critical point of failure in cable delivered Internet service. Comcast had widespread outages due to the loss in power. The utility pole mounted amplifiers ran off the small UPS systems for a short time. Once the battery ran out, all cable services were down, including our telephone PRI circuits. It was a long two days,



but I was thankful that were able to keep all the stations on the air, and our fallback network link stayed up during the cable outage. Comcast did not restore service for three days.

Other than a downed tree in our parking lot, there was no damage to our building or transmission facilities.

In March, we expanded our staff, to include a social media team. Simon and Cadriah are working with our web services, and developing strategies to provide more services for our clients. I spent time with them to put together a video editing station, and to acquire a professional HD camera, and lighting.

I upgraded our WEXL audio processor to an Omnia 7 AM. WEXL has a lot of music programming, and the Omnia 7 makes such a huge difference in the fidelity of the station.

There were some programming changes that required accessing the Tieline Genie codec we use for the Bob Dutko show. When I tried to get into it, the Genie was unresponsive and required a forced format and reconfiguration. It is my hope that the new firmware will work better than this version.

Last month, I mentioned the AMP Supply amplifier I had purchased at the Hamvention hamfest in Orlando. Like any hamfest special, it required a little TLC. I ended rebuilding the high voltage supply, replacing a damaged Zener diode that provided bias voltage, and I rewound the plate choke. I ended up buying a new set of 3-500zg tubes, and get full legal limit out of the amplifier. An added bonus is that it keeps the hamshack warm! I was able to get it completed for a contest, and worked several overseas contacts.

I enjoy building antennas, knowing that from my antenna in Detroit, I can have a conversation over 4,400 miles away through the air. And for the record, when I talked to Russia, we did not discuss the election!

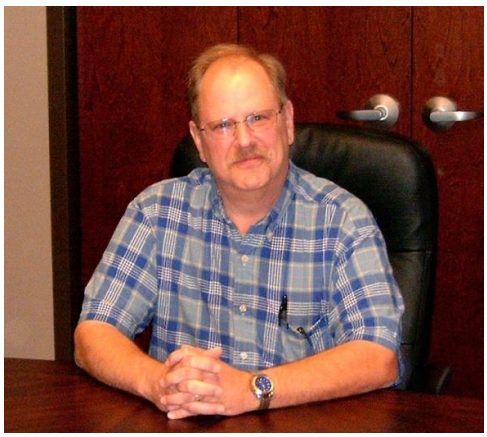
Recently, I had an opportunity to do a little more experimentation with the Raspberry PI. It is a very capable device. There have been a number of people that have used open source software known as LiquidSoap to develop a low cost STL solution. There is an interesting article that is worth reading at https://www.dlineradio.co.uk/articles/raspberry-pi-stl-in-a-box/. It is amazing what can with low cost hardware and open source projects.

With Liquid Soap, you can define a stream, and also specify local playback if the link fails. There are a number of professional audio solutions available for the PI. The PI-DAC Pro is a board that provides Balanced XLR output and provides 114db SNR, and -94 THD. It uses the TI Burr Brown 32bit/384kHz DAC TI PCM5242. It provides 24-bit/192kHz playback. I plan on doing some more testing as I have time.

Until next month, God bless and 73.

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

Several years ago, we installed our first microwave link for use as an STL. A few days later, I was having lunch with one of my fellow engineers from another station group. He asked the same question that most would at the time: ñIs it reliable? Donôt you have trouble with fading?ò



I am convinced now that the problem is two-fold: first, if your link routinely fades, whoever designed it didnôt provide enough fade margin. Second ç and more to the point here ç *it's entirely possible that the link was never truly aligned*. Letôs face it, it takes a special tower crew with special knowledge and skills to get those things peaked properly. Itôs painfully easy to accidentally peak a link to a side lobe. When we did ours, Cris gave us a projected RSL (received signal level) to shoot for, and if we were off by more than a few decibels, we would tell the tower crew to keep tweaking.

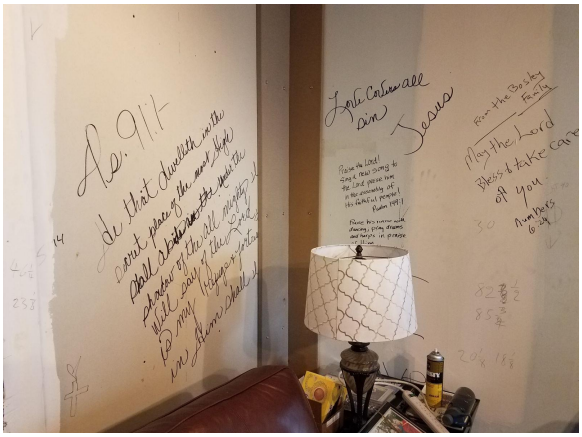


Figure 1 - These scriptures were written on the bare sheetrock back in 2006.

Anyway, the microwave link betwetn the WDJC-FM site on Red Mountain and the relay point in Warrior, AL has finally been tweaked well enough for data again. WYDE-FM is back on our all-digital STL. The RSL still isnôt where we want it to be, but itôs up and running. Given that weôre about to head into our first stormy season, I want as much fade margin as possible, so the tower crew will come back in the near future to fine-tune it for peak signal.

This underscores what we all know, and what I said last time: the dishes for these data links must be aligned very carefully. On a long-haul shot like WYDE-FMôs (almost 28 miles) that uses large-aperture antennas, tweaking the adjustment screws by *no more than* 1/8th of a turn at a time is essential. The pattern on these things looks like a spirographic nightmare. Itôs easy to accidentally peak on a side lobe thatôs a few degrees off axis.

Figure 2 - The (not very absorbent) cloth was glued onto the foil side. Totally ineffective.

Again: we all know this, but I underscore it because you *will* run across this (if you havenôt already). Trust me. A trusted, experienced tower crew may use fancy alignment tools, or do it the way theyôve always done it in the past. But youôll run in circles because the crew may insist that the alignment is correct when it isnôt. Youôll waste time swapping radios and checking other things if youôre not careful.

New Sound Treatment

Instead of nattering about the usual storms, repairs and other oddities, the bulk of this monthôs article is going to be about our new sound treatment. See Figures 1 through 4.

Figure 3 - Todd installing some of the Auralex Studiofoam in one of our production rooms.

You know youôre working for a Christian company if, when you remove the old sound panels, you see scripture verses on the bare sheetrock. I had forgotten about this, so it gave me an unexpected blessing (Figure 1). When we were building out the new studios and offices in 2006, the staff came in and wrote their favorite verses and inspirational sayings on the sheetrock and on the floors. That was a real blast from the past.

The original sound treatment was fiberglass duct board covered with acoustically-absorbent cloth... or at least, it was *supposed* to be. Figure 2 shows what we actually got: the contractor glued the cloth to the *foil side* of the duct board, instead of to the fiberglass. Even worse, while they assured us that the cloth wasnôt reflective, the more Iôve looked at it, the more Iôve realized that it simply isnôt. Especially as it has aged, that cloth has become hard, glossy and slick. It reflects most of the sound that hits it.

We had installed a temporary fix back in 2006. Additional panels done correctly were added to each room. The studios were still too ñliveò and bright, though, so when budget requests came around this time, I put in for a bunch of Auralex Studiofoam. That request was approved (thank you!), and weôre installing it now.

Figure 3 shows how we did it. Todd is installing some of the Auralex foam directly to the sheetrock in one of our studios. Weôre using a Liquid Nails-type adhesive to hold these in place. Weôre not putting Auralex on every surface; that would have cost too much, so weôre also using flame-retardant poly flannel to cover some of the older panels. Jack and Todd are removing the old cloth and foil, then covering the fiberglass with the flannel. The end result is shown in Figure 4, which was taken in WDJCôs control room. The lower part is Auralex; the panel above (behind the speakers) is flannel over fiberglass.

The difference has been like night and day. Going from a really bright, really ñlivelyò sound to a more neutral and less-reflective treatment has been wonderful. In the past, we had to close-mike everything; if the talent got more than a foot from the microphones, it sounded like you were recording in someoneôs kitchen. This will fix that.

Thanks again, Mr. Crawford, Cris, Laura, Mike, and anyone else involved in approving this for our 2017 budget. Itôs making a huge difference ... and besides, it just looks better. I never did like the original colors (a kind of muted, dirty-tan look).

Figure 4 - WDJC's control room. Still a work in progress, but it sounds (and looks!) much better!

Web Server

Sometime in the near future, Google will begin to require that all Websites use HTTPS, or theyôll be downgraded in search results. We can argue about whether theyôre right, but hey; theyôre Google and weôre not. They get the say-so.

Therefore, I had also budgeted for several SSL/TLS certificates for 2017. We need one for each Website on our server (we have 16), so we purchased a 20-pack from GoDaddy. This gives us some room for expansion.

In fact, anyone can set up a secured, HTTPS server, but if you donôt have a registered SSL certificate, youôre going to cause browser warnings. Iôm sure youôve seen these: ñThis site could be dangerous!ò The certificate guarantees that you are who you say you are, and (theoretically, at least), is

backed by a recognized Certificate Authority (ñCAò) -- GoDaddy, Verisign, or any of several others. Basically, they confirm that weôre legit.

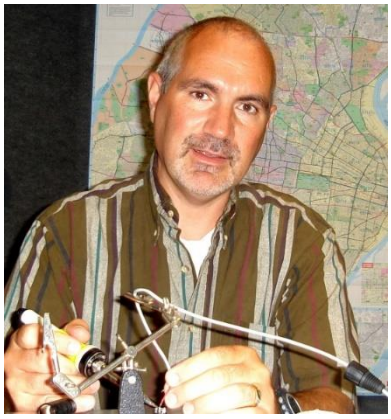
To do this, first, I must generate whatôs called a Certificate Signing Request, which I then submit to GoDaddy. Theyôll look for obvious problems (e.g., you claim that your Website is in Costa Mesa when, in fact, itôs in Bulgaria). Then they send an email with a time-limited authorization code. I log back onto their Website, enter that two-factor-authenticated code, and download the certificate.

I have to do this, and then cut-and-paste each certificate, for each Website. But once itôs done, people can use HTTPS for a secure connection to that Website without browser warning.

We hope to have that done shortly. Until next time, keep praying for this nation, and watch for more pictures of our big studio sound treatment project.

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

Last month, I spoke of the issues we were having with both our main and backup microwave links from the Hammond, Indiana, studios to the Lansing, Illinois, transmitter site. Spanning a state line, it sounds a lot farther than it is, about three miles. We havenôt yet changed out the backup 5.8 radios as we await a tower crew.



As for the main, the newly installed Trango Apex Lynx 18 GHz link, we seemed to be really stuck trying to figure out the problem with this setup. It had worked correctly for about 36 hours after installation and then began dropping packets at a rate of about one per second. Our chief engineer, Brian Bonds, had taken on the problem working with Trango support. Every diagnostic technique that was employed would show there was no issue with the radios or the link. It seemed we had exhausted every option, including new Ethernet switches, but we still saw massive packet loss on the Worldcast Horizon Audio Codec.

Finally, our director of engineering, Cris Alexander, suggested we look at the level of actual DC voltage making it from the power supply to the radio itself up on the tower. This was fairly easy to do because the radio GUI shows the voltage on the first status page.

The power supplies that come with the radios are rated at -48 volts. When we looked at the pages of the GUI, we found the unit at the studio was showing 45 volts. This wasnôt a very long run of cable, most likely less than 100 feet. The unit at the transmitter site was showing 43 volts. We were seeing five volts drop on a run of cable that was about 200 hundred feet.

Cris suggested that we purchase a better power supply for each radio. Figure 1 is one they were using with their Denver Trango radios, an Omron 48-volt supply which had an adjustment for fine tuning the voltage level. We ordered two of them, but one ended up on back order. We decided to put the first one that came in on the Trango at the transmitter site since this was the one with the longest cable run and showing the larger voltage drop.

After installation and radio power up, we logged into the GUI of the radio and saw the voltage had improved but was still not at 48 volts. I grabbed a ñgreenieò and barely turned the adjustment pot on the Omron power supply. I saw that voltage quickly jump to 55 volts. With a little bit of tiny movements on the pot I had it at 48 volts.

Figure 1 - Omron 48-volt 10-amp DIN rail power supply.

We then put the Horizon Audio Codec on the link again and we had no drop packets. In fact, we had no dropped packets on the Horizons status page days later. We just received the second Omron power supply earlier this week and will install it on the studio unit. We believe this will get us up to the proper 48 volts at the radio. How much this will improve the link will remain to be seen. I donôt think this will hurt to have the unit powered at the proper voltage level.

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

Spring is here, or, at least winter is behind us. This year, the number of winter snowstorms in the Portland area was near an all-time high. With access to the station limited, our staff searched for alternative solutions to keep programming on the air. As the distribution of programming has become more reliant on the FTP download model, remote access to station facilities has become more dependent upon the internet facilities.

Less than 15 years ago, radio programming was dependent upon the satellite distribution model. Stations struggled with restrictive zoning rules to get smaller and inadequate satellite dishes to work on the predominant broadcast distribution satellites and transponders. Analog was displaced by digital, which was in turn was displaced by second- and third-generation digital platforms. Large-scale distribution had no other resource to provide the capacity needed.

At the KKPZ Mt Scott facility, the satellite dish and second-generation digital receiver was in use 24/7, providing programming for a tenant station. A secondary use on the first-generation digital platform provided sports programming. Both of those applications became obsolete over the last few years, raising the questions about the future need for the facility. Current demand for the satellite distribution model seems limited to programming which requires real-time distribution.

Satellite real-time distribution is on the decline as internet codecs provide lower cost real-time program distribution. The smaller broadcast distribution networks, such as sports game broadcasting, has moved away from the satellite platform. Here in Portland, Trailblazers basketball has replaced aging satellite receivers with the Tieline Bridge-IT based internet distribution platform.

As satellite broadcast distribution transitions away from the current AMC-8 satellite, the demand to move to alternative distribution channels will increase. At KKPZ, the transition to a new satellite is driven by economics. The transition will require at least one new digital receiver and a major reengineering of the satellite dish and mount. The current dish is 3.4 meters and likely to require replacement. Potential vegetation and tree obstructions will need evaluation prior to the investment.

The economics of satellite distribution are also impacted by an ongoing reduced demand for satellite downlink installation services. Firms providing the equipment, expertise, and resources to do satellite antenna installation and adjustment are at a premium. Without any long-term demand, transitioning to a new satellite is bidding up the short-term cost significantly.

Crawford moved away from the large-scale satellite infrastructure for good and obvious cost reasons. I expect more of the same industry-wide in the future.

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

Cluster of Problems

One Friday morning in March, I received a text from one of our early morning board ops. He has a habit of checking in each studio when he arrives just to be sure nothing seems off. On this particular day, he noticed the control surface in the KLTT control room was completely dark. I immediately rushed in because I needed to be somewhere else a little later in the morning and had no time to dawdle.

Upon arriving, I found every piece of equipment was off. That told me the issue was the UPS. I turned it on and watched as things came up, then heard it scream. Knowing I had no spare battery for the unit, I got some power strips and plugged them into the wall and moved the few items we had on the UPS to it.

After I powered things up, I heard a constant popping in the speakers. I turned the power amp off and was still hearing it on the control surface speaker. I began checking all the equipment and finally noticed the power supply to the satellite router was causing it. As I heard the popping, I noticed the blue power light on the power supply was flashing with it. I am very grateful we now have two spare power supplies as that allowed me to immediately replace it and get the studio back to normal.

I was hoping this is what was causing the UPS to be cranky, but unfortunately it was not. I got the new battery pack in and replaced it and all seems to be working fine now.

Power Supply Fan

After replacing the power supply on the satellite router, I noticed the fan on the back wasnôt running. Now I was squeezed into a very tight space with not a lot of room to bend down and look at it up close. I called Wheatstone and found it should be running (it was not thermostatically controlled). I went to Micro Center and bought some fans I thought might work with it, and when I went to install a new fan, I found the fan was just unplugged.

You can see in my picture the wire for the fan went through where the AC power plugs in to the power supply. This made for a very short and tight connection. Apparently, when I pushed the power supply in, it unplugged the fan. I removed the fan, rerouted the wires and all is fine now.

Satellite Move

I wonôt say too much about this, but as the cover article indicates, we did get the satellite dish moved at the KLZ transmitter site over to the new AMC-18 satellite. One thing we learned in the process is, donôt believe everything you hear. We were told, including on the phone that day, since our XDS unit was plugged into the internet, it was updated to the new frequency for AMC-18. WRONG!

After getting our Wegener iPump receiver locked and running, we began working on the XDS receivers. Wegener support was very helpful and very nice to us each time we called. They were more than willing to walk us through things we missed in the instructions.

When I called Cumulus about the XDS, the person on the phone was not particularly friendly or all that willing to help. I was able to get him to give me the correct L-band frequency. When I informed him the unit did not update as it should have, he just didnôt care. It was our fault it didnôt work. Thankfully once we figured out the frequency, things locked in right away and we were able to tighten down everything. It was really a team effort thanks to the help of Keith, Jack Roland and Rich Anderson.

Dehydrator and Other KLTT Problems

We have had issues on and off with KLTT not properly switching to the night pattern. I set up a camera to look at the phasor controller and found it was K101 and K201 giving us grief. Those are the RF contactors at towers 1 and 2, respectively. But the

issue was so sporadic that any time I went out to work on it, the issue was not there. This included one Monday night. I was at a Bible study and got the alarms on my iPhone, so I immediately began trying to switch the site to the right pattern, but I could not get it to switch (it would switch but with K101 and K201 not showing closed, the interlock would not let the transmitter come on). I ended up leaving it at a very low power (250 watts) in the day pattern until I could get to the site. Of course, after a couple hours, once I got out there, it switched with no problem.

The issue came back a few days later and has been mostly consistent. I went out to the site to get the drawings for the phasor controller so I could look it over with my dad and figure out where I should start with trying to find the issue. It just about has to be the microswitches on K101 and K201 (or the wiring that connects them). I am planning on going to the site a little later in hopes of finding the problem spot, but since things are back to working order yet again, we will see if that happens.

When I go to the site, I always check in the back room where the dehydrator is. What I found during one recent trip was troubling. All the pressure gauges on the dehydrator itself and on the gas manifold were maxed out. I had been out a week prior and things were fine, but I hadnôt been back, so there is no telling how long excess pressure has been in the lines and also no idea if there is any damage to the lines.

Since I had never dealt with this type of issue, I called my dad. He told me what to do. I shut down the dehydrator, disconnected the feed tubing and let things bleed down to 5 p.s.i. and watched the individual line gauges with the dehydrator unplugged. Everything help up nicely for an hour, so I called it good and left. But not before moving the camera from the phasor to those gauges.

Later in the day, I checked the camera and noticed one of the linesô pressure had dropped to 1 p.s.i. NOT GOOD. I headed out there with my mom, who was in need of getting out for a bit. Sprayed some Formula 409 and found the leak to be right at the T handle on the petcock. I unscrewed it and while I plugged the hole so as not to lose any more air, my trusted helper wrapped plumbers tape around the threads. I put humpty dumpty back together again and the leak was gone.

I also found the dehydrator was working again. Although I am very skeptical. I moved our AC Sentinel to it so that if I see the gauges indicating too high, I can quickly turn the dehydrator off. I am currently waiting for a status on when I will receive a new pressure switch so I can replace it and get the thing back to trusted working order. We are also going to look into buying some kind of outboard secondary pressure switch that we can set to shut off at a certain pressure, so if this happens again we can somewhat protect ourselves.

Coming Up

April is the start of warmer weather. It will be a month of planning some major projects for the KLTT tower site. I also am hoping to finally have the KLTT night pattern change working the way it should consistently.

That about covers it for this edition, so until next timeé thatôs 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, 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/91.1 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
970 kHz, 5 kW-U, DA-1
WDJC-FM • Birmingham, AL
93.7 MHz, 100 kW/307m AAT
WEXL • 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 • Detroit, MI
103.5 MHz, 50 kW/150m AAT
WPWX • Hammond - Chicago, IL
92.3 MHz, 50 kW/150m AAT
WSRB • Lansing - Chicago, IL
106.3 MHz, 4.1 kW/120m AAT
WYRB • Genoa - Rockford, IL
106.3 MHz, 3.8 kW/126m AAT
WYCA • Crete - Chicago, IL
102.3 MHz, 1.05 kW/150m AAT
WYDE • Birmingham, AL
1260 kHz/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

Corporate Engineering

2821 S. Parker Road • Suite 1205

Aurora, CO 80014