The Local Oscillator

The Newsletter of Crawford Broadcasting Company Corporate Engineering

DECEMBER 2016 • VOLUME 26 • ISSUE 12 • W.C. ALEXANDER, CPBE, AMD, DRB EDITOR

The Home Stretch

As 2016 draws to a close, we are still trying to get two translator projects wrapped up ï KNSN and KCBC. As usual, the last 20% of these projects is taking 80% of the time.

At press time, all the equipment is installed and the KNSN translator antenna array is up on the tower, but the transmission line has not yet been installed. The tower crew ran out of daylight on the day they installed the antenna, and then wet weather moved in followed by the Thanksgiving holiday.

The transmission line should be installed in early December, a much larger project than it might seem. Hanging the line on the 445-foot tower will take the better part of a full day because grounding kits must be installed every 50 feet or so to keep the line at the same RF potential as the tower structure. Once done on the tower, the fun continues as 180 feet of additional transmission line must be pulled through a conduit under a roadway into the transmitter building. The tower crew wants to try and keep the line in one piece, which would certainly be my preference as well, but just in case it ends up in an odd twist as the last few feet are being pulled into the conduit, I purchased sufficient male/female connectors to do a splice at the tower base.

We will also have to measure the base impedance on both the KNSN and KURS frequencies, readjust the matching networks and file a Form 302-AM for each station before the translator license application can be filed and the station can begin operating. I hope to get all this done in December, but dealing with several different entities, including the landlord, the licensee and LMA operator for KURS, it could take longer.

KCBC has been on hold pending installation of the antenna and transmission line, which has been postponed several times due to weather. Because the antenna and line will be installed on one element of the 50 kW KCBC directional array, the station will have to go off or to very low power for worker safety. This means working on a Saturday to minimize impact on revenue, and every Saturday in November there has been rain.

As with KNSN, all the equipment is installed and ready to go ï Steve Minshall has had the transmitter operating into a dummy load as a means of testing the audio, RF and composite chains. As soon as the antenna and line are installed, Steve will have to float the other two towers and measure the base impedance of the east tower. If it is within 2 ohms and 4% of the proof-modeled impedance, weôll be good to file the license application and begin operation. Based on my experience with KBRTôs, KLTTôs and KLVZôs translator installations on AM towers, I donôt expect the impedance to be outside this window. Hopefully, weôll get KCBCôs translator on the air early this month.

Believe it or not, we have other year-end projects besides translators going on this month. Weôre replacing and significantly upgrading our corporate web server. The new server, which has two Xeon processors, 32 gb of RAM and a whole bunch of terabytes of storage in a RAID 0 array, is on the bench at press time with the OS loaded and material being transferred over. We hope to have it online early this month. There are three other servers being

replaced this month in Denver, including the corporate FTP server. We did a significant upgrade on that one as well to accommodate all the file sharing between clients and stations as well as WANcasting in various markets. Buffalo and Rochester are replacing their Nexgen file servers this month, and Detroit is adding an office file server. New Cisco managed gigabit switches are being installed in Detroit and Denver to manage the increased network traffic in those busy markets.

Speaking of switches, we had two separate incidents in Denver the last couple of months that involved Ethernet switches. The first happened at the KLVZ transmitter site in late October. The Burk ARC Plus at that site could not communicate or ñseeò the ARC Plus units at any of the other sites. As a result, it failed to properly make the switch to the day site one morning. Amanda spent a good bit of time trying various things and on the phone with Burk support. We could see and access the KLVZ unit from within and outside the network, and Burk did a firmware update as well as several other things to get the unit communicating with other ARC Plus units on the network, but to no avail. On a lark, I power cycled the Ethernet switch at the siteé and everything started working! Evidently there was some corruption in the ARP table ï or *something* -- in that switch that I cleared with a power cycle.

Last month, we started noticing a significant number of dropped packets on the audio streams to the various transmitter sites (APT Horizon Nexgen codecs). Amanda tried rebooting codecs and ñWiresharkingò the network looking for packet flooding and the like, but all to no avail. With Octoberôs KLVZ switch problem in mind, I suggested that we power cycle the Cisco switch on the transmitter network. Of course that would take all eight stations down for a minute or so, so we found a time when we could get away with that, putting critical stations on ISDN backup for a few minutes. When the switch came back up, the issue with the dropped packets was gone, and itôs still gone. That, however, pointed out the fact that the switch is five years old and unmanaged. We ordered and have since received a pair of Cisco SG300 managed gigabit switches to take over in this critical application.

Burk Power Supplies

Back in 2013, we replaced the old Burk ARC-16 units in our Denver cluster with ARC Plus units. We liked these units so much that we have since been installing them throughout our company.

Earlier this year, when the unit was just out of warranty, the ARC Plus at the KLZ failed, dead as a doornail with a power supply issue. The primary fuse was blown, and there was some issue with the switching supply. We mapped the Plus-X I/O unit at the site to the ARC Plus at another site to maintain control of the two-station KLZ site while we waited on a replacement supply to arrive. We replaced it and the ARC Plus came right back up.

Last month, on the same evening, the power supplies failed in the ARC Plus units at both KLTT and the KLVZ day sites. Both these units had been installed on the same day in 2013. Again, we mapped the Plus-X I/O units at those sites to the ARC Plus at another site and were able to maintain control.

We ordered *four* replacement power supplies. Since three of the four units had lost supplies, we had to replace the two failed supplies at KLTT and KLVZ, and we went ahead and replaced the supply in the unit at KLDC, figuring that it was just a matter of time before it also failed. That left us with one spare supply on the shelf.

Since we have a number of these units of roughly the same age elsewhere in the company, I advised the chief engineers in those markets to go ahead and order a spare power supply as a precaution.

I noted that the replacement supplies are different than the original supplies, so evidently Burk has found another supply or the original manufacturer has changed its design. Hopefully that means that weôll get a lot more than two years out of the replacement supplies!

Tower Lights

Some time back, the FAA revised its lighting standards to provide for bird strike mitigation. Studies have shown that for whatever reason, birds are often drawn to steady burning red lights and will often fly into towers at night as a result. If the lights are flashing, this doesnôt happen as much.

There are some towers in the Denver area along the South Platte River that were required to install glow-in-the-dark flags on the guy wires to alert migratory birds that use the South Platte corridor to the presence of the wires. I have wondered in light of the studies noted above whether the ñsteady burningò luminescent guy wire flags donôt actually increase the likelihood of nighttime bird/guy collisions rather than decrease it, but I digress.

We are currently working through conversion of all the towers in our company that are greater than 350 feet in height and employ standard red lights and paint to flashing side markers. One

exception is the 700-foot WDJC-FM tower on Red Mountain. Back when the study first came out, we asked for and received a waiver from the FAA to simply turn off our side markers, so that tower only has beacons now, all of which flash.

I have filed Form 7460-1s for all the remaining towers that fit the category, requesting permission to flash the marker lights. We will probably get approvals on these fairly quickly. I will then have to modify the antenna structure registrations. Once that is done and we get ASR grants, I will notify our engineers in the various markets. They will then move the marker wires over to the beacon flasher in the tower light control boxes to make the side markers flash. When that is complete, I have to notify the FCC that ñconstructionò is complete.

Most of these towers have LED side markers now, so the additional load on the beacon flasher is negligible.

Things I've Learned in 2016

As we wrap up another yearé and my 40th in this business (!!!), I thought it might be a good exercise to look back over the year and make a list of what new things I have learned pertaining to my job. You might want to do the same.

- I got a crash course in translator allocations work, and as a result filed some 11 translator applications, all of which have been granted.
- I learned about translator equipment, including transmitters and antennas, and we now have nine new FM signals on the air.
- I learned a lot about translator signal propagation and the effects of interference on them.
- I found out what happens to an FM antenna when the slug in the power divider comes loose.
- I learned some about LPFM stations and LPFM allocations work, helping a local police department prepare and file an application for a site change (which affected one of our translators).
- I got some new insights into the inner workings of the FCCôs Media Bureau.
- I found out how international FM allocations (sometimes donôt) work.
- I learned a lot more about SIP trunks and VOIP.
- I learned that you sometimes can squeeze in a new Part 101 microwave path when it appears that every frequency from DC to light is already taken.
- I learned a whole lot more about Nexgen, WANcasting and voice tracking.

Overall, not a bad year. I have some new skills and am a lot more comfortable with some tasks and technologies than I was before.

Finally, I am mindful of what a great company I work for, doing Kingdom work every day alongside the best team of broadcast engineers in the industry, hands down. My heartfelt thanks to each of you for making 2016 a success. I canô wait to see what 2017 will bring!

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

Hello to all from Western New York! It is hard to believe that this year is quickly winding down. I do not recall a year flying by as fast as 2016 has!

Looking back, it was a good year for our stations in Western New York. We managed to get through the year without any catastrophic failures, and the equipment failures we did experience were minimal. Our physical plants are in their best shape ever, and I donôt foresee any major projects to our buildings and properties for years to come.

The final items that needed attention were a new roof on the WDCZ transmitter building and new fencing around all six towers at the WDCX (AM) transmitter site, and both were completed over the summer months. Our towers are in wonderful shape, paint-wise, and should be good for at least the next eight years or so, depending on how severe the weather is in the future.

By the yearsô end, we will have replaced the NexGen file servers in both the Buffalo and Rochester markets, and will also soon be replacing our phone system in Buffalo with a VOIP telephone system. This will save us thousands of dollars yearly over service we now have with Verizon, and I am confident we will see improved reliability of our phone service. Our telephone and Internet service from Verizon has deteriorated over the past two years or so, not to mention the escalating costs of service, so making this change to VOIP is definitely a wise decision.

As I will be heavily involved in the installation of the new system, I will be able to perform most of the maintenance duties on the new system, saving even more money as we will not have to pay for service calls when we need to add or make minor changes to the phone system.

America's Pastime

I am a sports fanatic, and I closely watch my favorite teams, the Dodgers in baseball, Packers in football, and the Buffalo Sabres in hockey. I must say that this yearôs World Series was the most exciting series Iôve seen since the Dodgers defeated the heavily-favored Athletics in the 1988 World Series. Although the Dodgers didnôt advance past the NLCS, losing to the Chicago Cubs in a best of seven series, hats off to the Cubs who had not won a pennant since 1908!

I was fortunate to be able to watch every game in this yearsô National League series, and I must say that each and every game was a nail-biter. Congratulations to all those Cubs fans in CBCôs Chicago cluster! I guess itôs no more ñWait till next year!ò Now if only the Buffalo Sabres could win a Stanley Cup, or the Buffalo Bills a Super Bowl!

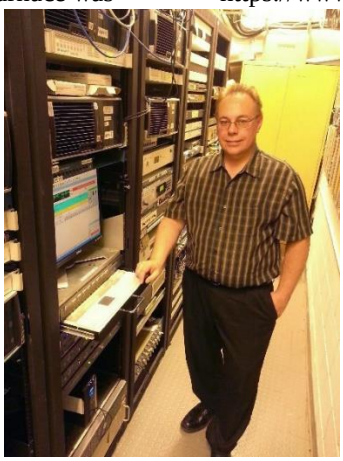
There is not much else to report on from the CBC stations in Western New York. The month of November was relatively quiet, with the majority of my time devoted to preparing our sites for the long winter season.

As we reach the time of year that we celebrate the birth of our Savior, I would like to personally wish each and every one of you a Merry Christmas, and that the New Year brings you Peace and continued success.

Pray for our Nation as we begin another chapter and change in leadership, that our elected leaders will make the right decisions, and rely on Him for guidance and council.

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

Greetings from Motown! It has been another busy month here. We had Travelers Insurance complete an audit on our facility. A new furnace was installed at the WRDT Monroe transmitter site. I also updated the IP codecs that we use for our backup STL links at WRDT and WEXL, and ordered another for the WRDT Motower site.



One of my priority items was to clean up the studio network. There were many unmanaged switches in the system with unmarked connections. Over time, things have become a mess. I ordered two 52-port Cisco SG300 switches. These will do Layer 3 switching as well as Layer 2.

We have separate networks for automation, WheatNet IP, and the standard office network. This provides isolation and protection from outside attacks and Malware from affecting the automation network.

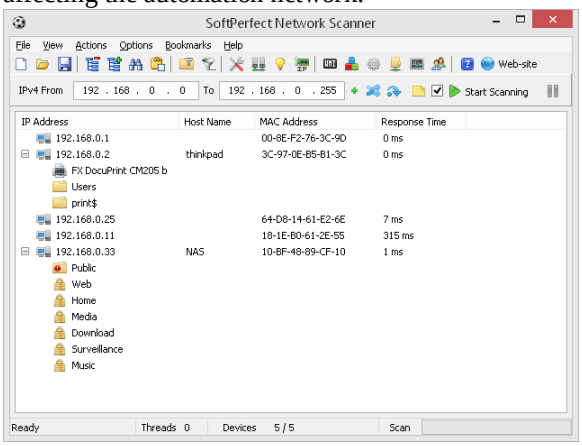


Figure 1 - Results of a network scan.

I used a network scanning tool to scan for machines that belonged on the network, as well as scanning for machines that donôt belong. I did find that a few connections were made across switches. Using the MAC address, I was able to identify the manufacturer by the (OUI Organizationally Unique Identifier). The first three octets of a MAC address are the OUI. See Figure 2.

A table can be used to identify the manufacturer. Wire shack offers such a lookup tool: https://www.wireshark.org/tools/oui-lookup.html

In my above example, a MAC address came up as 00:8E:F2 in its first three octets. This device would be a Netgear NIC or switch.

There are many good tools that are built into the IP protocol. ARP Address Resolution Protocol and TraceRT Trace Route are a few.

Once I finished scanning and identifying unknown devices, I installed the new Cisco SG300s. The advantage of a managed switch is control of the broadcast domain by using VLANs.

I remember working with Robert Metcalfe by in the early 2000ôs when I worked for a company that had an HDTV over IP server solution. We setup a live 1080p HD broadcast over the Internet from MIT to LAS Vegas.

This was in the early days of Quality of Service QOS control in networks. Bob was the co-inventor of the CSMA-CD protocol that was used in the early Ethernet specification. I had dinner with him and a few of the people that wrote the RFC specs

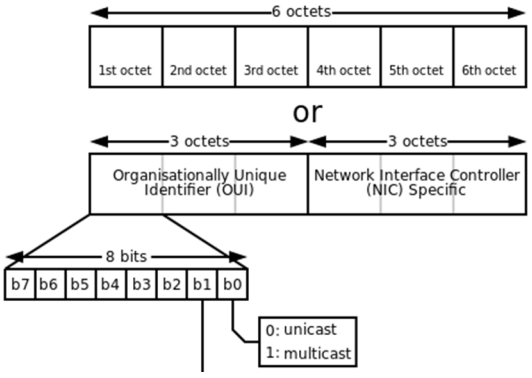


Figure 2 - MAC-48 Addressing. SVG drawing based on PNG uploaded by User:Vtraveller. This can be found on Wikipedia here., CC BY-SA 2.5-2.0-1.0, https://commons.wikimedia.org/w/index.php?curid=1852032

for a lot of the IP technology we are using today. He said he never had envisioned that Ethernet would be used for media applications like video and audio when it was first designed. By using VLANs, we can segment the broadcast domains improving speed and performance.

In other news, I have had some random issues with our Burk ARC Plus Touch losing its network connectivity and locking up, requiring a reboot. I am working on setting up a way to reboot the ARC Plus remotely in case this happens again. It can be a problem when you rely on it for nighttime pattern changes.

In the upcoming weeks I will be installing a new office file server and updating more of our computer equipment.

Until next month, 73 from Brian W8FP.

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

Nothing quite like being unable to see clearly ï and I blame it on conspiracy theories.

When Sandy and I first met our optometrist a few years ago, he was delighted to learn that I was Chief Engineer for WYDE-FM, our local talk station. If youôve ever worked in, around, or even merely beside talk radio, you know what Iôm talking about. There will always be a few regulars who call from their basements to whisper darkly about martial law and imminent doom. Theyôre Out There (in more ways than one).

Our optometrist is a special kind of conspiracy nut. I donôt think he has ever called our stations, because our transmitter hasnôt melted. But pick your theory: the Bilderbergers, the Council of Foreign Relations, the New York Banking Cartel, the Zionist-Catholic Warp Drive Project (OK, I made that one up), whatever, he believes it. And somehow, his brain manages to tie all of them together.

(I donôt think he mentioned those genetically-modified bionic chickens that could report our conversations to The Man or the alien mind control lasers in hidden orbits, far above. But my ears were numb after the first few minutes, so I can make no promises.)

Since the election, the news media has yammered about ñfake newsò (which can be defined as, ñanything that doesnôt conform to what we choose to tell you;ò but I digress). Social media like Facebook and Twitter undoubtedly had a major effect on this election, but not in the way they think.

I could make a strong argument that, if weôd had social media back in the 60s and 70s, prayer might still be in our schools and Roe v. Wade would have been overturned. This is the real reason why liberals have a love-hate relationship with the Internet: they know that we ordinary folks can talk to one another and discover that weôre not alone. We can organize. We can share ideas.

Unfortunately, so can the conspiracy nuts. The entire time that the optometrist was supposedly checking my eyeballs, he recommended several websites, some of which sounded as though Iôd need to bathe in Lysol afterwards. He nattered endlessly. ñHillary Clinton is actually a witch with a secret coven in the desert ... and the Saudis and the Russians ... OK, can you see better with this setting, or that one? Anyway, then Nixon and Kissinger ...ò

What should have been a 20-minute exam took over an hour. All I wanted was some glasses, one pair for driving, one for desk work. I will try to find a slightly saner eyeball doctor sometime early next year. In the meantime, if you see me driving around with a scowl and a squint, just give me a little extra clearance. Iôm typing this with my arms stretched out and my laptop about half an astronomical unit away. Iôll manage.

Wildfires

Alabama is usually a very wet place, but weôve been in a severe drought for a couple of months now, with wildfires all over the place. One blaze hit Warrior, near our home, and closed I-65 for a while. Iôve been itchy and nervous about fires blowing up around our tower sites, but that hasnôt happened, thank the Lord.

Last night, we received over an inch of rain;

weôre expecting severe storms and more rain this evening as I write this (morning of the 29th). We really need it, so thank the Lord again.

Where they really need rain, though, is in the mountains of NC and TN. Itôs heartbreaking to see the devastation around Gatlinburg and Pigeon Forge. Sandy and I love going up that way for vacation, and itôs being eaten alive by wildfires.

Web Server

November and December are usually our slow-down times in Engineering. The weather finally starts turning cooler, people are taking holidays, itôs just not as frantic. Therefore, this is an ideal time for a new web server.

Cris and Amanda have installed the new hardware and operating system. Theyôve put the new server on a temporary internal IP address. My job is to get Apache happy and to move/install databases for all of our websites. Keith Peterson will then go in and make everything pretty (arguably the biggest job, truthfully).

Weôre going to make some changes for security reasons. Each site, from 101wyde.com to wdcxradio.com to you name it, will be ñsandboxedò into its own directory and virtual server. That way, if one site gets hacked, the others are better isolated and protected.

One thing you can count on: if you run a web server, especially with a popular, well-known Content Management System (CMS) like WordPress, you will be attacked. The script kiddies will target you just for the fun of it; more nefarious types (such as distributed spammers) want to take over your server to send out ñNigerian Princeò and ñYouôve Won a Gift Card!ò spam.

In fact, this happened again last month. One of our websites stopped delivering email via the online contact form(s); upon investigation, we discovered that, yep, our web server had been placed on a blacklist. While Keith took care of getting us off of the blacklist, I blew up the site and rebuilt the framework. Keith once again did the hard part: he restored and rebuilt from backup.

(By the way, Keith Peterson gets a loud ñhoo-ahò for actually doing and maintaining regular backups. So many people donôt. Good on yô, Keith!)

Some diligence, some new security plugins, a different server arrangement and, of course, all outbound email going through our Barracuda Spam Filter, will hopefully make us better Netizens. (And itôll keep us off the blasted blacklists!)

Odds and Ends

WDJC-FM has been under a NOTAM for a while. Our normally-humid climate here (see my comments above) means that metal will corrode in a heartbeat, from conduit to the wiring inside. Over the years, weôve managed to get WDJCôs lights working again after each outage, but this time, nothing seemed to fix it. Todd picked up a spool of SO cable from Graybar and we have a tower crew coming in to replace that power cable. If that doesnôt do it, Iôve also got an extra LED beacon on hand.

The good news is that the AC units at WDJC-FM appear to be holding their own now. The company that we use for AC maintenance, KS Services, did an outstanding job of cleaning and

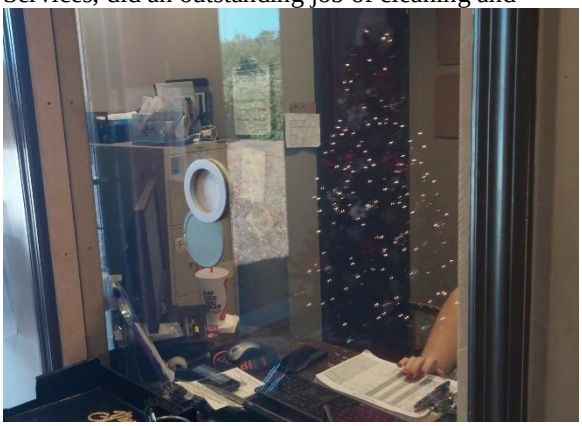


Figure 1 - Bullet resistant glass in the receptionist's area.

refurbishing our existing units. We had budgeted for replacement in 2016, but their work has let us move that back a couple of years.

Incidentally, KS also does generator work now, and that, given that they charge less than every other company weôve tried, is even more good news. A couple of weeks ago, the generator at 120 Summit started making alarms. We called KS and they discovered a coolant leak. They tried to repair it, but we ended up calling them back, at which time, they replaced the water pump. The total charge was still less than what weôd previously paid for comparable repairs.

We also installed bullet-resistant glass and glass treatment last month. The receptionist is now behind protected glass, as are the hosts in WYDE-FMôs talk studio. The outside windows have been treated with a film that isnôt as effective as true bullet-resistant glass, but it adds the benefit of being ñmirrored:ò a bad guy trying to shoot into the building wonôt be able to see anything.

Figure 2 - The new crew actually cares about the appearance of the grounds.

We've hired a new landscaping team to take care of the grounds around our 120 Summit studios, and they've been a dramatic improvement. The previous crew basically just wanted to use leaf blowers and maybe (maybe!) trim some weeds now and then; these folks take things more seriously.

Finally, more training is in order for both board operators and production personnel. I've been working on the materials for that in my spare time. We hope to do that within the next week or so, and I'll report on it next month, Lord willing.

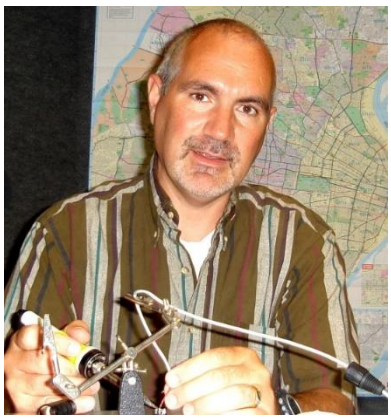
Congrats to Jack Bonds!

Before I leave, I want to congratulate Michael "Jack" Bonds, who passed his CBT exam a couple of weeks ago. Good job, Jack!

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

Exciters

Over the past few months, we have seen our BE FXi 60 and FXi 250 exciters show their age. Since I have been here for about two and a half years, we have almost zero issues with these exciters. They just run. We did have to replace a fan in one of them, but that would just be expected wear and tear.



Then, back in September, we began the merry-go-round of swapping the exciters from one location to the next. The first to show signs of age was the FXi 250, which is in our main transmitter for WSRB. We had some early warning signs that something was going on a couple of months before the event in September. When the air conditioning couldn't keep up with the hot weather, the transmitter would start losing a few hundred watts. The exciter controls the power level in FM/Hybrid mode. A power reset usually restored normal operation.

Then down the road, I received an alarm that the transmitter was over normal power level. I logged into the remote control and could see the power level actually moving up and down a few thousand watts. I went to the backup and when we arrived at the site a reset once again restored normal operation. At this point we started the conversation with BE about this problem child. About a week later, we found that the exciter was actually having spectrum issues. Of course, a power reset returned it back to normal. Obviously, I couldn't in good conscience put it back on the air, and we sent the exciter to BE for diagnosis and repair.

In the meantime, I grabbed the exciter from our backup HD transmitter for WYRB to use in the WSRB main. That ran fine, but while that was occurring, the exciter in the backup analog transmitter at WYRB had a power supply fault. It was still running normally otherwise, but the clock was ticking on how long that would last. I figured that when I received the FXi 250 back from BE, I would bring back the HD backup exciter to WYRB to use on the analog backup transmitter, and then repair the one with the power supply issue.

So, I did just that. We put the 250 FXi back in the WSRB main and it was running normally. I took the FXi 60 back to WYRB and put it in place of the one with the bad power supply. Keep in mind it ran fine in the WSRB main. As soon as I put the transmitter on air, I got an alert from the exciter that it had a low forward power alarm. It still had enough power to give me drive on the backup analog transmitter, so it at least bought me some time to repair the FXi 60 with the power supply alarm.

It ended up that we had to order a whole

new power supply on that unit and the exciter is now back in place running normally. Regarding the unit with the low power supply, we are awaiting a new final PA, which should hopefully resolve that issue and we can put it back on line.

Valley Notes
By
Steve Minshall
Chief Engineer, KCBC

After 36 years of broadcasting, I figured that I was probably done putting stations on the air. Now KCBC has a construction permit to add a translator and suddenly I am putting on a new station, of sorts anyway.

The translator is really not that much different than a full FM facility. Much is the same. It requires an antenna to be installed on a tower along with transmission line and, in this case, an isocoupler. It requires a building (or a cabinet in this case), HVAC, and even an STL system. Itôs on a smaller scale but it is an FM facility.

The first FM that I worked for had a transmitter in a building at the base of an AM tower, an isocoupler, transmission line, antenna, etc. Funny how some things come around again.

Our new FM package is definitely modern. There are a couple pieces of equipment made by Inovonics, an RDS generator and a modulation monitor. Inovonics is certainly a name I remember from my first days in radio. The Inovonics MAPII, 8-band audio processor was quite the unit in the day. I also enjoyed the use of the more grown up multiband processor the Inovonics 250. The Inovonics equipment has always been down to earth, reliable, easy on the budget and the people there have been nice to me as well.

Every unit for the new FM has an Ethernet connection. This is pretty cool, a big difference from my early days in radio.

I mocked up all the equipment with a couple sides of a Middle Atlantic rack so that I could test the equipment and get it all sorted out before moving it all to the outdoor cabinet.

With a piece of wire stuck in the sample port of the dummy load we can listen to the new station in a car parked outsideé if we open the door. It seems our metal building does have some shielding properties.

[*Steve wrote this column for publication last month, but I held it up because the antenna and line were scheduled for installation within a few days of the publication date, thinking that it would be better to tell the whole story this month than part of it last month. The best laid plans of mice and men often go awry, and first a problem with the ERI power divider and then wet weather have held the project up so that it still isn't complete. The translator itself is, however, assembled and installed, just waiting on the tower work for completion, hopefully early this month. – Ed.*]

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

As we gain more experience with the coverage of the new translator, I continue to be impressed. The translator uses a significantly directional antenna with the primary coverage for the translator to the south west. With an ERP of 250 watts, the power is fairly low compared to other full power stations.

The terrain to the southwest is far from flat, with hills, dales, valleys, and buttes scattered throughout the area. This is an area that has been added to the metro Urban Growth Boundary and which does not receive much attention or service from the Portland broadcast market. Our low power translator provides a good signal throughout that area, even in areas between topographic features that block a direct path from the translator. A real plus is the coverage in the Oregon City area. While this area is down on the edge of the lobe of the antenna pattern, mobile coverage is solid throughout the area.

The performance of the translator is excellent and an important benefit to KKPZ.

This past month, the Emergency Preparedness Leadership Forum debuted here in Portland. KKPZ attended the forum with a presentation based on communication. This forum is a new effort to bring preparedness to business and the public attention. Even though the event was lightly attended on the second day, I got significant feedback from other attendees about the KKPZ presentation in support of the public service provided by stations like KKPZ.

As the fall and winter weather approaches I have begun to plan for harsh weather, with the possibility that we will experience more winter than usual. Portland has a reputation for shutting down upon the reported sighting of a single snow flake.

At our Mt. Scott studios, we have a serious ice issue at our parking lot and driveway. For years the lot was graveled with reliable traction. Now that the parking lot is paved, any ice storm will result in a skating rink that appears to have been recently finished by that famous Zamboni machine. Not good for either staff or the general public.

I have contacted several parking lot maintenance firms to arrange a contract to provide deicing for safety. The boy scout motto applies: be prepared.

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

BURK!!!

Itôs been a long time since we used Burk as a four-letter word. Iôm still not using it as that. I absolutely love their ARC Plus units.

We had a power supply fail at KLZ last August and learned how to get things working again. Well, on the Friday before Thanksgiving, my dad called me. He was driving and noticed both the day and night sites were on for 810 KLVZ. I immediately began inspecting and found I could not contact the day site by IP or telephone and that I could also not connect to the 670 KLTT site by either means. I was able to get to all the equipment at both sites by IP, just not the ARC Plus units. This spoke volumes. It had to be the ARC Plus at both sites.

I headed out to 670 and Keith headed out to 810. We both found the ARC Plus unit at the respective sites to be dead as a doornail. Keith was able to turn the transmitter off at the day site so we could be on the night site for that station, and I was able to get 670 manually switched to night pattern.

I knew I could reconfigure the actual I/O devices to work with another ARC Plus unit over our network. All of our sites get their network from the studio using microwave links. This meant I could add a new IP-X device to one of our working ARC Plus units and regain remote control of the sites with the failed ARC Plus units.

Adding the device is a two-step process. First is to log in to the IP-X device and change the ARC Plus IP address to the one you want it to connect to. Then you go into the Auto Load program, go to the station you are linking to and add the device there as well. Then you will most likely need to unhide the next group of 16 channels.

I have a Station Handbook that has all the channels labeled for the ARC Plus at each site along with what the readings should be. Itôs mainly for phone use, a cheat sheet of sorts for board ops to use when calling. But since the phone and web interface use the same channels, it made labeling easy. The goal was to get the basic channels taken care of: ON/OFF, HIGH/LOW; DAY/NIGHT as well as the readings and some statuses such as tower lights.

Unfortunately, you have to calibrate the channels, but since I was at the site anyway, that made it easier. It made it a little more difficult for 810 KLVZ, but I was able to get it done as well. I was able to control three of my sites from one machine, the one at KLZ. That bought us enough time to get some replacement power supplies in before the Thanksgiving holiday.

Replacement is easy as well. When purchased through Burk, they send all new cables, and it is always best to replace those cables just in case. After you remove the lid of the unit, the power supply has four screws holding it in place. Remove those, unplug the cables and switch it out.

Once the ARC Plus came back up, I was able to log in to the IP-X device itself and switch it back to the correct ARC Plus unit and remove it from the other one I was using temporarily. Because those units are able to be networked, it really saved us from having to drive to two sites daily twice a day to switch patterns and check tower lights.

Legends 810

After months of work getting 810-AM back on air, the FM translator on and figuring out the whole voice tracking and WANcasting thing with Dallas and Colorado Springs, I think we are finally done. I had been putting in long hours, mainly

because in order to do any work on the Dallas Nexgen computer, I had to wait until the staff there was gone for the day.

We kept running into issues. We found that if where they do voice tracks does not match perfectly on our end, it won't work. What that means is if the song before and after the voice track is not the same as what we have in our system for some reason, the voice track will not come through.

The other major issue we ran into was with the live logs. Each day, two different hosts each do an hour of live broadcast from Dallas. We send them the Nexgen log and they connect to us via the Bridge-IT and play the log, taking requests and subbing out music to fill the requests.

The confusing part was, despite what we were originally told, Nexgen does not know how to deal with time zones, so our 24-hour day was identical to Dallas: 1PM MST = 1PM CST, and by the time Dallas gets ready to do the 1PM hour, it's already 2PM in Texas and that 1PM log is in the past and can't be played.

This means more work for Dallas. We send them the log, and then someone needs to go in and delete the unused hours in MST and then copy them to the correct time for CST. Otherwise we would end up replaying our hour again while Dallas was doing their broadcast.

We were able to run our first sock hop, simulcast with KAAM, the last Saturday night in November. So, with that working as well, I think I am finally able to take a step back and focus more on my engineering work. It is definitely a breath of fresh air to get back to a normal schedule.

Our next issue, which Stephen Poole is helping me with, is trying to find a way to turn port forwarding on and off automatically. When the broadcast happens from Dallas we need to turn it off in Denver and allow Dallas to export metadata to various equipment (for HD PSD, FM RDS and stream metadata) and then turn that off when we go back to broadcasting from Denver. We will see if we can get this figured out.

Coming Up

I pray you all had a blessed Thanksgiving. For us it was relaxing as we didn't have any big family plans, just dinner with my parents, so it was a nice small get together. My husband and I both had Friday off, so it was nice to have a day to lounge around, something we rarely get to do anymore.

December looks to be a slow month. We have some work to do on our NX50 transmitter in hopes of tracking down and fixing some nuisance alarms that keep happening. We also have servers to deal with and install. Several firewalls and file servers are in need of replacement, so we are now working on those. I look forward to Christmas and spending time with family. I am not looking forward to the end of yet another year, though. It is crazy how fast time flies. It would be nice if it slowed down some so I can enjoy it.

That about covers it for this edition so until next timeé 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, 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

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