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November-December 2018 – Vol. 26, No. 6

All-Digital Operation: The Future of AM

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COMREX

All-Digital Operation: The Future of AM

by Elaine Jones

AM radio is undergoing a dramatic shift in a bid to increase listenership and improve quality of services. Station owners realize that analog AM really can't compete with FM in terms of quality, especially for music programming. And hybrid operation is of concern to stations in large or crowded markets because of the potential for adjacent-channel interference.

One station has taken a very large step. It's been nearly six months since Maryland's WWFD-AM turned off their analog broadcast signal. The station's one-year project, which is testing an all-digital AM signal in one of the United States' largest markets using MA3 AM HD, is being closely watched throughout the industry.

A collaboration between Hubbard Broadcasting, Xperi, Kintronic Laboratories, and engineering firm Cavell, Mertz & Associates, with support from NAB's PILOT, the all-digital signal at WWFD is an experiment to test the long-term validity of all-digital AM as well as to identify any issues that may crop up with running the signal over a lengthy period. Nautel supplied equipment and support for this test, as well as for shorter digital AM tests over the past few years, at several other stations around the USA.

WWFD/WTOP Senior Broadcast Engineer / WWFD PD Dave Kolesar came up with the idea of going all-digital in late 2016. "We had applied for a translator on 94.3 in Frederick to support our AM 820 signal," said Kolesar. "Predictably, as soon as the translator went on-air a good portion of our audience went straight to FM because, given a choice, they'll choose FM for music. That left WWFD being the legal justification for this translator. Since the bulk of our audience had already moved, why not try something experimental with the AM signal?"

Xperi responded with enthusiasm when Kolesar approached them with the idea. "We think that all-digital AM will help to reverse the trend (of diminishing listenership)," said Xperi's Mike Raide. "AM all-digital gives the listener and the broadcaster more opportunities to be on par with FM stations – not only in the quality of the signal but in data services. Consumers want and expect the same quality as FM, and AM digital provides that ability through stereo audio and by providing metadata such as title, artist and album, and data services such as Artist Experience®, traffic and weather."

What's involved in transitioning to a fully digital signal?

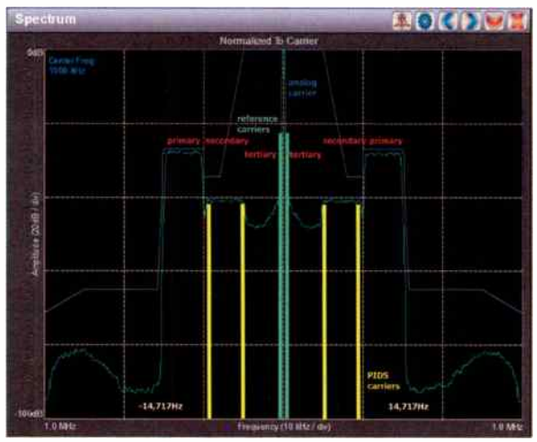
First, you'll need authorization. At present, digital-only operation requires an experimental license from the FCC.

Once you've obtained your experimental license, your next step will be to make significant changes in your transmission facility. You'll need a digital exporter/importer such as Nautel's HD Multicast+. If you plan to include special services such as Artist Experience® or weather and traffic alerts, make sure your importer/exporter supports these features. You'll also need an all-digital optimized transmitter such as a Nautel NX Series or a similar product, with an Exgine card. (Why "all-digital optimized?" It will provide the appropriate pre-correction techniques to supply a cleaner signal, enabling faster HD Radio™ signal acquisition in receivers.)

For the WWFD test, Xperi wanted to demonstrate interoperability between different manufacturers' products, mostly to show that good results can be achieved by adapting existing equipment to go all-digital. As a result, a Nautel Exciter, Exporter+ and HD MultiCast+ (acting as an Importer) were paired with a BE AM6A transmitter at the site. Raide worked closely with WWFD, Nautel and BE to integrate the products for the test.

Nautel Exciter, Exporter and HD MultiCast+ at WWFD

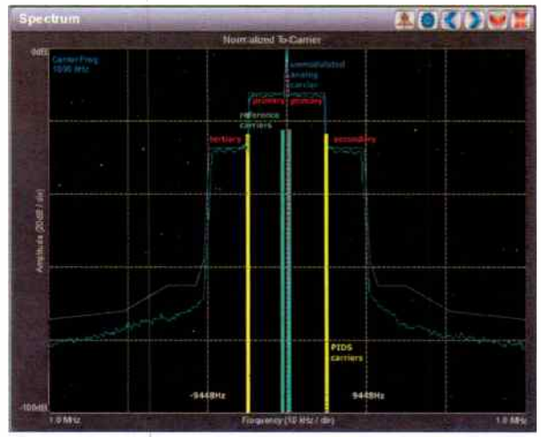
If you are currently operating in hybrid mode, you will shift your mode of operation from MA1, which supports the analog carrier, to MA3, which is designed for all-digital operation. In MA3 operation, the primary carriers are relocated to replace the analog signal and are increased in power by 15 dB. Secondary carriers are moved to the upper sideband, while tertiary carriers are moved to the lower sideband. Both secondary and tertiary carriers are increased in power to -30 dBc. This increased IBOC carrier power increase results in improved coverage and signal robustness, while the net effect on the signal bandwidth is a reduction from around 30 kHz to just under 19 kHz. The below figures demonstrate the spectral differences between MA1 and MA3 signals.



Spectrum of MA1 signal, as captured on Nautel AUI.

Existing HD Radio receivers are already equipped to handle MA3 signals, so there is no worry in this respect.

The antenna will need modifications as well. WWFD's antenna needed to be altered so it would be broadbanded enough to pass the digital signal. Kintronics was instrumental in this project, replicating the existing antenna system in software, then optimizing it to improve the day and night common point impedance bandwidth. Once the new design was determined, existing components were used as much as possible and only a couple new parts needed to be purchased for the new antenna system. Kintronics, Xperi and Kolesar were assisted by Gary Cavell of Cavell, Mertz & Associates who helped re-tune the array to make sure it met specifications.



Spectrum of MA3 signal, as captured on Nautel AUI.

What can you expect from an all-digital signal?

Your coverage area will be different. In many cases it will be improved. However, you also have greater potential for drop-outs due to the nature of digital transmission and reception. "The signal is either there or it isn't," said Kolesar, "but so far we have observed that the former coverage areas for WWFD, both day and night, are duplicated in the digital signal. We didn't lose any coverage area at all. In fact, under ideal circumstances, we have gotten reception reports from 80 to 85 miles away at the point where you could just barely hear the analog signal."

One challenge to an all-digital migration is the overall availability of receivers. NAB PILOT says the penetration of HD Radio receivers should ideally be in the order of 85% to ensure the success of all-digital services for every station in a market. About half of all new cars sold this year included HD Radio receivers, but there are still a lot of old cars with standard analog radios in use. In the Washington DC area, HD Radio receiver penetration is about 20%. Still, Kolesar thinks that's adequate for his purposes. "As the PD of a music station on AM, I would rather take my chances with that 20% than the 100% who can receive analog AM but will refuse to listen to it for music," he said. "Interestingly, I got some messages from listeners who said that on the switchover day, they heard a rush of static, then silence, then it came back 'clear and better than ever.' Many of them had HD radios in their cars and didn't even know it." Kolesar would like WWFD to remain all-digital in the future. "We may have to go back to analog at the end of the test period," he said, "but we plan to apply for a permanent digital license."

"Nautel believes the future of AM is tied to all-digital operation," said Nautel's Gary Manteuffel. "Our participation in tests over the past few years has shown us that extremely good results can be achieved through this mode, giving AM a chance to reinvigorate itself and remain a viable over-the-air choice for listeners."

Kolesar agrees. "The AM band in the United States has a bad reputation for quality and lack of services," he said. "As the country moves to all-digital operation I'd like to see a re-branding. I would personally like to use the term 'medium wave' like they do in Europe. It would help establish a new expectation for listeners."

Elaine Jones operates a technology marketing and PR firm based in Tucson, Arizona, and is Nautel's publicist.

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Studio Site

Streaming Leverage to Bolster Your Audience

Alexa, Help Build My Ratings!

by George Zahn

It's the time of year when radio station managers and engineers start thinking of New Year's resolutions. A phenomena that's about a year-and-half old is dealing broadcasters an extra card to battle for relevancy in the new world of downloads and on-demand streaming. Are you using the smart speakers of your listeners to your benefit?

First, let's talk about the great equalizer that is the Internet. As a station manager for a small independent Cincinnati public radio station, I marvel at the reach and adoption of our station by people listening on the Internet. including members who pledge from California, Kansas, New York, and as far away as Thailand. Simple streaming, although costly due to additional music rights and the cost of bandwidth, gives us the same availability worldwide that a 50,000 Watt AM can boast. While the larger station may have more promotional cache to spend on getting on-line listeners, on the Internet, it makes no difference the wattage of your station.

Mobility Matters

Most of our on-line listeners used to listen, "chained" to the desktop computer, often while cruising the Internet. Internet radios for the home extended the chain using the home's WiFi connection. Believe it or not, now more listeners are likely to be listening to our on-line radio stream on the tablet or smart phone. Our station skews slightly older demographically, and even our older demo is streaming us portably on the computers in their pocket.

Now devices such as Google, Amazon, and Facebook are opening even more doors. If your station is available through any of the standard radio suppliers including TuneIn Radio and iHeartRadio, your station's stream should be easily available on everything from Google Home, to Amazon Echo, to Facebook's new Portal. Brag all you want about your smart TV you're getting for the holidays. My best tech friend is the smart speaker in potential listeners' homes.

There have been many efforts to make radio more vital and interactive over the last few decades, including stereo AM and the Radio Broadcast Data System (RBDS) which started in Europe as RDS and allows stations to send "metadata" such as station format, song titles, artists, and even ad slogans, to those listeners with higher-end car or home radios that receive and display RBDS. It is a nice extra and becoming more ubiquitous, but I argue smart speaker technology will have a much larger impact.

I was explaining the role of Internet streaming for our station, to a tour recently. We do standard audio streaming through SecureNet and we also are a station (free listing) on TuneIn Radio, an app on most Roku boxes and smart TVs. We have a map of the world where we place pins in cities from which listeners have written, called, or pledged. In recent fund drives, we've eschewed the standard public radio mugs and tote bags and have offered Internet radios – and most recently Echo Dots as premiums or thank you gifts for pledges at higher levels.

"Vocal" Support

For every out of town listener and person living on the fringe of our signal, they now get us static free by simply saying, "Alexa, Play WMKV." In fact our Operations Guru Dave Schram created a free skill for smart speakers that allows access to any of our streaming podcasts in addition to our live stream. If someone wants to bypass the skill and just use TuneIn Radio, they request "Alexa, Play WMKV-FM."

The Amazon Echo Dot

Welcome to the IOT, whether we like it or not. IOT is the Internet of Things, and the same smart speaker device can be modified so you can control lights and appliances in your home, manage and download shopping lists to your smart phone, and far more than we can discuss here. Many are concerned (and by some accounts rightfully so) about security, and each tech owner should take security precautions, but instant access to entertainment and convenience likely will outdistance security issues. Yes, your fridge can text you to stop for milk on the way home when it sees the supply is low!

There was a day when many of us in radio wished we could have a Sirius/XM channel to reach more people. Smart speakers could leave that desire in the proverbial dust. If your station dropped streaming, balking at the extra costs for Internet music rights, smart speakers might just give you some extra bang for the streaming buck. If your station streams audio, it's definitely worth looking into a listing on TuneIn Radio, which is therefore available on smart speakers.

"App-y New Year"

Does your station have its own streaming app? It's surprisingly affordable if you're already streaming. A little work at the beginning, to create graphics and assemble basic connection information, allows for quick development of an app for iTunes and android. For a few hundred dollars a year, we have an app for both platforms. Because we chose the cheaper package, we have some banner ads, but there are other options. Our app features decent quality streaming and a listing of recent songs played.

Before you glaze over thinking about an app, remember what I indicated earlier, concerning how streaming listeners are using our product. If my station's slightly older audience has migrated away from the desktop "watering hole," any younger listeners you have are likely using a desktop to listen only a minute fraction of the time. One New Year's resolution could be simply adding an app to your streaming.

During the aforementioned tour of my station, the one lament I had was the fact the Internet "equalizer" for all stations was not very readily available on car audio. Sirius/XM has continued to stay relevant by inclusion as a standard free trial on many car radios, allowing new listeners to get a taste of their service. We continue to hear that Internet car radios will become more common.

On The Road Again

One workaround that some of our listeners use, is made easier by the very common auxiliary jack or Bluetooth capability of most modern car radios. Simply opening the station app on a smart phone and sending the signal via a mini plug cable or Bluetooth to your car radio is a great way to keep listeners beyond our fringe coverage. The one caveat is that streaming through the cell phone app will use data for the consumer, which is a concern unless they have high volume or unlimited data packages.

There are more possibilities on the horizon. The Echo Auto device looks to be coming in 2019 and will utilize a listener's smart phone and data plan to access the Alexa device and play it through your car radio. The device claims it will have many of the skills that the Echo smart speakers have. It becomes a natural extension of the smart speaker experience on the road.

Some tech forums have utilized a multi USB outlet to power a Google Home mini smart speaker to also tether to a smart phone, activated as a hotspot to create a similar result to the Echo Auto. Back in 2008-09, Blaupunkt was marketing an Internet ready radio, and there are some after market car radios that can be added that can tether to a mobile hot spot or cell phone activated as a hot spot. Again, any of the hot spot usage will incur data costs if the consumer's data package is limited.

The next logical step seems to be a true Internet radio that can be bundled with unlimited data. Listeners wanting that freedom can get a portable UB-powered hotspot and an unlimited plan to eavesdrop from anywhere on the road.

For the more advanced streaming station developers, GraceNote Radio ID is a rich format data production suite that allows streaming broadcasters to create more than a basic presence and can make streaming access for drivers around the country easier whether the station us found by tuning, DAB, or streaming. The service is glitzier than a standard app and allows for switching between terrestrial and streaming signals for the end user.

The key is not just to create the availability of the stream and smart speaker presence, but also to do three more important things – promote, promote, and promote! Create low or no cost skills to make your visitors' smart speaker experience more enjoyable. Solicit listener feedback to see what your listeners are wanting and/or expecting from your service.

And remember that each of the major brands, Facebook, Google, and Amazon also have devices with video options. It may be worth beginning to investigate how to incorporate webcam or other specialty videos in addition to your streaming, including through your website. Our listenership, and yes even for radio, we can say viewership in some cases, is definitely changing and some simple studio modifications to make streaming available can make a dramatic difference. Let me know how you're using smart speaker/streaming technology to operate "out of the box."

George Zahn is a Peabody Award winning radio producer and Station Manager for WMKV-FM at Maple Knoll Communities in Springdale, Ohio. He is a regular contributor to ***Radio Guide*** *and welcomes your feedback. Share your stories with others by sending ideas and comments to: gzahn@mkcommunities.org*

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Emergency Prep

Keep Learning From Disasters

by Wiely Boswell

This last hurricane was quite a disaster. Altough it had an advanced warning, Michael did damage that changed the landscape in a wide area for a lifetime. The positive aspect was having help being able to come from the west, north, and east. An island, for example, has to wait longer for help to get there and increases the difficultly just moving materials and manpower, especially volunteers.

The staged help from various relief organizations and utilities, like Gulf Power and their amazing intra-company fraternity of linemen, shown bright in the aftermath.

I did make it in within 24 hours to check on a trailer at Panama City Beach, not knowing if anything was even left. It had some damage, but another 20 mph would have torn it apart. Aluminum and tin starts peeling, just ripping a hole where a screw head was and, if not tied down over the top, then becomes an air born menace to anything it hits. The square foot wind loading factor really starts to come into play, be it a tower or a porch roof. There is really no practical way a building or tower can survive high winds and debris with out a huge investment when built.

An EOC really needs small, strong, limited number of windows and nothing nearby to fall on the building. It has to have some elevation and a strong sleek roof with small overhangs. Radio was the informer and the Panama City EOC was ready. WKGC 90.7 had a closet studio at the EOC ready to go. They were one of the few left standing and had direct reports aired from EOC staff. iHeart also came back up and established local and remote studio feeds, and even had EOC staff on hand and some listeners call in.

When you need to get to your site during a major storm event the authorities may not let you in the area. *First Informer* status is needed to access a disaster area so you can get to your tower site or studio. It appears to be slowly progressing through the different state agencies. As for now, you will need a letter from Homeland Security to get access and fuel. To get access to "medium" damaged areas may require proof of property ownership with the address, or possibly a power bill.

The radio landscape changed, with multiple towers down and some studios soaked as towers crashed through their roofs. Powell Broadcasting called it quits and now its stations are being sold. There's plenty to see and read on the Internet of course and it can be disturbing to watch. The damage lingers, trees are broke in half, leaning over, and stripped of all their leaves. During these type events you go full speed in recovery efforts but it only lasts for about 2-3 days and then you drop. Chances of injury increase because of being worn out mentally and physically – you can become a burden to the system. Both hospitals are now out of commission in Panama City, with just an Emergency Room operating. It is something you would just not expect.

One thing that will slow you down in an area of destruction is flat tires. Lots of nails and sharp debris will be every where. Have a tire tool, a good spare tire, jack, plenty of tire plugs – and an inflator available that runs on DC, to be ready for flats. Hydrogen peroxide, Neosporin, and bandages are good first aid supplies. Nail resistant work boots, heavy duty battery jumper cables, and gas cans are also important. Don't forget essential meds, aspirin, and Advil. This is the type of recovery that I have learned about over the years.

What seems evident is that a complete backup site, which includes a tower with a licensed auxiliary antenna, needs to be some distance away from your primary facilities. A small studio, and reliable connections to the EOC and outside world, is needed to keep your listeners informed. When all communication is down, radio has been used to inform first responders.

A radio that works on rechargeable lithium tool batteries lasts a long time and will even run hand held inflators and tools. Data backups of various recordings, photos, and accounting records taken off site, are important prep you can do for the main site. Fireproof safes can also save important documents.

Several generators did fail during the Hurricane Michael. Large generator batteries have to put out an enormous amount of starting current. Any impairment such as cold weather or poor fuel, that requires an extended cranking period, is where an old set of batteries will fail. You can become so accustomed to a quick crank cycle you may not realize there is an issue with extended cranking. Running dry on fuel can also require extended cranking after refilling a fuel tank. One of my diesel generators has a lever on the side of the mechanical fuel pump. This lever can be used to pump fuel to prime the engine fuel supply. You also may need to bleed the injectors. Ask experts about your particular generator(s). The batteries should be changed out every three to four years. There is no reason an expensive generator should fail due to aged batteries.

If a known possible event is approaching the generator, it should be started *before* the event. It provides a quicker transfer and gives you a chance to see that it is operating before the wind and rain arrive.

Another need is re-fueling during an extended loss of power. This is addressed in disaster checklists. A known fuel supplier (with a backup) that has a tank on a 4WD truck should be on a standby contract. They will have to be able to get into the area and facility.

When refilling near empty tanks, the sediment can be stirred up and stop up fuel filters – have multiple replacement filters on hand at your site. Also, there can be both a pre-filter and a post-filter in the system. Fuel should be tested and treated to prevent algae growth in the fuel. Fuel "polishing" is an outboard way of cleaning old fuel by pumping and re-circulating the fuel through large filters on their truck. If you get an oil analysis it can spot internal engine component issues. Spare air filters may also be required if soot and ash from fires are in the area.

Guy wires make for a strong tower but add vulnerability. Guy paths have to be clear. Wind loading will add up, and stand-off mounts can add a torsion that can twist down a tower. Anti-torsion guy points are needed, especially for dishes. If you are on a leased tower, their restoration plan may not occur as fast as you would expect. Unused antennas and feed line should be taken down if they have been abandoned to reduce wind loading. A structural tower analysis and guy anchor inspection will reveal weaknesses. Free standing, self support towers will go down even when they have a wide base. It is best not to have a tower located right by a studio.

Lots of tarps and tie-down rope on hand will help you prevent water damage to equipment, when parts of a tower or trees may damage the roof. Even a small hole can do thousands of dollars of damage. Downward loops, with slack between tower and a transmitter building, can prevent damage to connected equipment by the feed line being pulled out of building by a falling tower. I bought a Nautel transmitter that had been junked because it was drug across a building, bending the harmonic filter connection, and bending the frame.

Have plans made ready to go and revisit often, as service and fuel suppliers may change, and revise based on what you will learn from experience.

Wiely Boswell is Chief Engineer of Faith Broadcasting, Montgomery, AL; CBRE,CBNE, and SBE 118 Chairman. He may be contacted at: Wiely@faithradio.org

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FCC Focus

FCC Reflections

Looking Back and Moving Forward

by Gregg P. Skall – Womble Bond Dickinson (US) LLP

It's about that time of year, between Thanksgiving and New Year's, when it's traditional to look back on where we've been and forward to where we're going. In Federal Communications Commission terms, given the goal of eliminating unnecessary regulations, ushered in by FCC Chairman Pai, it's appropriate to take stock of Commission's actions so far, and what is teed up for 2019.

Since January 2017, the Commission has moved to eliminate or relax a plethora of rules. Principal among them was eliminating the main studio rule which ended requirements that each station maintain a local studio together with corollary staffing requirements of two full-time employees and a managerial presence. Also eliminated were a number of monitoring and other requirements related to AM directional antennas. In its 2014 Quadrennial Regulatory Review order, the Commission entirely repealed the newspaper/broadcast cross-ownership rule which, for more than 40 years, had prohibited the common ownership of a daily newspaper and a full-power broadcast station in the same community. Also eliminated was the radio/television cross-ownership rule, concluding that eliminating the prohibition on common radio and TV station ownership in the same market would have a negligible effect. While the FCC retained for now its current methodology for local radio ownership rule compliance, as discussed below, that rule will be up for consideration again soon.

The television joint sales agreement (JSA) attribution rule was revised, with the Commission explicitly finding there was a lack of evidence to support its prior determination that a television JSA confers a significant influence or control over the core operating functions of the brokered station. The local television ownership rule was not eliminated entirely, but was modified to eliminate the requirement for the survival eight independently owned television stations (the 8-voice test) in a market after a merger of two same-market stations. The FCC adopted a hybrid approach to modifying the ownership restriction of two of the top-four ranked stations in the same market (the Top-4 prohibition), deferring to a case-by-case evaluation based on evidence warranted in a specific case, rather than a "bright-line" test. Obsolete television rules were cleaned out, including rules relating to full-power analog television and the analog/digital TV transition.

Relying more on the Internet, the Commission eliminated the requirement to keep paper copies of the FCC rules. Last year, the Commission updated its 2001 EEO rules and policies that required a non-Internet broad outreach to advertise full-time job vacancies, concluding that the Internet had now matured to the point where it could be presumed to reach all communities to accomplish broad outreach.

The Modernization of Media Regulation Initiative eliminated the requirement in §73.3613 for paper filing of station contracts and other documents within 30 days of execution, substituting a new rule that stations simply update an inventory of 73.3613 documents, amendments, supplements, and cancellations to the public within 30 days of execution, adding the option to file a list of the documents and provide them upon request. Notably, the Commission included an elimination of the filing requirement for time brokerage and joint sales agreements, although they were retained as items to be listed in station's ownership reports and to be uploaded to the on-line public file.

Noting that very few TV stations reported ancillary digital income, the Commission modified its reporting rule to require only those DTV stations that provide feeable ancillary or supplementary services during the relevant report period to submit the report.

Finally, in February 2018, the Commission proposed eliminating the Form 397 Broadcast EEO Mid-Term Report, suggesting instead that stations be required to indicate whether they are subject to the mid-term review in their annual EEO public file report or in its on-line public file database. To date, it has not taken action on that proposal.

Looking Forward

So looking forward, what new regulation revisions might we expect in in the New Year?

Ever since the recently-concluded 2014 Quadrennial Review Report passed over radio local market ownership caps, the topic has remained in the forefront of conversation. Key among advocates for radio AM/FM subcap reform is Commissioner Michael O'Reilly. O'Reilly advocates that subcap modernization would allow radio station owners to better compete with digital media for ad dollars, arguing that broadcast radio is in a life and death battle with digital streaming media. We can expect the NAB to continue its advocacy in the Quadrennial Review to modernize what it has characterized as "outdated radio ownership rules" believing that it will provide increased competition in the audio space and allow radio to remain free, over-the-air quality entertainment and information service by eliminating the subcaps in markets ranked higher than 75 and allow one competitor to own as many AM stations as they wish regardless of market size.

While many in the radio industry believe radio ownership cap elimination will harm localism, modernization appears to be on the FCC's doorstep and is keyed up in the Commission's Modernization of Media Regulation Initiative scheduled for the December 12th FCC meeting. Also expected to be a part of the 2018 Quadrennial Review is further review of local TV ownership and the "dual network rule" prohibition of any one company owning more than one network.

Another potential rule for elimination is the requirement to maintain and display station licenses at specific locations, such as their transmitter sites. Since licensing information is readily accessible on-line and in the FCC's databases, it is argued that these rules are redundant and obsolete. One commissioner, upon visiting broadcast transmitter rooms in New York, noted that licenses are pasted up on the wall in such a way that they were literally unreadable.

On October 5th, the FCC adopted the Second Further Notice of Proposed Rulemaking in The Revitalization Of AM Radio Service. Already implemented are several rule changes designed to revitalize AM radio, the most important of which was to permit cross-service use of FM radio translators by AM stations and liberalization of their community coverage requirements. As I wrote in the July/August 2017 edition of this column, however, the AM Revitalization "800 Pound Gorilla" is still in the closet. That gorilla is the proposal to modify AM protection standards for what were formerly known as "clear channel" AM stations by revising their protected service contour definitions in recognition of modern-day noise interference and new services that have replaced sky-wave service.

The Commission now appears ready to tackle that issue which may enable many daytime-only and limited nighttime service AM stations to increase local nighttime service. I recommend the reader take another look at my July/August 2017 article. www.mydigitalpublication.com/publication/?i=429250&ver=html5&p=12 Another issue to be considered by the Commission is the possible effect of such AM rule changes on the EAS and IPAWS emergency notification systems. Comments on the FCC's AM protection proposals are due January 22, 2019 with reply comments on February 19, 2019.

With the proliferation of FM translators, an increase in interference complaints was bound to occur. Under the current rules, an authorized FM translator cannot cause interference to the direct reception by the public of an off-the-air signal of any authorized broadcast station that is regularly used by a *bona fide* listener. If interference is demonstrated, the translator has to remedy the situation or suspend operations. Two petitions were filed with the Commission to change this rule. Aztec Capital Partners petitioned the FCC to update its rule by giving some protection to fill-in translators and to prohibit "distant" FM stations from claiming sweeping service areas, thereby knocking AM station fill-in translators off the air. The NAB also petitioned for certain rule modifications to alleviate the translator interference problem.

In response, the Commission issued a Notice of Proposed Rulemaking proposing several rule changes designed to help translators and full power stations resolve interference complaints. The first change would be to allow FM translators to change to any available FM channel as a minor modification upon the showing of any interference to or from any other broadcast station. Under current rules, channel changes are limited to only a first, second or third adjacent, or an IF channel. Second, the Commission proposed to require a minimum number of listener complaints to support any claim of translator interference.

The Commission also proposed strengthening the upfront requirements for a *"bona fide"* listener, seeking comments on whether it should require that a complaint include the full name and contact information of the listener, a clear concise and accurate description of the location of the interference, a demonstration that the complainant is a regular listener (i.e. at least twice a month) and be disinterested i.e. no legal financial or familial relationship with the desired station. Notably, the Commission also proposed to eliminate the current requirement that the complaining listener cooperate with the remediation efforts. Aztec sought to limit the interference radius ratings of full power FM stations. After considering its reasoning and proposal that the 60 dBu contour standard be used, the Commission concluded that it would be more appropriate to use the 54 dBu contour standard and asked for comments on this or what other outer limit might be considered for different classes of FM stations.

Of all the dockets and proceedings discussed in this article, this docket dealing with FM translator interference is probably the most controversial of all. While the Commission may have had hopes that its proposal would foster an industry consensus, the actual comments filed demonstrate an extreme disparity in viewpoints, particularly on the FCC's proposal to limit complaints to the 54 dBu contour of existing stations.

While there are many other dockets and proceedings deserving of attention for both the Commission's deregulation and re-regulation efforts, the ones discussed here, at least for now, may be of most immediate interest to broadcasters. But ... stay tuned! If anything is clear about Chairman Pai and the FCC Republican majority, it is that deregulation is high on the priority list and anything and everything is fair game. Combined with an ever changing and escalating evolution of technology, I suspect that we'll have a new even longer look-back list next Thanksgiving.

This column is provided for general information purposes only and should not be relied upon as legal advice pertaining to any specific factual situation. Legal decisions should be made only after proper consultation with a legal professional of your choosing.

Gregg Skall is a partner of the law firm Womble Bond Dickinson (US) LLP. He frequently lectures on FCC rules and regulations, represents several state broadcaster associations and individual broadcasters and other parties before the Federal Communications Commission in their commercial business dealings.

Prior to private practice, Mr. Skall served as the Chief Counsel for the National Telecommunications and Information Administration and General Counsel to the White House Office of Telecommunications Policy.

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Tips From the Field

Old Tools and Tips

by Michael Bradford

I was running some new wiring in existing conduit for a translator installation, and noticed a sharp burr around the inside of one piece of the EMT. (**Fig. 1**) This sharp ridge can easily cut into the insulation on THHN wire and cause trouble you won't notice until you power-up the circuit. I have a nifty deburring tool from Noga Industries that removes that burr and makes a smooth surface on the inside of the conduit. (**Fig. 2**)


Figure 1

The tool itself has a replacement blade stored in the handle, is simple to use and very effective. (**Fig. 3**) I discovered years ago, that using your pinky-finger to check for such a sharp burr is not a good idea. I ordered my original tool from the manufacturer's catalog almost 15 years ago, but I see them in electrical supply houses these days and on several websites.


Figure 2

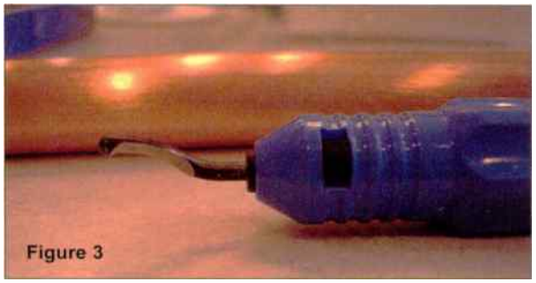
Figure 3

During the same project, I installed a new Uni-Strut support, using a 24-inch length of 5/16 threaded rod for the support. I was just finishing when I noticed I forgot to install a securing nut at the top of the rod. Normally, it would be necessary to undo the whole support rod and brackets to install that upper nut, but I remembered a special split-nut that's been hiding in my toolbox for several years. I've had this so long, I don't recall where I got it but I remember requesting a "sample" from a small company in northern lower Michigan near Harrisville. In any case, with this split-nut it was possible to slip it over the threaded shaft near the top, rotate the nut into locking position and tighten it without having to disassemble the whole installation. The nuts (**Fig 4**) come in various sizes. Researching the Internet will reveal many sources of split nuts. A common source is www.grainger.com

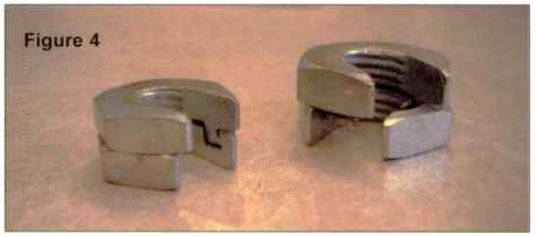
Figure 4

My neighbor stopped over with his 1965 Jaguar XKE and wanted some help replacing a broken toggle switch on the dashboard. The electrical equipment from Lucas doesn't have a great reputation from this decade and I didn't know what I might be getting into. I used a mirror and flashlight to inspect the rear of the panel and found the switch was jammed between a metal support and nearby ashtray bracket. Now mind you, I used to be able to crawl around underneath dashboards and such, and assume some pretty interesting positions in my youth, but not in this time of my life! I noticed the knurled nut on the front holding the switch in place and remembered a special tool I had from years ago that is perfect for this type of project. (**Fig. 5**) This special tool opens and expands like a pin-vise to grab the knurled nut without distorting the nut or scratching the surface of the panel. Thus, it was easy to remove the broken switch and install a new one without crawling underneath the dashboard or ruining the nice finish on the instrument panel. This tool has part number GC-9359 and was very handy back when this type of mounting nut was more prevalent.

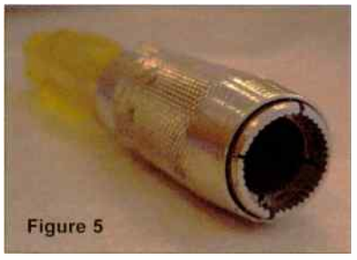
Figure 5

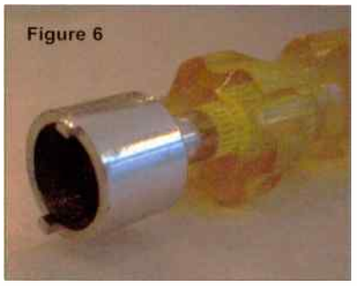
Figure 6

Speaking of special mounting nuts, remember the split-ring mounting nuts used by Scully and other manufacturers to mount their panel switches? Remember trying to use a "Greenie" or some other small screwdriver and a hammer or a pair of needle-nose pliers to remove this type of nut? Some fun, hey? Well, I have another special wrench (**Fig. 6**) that I bought directly from Scully back in the 60s. This fits the split-ring retainer nuts used on most of their recorders at that time. I found this wrench handy when rebuilding some government surplus equipment and maintenance on some electronic cherry sorters from the 1960s and 70s.

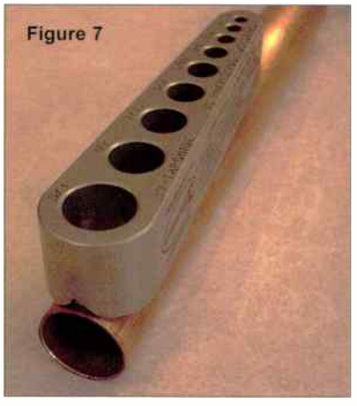
Figure 7

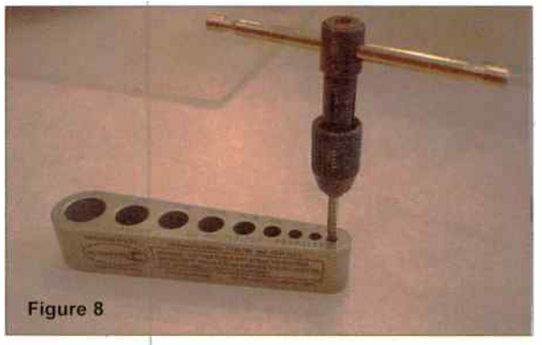
Figure 8

Another wonderful tool I have used many times throughout the years is my Big Gator Tools Tapguide *(available at www.amazon.com)*. This tap/drill guide helps assure perfectly straight holes when drilling flat-work, tubing (**Fig. 7**) or even right-angle metal. Keeping your drill straight assures no skipping across the surface while drilling and when tapping threads, the guide guarantees perfect threads every time. This tool has a base made to straddle round stock for threading holes into pipe or plastic. It's important to know that you should use a thread-tapping lubricant when using a tap. This fluid has the consistency of honey and is necessary especially when using a hand tap (**Fig, 8**),

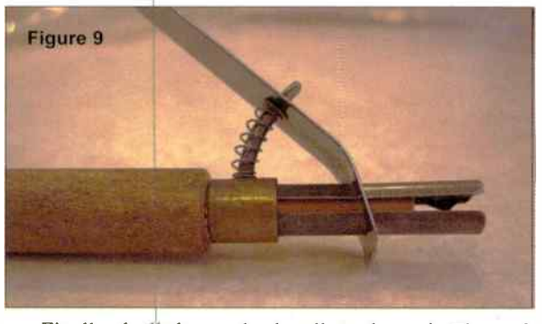
Figure 9

Finally, the little wooden handle tool seen in **Figure 9** is probably older than many of you reading this article. It was a gift from my Uncle Bill when he worked for the Michigan Bell Telephone Company in Traverse City, Michigan. I was telling him how difficult it was to safely remove the indicator bulbs from the RCA phase-control panel at WAAM in Ann Arbor, Michigan. No matter how careful I was, I managed to break at least one of the 120 Volt bulbs when removing it from the socket. He rummaged through his "goody" box and came up with this little beauty. It was made to remove the indicator bulbs used in telephone equipment and office phone systems back in the long-past days. It is perfect for those incandescent wedge-base bulbs in the RCA controller. You slip the metal clam-shell end into the socket around the bulb – gently squeeze the lever down – and easily (and safely) remove the bulb. I have loaned this little tool to several engineering friends and I'm sure it has saved many a bulb and many naughty words!

Have a safe and happy Christmas and hope you receive no emergency calls right in the middle of dinner or gift-opening this year!

Michael Bradford began his career at WCCW in 1962, A CPBE since 1984, and currently a contract engineer, you may reach him at: mbradford@triton.net

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JETLINK

The Great Flood

by Gary Minker

It was a typical day, like many other days in the office when the phone rings and a voice on the other end says, "Hi Gary, Whatcha Doin?" The well meaning social call is the kind precursor to the real root of the reason for the season.

"Hey, this is Ferd and you know, I am with The Aardvark Channel and we have an issue here that I think I need your help with." Ferd is a pretty sharp guy and I know that anything that he tells me is only going to come popping out of his Mensa IQ after some considerable thought – and then here comes the money question. "Can you come out to the transmitter site? STL-1 – you know, our only STL – is down hard with -99 dBm showing, and the fiber is having an old home reunion with a back hoe from the new water main installation, since they took away our well and septic system." Ouch!

Down Hard

These are not the words spoken lightly by anyone who is now resorting to keeping his station on the air with videos from his Smart Phone. Fortunately for Ferd, I am just itching to get out of the office and go save the world. Poor Ferd, only one STL, and only one TSL, and nere do the two cross functions in their unidirectional worlds.

It only took me 30 or so minutes to get out to the site and on my surprise, there was a tower crew there waiting for me. I guess the jig had been up for a few hours and Ferd, having gone through troubleshooting with me before on his main 8-inch line, knows that I like a climber to be there.

I learned that the system had been fading for several days and then, *bang,* down it went. There was a small but persistant air leak that had smoked the toy dehydrator often used on short runs of Elliptical, and the climber thought he heard sloshing in the first low spot dip in the line at the base of the tower – about ten feet in length before it climbed up hill in elevation to run in the ice bridge toward the transmitter room.

Wow!

Who can argue with having so much great information handed to you right when you arrive? Ferd and his eager group had gathered up as many "T" size bottles of Nitrogen that they could steal from the other sites in the facility, and I sent the climber up to the business end of the system with a short and a termination.

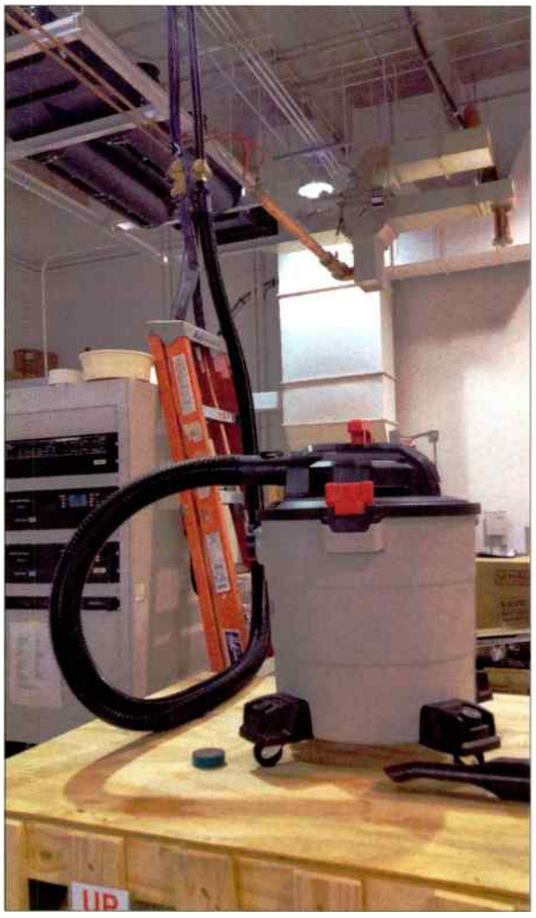
Radio in hand, I finished my calibration of the Vector Network Analyzer (VNA) and off to the races we went, with several tries of, "Let's see the short ... OK, let's see the termination, hmmm ... OK, back to the short ... OK, hmmm, back to the termination." All with zero change in either the Return Loss, or Time (frequency) Domain test screens which I was watching in a dual-channel overlay configuration so I didn't miss anything.

This line was *down hard.* The collective decided that there could likely be up to a half gallon of water in the line, from the magnitude of the sloshing, and we decided to strip a few inches of Vinyl off the low spot. With pressure in the line, to keep chips from entering the line, we carefully drilled a 1/32" hole in the bottom of a high spot annular ridge. With 5 PSI on the line, I could hear the shriek of joy from the climber hanging in his harness, when the suspected half gallon of water came spitting out in to his lap. After about four minutes of hurricane force leakage, the line stopped peeing and started to just hiss. We applied a suitable hole repair to the spot and went on to continue testing.

Just 1 Cubic Centimeter

In microwave 7 GHz service, just 1 CC of vaporized water can bring a good system nearly to its knees. With the majority of the blockage now gone, I could communicate with the climber through the Elliptical and, with radio in hand, a new insertion loss test revealed about 50 dB of insertion loss which was a step in the right direction – from infinitely toasted.

A search for a source of warm, dry, highly pressurized air was set upon around the facility and we found a shiny new shop vacuum. The climber installed a sock with tape to the top of the line and covered it with a bucket, to insure that rain was not our enemy, along with a hose connection made to the line down below. The vacuum was set up to blow warm air through the line, and, after three hours of this treatment, it was tested for insertion loss once again.



Happily, a new and improved value to 23 dB was seen – and the warm purge continued for another four hours. With fingers crossed, and the senior staff still in frightened disbelief that I could be related to Lazarus of the RF world, the line popped up with only 4.3 dB greater loss than the factory specification for brand new line – and this was still not fully dried out.

Nitrogen is a Wonderful Thing

With a savings of over $23,000.00 in the bag – as compared to replacing the line and being off the air playing smart phone videos for a month, while waiting for a new spool and connectors – a Nitrogen purge protocol was initiated that I have designed. This protocol continued for a week with a 1.5 PSI popper valve at the top of the line to continuously bleed Nitrogen and moisture out of the system. Yes Matilda, we still have a leak to find but that can be done once the line is dry and time is on our side.

Fully Restored

With a week of purging at 1.5 nominal PSI, using some industrial grade Nitrogen from a Liquid Dewar, and precision regulator, the line returned exactly to factory specifications and the leak was found. Pinched gaskets can take years to become problematic.

Gary Minker owns Radio Works R.F. Consulting Email him at: gary@RadioWorksRFConsulting.com or call 561.969-9245 Find Gary on the web at www.RadioWorksRFConsulting.com

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Tower Topics

Basic AM Directional Antenna Patterns

by John L. Marcon, CBRE CBTE 8VSB Specialist

It is well known that a single antenna tower is used when an AM station is licensed to broadcast equally in all directions. To be able to direct the signal towards a certain direction and minimize it on another direction, at least two towers are needed. Two towers will make a certain directional pattern when they have a specified tower spacing and phase difference between the currents of each tower. The currents of both towers are usually equal.

As we discussed from the last time, when the towers are 180 degrees apart, have equal current magnitude and the same 0-degree phase, the resultant lobes are shaped like a figure "8". On the other hand, when both spacing and phase difference are 180 degrees, the resulting lobes are still shaped like a figure 8, but lying on its side Also, the lobes are broader than the first one. These are shown in **Figures 1 and 2.**

Figure 1

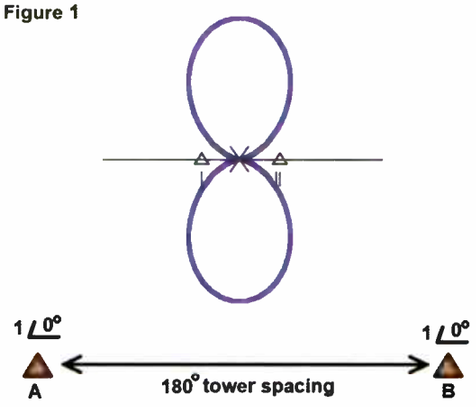
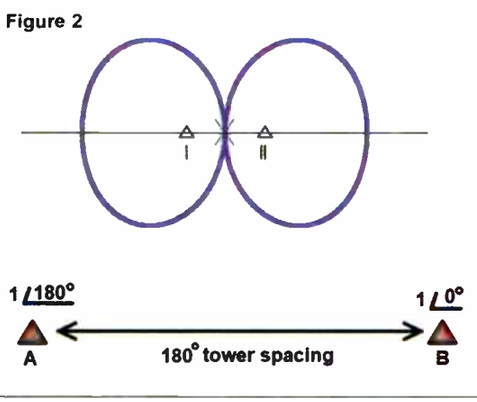


Figure 2

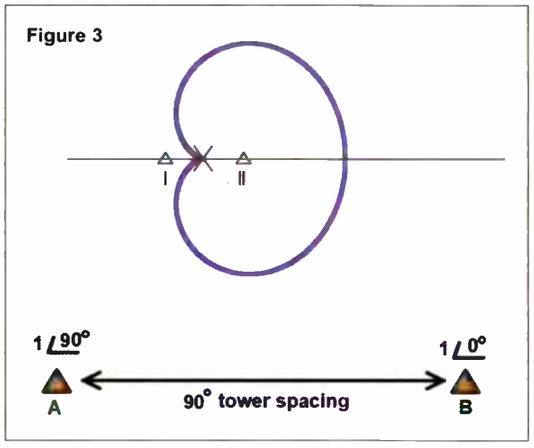


Another well-known directional pattern is the cardioid which has a 90-degree tower spacing and 90-degree phase difference between the two tower currents, as shown in **Figure 3.**

These three basic, two-tower directional antenna patterns can be used as the basis for building an even higher gain antenna array.

We also noted from last time that the horizontal pattern of the signal from two towers is governed by the formula:

Figure 3



$$E = \cos[(S/2)\sin\theta + \phi/2]$$

Where: S = tower spacing in degrees

ϕ = Phase difference in degrees

θ = Horizontal direction

θ = 0 is perpendicular to the line of towers

In reality, however, the gains and nulls that are needed by a station cannot be achieved by just two towers and that is why there are many AM stations that have more than two antenna towers. A four-tower array is actually two sets of a two-tower system. That is, instead of a "tower" in a two-tower system, we replace each "tower" with a directional array.

End Fire Array

As an example, let us consider these 4 in line towers shown in **Figure 4.** The 90-degree tower separation of tower A from tower B, and 90-degree phase difference between the currents result into a cardioid pattern. The same is true for towers C and D. The center of A and B is 180 degrees away from the center of towers C and D. What will the final pattern be for this 4-tower array? We would intuitively think that the result would be a bigger cardioid, but it's not. To analyze this better, let's go back to the two-tower array. Remember that the two towers, on their own, are omni directional towers (or have circular pattern). We would think that by having them together, the resultant pattern would be one bigger circular pattern.

However, we know that this is not the case. When we separate the towers by 180 degrees and the tower currents are 180 degrees out of phase, it results into a figure 8 lying on its side, as seen in **Figure 5.**

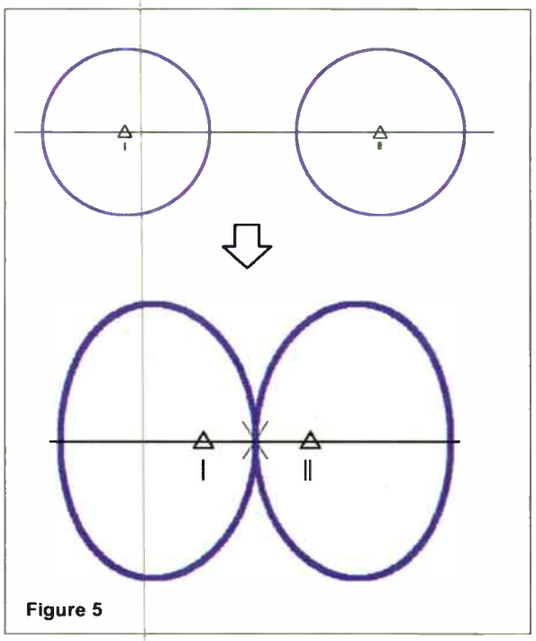


Figure 5

So, following this reasoning, the two cardioids should also result into somewhat of a figure 8 pattern because of the 180-degree separation. However, the nulls from the individual patterns should show up on the final pattern. Therefore, since the cardioid has a null towards the left, the final pattern should have a null to the left as well and this will definitely not result in a figure 8. The main lobe points toward the right. There are two more nulls at the intersecting point of the figure 8 pattern and these should show up in the result. The resultant pattern is shown in **Figure 6.**

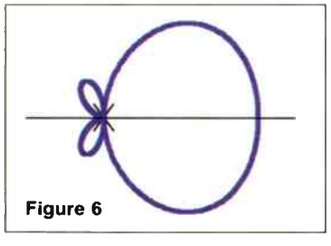
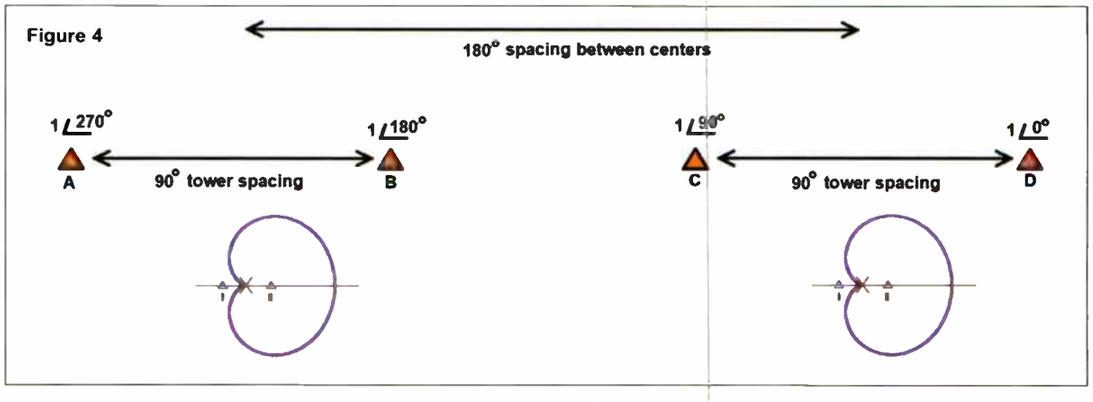


Figure 6

As we can see, there are three nulls at the backside. How did this come about? We go back to the propagation formula: $E = \cos[(S/2)\sin\phi + \theta/2]$ and enter the numbers from the two original patterns. Let us say that E1 is the pattern for the figure ∞, E2 is for the cardioid, and Er is the resultant pattern: *(see page 20)*

Figure 4



For the figure: ∞

$E1 = \cos[(180/2)\sin\theta + 180/2] = \cos[(90)\sin\theta + 90]$

And for the cardioid:

$E2 = \cos[(45)\sin\theta + 45]$ *(Continued on Page 20)*

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Cough. Drop.

Studio guests are only human. And humans cough. They cough and clear their throats and sniff and snort. Not the most pleasant experience for your listeners. If you tell your guests to turn their heads and cough, they might misunderstand. Besides, it really doesn't help that much.

Cure this with the Guest Gizmo. It has a cough drop (ahem) button built right in. Your guest feels the need to make disgusting noise and pushes the button until the urge has passed. You'll want one at every guest microphone position. The cough button is a necessary tool.

Speaking of necessities, every guest needs headphones. Which is why the Guest Gizmo provides a stereo headphone amplifier with volume control. Your guest can adjust headphone levels to personal taste (that human thing again). And the Guest Gizmo amp has the power to drive just about anything, even those big cans so beloved in radio.

You know those cool new mic arms with the built-in LED tallies? They're all the rage. Problem is lighting them up. Guest Gizmo to the rescue again. Hook up your mic arm to the logic port and the button changes from cough to on/off/cough and drives the red light whenever the mic is hot. Cool?

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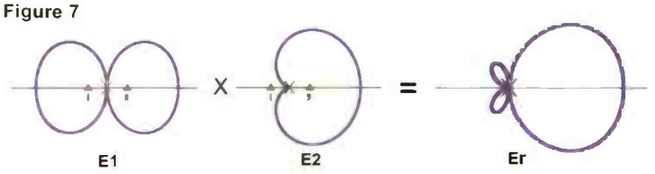
Basic AM Directional Paterns

– Continued from Page 18 –

The resultant pattern Er is actually the product of multiplying E1 and E2 or in other words Er = E1xE2. In pattern forms:

Figure 7



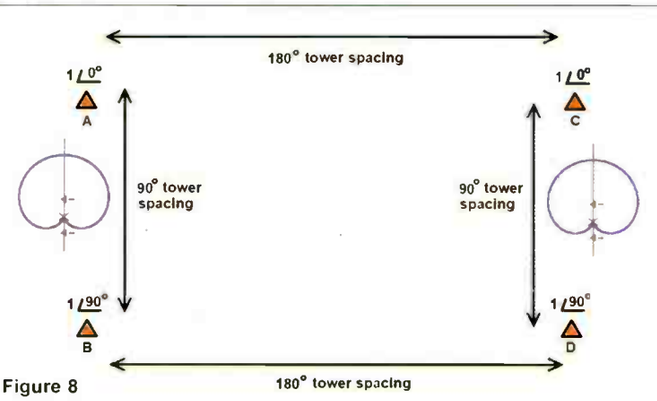


Figure 8

Broadside Array

For our next example, let us consider the 4 towers in **Figure 8.** Towers A, B, C and D are at the corners of an imaginary rectangle. Towers A and B have a phase difference of 90 degrees and spaced 90 degrees apart. This arrangement is a classic cardioid but instead of pointing sideways, it is pointing upwards. The same is true for towers C and D. Towers A and B are 180 degrees away from towers C and D.

We know that when two towers are in a horizontal configuration, separated 180 degrees and without a phase difference between their respective tower currents, the resultant pattern is that of a standing figure "8."

Following the method from the end fire array, the resultant pattern therefore is the product of the vertical cardioid and the figure 8 patterns. **See Figure 9.**

For the Cardioid:

E1 = cos[(45) sin(90+θ) +45] . The 90 degrees with the θ is to make the cardioid point upwards.

And for the figure "8":

E2 = cos[(180/2) sinθ +0/2] = cos[(90) sinθ]

Er = E1xE2.

From these two examples, we can see that there are many options for the designer because he can change either, or both, the spacing and the phase difference to obtain the right gain or null.

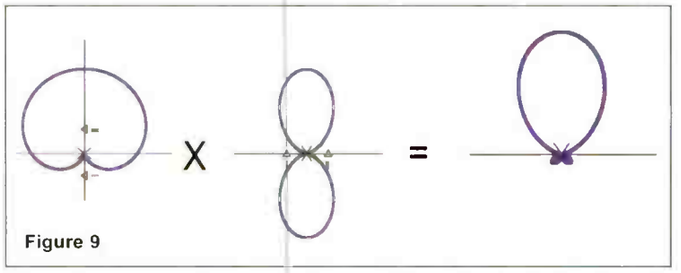


Figure 9

We also noticed that the signal obtained in the four-tower array has one high gain lobe and nulls at the backside. This is important in many applications because stations sometimes need to minimize signals from certain direction and maximize it on the opposite direction. This arrangement can also be done with a two-tower array but with a lesser gain and the nulls are on different places. Having the desired pattern assures us of an effective broadcast to our audiences while at the same time avoiding interference to other stations.

References:

1. Jordan, E.C. (May 1955). Electromagnetic Waves and Radiating Systems. New York: Prentice Hall

2. Entz, L. (1988). Multi-tower Patterns and Matching

John L. Marcon, CBTE CBRE 8VSB Specialist, is the Chief Engineer for Victory Television Network (VTN) in Arkansas, with international experience in both Radio and Television Broadcast, and has an Electronics Teaching background.

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Tech Tips

By Jeremy Storm

An Inexpensive Temporary Dehydrator

Many times dehydrators are installed at transmitter sites, and never checked again until there is some major problem. If you find yourself with problems at an odd time, here is a solution that works in a pinch.

If one of your transmission systems uses a dehydrator, you might find this useful.

Hilo, Hawaii has two distinctions. We have the highest rate of interracial marriages, and the most annual rainfall of any U.S. city. I am not sure if the two are related, but here, "where the rain reigns," would be a good place to test my idea.

Trouble Call Call

One day the low pressure alarm status indicator at one of our FM sites lit up at the studio. I arrived at the site and found the dehydrator compressor making a terrible grinding noise. It seems it threw its needle bearings along with other metal bits and, by the time I arrived, it was well on its way to a meltdown.

The transmission line at this site is a bit leaky so setting up nitrogen gas would be impractical. Until parts arrive (or the bean counters let you replace the compressor – at a cost of something like $1,400), what can an engineer do to keep things operating?

A Low Volume Compressor

All we really need is a low volume moderate pressure compressor, something like an aquarium pump. These are capable of making a peak pressure of 4 psi, and will pump up to one liter per minute at no pressure. It would be perfect for our needs.

I know dampness in a home closet can be controlled with DAMP-RID. This is an inexpensive chemical (calcium chloride) dryer. This, along with the aquarium air pump, seemed like a natural.

To construct my emergency dehydrator, the following items were bought locally *for a total of $23.*

(1) Aquarium air pump.

(1) Aquarium tee with valves.

(1) Plastic box with snap-on lid size: one cubic foot.

(1) Container of DAMP-RID
(and an extra box of chemical).

(1) Length of plastic hose for aquarium pump, enough to run to the RF feed line gas barb.

Putting it All Together

Set it up like this:

Cut a three (3) inch section from the hose to connect air pump out to the input on the tee.

Connect the remaining hose to one output on the tee and open its valve. (This will connect to the feed line later.)

Close the other valve.

Cut a 1/2 inch hole in the lip of the box lid just large enough for the output hose and compressor power cord.

Activate the DAMP-RID container by pouring in the pellets.

Put the DAMP-RID container, air pump and tee valves into the box and close the lid.

Connect the output hose to your feed line gas barb.

Wait a few minutes for the air to dry then plug in the air pump.

After a few more minutes the pressure will reach 4 psi.

Finally, lift the lid and open the closed bypass valve slightly so the pressure drops off to 1 or 2 psi.

This will make sure air is flowing through the pump and the small draft will help circulate the air in the box. Replace the lid and sit back to enjoy your handiwork.

Minor Task

This dehydrator is not automatic so be sure to check the DAMP-RID container monthly and add or change the chemical before it turns into a liquid.

The aquarium pumps are very reliable and should not be a source of trouble during the time it takes to repair your very expensive automatic dehydrator. – *Radio Guide* –

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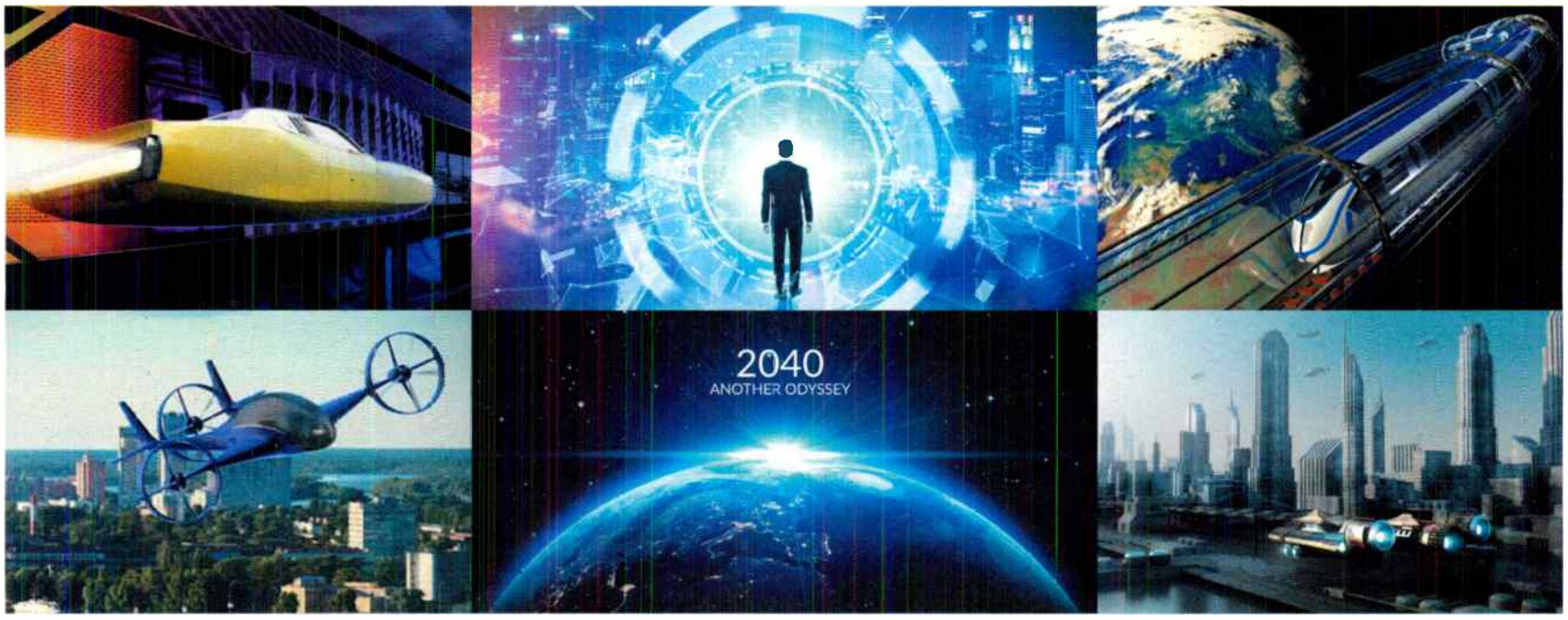

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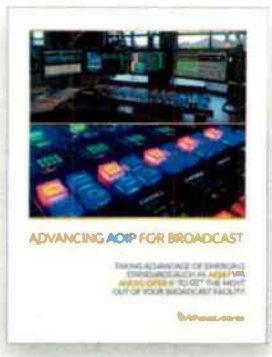

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Station Stories

Listen to Your Intern!

by Steve Callahan

I was thinking the other day of how much the business of broadcasting has changed in the last twenty years. You know, it really wasn't that long ago that stations were operated by broadcasters and there was maybe one AM and one FM station per owner per market. Programming focused on community service, and local news on the top of every hour was reported by a very busy station news department. The sales department was always chasing after the advertisers who had the full page ads in the local newspaper. Most importantly, there was a system where up and coming on-air talent and young engineers would start out in smaller rural markets and they would then get "their big break" into a major market. In New England, budding broadcasters would be lucky to get their first job in Bangor, Maine, Burlington, Vermont or Pittsfield, Massachusetts, with an eye toward moving up to Boston.

I'm concerned that we don't have any "farm club system" like in baseball, for any younger person who has an interest in broadcasting. I know of radio engineers who have a dozen or more stations and they are stretched to their limit – time-wise and energy-wise. It wasn't that long ago that I had 20 stations to babysit, in four states, and it wasn't that easy. Those years were not necessarily financially lucrative, but I learned a lot very fast because I wanted to learn and I had the opportunity.

Nicholas Viehl – Boston Radio Intern

Just recently, I got a phone call from a fellow who just bought two AM stations about an hour apart. He called me because I had done the due diligence report for his communications attorney on the physical plant of the stations.

He was desperately looking for an engineer to work at his stations. It seems that within a month after he bought the stations, both stations were dropping off the air repeatedly and it was playing havoc with his programming. Unfortunately, I am not available to work at a station that I technically appraise so I directed him to a half-dozen radio engineers in the area that I thought might be able to help him.

A week later, with one station still off the air, he called me back and said he had no luck finding an engineer who had the time to come and help him. I truly felt sorry for the fellow but there was nothing I could do. I made some calls for him and the same thing I kept hearing was, "I have too many stations now, and I can't possibly take on another one."

Back in August, I got a call from an FM station that I had built almost 25 years ago. The present owner called me because my name was on the last transmitter log! It seems the tube transmitter, that I had installed way back then, was finally gasping its last and it had multiple problems which were propelled to a smoky conclusion by a summer lightning storm.

The station in question is several hours from me and I just didn't have the time do go and spend several days on a mountain. I was lucky enough to find an engineer friend who lives closer to the troubled station, but he also couldn't devote full time to tracking down the multiple problems, because he had other stations in need of his time and expertise. I hate to say but, at last report, that FM station was running on its 30 Watt exciter while waiting for repairs.

(Continued on Page 28)

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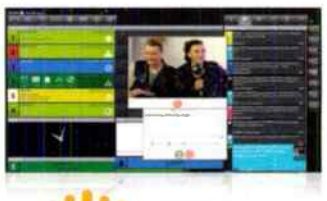

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Listen to Your Intern!

– Continued from Page 26 –

Just last Friday, I got a call inquiring if I'd be interesting in taking over the engineering duties for two small AM stations a couple of hours west of me.

Again, my schedule these days doesn't permit me to jump in the car and travel to the hinterlands to babysit a couple of stations. Years ago, I wouldn't have hesitated to say yes and I would make a mad dash to the stations. However, this would be a perfect opportunity for a younger person looking for that elusive first break.

I wanted to learn more about younger people who had shown an interest in broadcasting and if they thought there was a future for them in the industry, so I chatted with an intern at a Boston station who has shown a lot of interest and promise.

Nicholas Viehl is a self-proclaimed "Sophomore and a Half" at the University of Massachusetts and is majoring in Electrical Engineering. He was always interested in music and recording while growing up and was a naturally talented musician who liked to take things apart to see how they worked.

He liked the idea of radio because it gave him a chance to see "behind the scenes" of the music industry. His first radio job was as a "street teamer" in the promotion department, but that got him back-stage access to station-sponsored shows and concerts and that alone was worth the long hours and hard work.

One day, while in the rack room of the station, he looked into a rack and saw the "Rainbow of Wiring," all neat and orderly, and he was hooked on becoming a radio engineer. That desire, combined with his street teamer experience, has led him to assume responsibility for setting up some of the station's remote broadcasts.

His academic study is in artificial intelligence and how that will factor into the future of music and broadcasting. Nick was very outspoken that young people his age are just not interested in traditional radio. Millenials are interested in new technology – the newer the better – and they seek out the newest and greatest tech developments. He revealed that the reason his peers don't listen to traditional radio is because of the lack of innovation. They hear the same songs over and over again. Sound familiar?

Nick's view of his fellow millenials is that they would like to hear about something that was local and they couldn't find it anywhere else. They like podcasts because they talk about things that millenials want to know about *when* they want to listen, not when the station wants to broadcast it.

He feels that there will always be a place for talk radio with "a real person's voice" and that it fills the need for something to listen in the car on a long trip. He also feels that there is always a future for "Hit Radio" which features the latest local musical talent and up and coming musical artists.

Last summer, I got called in to an AM station move by a young engineer who needed some guidance. I was more than happy to assist, even though I believed the young engineer had jumped into a project with a lot of potential problems that involved moving an older AM transmitter and an even older AM phasor. However, I'm happy to report that the move went well and in the end also factored in a new FM translator. I was happy to share the knowledge and experience that I had with someone who had the time and enthusiasm to jump in and successfully finish this project.

Presently, I'm managing a transmitter site move for a station about three hours away by remote control. There is no available local radio engineering talent in the market and I'm fortunate to have some very talented people working with me. More on this project in a future *Radio Guide* story!

Steve Callahan, CBRE, AMD, is the owner of WVBF, Middleboro, Mass. Email at: wvbf1530@yahoo.com

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Putting the Refurbed Computer to Good Use

Getting Around the Windows Obsolescence Situation – Part Four

by Tommy Gray – CPBE, CBNE

Well we have our new Linux Computer up and running ... now what's next?

In my last few articles, I have been discussing the transition from Windows™ using a great replacement solution which is not only free, but as good or better in most cases than Windows. The great thing is that it runs fast and will breath new life into older computers that had become so bogged down with Windows updates that they were as slow as molasses, and almost useless. With Linux, you get not only a free solution, but have so many different distributions to choose from, that if you are a techie or a home user, there is a version that you will be happy with.

For the past few issues I have discussed taking an old computer (which just happens to be an old Dell Laptop, though this applies to any computer) and installing the version I use, which is "Linux Mint Cinnamon." It is available in both 32 bit and 64 bit versions. If you liked Windows but had grown tired of all the problems, required updates interrupting your workflow, and having to deal with a progressively slower computer, then you need to seriously consider it. I took several older Windows XP machines, and one Windows 10 Pro machine and installed a dual boot configuration, which is as easy to do as simply choosing the option to install "Alongside Windows." This gives you an option screen, when you boot your computer, to either run Linux or Windows.

For a while, as I was transitioning over to Mint Cinnamon, I would use Windows quite a bit, but after a while I rarely ever booted into it. You can see your Windows hard drives from Linux, so if there are files, etc., that you need to retrieve, it is as simple as opening a drive on the Windows machine from your drive list and copying them over without ever having to run Windows.

If you have multiple machines in your network that you want to access, you can run a secure shell (SSH) by connecting to the IP address of the other machines after making a simple firewall access changes. Then you can access everything in your system from your Linux machine as easy as pie.

I am not going to get into that today but will, maybe later. In my last installment, I mentioned the Office applications that are included with Mint Cinnamon that are functional like Microsoft Office (LibreOffice), and they are again free, with free updates when they are needed.

This time I want to talk to you about running Windows programs inside, or from, your Linux machine. I have several older applications that I use, that I had run on the Windows machines that can be run from an .exe file. These require only finding them in the files lists and creating a launcher on your desktop. When you want to run them, just click on the icon and they run on your Linux machine just as they did on the Windows box for the most part. Now not every Windows program will run that way. Some are just not able to be run outside Windows. However there are a great number of Windows programs that *can* be run in your new OS – and quite well.

Today I want to mention something that might make life easier for you in your transition. There is a program (application) that comes with Linux Mint Cinnamon that is called "PlayOnLinux." I think it was originally designed to help gamers to run their Windows games on their Linux machines. It can be easily used to actually install Windows programs on your Linux machine. It can also be used to install programs on your machine, if you have the install disks, and never have to run them in Windows again. There are a lot of programs already listed in the available installs, and, as I recall, you can even install Windows XP in Linux if you have the install disk.

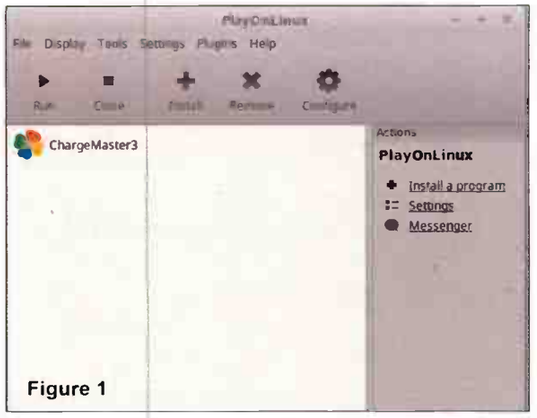

Figure 1

Figure 1, is a screen shot of the "PlayOnLinux" Install screen. In this shot you see the main screen you are greeted with when you start the application. *(Continued on Page 32)*

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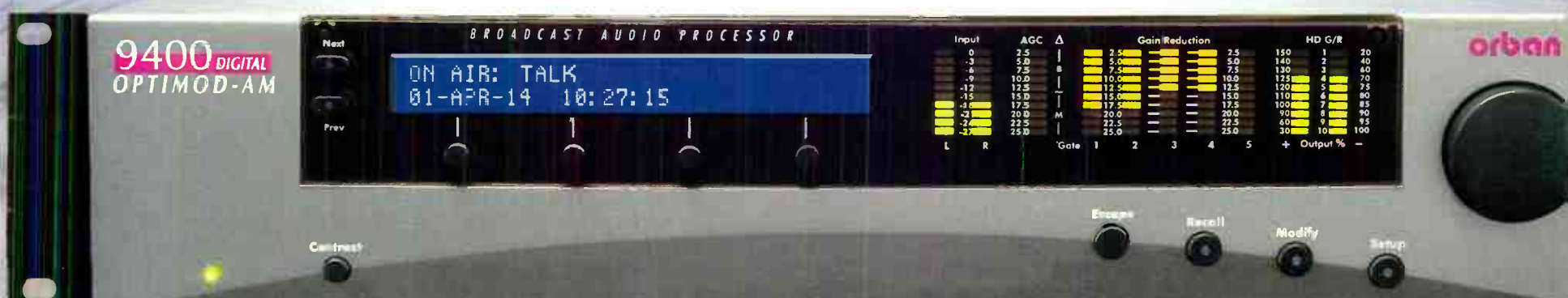

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Putting the Refurbed Computer to Good Use

– Continued from Page 30 –

In **Figure 1**, you are presented with several options. You can run a program that is in the list by clicking "Run." You can see I have installed a program that controls my computerized battery charger. The battery charger has WiFi built in and I can control it from the "Chargemaster™" app in the list, if I so desire. All I have to do it is to click run after selecting it. I can also run it straight from the desktop using a launcher (Icon) I created for the purpose.

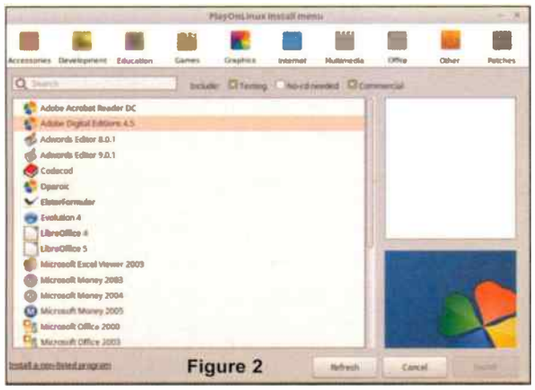

Figure 2

In **Figure 2**, you see the install screen, which you access by clicking the "Install" Plus Sign at the top of the screen. Here you are presented with all the applications that the program already is setup for, though you can easily install your own as well. To get the information in the list, I clicked on the **Figure 2** "Office" button and then it showed me a list where I can select any program I have installation media for.

Follow the on-screen prompts and you will be able to complete the installation of your desired program. You may install other programs, such as the one I did on mine, by searching for the file. There are good help files and you can get help for any Linux distro (version) easily on the Internet. The best help files available for any computer OS out there, are right there with a simple search. Help is also built into the OS itself, just like Windows.

To locate programs like the PlayOnLinux app, simply go to the main menu in Linux Mint Cinnamon and open the Software Manager program. When you are doing a search on the Internet for something, and the article mentions a particular program, you can either find it in your Software Manager or follow a simple command line statement in the Terminal inside your OS and install it. I would recommend *only* installing from the Software Manager as it looks at the preferred Linux Repository and will give you clean files that are trusted for the most part – unlike pulling them down off the net with the Apt-Get command in the terminal. Now there are some things you will need to do that for, and that can be helpful. You can customize your install of Cinnamon any way you want to.

By the way, I have not even mentioned that in Linux Mint Cinnamon, as you do in most Linux Distros, you have multiple desktops you can use simultaneously. If you have your main screen filled with running programs or projects and want to do something else without messing with it, no problem! Simply click on the desktops icon on your taskbar and open another one. There you will get a clean screen, almost like being on another computer. Just remember that the speed at which your machine will be able to run these multiple desktops is a tad limited by your computer's hardware power.

I find this helpful, as I have a lot of things going on at once. I usually have LibreOffice Writer (like Word) running a document, and also pulling in graphics from the built-in graphics editor app on one screen, not to mention a myriad of other things I decide to do in the interim. Having three other screens I can use, while leaving all that in place, is a fantastic tool that really makes life easier. You can do that with Windows if you have multiple monitors, like I used to do where I had four monitors on my desk all running something different (engineering programs, office applications, email, web browser, etc.). But in my current office, I have one large monitor, a KVM switch to change between all the machines in it, and the Linux machines have multiple desktops – so it is like having a houseful of monitors in one, and it sure is nice! Say I get a call and need to do something for a client or a station, I don't have to shut down what I am doing, I just pop open another screen and go for it.

Well I am out of space for this time, so more next issue! Happy Holidays!

Tommy Gray is a semi-retired veteran broadcast engineer currently staying busy doing engineering in the gulf south, through "Broadcast Engineering & Technology LLC", a Louisiana based Consulting and Contract Engineering Firm, serving the US. www.BEandT.com

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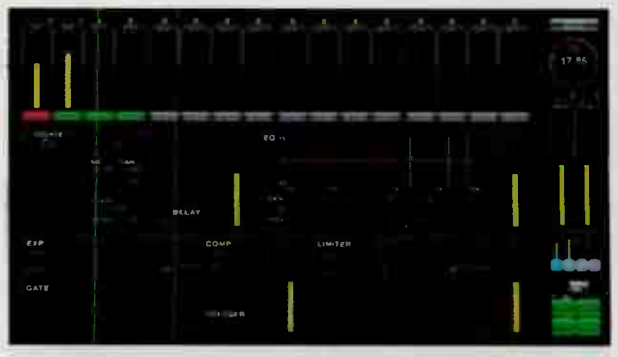

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Engineering Perspective

Mentoring Reflections

by Jim Turvaville

In the past 2 weeks, I've had no less than three calls from clients or other associates, asking if I knew of an Engineer who would be interested in a job. I've also assisted in several job searches for clients and other associates, in the over 4 years since I retired from Corporate Engineering work, seeking to place qualified talent in available positions in the Engineering community. I'd like to be able to brag on being successful in those endeavors, but to be honest, I find this is an increasing situation, and is similarly increasing in difficulty being able to find those of a younger age who are moving into our technical and Engineering world. Fortunately, many state Broadcast Associations, and our friends at the Society of Broadcast Engineers, have a valuable resource in their Job listings, which has been of great benefit in getting the word out for most of these openings.

But these situations, as well as my radio anniversary coming up this time of year, has caused me some reflection on just why I got involved in this industry, and how I have tried to be responsible to bring others along behind me. Allow me to reminisce and share some thoughts, to assist us all in being a good steward of the talents we have gained, and hopefully encourage someone else along the way.

Visitors to my little radio studio will see a printed poster framed on the wall which usually draws some questions. It simply reads: *"When I was 9 I caught the RADIO BUG ... it appears to be TERMINAL."* While that is certainly humorous, those of us in this industry as long as we have been, know it to be ironically true as well. And in fact, I was just 9 when I was introduced to a little bit of "radio" by an older relative who actually worked at a little AM station down the road. He was 30 years my senior, but saw an interest in me for technical things and gave me a tape recorder. Now, this was 1970, so "tape recorder" literally meant a portable 3-inch reel-to-reel machine. Yes, just like the one that used to be on the opening credits to the original *Mission Impossible* TV shows, as in *"This tape will self-destruct in 5 seconds ..."* Even after all of my years as an Engineer, I'm not certain I have ever understood exactly how that tape would self-destruct just by playing it, but then sometimes we over-think what we see on TV and ruin the experience – so I'm told.

But that tape recorder led me to a curiosity and a path of experiences in audio recording, wiring, and how it all operated. I went on to buy my own larger tape recorder – a 7-inch reel-to-reel unit – as well as one of those new-fangled Cassette tape recorders. The neighbor across the street had a son who was a senior in college, and he came home after graduation and cleaned out his room, to go on in life, and decided to gift me with the contents of his home closet – it's just that he had graduated in Electrical Engineering. That "gift" included boxes of parts, electronic kits, components, and a huge pile of books on Electronics and circuit theory.

I was fortunate enough to have a Pastor at my church that saw my interest in audio things, and encouraged me to help out with the sound system and with music there. I was there running the sound system at my church, when the new out-of-town station manager for the local AM radio station found me one Sunday evening and asked if I'd like to come to the radio station for a visit. That visit then led to an offer to come to work on weekends, spinning records until sundown both days.

There was another guy in my High School class which already worked at the radio station, and he gave me all of five minutes of training on how to run the old RCA Studioette Console, and directions on how to read the Program Log and find all of the commercial carts – then he was out the door. So at 12:00 noon on Saturday, December 9, 1978, with a fresh-off-the-press Provisional Radio Operator Certificate (aka "RP-3"), I began my radio career. I did not know exactly what all of that equipment did in that studio with the RCA BTA-1R3 in the corner, but I had it all to myself and I got to play records on the radio.

However, my life changed the very next day, on my *second* day of work at the station. A local radio engineer who had owned the station in his younger days, signed my FCC application as the designated 1st Class License holder who would oversee my training, and see that I completed the exam for the Third Class Radio Operator License in due course. However, this retired owner was not active in radio any longer, he only loaned his credibility to the station so it could remain FCC compliant and have the required First Class Operator License posted. There was, however, another person who actually *did* the technical work for the station; a 2-way radio tech who knew enough about high power transmitters to be on contract for weekly maintenance.

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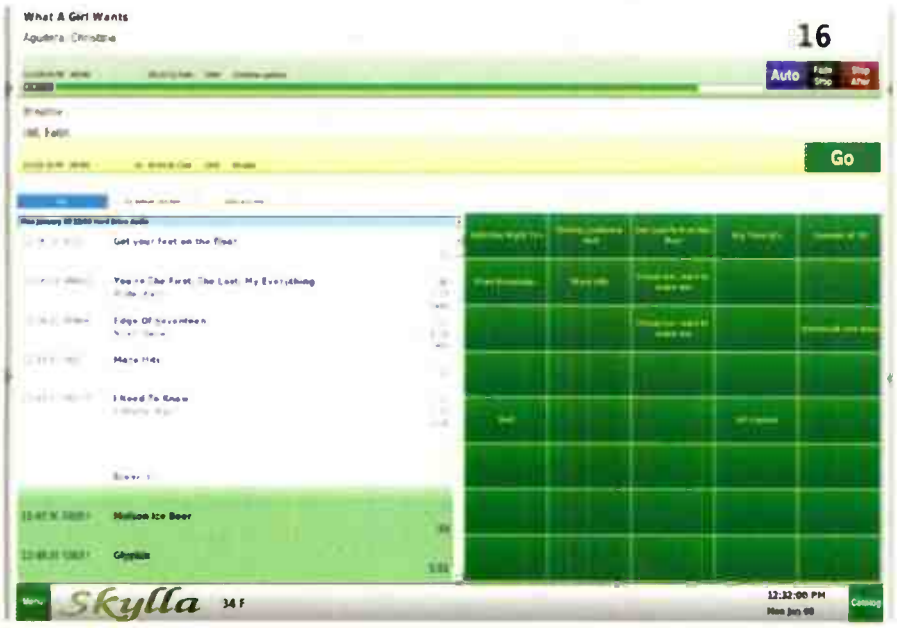

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Engineering Perspective

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And it was at 5:30 p.m. on Sunday, December 10, 1978, at just about the same time that I walked to the corner and prepared to flip the red toggle to "Plate Off," on that old RCA transmitter, that the front door opened to the studio and in walked Bob.

Bob made a quiet and quick introduction, asked me to leave the transmitter on, and proceeded to grab a clip board and fill out a maintenance log. He took some readings, turned it off and opened the door. He made a visual check inside, closed the door and proceeded to check out the processor rack, and then the console and studio gear. I did not exactly know what he was doing, but I knew one thing – *I wanted to be like him!* Not only to get to operate, but to maintain and work on, this magic equipment was exciting to a 17-year old tech kid who had already been suffering from that bug-bite for over 8 years now.

My interest did not go un-noticed, and as that Station Manager left and another took his place, the new guy also saw potential in my radio interest and expanded my work at the station. I was quickly given permission by Bob to "fix things" and just call him if I needed any help. There were lots of calls, but he patiently answered my questions and directed me in my hands-on learning experiences. I guess I sure made his contract job a lot easier, since he rarely had anything to do but sign that log each week.

I also got to meet a couple of other radio engineers for various reasons – the "annual proof" was still required and that took outside Engineering help – and the occasional problem, bigger than Bob could fix, would call for other Engineers to show up. I made it a point to shadow them all, and probably asked a ton of dumb questions; none of which were shunned and all of which were patiently answered.

Looking back, I realize how much the small things of interacting with others have made such an influence on my career choices and path. Time and space in this article does not permit me to actually name names of the myriad of people who have played a part in that 40-year long life experience. I have mentioned the first radio tech guy "Bob," but for neither love nor money can I tell you what his last name was, or if he's still alive. From that point in life, I could name dozens who I do keep in touch with, but for the fear of leaving one out, I will abstain from attempting to call names. Some of them will read this article, and hopefully know that I value the connection I've had with them all.

I also have found it easy to reciprocate in many ways through the years; and with all my heart I would that we all would do that as well. I've had the privilege to be in a position to mentor several younger guys and gals, and be the one who answers those "dumb" questions with patience and with the understanding that I, too, was once the one doing the asking. Some of them have gone on and made radio a career, a couple have migrated into I.T. and other tech work, but still keep contact with the radio world in some capacity. Most of them I retain contact with by social media, text or email, and the occasional "ONStar" call with a frustrating problem they are facing, – usually alone at a tower site late at night. I remember that I had some of those numbers to call when I needed a friendly voice who understood the mess in which I found myself at that time, and to offer some advice from a much less tired mind and with a bit more experience from which to glean thoughts.

So let me conclude this with these thoughts for all of us:

• If you're asked a question by a younger person, go out of your way to answer it thoroughly and patiently. Try to understand their depth of knowledge, and challenge them to increase their learning as they are able. Don't talk down to them, and encourage them to ask more questions as they are able to understand. This simple thing made such an impression on me in my early years, and have always strived to do the same when I can.

• If you have hands-on projects which can involve someone else, make a point to invite them to help. Even if they do little more than hand you a tool or hold a light, it gives them an opportunity to be involved and see first-hand what you are doing. It also opens the door for asking questions and increasing learning opportunities. I cannot count the times an older engineer asked me to come along on a project, and I cannot begin to annotate the things that I learned as a result of just "hanging around."

• Be mindful of those shy and backward personalities that so many of us have, that make us who we are. See those traits in young people and reach out to them as you are able. They might be looking for someone who accepts them and their idiosyncrasies, and realize they have unique talents and are willing to take a chance to influence them in a life career choice. We don't have to be creepy about it, but being kind and open to someone might be just what is needed to help them become one who comes along behind us.

As I turn the calendar again, and observe the 40th anniversary of my career, I cannot imagine my life doing anything else but this crazy radio thing. I did not exactly plan all the steps along the way, but it's been a wonderful path and one I will be on until that day I turn "Plates Off" for the final time. As we say, *"Old Radio Engineers Never Die, we just slowly drift off Frequency."*

Jim "Turbo" Turvaville is semi- retired from 40 years in full-time Radio Engineering and lives in Rural Wheeler County Texas in a "tiny house" where he maintains a small clientele of stations under his Turbo Technical Services (www.jimturbo.net) operation providing FCC application preparation and field work.

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System Solutions

Windows Operating System Maintenance

by Chris Ark – CBT

In this edition of *Radio-Guide* we're going to discuss Windows™ operating system housekeeping. These are the basic housekeeping tasks that I use to get more performance and life out of my computers.

Installing New and Removing Old OS Updates

It's important to keep Windows updates current. Hackers like to exploit vulnerabilities within the operating system in order to gain access to your network and data. In Windows 7, there are a few different options on when Windows will download and install updates. I prefer the update setting *Check for updates but let me choose whether to download and install them.* Not all updates being pushed are applicable to my computer. An example would be if this round of updates is trying to send patches for Office 2013 but my computer has Office 2016 installed. It takes a little extra effort but you're only downloading what updates are needed. But depending on the number of computers you support, this may not be a realistic approach. It's worth mentioning that in Windows 10, Microsoft took away most control and forces updates on you. There are work arounds but that's for a different article.

The folder in which Windows updates are stored is labeled **WinSXS.** Overtime, this folder can become a space hog and will take up GB's of storage space. It's advisable to clean this folder on occasion. You can navigate to the WinSXS folder and delete the updates manually, but I would recommend clearing out these files with Windows utility **Disk Cleanup.** Launch Disk Cleanup and select the option that says, *Clean Up System Files.* Next, check the box next to *Windows Update Clean Up.* Click the "OK" button and then the cleanup will begin. If you don't see a *Clean Up System Files* option, there are not any update files they can be safely deleted.

Managing Restore Points

With each Windows update, driver update, or program install comes a restore point. Each restore point is saved in a folder labeled **System Volume Information.** This folder can also get extremely large without any housekeeping. You can delete old restore points using the Windows utility **Disk Cleanup.** Launch Disk Cleanup, select the option that says, *Clean Up System Files,* click the tab labeled *More Options,* then click the button labeled *Clean Up.* A box will pop up asking if you really want to delete all but the last restore point. Click the "Delete" button and then the cleanup will begin.

When working on a computer for the first time, it's worth checking how much disk space is being allocated for system protection (restore points). There is a user definable setting under **System Protection** that allows you to set how much hard drive space restore points can use. To check this setting, Right click "Computer," click "System Protection," click "Configure," then move the slider to set the Max Usage allowed for restore points. I once had a client with a production computer that was a few years old. They told me that the hard drive was nearly full despite them removing most of their production files. Lo and behold someone set the max usage for system protection to 100%. There was nearly 420 GB worth of restore points!

Managing the WinEvt Folder

In brief, there is a third folder that can get quite large. This folder is labeled **WinEvt.** This folder houses all the event logs for your computer. Upon last check, there are just over 16,000 events sources available, so you can see how this folder has potential to get large over time. Providing your computer is in good health, and you do not need any of these logs for troubleshooting purposes, the logs are safe to delete. Navigate to your C: Drive, click "Windows," click "System32," click "WinEvt," open the logs folder and delete the contents.

Software Auditing

Certain positions at radio stations tend to be a revolving door. With each person stepping into that position, comes a flurry of software that they prefer to use. Just because someone new comes into a position, doesn't mean a new computer is deployed. Therefore, software tends to pile up. Bloatware begins to steal disk space and slow down your computer. This is especially true if they have processes or tasks running in the background, regardless of whether the program is in use. This type of OS mainte-

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nance tends to get away from some IT Managers and IT firms. Take the time to delete this garbage. The **Uninstall a Program** feature within the Windows control panel works just fine for removing unwanted software but I would recommend using **CCleaner.** This is a freeware that allows you to uninstall programs but, unlike the built-in uninstaller with Windows, CCleaner is a bit more through and removes the newly uninstalled programs root folder off the C: drive.

User Profile Auditing

Once you have removed all the superfluous software from the computer, head over to the control panel again and delete user profiles of employees that no longer use the computer. This is just a good standard practice to get in to, regardless of whether the computer is in a workgroup or domain environment.

Lets touch on local user profiles and how it relates to a domain environment. One company that I worked for had a common practice of, once a computer was added to a domain, all local user profiles on the computer were to be removed or disabled for security purposes. I do not subscribe to this for the following reasons.

1. Let's say the computer was connected to a domain but was inadvertently placed back into a Workgroup (I've seen it happen). Once removed from the domain, how are you going to login? You essentially bricked the computer.

2. Similar situation to the above scenario, but now let's say that you get the pesky error message of *"The system cannot log you on because the domain is not available."* Regardless if the domain controller is available or not, you can't get into the computer. If you still had a local user profile available, you could at least go in and retrieve files, temporarily working in a local user profile.

3. I've seen the *"The system cannot log you on because the domain is not available"* issue come up and it won't go away. The only option seemingly left is to login with a local user profile, remove the computer from the domain, then re-add it. Whoops! You deleted or disabled the local user profile(s). How are you going to get into the preferences to remove then re-add the computer to the domain?

You may be thinking to yourself "Why in the world would an IT tech do such a thing?" Good question. I acknowledge this isn't a typical practice, but I have seen this done at the corporate level, so I figured it was worth mentioning.

Disable Unnecessary Automatic Services and Startup Items

When booting and logging into a computer, background services essential to the operating system begin to run. In addition, you may have third-party software background services and GUI's automatically start and open. Generally speaking, these automatic startup items are more of a convenience than a necessity.

Starting three dozen background services and launching four different programs all at once can be quite stressful on the average office computer. File transfer software, browser updaters, the grocery coupon club widget, PDF viewer update, remote PC software, etc ... begins to add up and rob you of valuable system resources.

I'll refrain from making hard recommendations on what should or shouldn't automatically startup, because its unique to each facility and end-user. With that said, I personally disable automatic startup items and services that are not essential for the operating system to boot and function properly. That includes, but is not limited to, Microsoft Office programs, market ratings software, FTP services, Adobe updaters, and web browser updaters. This just makes for a smoother boot up process and an all-around better experience for the end-user. Two things to note here. **1.** Yes, the end-user will be upset when you go through and disable all these automatic tasks – but they'll survive. **2.** Yes, you will have to manually update the software you disabled the updaters on. Again, what you choose or don't choose to have startup automatically is all subjective to the facility, end-user, and the computer.

To view and make changes to automatic startups and services, type **MSCONFIG** in the search bar and hit enter. It may take a few seconds for the System Configuration box to pop up so be patient. Before disabling any services, be sure to click the check box for "Hide All Microsoft Services." This will help prevent you from disabling an essential Windows service.

Disk Defragmentation

I won't really talk about **Disk Defragmentation** as 99.999% of those reading this article are well aware of this Windows utility. But after a long hard day of cleaning and deleting updates, restore points, event logs, bloatware, and files, cap it all off with a nice defrag.

Conclusion

Everything I discussed above is subjective to facility IT security, hardware limitations, and the end-users work flow. I'm sure if you went on Spiceworks or did a Google search, a million results would challenge how I do things. That's OK, I'm not an expert. This is just what works for me. If you have anything tips or tricks that you would like to share, please feel free to reach out. If we work in a box and the discussions stop, we stop learning.

Chris Ark, CBT – CRAAudio.com

Small Market Guide

Our Changing Marketplace Your New Hire

by Roger Paskvan

There are days at this job where the day-to-day routine begins to deteriorate. It's possible to notice this as an attitude change within the station. The "get it done," attitude is just harder to find. Even with the November election results across the country, the totals between the parties were much closer than in past years. This may reflect the rise of the entitlement attitude in some of the electorate.

Having been in radio for four decades, I've seen these same changes reflected in the retention process of employees. It would seem that the older generation had more commitment to the job, and loyalty to the station, as a part of their professional life. Like the textbook saying, "radio becomes synonymous with the community after many years." The older generation would make themselves part of that phrase. Pride in doing the job right, respect for their employer and commitment to the challenges became commonplace. This was what radio was all about back then. New announcers wanted to be part of the team and volunteered for activities, remotes and live broadcasts just to help out. It was "real radio" and it was exciting.

This belonging to a group helped minimize turn over, which may be lower in small market radio stations, due to many factors. Employees feel part of the community and radio is that community element that cements the town together. Being part of this element provides that sense of belonging and tends to provide satisfaction in small market towns. In major markets this whole philosophy is transformed into a dog-eat-dog syndrome – whoever pays the most is the next stop! Is small market starting to lose this community element?

After owning a small market radio station for any length of time, I'm sure you have noticed changes in new hires, especially this past decade. There seems to be a new breed of entitlement attitude that comes in the door with each new broadcast potential. "What's in it for me," dominates the thinking of many new hires. "What can I get from this job for myself?" "I don't volunteer for anything unless there is a check attached to it." "I don't do weekends." "I'll only do paid remotes and no community charity work. The all-time best one of all, "You're lucky I came to work today!" (We fired that one.)

There seems to be a dramatic difference in the new people coming into small market radio. It could be described as "You owe me," attitude from day one. All that seems to matter to the new hire is "How much do I get paid." Some new employees are not even interested in the company health plan or retirement benefits. I've been asked on multiple occasions, "Can you just put the money going to my healthcare back into my paycheck?" Money, money, money, and how can I get more, dominates the ideology of the new small market broadcast people. The old philosophy of pride, being part of the greater good in the community seems to be gone. I even had a recent (now past) employee tell me, "I refuse to work weekends."

Have the values changed? Is the mind set different? So, what is happening in our small-town marketplace. Was this attitude of entitlement always in the broadcast workplace or did it finally just catch up to small market stations? It has become a problem in the sense that this entitlement attitude directly conflicts with the values that made small market broadcasting special. It doesn't fit the community sharing idea, part of the greater good.

The acquisition of large broadcast chains under one roof has produced a business model where localism really doesn't exist anymore. This may be the start of the problem. Just the process of gobbling up many Ma and Pa radio stations eliminates that small market ideology. Maybe this transforms down to current employees that see radio as a "job means to an end" rather than becoming part of that bigger picture, community and respect for that concept. The small marketplace may be changing. Can we protect the old ways anymore or will small market radio just become a "job," no different than any other place to work? This writer hopes that this new philosophy may not be the case, but that's just my opinion. Ask your next potential hire, "do you want to become an integral part of our community?" The answer you hear may be your best recruitment measure.

Roger Paskvan is a Professor of Mass Communications at Bemidji State University, Bemidji, MN. You may contact him at: rpaskvan@bemidjistate.edu

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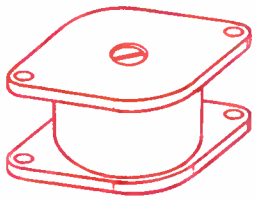

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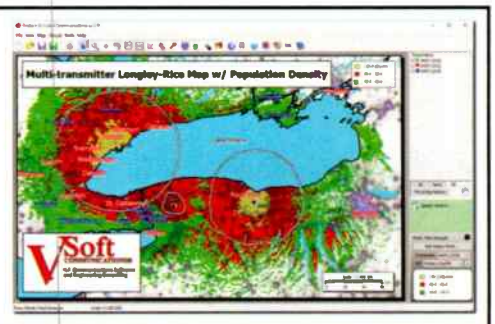

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Service Guide Radio Equipment Products and Services

Gear Guide

NiCom NTi Transmitter Series

I have been very grateful for the opportunity over the past year to write review articles in each issue of ***Radio Guide***. I wish to thank all of you who have sent some nice comments in your emails. I wish you a Merry Christmas and I look forward to writing more articles in 2019. I hope I'll have an opportunity to meet some of you in person at the April NAB show in Vegas.

Jimmy Stewart and Donna Reed starred in the classic, "It's a Wonderful Life."

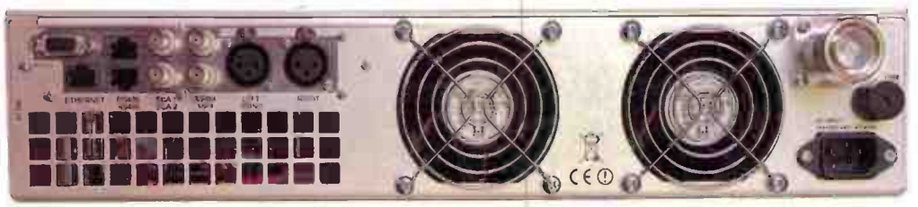
This being the issue closest to Christmas, I'm sure each of you have a holiday tradition or two that makes this time of year more fun. After 43 years of married life, Beth and I really enjoy old Christmas movies. The original, *It's A Wonderful Life, Miracle On 34th Street, and A Christmas Story,* are right up there at the top of the list, with the last being my number one.

Christmas Story Museum owner Brian Jones holds one of the Red Rider BB guns used in the movie.

In the Christmas Story movie set in 1940's Cleveland, 9 year old Ralphy Parker wants *"An Official Red Ryder 200 Shot BB Gun With A Compass In The Stock."* Daisy actually custom made six of them just for the movie. His Mom and teacher both respond with the classic line, *"You'll shoot your eye out."* Not dissuaded, Ralphy decides to ask Santa and gets the same response! If you haven't seen this film you should put it on your list of must see movies. By the way, they've turned the house in Cleveland, used in the film, into a museum for the movie.

Coming back from my holiday movie "rabbit trail," I have a holiday gift selection for broadcasters. Its a new series of exciters and transmitters that offer more features than whatever you may currently be using. It's a bit hard for me to admit, but the truth is, I resist change. I still dig 60's & 70's music, haven't changed my hairstyle since high school, and I had a flip-phone way longer than anyone else. When I started looking at the new NTi Series from NiCom, I realized how good change could be. They offer the new NTi Series in multiple power levels, 150 Watts, 300 Watts, 600 Watts, 1200 Watts, 2 kW, 3 kW and 5 kW. The **NTi 300** is pictured below.

The quick list of features on this series of transmitters include: Built in Stereo Generator & Audio Clipper, RDS Encoder, S/PDIF and AES & EBU for Digital Audio, Instant Front Panel Programming using the large OLED Display. There is also user friendly Encoder Shuttle, Front Panel USB for easy PC Connectivity, Event and Errors Logging for up to one year of activity, Built In Web Server with Alarm Monitoring through Email and Ethernet Connections, and Modulation Level can be accessed through front panel or remotely. NiCom also goes the extra mile to have their transmitters FCC and IC Certified. Except for LPFM, "Type Verification" is all that is usually required these days.



I unpacked one recently, and for a moment was surprised that there was no manual. But then I saw the thumb drive taped on the top of the unit. Of course, printed manuals are mostly a thing of the past. On that thumb drive I found two manuals with PDF pages full of detailed information. One is for the transmitter itself, the other for the RDS Encoder. Easy instructions tell you how to connect to the new transmitter through your Local Area Network (LAN). There's also that USB connection on the front of the unit that provides easy laptop access after rack installation. Through your computer, you can access all of the functions and adjustments easily. But if you are installing one without your trusty laptop handy, you can still access everything though the blue lit rotary push button they refer to as the "Friendly Encoder Shuttle." Using this, you simply need to step through multiple selections, to get to where you can set frequency, power levels, audio input choices ... etc.

On the rear of the unit from left to right you'll see a multi-purpose DB9, an Ethernet Connection, RS485 Com Ports In and Out, two SCA Inputs, S/PDIF Digital In and Left / Right Balanced Audio Inputs. The Left doubles as a Mono input when selected from the choices offered during your set up. The RF Output is a 7/16" and the switching power supply accepts 115-240 VAC. The forced air cooling by the brushless fans moves a lot of air which is good, but it makes for a bit of noise ... certainly cannot have it too close to your studio.

After I installed the NTi 300, I went back and took a good look at the RDS information. I now know why it requires a separate manual. There is a lot to learn about how you want your RDS information displayed and exactly what you want your system to say.

Let's do a quick recap of the built in features; the NTi Series transmitters offers excellent stereo processing from an analog or digital source, audio limiting to prevent over modulation, RDS, and a built in web server allowing remote control of the features plus remote on / off of the carrier. This one transmitter unit also seems to take the place of several other boxes. The most surprising thing is the fact that the new NTi Series is not much more costly than the older NT Series. Plus, in the big scenario of transmitter prices from other companies, NiCom has kept the price quite competitive and radio Santas will certainly appreciate that.

Ron Erickson can be reached by calling 541-460-0249 or email at ronerickson@gmx.com

Final Stage

RADIO ROUNDUP

The Radio Guide Event Register

Email your dates and info to: ***radio@rconnect.com***

2019 CES Conference
January 9-11, 2019
Convention Center – Las Vegas, Nevada
https://ces.tech

NATE Unite 2019
February 4-7, 2019
Grapevine, Texas
https://natehome.com/annual-conference/nate-unite-2019

2019 NRB Convention
March 22-29, 2019
Anaheim, California
www.nrbconvention.org

NAB 2019 Spring Convention
Convention Center – Las Vegas, Nevada
April 6-11, 2019
www.nabshow.com

Texas Association of Broadcsters (TAB)
August 7-9, 2019
JW Marriot Downtown, Austin, Texas
www.tab.org/convention-and-trade-show

NAB Radio Show
September 24-27, 2019
Dallas, Teax
www.radioshowweb.com

Radio Guide Advertiser Info – December-November 2018

Advertiser - Page	Website	Advertiser - Page	Website
Altronic - 28	www.altronic.com	Inovonics - 1, 17	www.inovon.com
Angry Audio - 19	www.angryaudio.com	Kintronic Labs - 39	www.kintronic.com
Arrakis - 37	www.arrakis-systems.com	Lawo - 33	www.lawo.com
Axia - 27	www.telosalliance.com	Lightner Electronics - 44	www.lightnerelectronics.com
Bay Country - 43	www.baycountry.com	Logitek - 15	www.logitekaudio.com
BDR - 41	www.thebdr.net	Mega Industries/MCI - 22	www.mcibroadcast.com
BEXT - 43	www.bext.com	Mooretronix - 44	www.mooretronix.com
Broadcasters General Store - 23	www.bgs.cc	Nautel - 7	www.nautel.com
Broadcast Electronics - 38	www.bdcast.com	Phasetek - 47	www.phasetekinc.com
Broadcast Software Intl. - 11	www.bsiusa.com	ProAudio.com - 4	www.proaudio.com
Broadcast Tools - 26, 47	www.broadcasttools.com	Propagation Systems (PSI) - 20	www.psibroadcast.com
CircuitWerkes - 29	www.circuitwerkes.com	Radio-Classifieds.com - 45	www.radio-classifieds.com
Coaxial Dynamics - 41	www.coaxial.com	Radio Systems - 40	www.radiosystems.com
Comrex - 5	www.comrex.com	RF Specialties - 41	www.rfspecialties.com
Davicom - 43	www.davicom.com	SCMS - 31	www.scmsinc.com
Dean Technology - 44	www.deantechnology.com	Shively - 36	www.shively.com
Deva - 39	www.devabroadcast.com	Smarts Broadcast Systems - 35	www.smartsbroadcast.com
DH Satellite - 34	www.dhsatellite.com	Stackley Devices - 46	www.stackleydevices.com
DM Engineering - 47	www.dmengineering.com	Studio Items - 30	www.studioitems.com
Econco Tubes - 42	www.enco.com	Telos - 21	www.telosalliance.com
Enco - 43	www.enco.com	Tieline - 9	www.tieline.com
ESE - 47	www.ese-web.com	Titus Labs - 32	www.tituslabs.com
GatesAir - 13	www.gatesair.com	Transcom - 42	www.fmamtv.com
Graham Studios - 46	www.graham-studios.com	V-Soft Communications - 44	www.v-soft.com
Henry Engineering - 2	www.henryeng.com	Wheatstone - 3, 24, 25, 48	www.wheatstone.com

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