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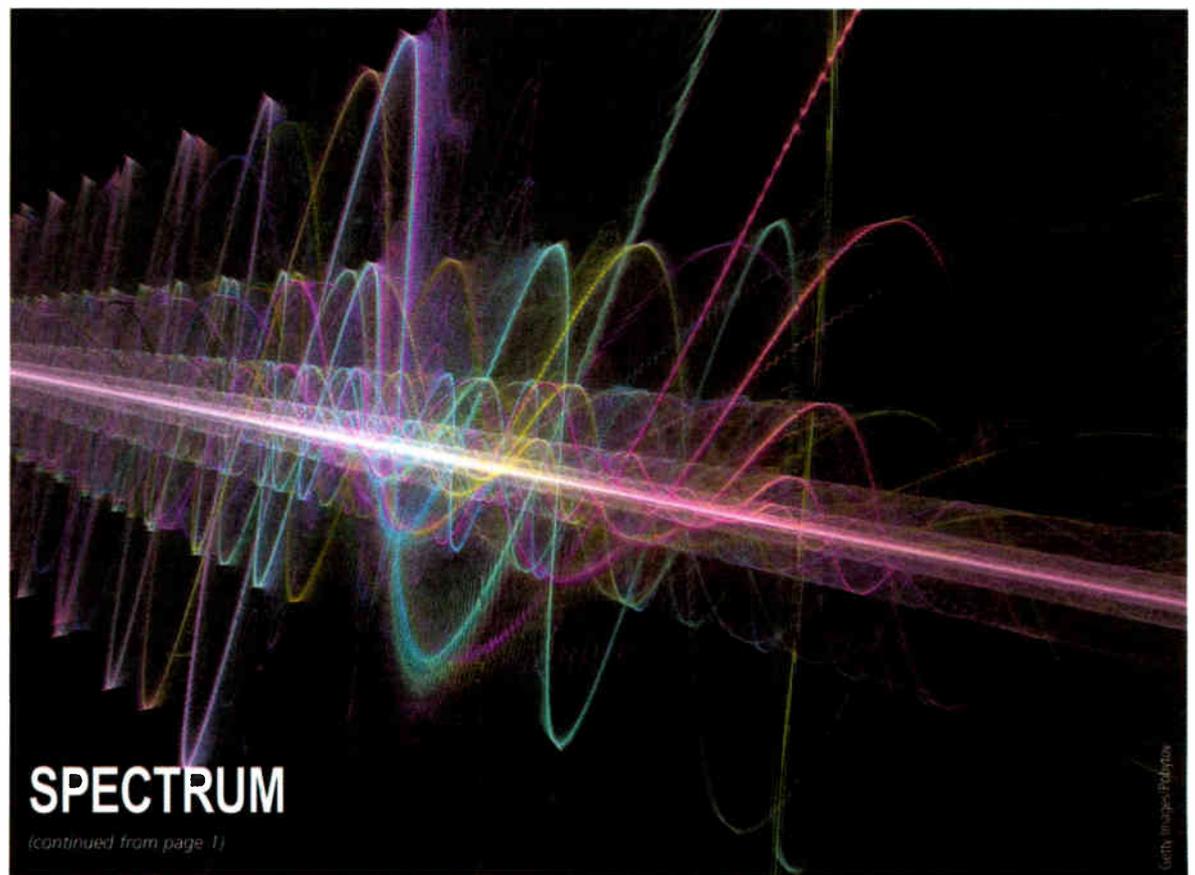


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versus 5G broadband at 3.7–4.2 GHz, and what the SBE perceives to be FCC compliance abandonment.

The society, which has more than 5,000 members and 114 local chapters, offers educational and certification programs for broadcast engineers, operators, technicians and broadcast IT professionals. But the non-profit also closely tracks technical regulatory topics of interest to its membership.

"FACELESS AND NAMELESS"

Chris Imlay, SBE general counsel, said the group has identified several top areas of concern, including ever-increasing ambient noise in the AM band.

"It seems like we always come back to that issue. I don't think the FCC wants answers to questions it has asked in the past but never taken steps to explore and investigate," he said.

"I have preached for years that the typical listener of the AM band is not going to reach out to the FCC to complain about interference issues in the AM band, they will simply not go back to AM."

Anecdotal, ambient noise in the AM band has grown dramatically worse in the past 15 years due to the proliferation of Part 15 RF devices, RF lighting and deteriorating infrastructure of power lines, Imlay said. SBE's experiences typically concern ambient, man-made noise in the medium-frequency, high-frequency and VHF bands.

The FCC's Technological Advisory Council opened a noise floor technical inquiry in 2016 to determine if there is such an increasing problem. Part of the council's work was to determine the methodology for a noise study.

Imlay said the FCC opened a docket and took comments but never took further action.

"All of a sudden, the docket disappeared and you can't find it anymore. The FCC gave no further explanation. I don't think they wanted the answers. It could have revealed the effectiveness of their rules on unlicensed devices. They're obviously ineffective.

Maybe the FCC felt the problem is too big to solve already. Meanwhile, the ambient noise levels are growing worse," Imlay said. [Read SBE's official comments at the time, including a summary of prior FCC discussion of the topic, at <https://tinyurl.com/rw-sbe-noise>.]

Also, Imlay cites the FCC's "compliance abandonment" as a growing issue in the field for radio broadcasters.

"The loss of the FCC's field offices has hurt. They were staffed with experienced engineers. (FCC) lost a huge knowledge base with those moves," Imlay said.

What the FCC replaced the field offices with was a "faceless and nameless" complaint system, Imlay said, void of any relationship-building.

"The online complaint filing procedure has been a dismal failure. And the FCC even acknowledged up front that they would put in place this new online complaint system but wouldn't necessarily take any action on individual interference complaints. They said it would be more of an information gathering site," Imlay said. "It's really a slap in the face to radio broadcasters."

And illegal stations remain a major issue, Imlay said.

"Pirate broadcasting is pretty much out of control. Again, that brings us back to the complaint system in place now," he said.

(continued on page 5)



TRANSLATORS

(continued from page 1)

by a complaining station. The commission based the complaint minimums on an approximate increase of one complaint for every 100,000 people in the complaining station's service area — *i.e.*, six complaints for a population of 1–199,999 to 25 complaints for a population of 2,000,000 or more. Previously, FM translators could be forced off the air as a result of a single unresolved interference complaint brought against the station, or multiple unresolved interference complaints from a single location. As a result, the FCC now requires translator interference claims to be based on “separate receivers at separate locations” — whereby multiple listener complaints from a single location will not count beyond the first complaint towards the prescribed complaint minimum.

Contents of Each Listener Complaint. Under the FCC's existing complaint procedures, there are separate requirements for demonstrating that individual potential and actual interference complainants are *bona fide*. This has resulted in protracted and contentious proceedings as to which individual complaints had to be resolved by the translator licensee — many times before

the technical aspects of the interference complaints were even addressed.

In the report and order, the commission streamlined the individual complaint requirements by defining an actionable listener complaint as a complaint that is signed and dated by the listener and contains the following information:

- The complainant's full name, address, and phone number
- A clear, concise and accurate description of the location where interference is alleged to occur (*e.g.*, map coordinates, street addresses, street intersections, etc.)
- A statement that the complainant listens to the complaining station using an over-the-air-signal at least twice a month to demonstrate that the complainant is a regular listener
- A statement that the complainant has no legal, employment, financial or familial affiliation with the complaining station (social media contacts with, participation in promotions/contests held by, volunteering for, or donating to a complaining station are no longer deemed as disqualifying) to demonstrate that the complainant is disinterested

Complaints adhering to the above requirements enjoy a presumption of



Getty Images News/Alex Wong/Staff

People enter the Federal Communications Commission building in Washington. The FCC this spring adopted new procedures and rules for situations where FM translator interference is alleged.

validity — which the translator licensee bears the burden of rebutting.

The FCC also eliminated the requirement that listener complainants must cooperate with translator licensees in resolving their interference complaints. In the past, listener cooperation was essential for the complaint to be *bona fide* — thus resulting in protracted and

contentious proceedings as to the level of the listener's cooperation.

Contour Limit on Interference Complaints. The commission adopted a contour limitation on translator interference complaints, setting the complaining station's 45 dBμ signal contour as the

(continued on page 6)

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JULY 17, 2019

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SPECTRUM*(continued from page 3)*

Imlay acknowledges improved enforcement of illegal broadcasts early in FCC Chairman Ajit Pai's tenure, but he feels that less being done in that regard today.

"Pai is a friend of radio, but I wonder if the FCC's anti-pirate initiative is still underway. The closing of the field offices remains a big issue," Imlay said.

The FCC closed more than a dozen field offices beginning in 2017 as part of a restructuring plan in the face of budget reductions. The move was expected to result in the commission trimming up to 44 positions.

Imlay said that he is hopeful the FCC will one day bring back some of the agents it let go in the cuts. "You don't need the brick and mortar offices to reopen, but additional agents on the ground with mobile vehicles would really help matters. The industry suffers from a lack of bodies and the talent they lost."

Imlay said the PIRATE Act, which would increase fines illegal pirate operations pay per violation, is making its way slowly through Congress and would help the situation. The bill passed the House of Representatives in February and the Senate Commerce Committee passed it in May. However, the full Senate has yet to take action on the act, after which it would go to the president.

"STILL NERVOUS"

Broadcasters and other users of the 3.7 GHz to 4.2 GHz band remain worried about the FCC's designs on the spectrum as it seeks means to further feed the appetite of wireless and broadband

NEWS

All of a sudden, the docket disappeared and you can't find it anymore. The FCC gave no further explanation.

— *Chris Imlay, referring to the 2016 Notice of Inquiry about the noise floor*

companies and the 5G rollout.

"A lot of radio users who depend on C-Band distribution for programming are still nervous about what the FCC wants to do," Imlay said, "and how to ensure the existing C-band operations are fully protected, if some of the 3.7 GHz to 4.2 GHz spectrum is going to be shared with wireless carriers."

Several compromises have been floated from both camps, according to observers, and Imlay said he expects a final ruling from the FCC before the end of this year.

Other regulatory technical issues SBE

is tracking include the discussion over whether to create a new Class C4 for FM and whether an upgraded or new Class C4 station be required to protect existing FM stations to their 45 dBu contour in the same way that was just ordered for FM translators, as some observers hope. SBE hasn't taken a position on the creation of the new FM class.

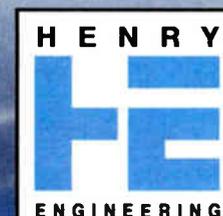
In addition, Imlay said with the TV UHF auction completed and TV repack work well underway, there is very little spectrum left in UHF for wireless microphones, which is an issue SBE will track.

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TRANSLATORS

(continued from page 4)

outer limit for both actual and potential interference complaints. In other words, all individual interference complaints must now allege interference from a location within the complaining station's 45 dB μ contour to be actionable.

Under the FCC's existing complaint procedures, there are no geographic limitations on actual interference complaints, and the existing rules only require that each individual complainant's address fall within the translator's 60 dB μ service contour in order to be *bona fide*. The commission adopted the 45 dB μ contour limit due to concerns that out-of-market stations were using the lack of geographic limitations on complaints to extend their reach into markets which they otherwise would not have.

In the report and order, however, the FCC stated that waivers of the 45 dB μ contour limit would be granted in extremely limited circumstances. To obtain a waiver, the complaining station would have to include at least 20 individual complaints from outside the 45 dB μ contour. In reviewing such requests, the FCC would also take into account relevant factors including a demonstration that: (1) geographic features enhance reception at the relevant listener locations; and (3) the listener expectation of service is well-established.

Other Complaint Requirements. Under the new procedures, complaining stations must also include the following with their interference complaint:

- A map plotting the specific locations of alleged interference in relation to the complaining station's 45 dB μ contour
- A statement that the complaining station is operating within its licensed parameters [not including pursuant to Special Temporary Authority (STA)]
- A statement that the complaining station's licensee has used commercially reasonable efforts at resolving the interference issue with the translator's licensee
- Undesired/Desired (U/D) data demonstrating that at each listener location the ratio of undesired to desired signal strength thresholds (co-chan-

nel and first, second, and third-adjacent stations as appropriate) are satisfied

Previously, the map and the technical showing requirements only applied to potential interference claims — not claims of actual interference. Moreover, the commission noted that the certification that the complaining station was operating pursuant to its licensed parameters was necessary because operating outside of the station's licensed parameters "could affect its actual versus its licensed 45 dB μ signal contour and therefore alter the permissible scope of its interference claim." Nevertheless, the FCC failed to state in the report and order whether the actual or licensed 45 dB μ contour was required for an interference complaint.

Finally, the commission noted that the certification regarding the private resolution of interference complaints would encourage parties to resolve complaints before a complaint proceeding was initiated at the FCC.

New Complaint Remediation Procedures

The commission also drastically changed the existing translator interference complaint procedures to speed up and streamline the process. Under the new rules, translator licensees may resolve each listener complaint by either working with: (1) a willing listener to resolve reception issues; or (2) the complaining station to resolve signal interference issues using suitable techniques.

Working with Willing Listener Complainants. Translator licensees are permitted to resolve individual listener complaints by adjusting or replacing the listener's equipment. This option, however, is only available if: (1) the listener's equipment is determined to be the primary cause of the interference issue; and (2) the listener is willing to cooperate with efforts to eliminate the interference. Otherwise, translator licensees are required to work directly with the complaining station to resolve interference complaints.

Working with Complaining Stations. The vast majority of translator interference complaints must now be resolved by translator and complaining station licensees working together using suitable techniques to resolve the interference issue. Such suitable techniques include, but are not limited to usage of: (1) the U/D ratio methodology previously applicable only to potential interference complaints; (2) the FCC's standard contour predicted methodology specified in Section 73.313 of the commission's rules; (3) on/off testing; and (4) on-site field strength measurements. The FCC noted

that lack of interference may be demonstrated by either on/off testing or on-site field strength measurements, and alternative translator technical parameters that would eliminate interference could be derived from on/off testing.

The commission intends to provide translator and complaining station licensees flexibility in the interference testing and remediation techniques and therefore leaves it to the parties to settle

The commission explicitly stated that any FM translator interference complaints pending as of the effective date of the new rules would be decided under the new rules.

upon mutually-acceptable techniques. If the translator and the complaining station licensees are unable to agree on which methodologies to employ, the parties may engage a third-party engineer to conduct interference testing and remediation. The results, however, are to be jointly submitted to the FCC — which will make a final determination as to whether interference has been resolved. Unilateral or contested data, however, will not be permitted to be presented to the commission as a remediation showing — or to dispute such a showing.

The FCC declined to adopt a universal interference resolution deadline, instead deferring to the Media Bureau to establish specific deadlines for each interference complaint. The commission, however, established a target deadline of 90 days from the date the bureau completes its initial review of an interference complaint to resolve complaints.

In practice, the bureau will issue a letter notifying the translator licensee that the interference complaint has passed its initial review, and will set a specific remediation deadline along with any necessary intermediate deadlines (*e.g.*, remediation plan deadline). If all interference complaints are not resolved by the set deadline, the FCC may order the immediate suspension of translator operations or power reduction.

Channel Changes

The commission adopted the proposal to allow FM translator stations to remediate interference issues (either caused

to or received from another station) by changing channels to any available same-band frequency. Such channel changes would now be deemed minor changes and would be permitted upon a showing of actual or predicted interference to or from any other broadcast station. Previously, translators were only permitted to move to first, second, and third or intermediate frequency (IF) channels to resolve interference. The expanded channel-change options will provide translator licensees with increased options for resolving interference — without having to undergo protracted complaint proceedings or being forced off the air for failing to eliminate interference.

Treatment of Pending Complaint Proceedings

The commission explicitly stated that any FM translator interference complaints pending as of the effective date of the new rules would be decided under the new rules.

Once the new rules become fully effective, the commission will permit parties to pending complaint proceedings to submit supplemental materials to address the revised rules. Presumably, this will serve as an opportunity for complainants to make the necessary modifications to their complaints to adhere to the new complaint requirements, and for defending translator licensees to seek dismissal of the complaints for their failure to adhere with the new procedural requirements.

The amended rules should become effective in mid-August. The report and order was published in the Federal Register on June 14, which would make the effective date of the rule amendments that do not constitute "information collections" Aug. 13 (we note that the initial Federal Register publication reported the effective date as July 15, but FCC staff has confirmed that was in error, and a correction will be published).

As stated in the report and order, however, the bulk of the new complaint procedures deal with "information collections" and therefore require the further approval of the Office of Management and Budget under the Paperwork Reduction Act, and will become effective only after the FCC publishes a notice of OMB approval in the Federal Register. FCC staff has indicated that they expect that approval to also be obtained by mid-August, so that all of the rule amendments can take effect at the same time.

Should you have any questions regarding the new FM translator interference complaint procedures, or require assistance navigating a current complaint proceeding, please contact your attorney.

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WTMA Celebrates 80 Years in Charleston

It hasn't changed the call sign, but not much else is the same in 2019

ROOTS OF RADIO

BY KEN DEUTSCH

"We've come a long way from being that crazy 'Tiger Radio' back in the 1960s and '70s playing top 40, to being a more responsible station that talks about today's news," says Program Director John Quincy. "WTMA(AM) is still here and thriving."

Our story begins 80 years earlier.

On June 15, 1939, WTMA, Charleston, S.C., signed on the air, the second station in the market to do so. WCSC(AM) was the first (signing on in 1930), but while that station still exists, it has changed call letters several times, something WTMA has never done. Coincidentally, the two stations now share a tower site.

WTMA originally broadcast at 1210 on the dial and had its early studios on 10th Street in Wagener Terrace, with its first broadcast originating from the Dock Street Theater. In those years, WTMA operated at 250 watts, but because there was little interference from power lines, that signal was enough to blanket Charleston and beyond.

The original owners were insurance men Y. Wilcox Scarborough and Jesse W. Orvin, but they owned the station for only a few months before selling it to the local newspapers. And what did the call letters stand for? Stay tuned to find out, as the early announcers might have said.

Today, WTMA is 5,000 watts non-directional during the day, and 1,000 watts directional at night with two towers. The station moved its dial position to 1250 in 1941 and has had multiple owners over the past eight decades including a brief stint with Ted Turner. Today, WTMA runs a news/talk format and is part of a five-station cluster owned by Cumulus Media, with studios in north Charleston.



John Quincy at the mic

Quincy has been with the station since 2002. Having come to appreciate WTMA's rich history, Quincy took it upon himself in 2003 to establish a website devoted to celebrating its personalities and community service: www.wtmamemories.com.

"After years of carrying NBC soap operas and other network fare, WTMA adopted a top 40 format in the early 1960s that was very successful," said Quincy. "In fact one of the 'Mighty TMA' DJs back then had a 70 share in the Arbitron survey! As FM became more popular with music listeners in the late 1970s, WTMA switched formats a couple of times before adopting the current news/talk format on June 1, 1989."

(continued on page 10)



Bill Edwards in 1965

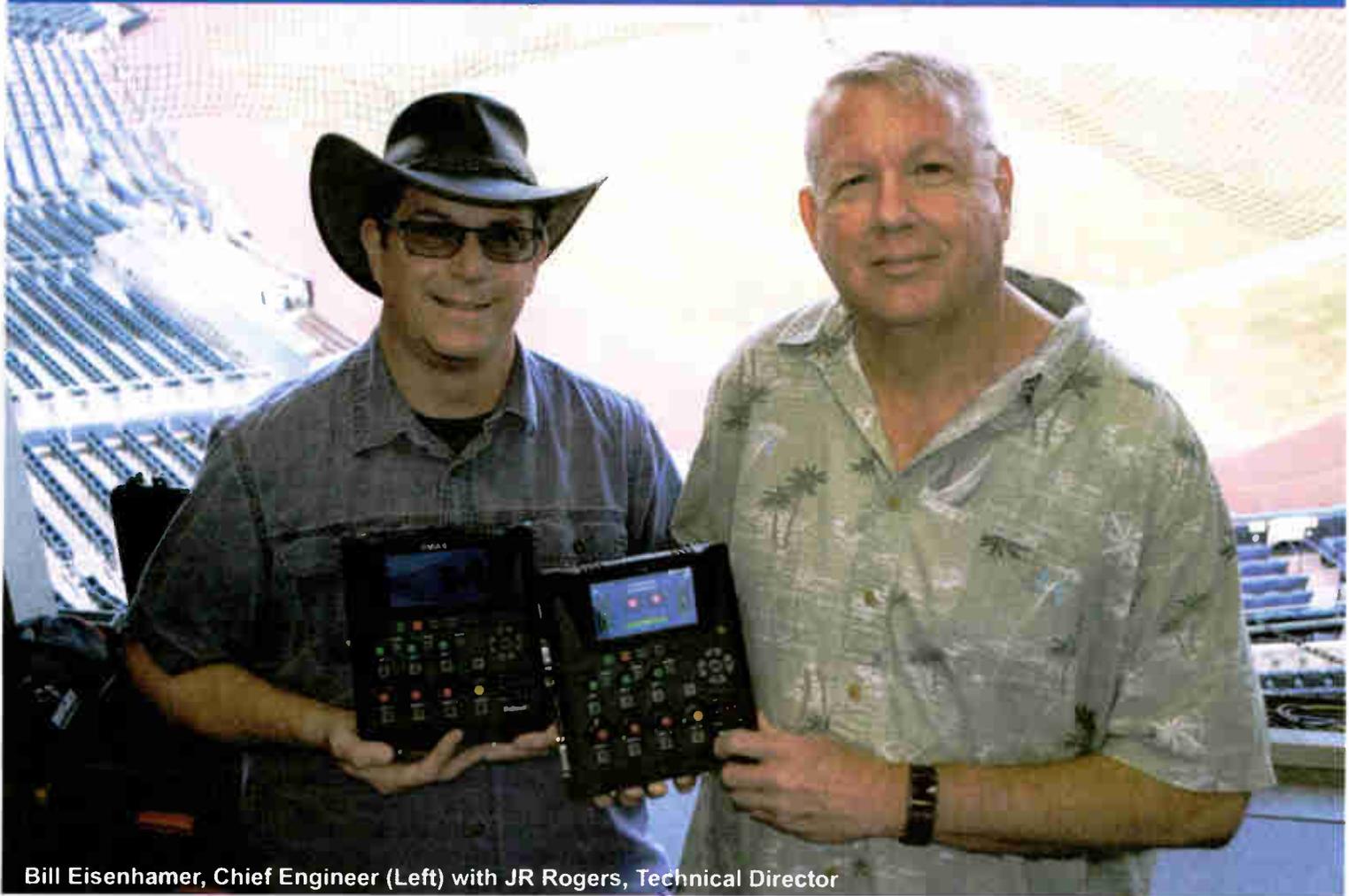


A station vehicle is parked in front of WTMA's offices and studios on Church Street in downtown Charleston in a photo from a 1950s promotional postcard. The building also housed the historic Dock Street Theatre, so the station jocks reportedly had to minimize the volume on their control room monitors when a play was being performed. The small sign above the door reads "Radio Station WTMA, N.B.C."

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Bill Eisenhamer, Chief Engineer (Left) with JR Rogers, Technical Director

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Bill Eisenhamer
Chief Engineer, Entercom San Diego



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WTMA

(continued from page 8)

STORM'S SILVER LINING

Hurricane Hugo arrived just three months after that format switch, and while it was a disaster of immense proportions, Quincy said it was the event that put the "new" WTMA on the map.

"The station was off the air for a day, as everyone in the city was evacuated," he said. "Our engineer, Bruce Roberts, was first to return, and he used a generator-powered hair dryer to help drain the transmitter after the flap on the vent opened during the storm.

"For weeks until Charleston residents all returned home and power was restored in the region, WTMA carried all the news, and then at 7 p.m. the program manager, Dan Moon, would go on and open up the phones. The people called in and talked, and Moon



Charlie James

stayed on the air every night until that evening's calls dropped off," he said.

"The other Charleston stations were playing music and commercials, but WTMA provided information and kept people company throughout the evening. Eventually, this led to Moon becoming the morning show host, a job he held until 2003."

REMEMBERING THE FUNNY, TOO

But in the course of 80 years of broadcasting there had to be some funny station stories, right?

"At one point WTMA and its sister WSSX(FM), formerly WTMA(FM), were in the same building," said Quincy. "But there was an RF problem that caused the AM signal to get into the FM studio's board. According to then-DJ Moon, the FM staff would surreptitiously reduce the AM daytime power from 5,000 to 1,000 watts, which alleviated the RF problem in the FM control room but caused other issues."

And according to Quincy, former top 40 personality Bob "Booby" Nash performed some of those wonderful stunts that made the format so much fun in the '60s.

"He allowed himself to be 'buried alive' at a local drive-in, and he broadcast one show underwater from a tank at a mall. Nash had buttons made and distributed to listeners that said 'I'm a Booby Lover.'"

The previously mentioned website, WTMA Memories, is a great source of other station trivia. For example: When broadcast personality Connie Neal McPhaul (air name "Big Mack") was a 14-year-old radio enthusiast growing up in Charleston, he put a pirate station on the air. Unwisely, he used a 75-foot



Booby Nash in 1966

tower and pumped out 250 illegal watts, knocking off any station within a half mile of his house. An FCC field rep busted him and seized his equipment, but suggested the lad enter radio legitimately when he was a little older.

Eighty years after the station signed on, WTMA still serves Charleston. On June 15, 2019, South Carolina Gov. Henry McMaster declared its 80th anniversary as "WTMA Day" statewide.

Check out a multi-hour audio documentary on the history of WTMA: <http://wtmamemories.com/historyoftma.htm>, and visit the station's website, wtma.com, to learn more.

But what *do* the call letters "WTMA" stand for? Nothing at all — they were randomly assigned by the Federal Communications Commission.

Ken Deutsch describes himself as a former disc jockey, program director and master of ceremonies at local animal moltings.

HOW WTMA CELEBRATED ITS 80TH ANNIVERSARY

Each Saturday afternoon of May, June and July, the station has been running two separate hours of "The History of TMA," a John Quincy-produced 36-hour audio documentary that features airchecks from WTMA's music radio days, interviews with

past personalities as well as airchecks from previous anniversaries.

The whole program can be downloaded at www.wtmamemories.com.

On Memorial Day, Independence Day and Labor Day on morning drive, WTMA is playing airchecks of past talk personalities like Dan Moon, Richard Todd, Rocky D. and Nancy Wolf.

Several times each day, WTMA also is airing

one-minute "flashback" clips featuring airchecks from old newscasts and WTMA DJ and talk shows.

On June 14, the day before its 80th birthday, WTMA staged an on-air party at the station. Morning personality Charlie James hosted, with appearances from past music and talk radio personalities. WTMA rechristened its talk show studio "The Dan Moon Studio."



Dan Moon



Nancy Wolf



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World Radio History

Use This Auto Part to Repair a Dehydrator

Plus, a Workbench tip from RW Editor Paul McLane

WORKBENCH

by John Bisset

Email Workbench tips to johnpbisset@gmail.com

The internet is such a useful tool for today's broadcast engineer. Here's another case in point:

Bill Bowin is the chief engineer for North American Broadcasting Company in Columbus, Ohio. He relates that his assistant Dave Matthews picked up an Andrew dehydrator at the most recent Dayton Hamvention. Dave figured that even if the unit didn't work, the price was right, even if just for spare parts.

After getting the dehydrator on the bench, the only problem Dave could find was that the cooling radiator had corroded, as seen in Fig. 1. Hoping to get the "radiator" repaired, Dave took it to the station's resident car guru, who commented, "Hey, that's an oil cooler!"

A quick search on Amazon revealed a virtually identical replacement for under \$30. Fig. 2 is a picture of the actual box, including the part number. The replacement oil cooler fit perfectly in the dehydrator, which will now have a new home keeping a transmission line dry.

RW Editor-In-Chief Paul McLane occasionally passes on some great tips of his own.

This one is borrowed from the June 24 issue of PC Magazine. Because so many engineers use the Raspberry Pi computer, readers will be pleased to

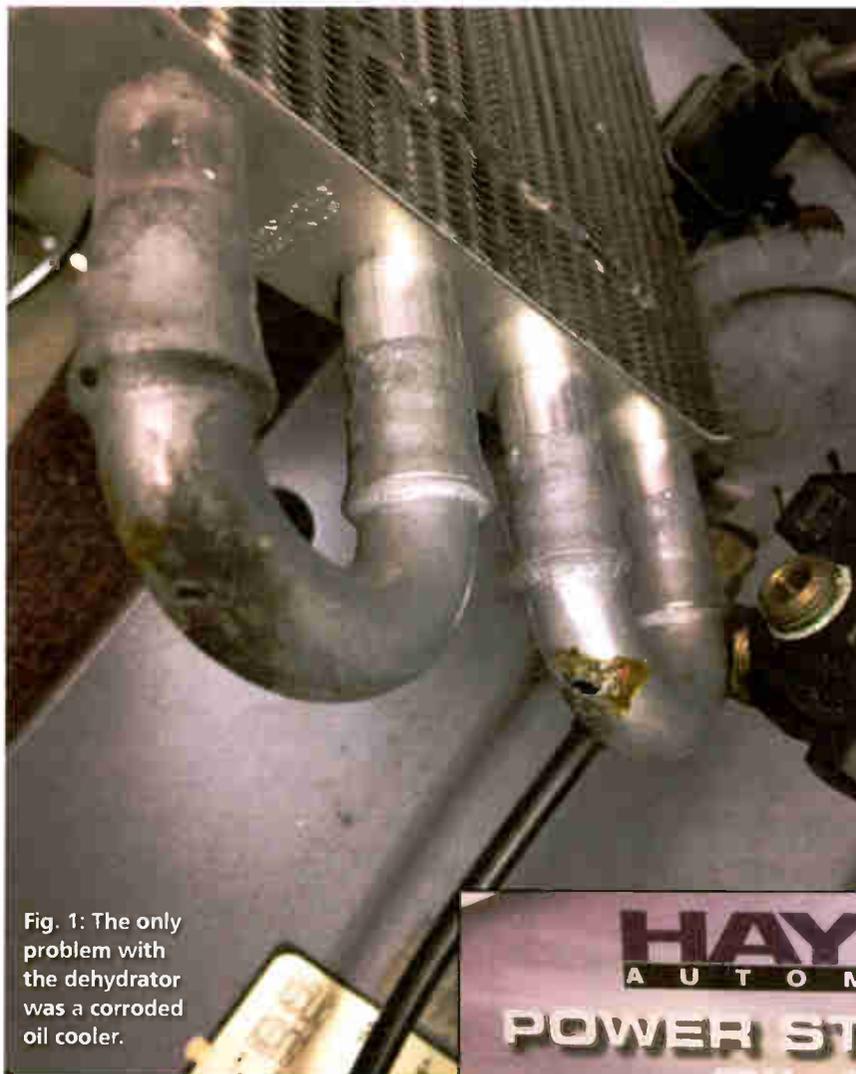


Fig. 1: The only problem with the dehydrator was a corroded oil cooler.

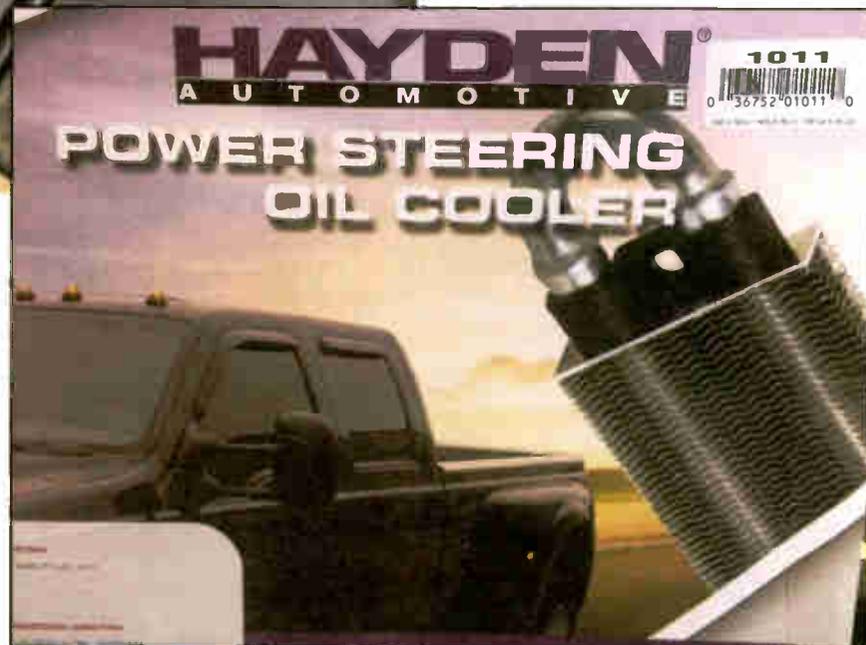


Fig. 2: Amazon to the rescue with this replacement oil cooler for \$30.

know that the new Raspberry Pi 4 laptop computer comes with three times the processing power of the previous generation. Plus, it has the capability to drive two 4k HDMI displays at once, as well as providing a Gigabit Ethernet port and offering USB 3.0 connectivity.

If you haven't explored the Raspberry Pi, head to www.raspberrypi.org. For \$35, you've got a full-fledged computer,

and the site provides both tutorials and a number of projects.

If you've experimented with a Raspberry Pi in the past, another feature is this new version is backward-compatible. So, if you have older Raspberry Pi projects, this new version can be easily exchanged. What a concept!

Have you used the Raspberry Pi in a broadcast setting? Let our readers know about it. Send me your project information, along with high-resolution photos, to johnpbisset@gmail.com.

Frequent contributor and project engineer Dan Slentz sent another link for acoustic foam panels — this time from Home Depot. Dan writes that he is amazed how much "studio" gear is found on non-broadcast websites.

Go to www.homedepot.com, and enter Acoustic Panels in the search block. You'll find a variety of acoustic panels by several manufacturers including Auralex. Are you looking for a non-foam sound diffuser? Enter "sound diffuser" in the search block and scroll down for a variety of products.

Of course, readers of Radio World should patronize our broadcast industry suppliers first, when all other things are relatively equal. A non-industry supplier may or may not be more expensive. Keep in mind too that Home Depot may have neither the range of options or the expertise to help you.

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But a box store might help you out when you need something this minute. Remember, Radio Shack probably wasn't your first choice in the old days if you needed a connector, cable or cheap mic. But it was comforting to know you had that option as a complement to your relationship with a favorite radio industry distributor.

(continued on page 14)

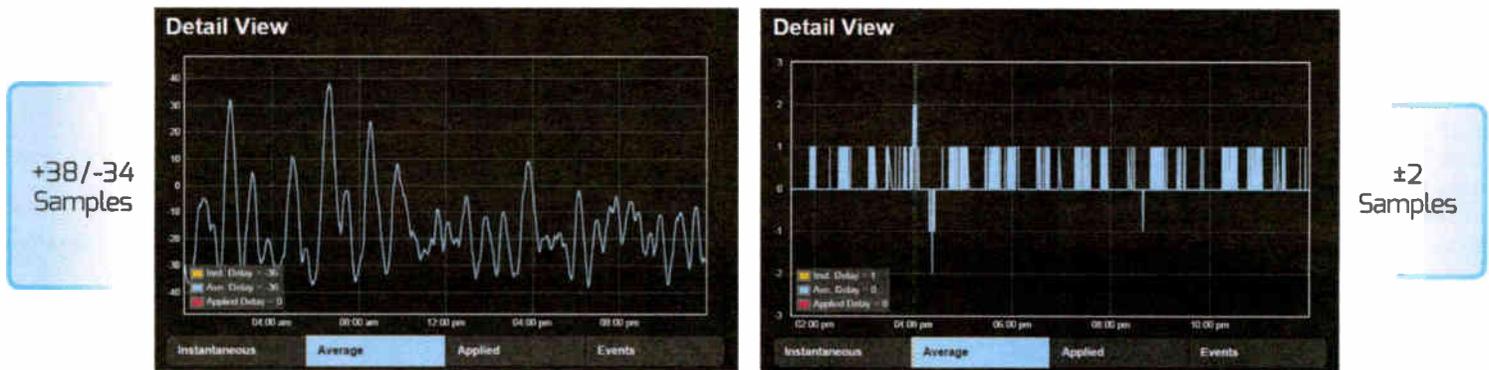


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Hooked on Startups, He Invented Infocast

Here's a story about something you might call "The Wireless Internet of 1978"

RFAPPLICATIONS

BY MICHAEL A. BANKS

"Von Meister is a terrific entrepreneur, but doesn't know when to stop entrepreneuring." — Jack Taub, financial backer of Infocast

Bill von Meister grew up planning to be his own boss. He had a fine example in his wealthy father, who managed a company called German Zeppelin Shipping in Lakehurst, N.J.

After completing his (non-technical) education at Georgetown University in 1973, von Meister started a wholesale liquor company. He found this boring and decided that he should become a consultant.

Working family connections, von Meister was hired to create a database for Litton Bionetics. He knew only the basics of computers but completed a successful database. Once it was up and running, he lost interest and went looking for another consulting gig.

Word got out and Western Union contacted him; they needed someone to create a computerized billing system. Von Meister went to work on the system in 1974 and expanded his knowledge of computer applications with the help of Western Union engineers.

He was fortunate to have an intuitive sense for how various systems and equipment might be combined to serve brand-new purposes. An example of this can be found in his next job change.

TELEX AND TELEPOST

Western Union gave him an assignment that involved Telex. In it, he saw a way to speed up delivery of hardcopy business mail. A letter was transmitted to the city nearest its destination by Telex. A local teleprinter created a hardcopy, which was sent to its final destination via USPS Next Day Delivery. Customers could call in and dictate letters.

He offered the idea to Western Union. The company wasn't interested, so

von Meister found another backer for his idea, a company named Xonics. The service, called Telepost, was so successful that Western Union bought Xonics and rebadged it as Mailgram.

HOOKED ON STARTUPS

Von Meister wasn't giving Telepost much attention by this time. It was characteristic of Bill von Meister that he could never be happy running a successful business. He was hooked on startups. A pattern emerged as he started a search for a backer for his next big idea.

The idea was a "least cost" long-distance service that he developed with an engineer from Western Union. The service cost less (thanks to a routing algorithm the two developed) and had more useful features than anything MCI or AT&T offered. Von Meister called the service Telemax and marketed it under the corporate umbrella of TDX.

Telemax soon reached a point where it required additional capital. Von Meis-

ter found a backer in a British company, Cable & Wireless, which was looking for an entry into the lucrative North American business telephone market.

The deal closed with von Meister drawing \$70,000 per year to run TDX/Telemax. Within months, von Meister was eyeing two new businesses while neglecting TDX.

One combined Telemax with

FAX and Express Mail to expedite collection letters. Letters were FAXed to the USPS Express Mail center in Chicago. From there, the FAX printouts were Express Mailed to recipients.

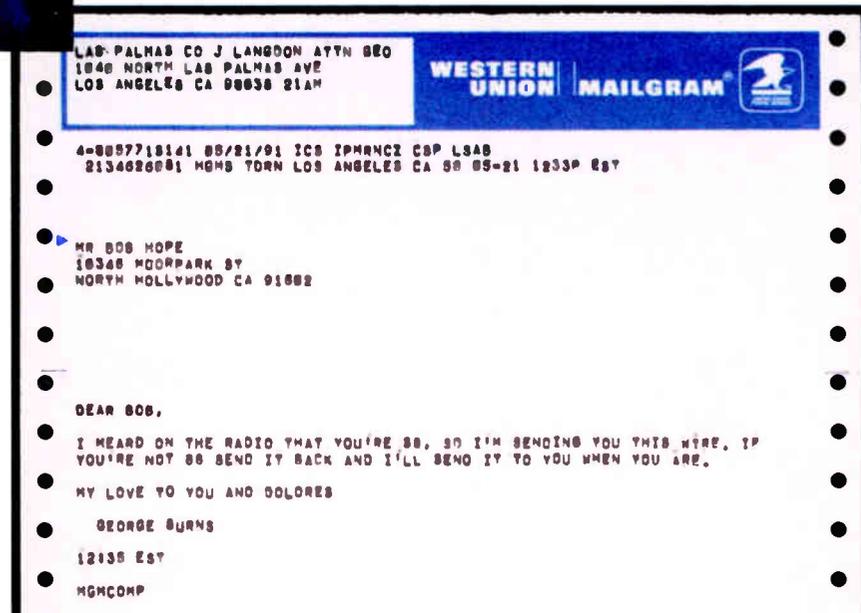
INVENTING INFOCAST

The other idea was probably the most revolutionary concept Bill von Meister ever had.

Von Meister and two engineers devised an information network based on "piggybacking" digital data on FM radio broadcasts using a single side-band.



Bill von Meister



Here's an example of a Mailgram — in this case, from George Burns to Bob Hope — and (see facing page) the envelope in which it was mailed after being transmitted to the post office nearest the recipient via email.

WORKBENCH

(continued from page 12)

Ham Brian Beezley (K6STI) commented on the Stellar Labs Yagi that we mentioned in a previous column. From his perspective and measurements, it lacks the tremendous directivity and forward gain promised by the manufacturer. Brian also questions whether it would survive a harsh winter, even though it is constructed of tubular and not rolled metal.

Brian modeled the antenna, and its performance, along with a suggested modification to improve the performance. His results can be found here: <http://ham-radio.com/k6sti/stellar.htm>.

Brian also modeled the performance of over 25 Yagis, and their individual performances can be compared here: <http://ham-radio.com/k6sti/curves.htm>.

As to the Stellar Labs product, Brian writes that its availability and low cost are perhaps the most valuable features.

In the previous column, I challenged readers to identify Fig. 4 (shown as Fig. 3 here). I noted that it was a commonplace in radio and TV stations but might be hard to find anymore.

These are adhesive labels that were used not just on file folders but to label audio tape cartridges, which we inserted into endless-loop cart machines to play back spots, jingles and music.

Ask a broadcasting veteran how much fun it was trying to

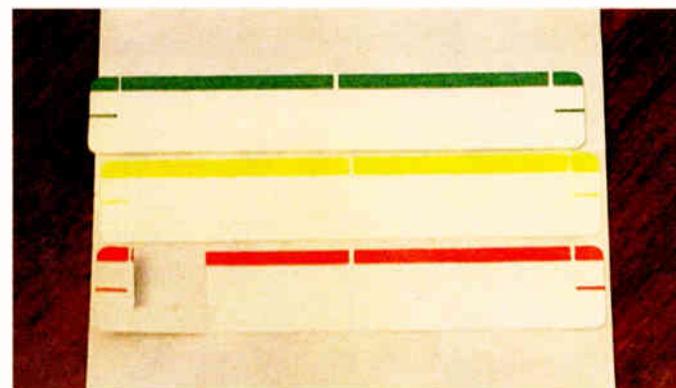


Fig. 3: How long has it been since you've seen these? Do you even know what they are?

scrape off all that adhesive when trying to remove the labels! (That was one of my first jobs in radio.)

By the way, I checked; Avery still manufactures these labels, just in case you need them for file folders — or that stack of carts in your basement! Head to www.avery.com and search for "file folder labels."

Contribute to Workbench. Send Workbench tips and high-resolution photos to johnpbisset@gmail.com.

Author John Bisset has spent 50 years in the broadcasting industry and is still learning. He handles western U.S. radio sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.



The system, which von Meister named Infocast, could broadcast data up to the limit of an FM broadcast (about 75 miles). Dedicated receivers would decode Infocast data for display on terminals. As he told Businessweek, a network of 50 FM stations across the country, with data routed between stations by packet-switching networks over telephone lines, could reach more than 90% of businesses.

Von Meister's plan was that Infocast clients would have private two-way data channels through which they could transmit anything, anytime. Infocast would lease equipment to clients, and charge for data traffic.

Von Meister formed a company called Digital Broadcast Corp. to produce and market Infocast — with Cable & Wireless money. (He would soon be forced out of TDX/Telex over that.)

He lined up equipment sources, set up offices and a technical staff in McLean, Va., and put sales force to work marketing Infocast to corporations and institutions. In November 1977, WGMS(FM) of Washington, D.C., began on-air tests with Infocast hardware. Before long, FM stations across the country were broadcasting data for Infocast.

A California-based grocery chain called Lucky Stores signed up to send data to its stores on the East Coast. And there were other customers.

BIGGER PLANS

Infocast was a viable entity but more than a little tight for cash. Late in the year, von Meister found a backer for Infocast, an entrepreneur named Jack Taub.

Of course, von Meister's master plan was for a consumer network — a system that would transmit news, weather, stock market prices, sports and other information from a central location, to be relayed to FM stations for broadcast.

Home users would tap into data broadcast with receivers and terminals rented from Infocast. Von Meister also planned to allow those same users to send data, and even exchange messages.

Essentially, it was a wireless public internet, 20 years ahead of its time.

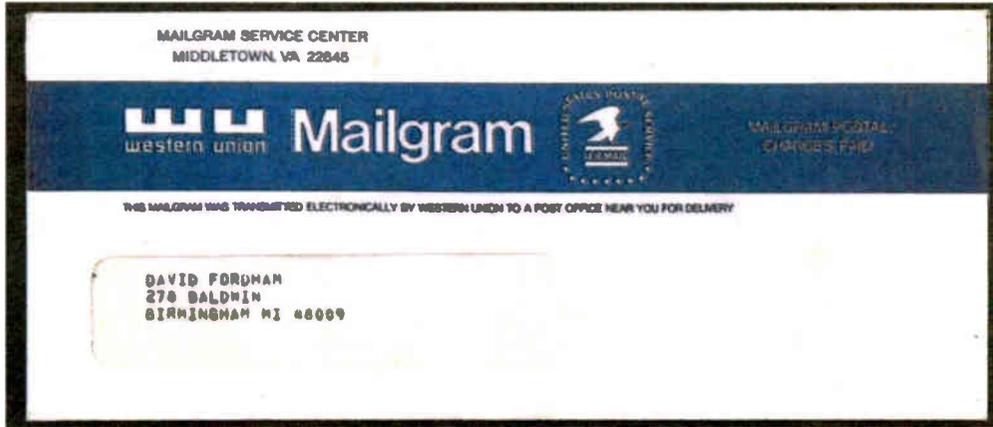
But there was no way to fund an Infocast consumer network. Supplying 1,500 terminals to a corporate customer at a cost of a few million dollars was practical. Providing terminals to millions of consumers was not. Thus his dream faded.

But Bill von Meister had another idea, which was inspired by reports of personal computers flooding homes across America. He called his idea CompuCom. Later, the name would be changed to "The Source." But that is another, fascinating, story.

This story is based on trade magazines and newspapers of the period, with supplemental information from

Bob Ryan, president of The Source at its founding, and Jack Taub, a primary investor who took over the company and fired von Meister in 1980.

Michael A. Banks is the author of "On the Way to the Web" (APress, 2008), "Crosley and Crosley Motors" (Enthusiast Books, 2012), "Ruth Lyons, the Woman Who Created Talk TV" (Orange Frazer Press, 2009) and other titles.



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Ten Codec Questions to Consider

Important points to take into account when implementing codec technology

BY GARY KLINE

The large choice of codecs available on the market can be overwhelming. Gary Kline, a consultant and former corporate director of engineering and broadcast IT for several radio companies, highlights important points managers should take into consideration when defining their audio transport strategy and shopping for new gear.



Gary Kline

ing, we both realize that there is a bigger picture to consider involving several codec brands and models. By asking the right questions and walking through the technical workflow of the building, we learn that there are pending, among other things, STL, remote broadcast and even on-air telephone system needs, all of which could involve codec purchases. So before the codec selection and

quoting process begins, ask yourself whether this is a limited scope project or something broader. You may save money and increase efficiency on your capital spend by reviewing the larger picture up front.

3 *If this is a broader physical plant codec review, have you defined your goals and requirements?*

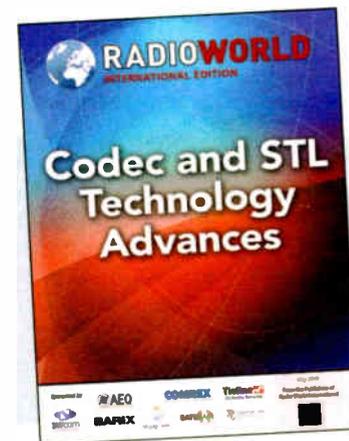
Defining your requirements goes together with the above question. Without specific goals, how can you determine whether a codec makes sense for a particular situation?

Obviously, a simple remote broadcast codec solution is easy to determine. But a larger, sophisticated codec upgrade and replacement project does require you to identify your goals and requirements.

Some requirements might include:

- cost savings over telecom fees
- audio quality
- increased density so that multiple audio channels can be accommodated with lower cost
- improved workflow

This article is from Radio World's ebook "Codec and STL Technology Advances." We've now published more than 50 ebooks on a wide range of topics of interest to the broadcast technologist or manager including AoIP, next-gen codecs, cloud technology, digital radio, RDS, DRM, translators and more. All are free to read. Find recent issues by clicking the ebooks section under the Resource Center tab at radioworld.com.



- redundancy against existing legacy audio transport, metadata and control
- integration into AES67/AoIP/Dante infrastructure
- cost savings over non-codec/IP solutions
- reduced maintenance requirements
- interoperability/interconnectivity within the plant or third-party studios
- portability in the field
- integration (or replacement) of on-air phone systems
- additional methods for listener interaction (using mobile apps, etc.)

Those are just a few examples. Any of these requirements can be combined into a matrix to help determine if or when a codec purchase should be made.

4 *I don't trust my audio to the public internet for delivery. Is that a valid concern?*

Ten years ago, many engineers had their doubts about the reliability of using IP codecs for critical audio applications over the public internet. At the time, they might have considered using the public internet as a backup path only. This was due to internet speed, reliability, cost and a lack of availability at rural locations, such as transmitter sites.

One could have ordered dedicated point-to-point IP circuits, but 10 years ago those costs were much higher than

they are today. Also, some codec models didn't have a redundant second carrier or aggregation option which meant everything had to rely on a single internet provider.

Today, however, public internet generally is reliable and can be ordered as a business class service with higher speeds. It is usually inexpensive and is available in more places including rural transmitter sites.

Most codec units on the market now — including single remote broadcast units — have options for integrating and aggregating multiple carriers, which make using the public internet safe and reliable. Hundreds of codec installs using the public internet have been implemented with few problems. In some very high-profile mission-critical situations, I have ordered a point-to-point Ethernet circuit to be used as the primary carrier with a public internet line as the second carrier. Dedicated Ethernet circuits guaranteeing increased supervision by the carrier are a lot less expensive today. So if having a dedicated circuit is a mandate for you, like a traditional T1, this is absolutely possible.

Broadcasters use a combination of public internet, point-to-point Ethernet, MPLS and RF to connect their codecs.

5 *Can a codec operate using RF?*

Yes. Typically, a data radio is used at each end, which provides a private Ethernet path for the station between two points (typically between the studio and the transmitter site). This allows for audio transport, metadata, Ethernet and remote monitoring.

The RF data radios are usually bidirectional, as are the codecs, so return audio can be passed back to the studio for confidence monitoring, etc. The RF path physical distance can be short or go for several miles.

There are different radio models with different costs depending how much bandwidth is needed and how far the transmission path is. For shorter distances, these radios utilize smaller dishes. If a proper path is designed and the

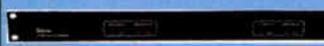
(continued on page 18)

1 *In today's terms, does everyone on the team understand what a codec is and how it is used?*

This might seem like a basic question that anyone can answer; but often, depending on the person you ask, the definition will vary. Years ago, we thought of a codec as a simple singular compression and decompression scheme or device. But the term "codec" has taken on a more general definition, which can sometimes be interchanged with STL, microwave, transmission path, etc. So before you go down the path of integrating new codec technology into your facility, make sure everyone on the team is familiar with the current models and configurations of the codecs on the market. Codecs today comprise many technologies and come in various sizes, shapes and price tags.

2 *Is this a simple codec replacement project or something bigger in scope?*

In my consulting practice, I meet many managers who start off by asking about a simple codec recommendation. By the time we finish talk-

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CODECS

(continued from page 16)

appropriate radio/antenna combination is selected, the RF system will be very reliable. Some systems can be installed without a license from the spectrum regulatory body but other cases may require one.

The cost to implement an RF link for codec usage is very competitive compared to traditional analog microwave gear; in some cases much less expensive.

6 Are there any new practical codec technologies?

Yes. Here are some of the features you'll find in codecs today: AES67 and Dante compatibility, AoIP compatibility with console manufacturers, transport of FM MPX composite over IP, higher-density transport containing multiple audio channels using the same piece of hardware, smaller physical sizes, carrier aggregation for redundancy and improved connection reliability, improved usage of cellular including 4G LTE and easy-to-understand GUIs.

In addition, most units now feature integration with on-air phone systems for improved caller audio; iOS and Android apps for remotes and news gathering as well as enhanced listener and VIP participation; reduction in cost per audio channel; and cloud-based switchboard servers to make connecting codecs even easier by eliminating certain firewall or router issues.

The FM MPX over IP feature is very helpful to those who wish to move their audio processing back to the studio or for those who want one audio processor to feed multiple locations. MPX over IP may also be interesting to those who employ SFNs.

Apps for the smartphone or laptop make remotes, newsgathering and listener call-ins sound better and are easy to implement. Cellular bonding makes broadcasting from rural areas and large events (concerts, sports) more reliable because it helps mitigate network congestion.

7 Are there advantages to having an AoIP plant as it relates to codecs?

Yes. There are several codec boxes today that are compatible with AoIP

consoles and audio routing systems. This allows for high-density audio paths without all the extra wiring.

A well-designed AoIP plant will incorporate seamless integration into the switching and control aspect of all installed codecs. For example, a large complex with many studios can use just a handful of codecs by utilizing dynamic allocation and switching available within an AoIP system. This saves on the expense of purchasing more codecs than otherwise might be needed.

AoIP also allows for the automatic control and manipulation of codecs for linking remote studios together or to send programs from one city to another. The macros and automation available in a typical AoIP infrastructure can tie together the features of your automation playout system, console routing and codec allocation to facilitate very powerful audio transport within your plant or to the outside world. Modern radio distribution networks are being built around this concept. IP codecs are increasingly being used for program backhaul, satellite replacement, and regular program distribution at great cost savings and efficiencies.

8 Besides the purchase of the codec equipment, what other technical matters should be considered?

There are a few key ones.

One is your firewall. Codecs that talk to other devices in the outside world need a way to get through your firewall. Each codec has its own set of ports and special routing requirements so they can connect reliably to the far end. The

requirements are not complicated, but someone with knowledge of firewalls and routers will need to manage this. The use of cloud-based switchboard/transversal servers can eliminate some or all of this, so they are a good option.

You should also consider redundancy for mission-critical paths. This is good practice whether you are using a codec or any other type of transport device. One method is adding additional carriers for what is known as "carrier redundancy." The other is physical hardware redundancy, which means you will have a second physical codec or legacy device in place to backup the primary codec.

Another key consideration is your internet provider. You should allow for enough bandwidth inside your facility to handle all the requirements not related to codec usage plus your total possible codec utilization.

Do not ignore your upload speeds; this is particularly important for codecs that are sending IFB audio to the field. Some facilities have installed a separate internet line solely for their codecs or to be used as a backup, although this is not absolutely required.

Every situation is unique, so it's impossible to cover them all here. These are just a few of the more common approaches. The bottom line: Redundancy is good engineering practice in addition to having a well-designed IT infrastructure.

9 Do I need to be a scientist (or hire one) to install and program codecs?

No. The GUIs and setup screens in

codecs today are easy enough to understand and navigate.

In addition, because IP codecs have been around for several years, there is a lot of institutional knowledge out there. It is easy to find someone on staff or locally who can assist with the programming and setup of any popular codec device.

There are also excellent online resources in the public user groups and on manufacturer websites. Most program directors and on-air talent regularly broadcast from the field using an IP codec without any technical assistance. Some codecs even allow for remote control so that someone back at the studio can diagnose minor issues in the field for an added measure of support.

10 I have a codec; which audio algorithm should I use?

Use the highest quality (least compressed) algorithm that will reliably work given your particular speed, network congestion and program material. In other words, choose for the best audio quality without risking drop-outs or glitches.

Most codecs have settings to buffer and lock in a solid connection even under challenging situations, so don't be afraid to start at the top and work your way down. Using more than one carrier simultaneously (aggregation) can improve robustness. Music programming usually requires higher quality while speech can get away with lower bandwidth in many cases.

Your codec manufacturer can walk you through the steps necessary to activate carrier aggregation.

WHERE ARE YOUR LISTENERS FINDING YOU?

More and more radio listeners hear their favorite stations via a digital platform rather than a traditional AM/FM radio.

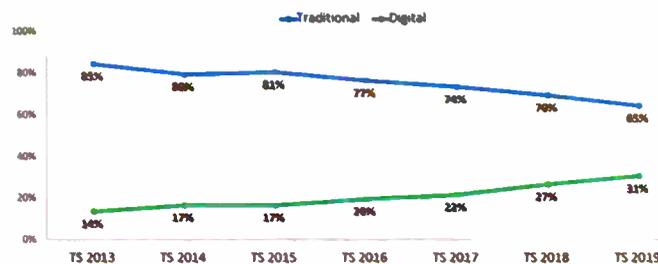
That's one of the trends reflected in Jacobs Media's Techsurvey 2019, released this spring.

Jacobs Media conducts this survey each year seeking to learn the media habits of core audiences to 14 radio formats. Its findings cannot necessarily be generalized to all radio listeners because the respondents are largely commercial radio users who are already members of station databases; but the results provide numerous insights into the habits of today's radio audience. You can read the entire slide stack at <https://jacobsmedia.com/ts2019-results/>.

Among the notable overall trends reflected in the data are the rise of voice, with smart speakers being owned by more than a quarter of the respondents, up significantly from just two years ago. Also, Jacobs found that streaming video continues to grow, with Netflix used weekly or more by more than half of these respondents, and Amazon Prime Video and Hulu also popular.

Radio's digital listening has expanded. While two-

Home Station Listening Platform: Traditional vs. Digital



thirds of consumption to the average station in the survey takes place on "regular radios," about a third of listening is via digital platforms including computer streams, mobile apps, smart speakers and podcasts. The image here shows the trend for home listening specifically.

And while weekly podcast/on-demand audio listening was flat, podcasting's momentum among those who already listen was found to be growing rapidly.

The survey was taken in January and February, and encompasses data from 50,600 respondents obtained through 519 North American radio stations.





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PROMO POWER



Mark Lapidus

Like many Radio World readers, I do a lot of work in both traditional radio and digital media, where nearly everything can be measured. When a program concludes, most advertisers want to know the final metric results or key performance indicators.

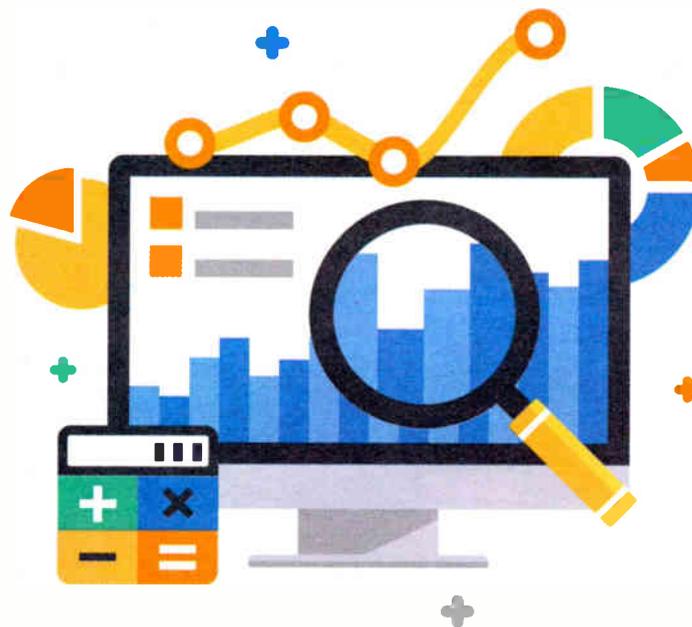
Anyone who presents media metrics regularly has learned that most people don't actually know basic definitions or have the necessary context to draw actionable conclusions.

So what's a media person to do? Here are two suggestions:

1. To prevent unhappy clients at the conclusion of a media campaign, you should agree on expectations at the very start. This discussion and subsequent negotiation is as important as getting the sales order. Why? Because it greatly increases the chances of return business, instead of one and done.
2. Learn as much as you can about radio ratings and digital metrics in order to make sense of them. This starts with defining which metrics are important. This learning curve requires practice and even tests to ensure that your sales reps can walk the walk and not just fake it till they make it.

Agreeing on outcome expectations seems elementary, yet I find that people generally are surprised when I bring it up as the first topic — even before we discuss budget, creative execution or placement. Understanding what clients are attempting to accomplish, or are even willing to accept as an outcome, is tremendously useful in delivering a happy ending.

Perhaps your client won't even care about media metrics; they may care only



Getty Images/Molnia

about immediate cash register results ... and if short-term efforts to move goods or sell services is all that matters, it totally affects the creative you run and the length of the advertising schedule.

If you're not following, here's a simple example from my very distant past.

LUCKY LAPIDUS

I was doing a live two-hour remote from a car dealership. (Remember those?) It was raining. It was dark. I

was young and naïvely asked the manager how many cars he expected to sell. He was sure that by the time I was off the air, he would have sold at least two cars, covering the cost of the remote and securing reasonable profit.

I was concerned. My first thought was that I was talking with one crazy car guy, and my second was wondering if the sales rep from my station had discussed this expectation with him.

However, I did have one weapon in

my arsenal: lots of free food. Turns out he sold four cars. Call it dumb luck — or the most amazing remote I'd ever orchestrated. Either way, it would have been much better to have set that expectation prior to execution.

WORKING WITH SEASONED SPONSORS

Fortunately, most advertisers do not expect to measure a campaign based on direct sales action. Seasoned sponsors realize that building a brand takes time and investment. The advertiser or their agency will likely care about metrics — even if they require repeated explanation.

Think agencies always understand metrics? Think again. A lot of people fake it.

Fortunately, this isn't rocket science. There are many resources online, and there are lots of consultants who can provide training.

A fun place to start is studying SMART criteria. This is an acronym often attributed to George Doran and developed by management guru Peter Drucker. It stands for: Specific, Measurable, Assignable, Realistic and Time-related.

Don't confuse goals with key performance indicators. They are not the same thing! A goal is what you're attempting to achieve. The KPI can inform your decision about whether or not you're on track to achieve that goal.

My goal was to start you thinking about setting expectations up front and openly discussing results/metrics. Hopefully, I was successful. If not, well ... I'm glad I haven't forgotten how to do radio remotes from car dealerships!

Mark Lapidus is a longtime contributor to Radio World. Email him with comments or your own promo successes at marklapidus1@gmail.com.

PEOPLE NEWS

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Introducing The Über-Node.

Power Core is designed with flexibility in mind. So you can combine AoIP streaming with device administration on a single Ethernet port... or place them on separate ports. Power Core lets you design your network your way.

Power Core can handle up to 128 MADI channels, standard. 4 front-panel ports (two dual-redundant pairs) with SFP make it easy to bridge your AoIP and baseband digital signals.

Think Power Core looks awesome outside? That's nothing compared to the sheer processing might inside, with a 1920*1920 routing matrix, 96 DSP channels and 80 summing buses. All your friends will be so envious.

Information please: high-resolution color display with rotary encoder provides easy front-panel access to network information and settings.

Power Core is 100% standards-compliant - because proprietary AoIP is so 2003. Up to 256 channels of true AES67 and RAVENNA streaming, on two front-panel Ethernet ports. Even complies with the ST2110-30 standard. Because you can't be too future-proof.

Power Core supplies 64 channels of GPIO via standard RAVENNA and open-source Ember+ protocols. Need physical connections? Use the front-panel interface. Highly logical.

The Lawo logo. Your assurance of meticulous engineering and premium components, uncompromisingly crafted to the highest German standards.



Power Core is the only broadcast AoIP node with ST2022-7 Seamless Protection Switching, giving you dual discrete links to your network core. Completely redundant, with automatic, inaudible switching. Now that's what we call peace of mind.

Connect your AES / EBU devices. Expansion card has 4 digital stereo inputs with broadcast-grade sample rate conversion, and 4 digital outputs.



Everybody's got a few analog sources. Line input & output cards with 4 stereo (8 mono) channels make connections a snap.

Lots of talking to do? 8x Mic/Line card with Phantom power does the trick.

Studio I/O card is perfect for on-air rooms. 2 Mic/Line inputs, 2 Line outs for speakers and 2 headphone feeds.

Got DANTE®? No problem. Power Core equipped with a DANTE expansion card gives you access to a whole world of pro-audio devices. Two mirrored ports with onboard SRC provide 64 channels of I/O.

If four front-panel MADI ports aren't enough, you can add more. Dual-port MADI expansion cards give you two SFP ports with 64 channels each.

Power Core is already the highest-capacity AoIP node + console engine in the world. 8 rear-channel expansion slots make it capable of even more.

Dual-redundant power, of course. Our hardened internal auto-switching power supply is backed up with an inlet for external power too.

As proof, we present Power Core: the modern, super-compact AoIP audio interface that packs hundreds of stereo channels into just 1RU. Handles AES67, MADI, analog, AES3 – even Dante®. You'd need 24 rack units of old-style nodes to equal all the I/O available in just one Power Core.

Impressive, yes? But audio I/O isn't the end of Power Core's capabilities. There's DSP; a lot of it — 96 channels of EQ, dynamics and mixing. AutoMix, too. Plus routing: 1,920 crosspoints, enough to switch an entire multi-station broadcast facility.

Power Core is flexible, too. Pair it with our award-winning Ruby radio console and it's the most powerful mixing engine ever. Put it in your rack room and presto! it's a high-density audio interface with built-in routing. Remote-control it with our VisTool GUI Builder software, and it's the heart of your TOC.

Power Core. The Über-Node has arrived.



Power Core is the perfect AoIP supernode. But it's also a powerful mixing engine. Pair it with our award-winning Ruby – the beautiful, powerful, intuitive surface your talent will be clamoring to get their hands on. Or control your Power Core with Lawo VisTool for a custom "virtual console" with context-sensitive multitouch controls.

Getty Images/Dmitry Fisher

It's new equipment season again! Radio World's "Summer of Products" feature is all about new gear that has come onto the market in recent months, especially during spring convention season. Over several issues we feature equipment that caught our eye.

V-SOFT PROBE 5 RF SIGNAL PROPAGATION MEASUREMENT PROGRAM

This latest version of Probe will now process at 64 bits. That should increase its calculating power to take advantage of computer RAM greater than 2 GB.

The company says that users can configure every aspect of Probe 5's maps including down to the street level to provide high detail. It also says that features such as, highway colors, line-thickness, road markers, city names, lake and ocean colors, font names and sizes are fully selectable. It features USGS topographic maps.



The program now includes "industry standard" NSMA OHLOSS propagation algorithm. Incumbent propagation methods include: Other propagation methods are standard FCC, Longley-Rice, Okumura/Hata/Davidson and COST-231/Hata, point-to-point path profile analysis, line of sight/shadow, the FCC's PTP and PTP2 methods and ILLR Satellite Home Viewers Act.

Info: www.v-soft.com

ARRAKIS SYSTEMS DARC SURFACE 12

The DARC Surface 12, from Arrakis Systems, is a 12-fader control surface.

It is designed to work with Arrakis' DARC Virtual Console controller software and an AoIP network. It is Dante- and AES67-compatible.

Included is an LED meter

bridge. Small OLEDs are used for channel displays and LED switches for switches. Faders are conductive plastic.

There are two output busses. Arrakis' Simple IP AoIP I/O hardware package is available for the DARC Surface 12 though it will work with most any AoIP hardware.

Info: <http://arrakis-systems.com>

POINT SOURCE CO2 CONFIDENCE MICROPHONES

Tested on live stage, the CO2 Confidence Collection microphones from Point Source Audio are dual-element wireless microphone with a number of features for broadcast use.

Besides redundant dual elements, they are IP 57 waterproof-rated with a nearly "unbreakable" that can be rotated almost 360 degrees — all featured in a slimline design. The omnidirectional waterproof elements are 3 mm and matched feature precisely matched elements to a near identical ± 0.5 dB difference, according to the company. They can be nested to appear as a single element.

They are available in headset, lavalier and ear-mount and in black, beige and brown. Connections to wireless hardware are made with the company's locking X-Connectors.

Info: www.point-sourceaudio.com

AUDIOSCIENCE HONO AVB VSC BASIC



Sound card specialist AudioScience describes the Hono VSC Basic as a low-cost version that does not sacrifice I/O. It has 64 x 64 AVB channels, 8 x 8 AVB streams and works with WDM or ASIO, allowing its use with computer-based audio processing applications. Stream-wise it will stream formats of 1, 2, 4, 8, 16 and 32 channels.

With support for the IEEE 1722.1 Discovery and Control protocol, the VSC Basic can be configured using AudioScience's Hono AVB Controller or third-party AVB controllers. It is 64-bit Windows-compatible and can run on Intel i210 Gigabit AVB Ethernet

AudioScience Product Sales Manager Nicole Santiago said, "The VSC Basic is anything but basic. This VSC still provides the same quality audio as the Hono AVB VSC with 64 channels in and 64 channels out at a more cost-effective price point for our customers.

Info: www.audioscience.com

DIGIGRAM IQOYA TALK CODEC

The Digigram Iqoya Talk is a portable IP audio codec for remote live operation, featuring a smart-phone-like user interface allowing remote reporters to perform key actions in just two clicks. Operators can manage live reporting or commentaries with studio-quality interviews for up to four journalists and guests. The company adds that the user interface is designed for journalists not engineers.

Digigram says that the Iqoya Talk comes as a part of a comprehensive package, including studio and OB van applications, a range of four rack-mountable IP audio codecs, or the company's flagship multichannel audio IP codec for a large number of streams.

It also features a smartphone application and accessories for mobility; a web codec solution to connect a guest from anywhere, anytime; a suite of web applications to allow technicians to control and manage the entire fleet of codecs; and a secured infrastructure that enables interconnectivity between all the IP codecs.

Info: www.digigram.com



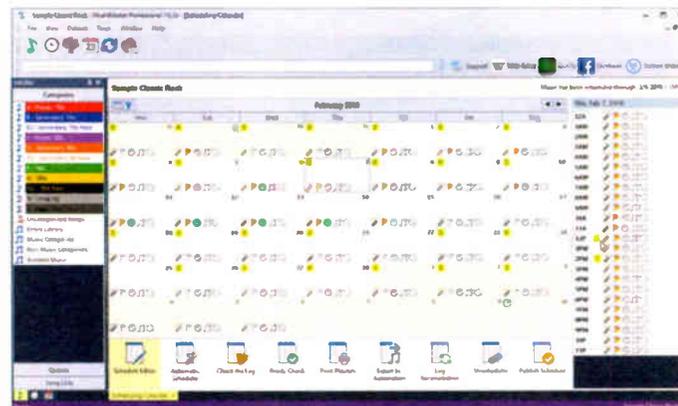
MUSICMASTER PRO 7 SCHEDULING SOFTWARE

MusicMaster says version 7 of its Pro music scheduling software has new workflow and performance enhancements which will make it more efficient.

Included are deeper search functionality, new styles and customization options, easy database field creation, an enhanced Scheduling Calendar dashboard, a simplified Live365 connector, new library and clock tools, and more.

MusicMaster's Client-Server, the top-tier option for large broadcasters who wish to manage data and processing in a central location, has new options for setting user and station permissions, importing songs to a station from the Enterprise library, merging duplicate songs, printing reports to Word, PDF or rich text formats and more in the new version 2.2 release.

Info: www.musicmaster.com



JBL ONE SERIES 104 MONITOR

The JBL One Series 104 is a compact powered reference monitor.

Created with an eye towards the needs of on-the-move content creators, One Series 104 monitors sport newly engineered JBL 4.5-inch coaxial drivers, 3/4-inch tweeter, reportedly contoured using the same research that led to the waveguide found in M2, 7-Series, and 3-Series monitors, providing users with a sizable sweet spot for the price point.



JBL 104 Reference monitors include integrated 60 W Class D amplification that, according to JBL, can drive the speakers to 104 dB SPL (peak) without distortion.

Features like a front-panel volume control allow level adjustments without straying from the sweet spot. A front-panel headphone jack automatically mutes the speakers, and dual 1/4-inch balanced and single 1/8-inch unbalanced TRS inputs can accommodate various sources. An optional, protective carrying case will also be available for production on the go.

Info: www.jblpro.com

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Moseley uses proprietary technologies and owns more than 50 patents and has delivered more than a million radios deployed in over 120 countries.



SOLID STATE LOGIC SIX MIXER

The Solid State Logic SiX is described as "a condensed professional console for use in the studio, post-production, on stage and for podcasting." SiX packs some big desk features into a package small enough to fit into a backpack. It could find a home with radio production studios looking for high-quality audio production.

SiX offers two recording channels with SSL's SuperAnalogue mic preamps, a one-knob version of the classic SSL Channel Compressor, a new two-band Channel EQ, inserts and 100 mm faders.

There is a two-knob version of the SSL's G-Series Bus Compressor on the main mix bus and the company's Listen Mic Compressor on the talkback. In mixdown mode, the unit can also serve as a 12-channel summing system.

Niall Feldman, SSL director of new products, noted, "The big challenge then was how to deliver those values and features in a compact product. Working with a great team and focusing on audio quality, workflow and flexibility, the resultant SiX mixer is one of our proudest achievements."

"SiX is everything an SSL console should be, but at a price point that makes the SSL audio pedigree more accessible," opined James Gordon, CEO of Audiotonix, the company that owns SSL. "When Fusion launched last year, we hinted it was the start of a new line of studio offerings and SiX is step two of that commitment."

Info: www.solidstatellogic.com



CENTRANCE MICPORT PRO 2

Need an above-average pocket preamp for on-the-go field recording, journalism, videography or podcasting? Check out CEntrance's reduction of its MicPort Pro portable preamp, the MicPort Pro 2.

Recently teased at the NAMM Show in January, the petite single-input interface is for connecting to digital devices such as laptops, tablets and smartphones. A release says, "Smaller than a microphone, the interface is lightweight and was designed with frequent travelers in mind."

It offers 48V phantom power and will connect to Android, iOS, Mac and Windows devices.

There are input, gain and monitor controls. A built-in rechargeable battery can be refreshed through the USB connection. CEntrance says the preamps are the company's Jasmine preamps.

A Neutrik combo jack also offers a Hi-Z (1/4-inch) input for guitars.

Info: <https://centrance.com>



SUMMIT TECHNOLOGY SIDECAR LOGGER

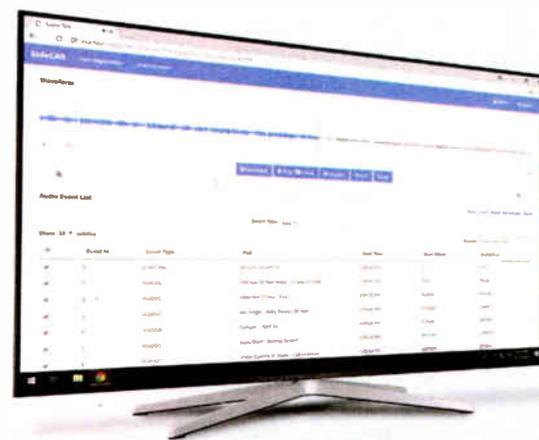
SideCAR, developed by Summit Technology Group, is a software-based logger.

The company says that it, "designed SideCAR with a station's engineering and management teams in mind to provide a means of regulatory compliance logging." Besides compliance duties, Summit President Paul Stewart says, "Reporters and producers were using the product to create best-of-show airchecks, podcasts, or simply upload a select piece of audio to their website."

SideCAR uses ENCO's enCaption speech-to-text engine and its performance should be near real-time, according to the company.

The company adds that it should integrate with AoIP equipment of many, if not most, manufacturers. It is also compatible with automation systems. SideCAR is scalable from a single station to networks.

Info: www.summittechgroup.com



LAWO POWER CORE MIXING ENGINE

The Power Core was initially introduced as a DSP mixing engine and modular I/O system for Lawo's Ruby radio consoles, but, the company says, many broadcasters were using the system as a gateway between legacy audio formats and standards-based IP media networks.

This was possible because "The ST2110-30 standard ensures seamless interoperability of audio and video equipment in combined radio/TV broadcast plants," it said in a release.

New features recently added to Power Core include: Dante card with dual-redundant ports and sample rate conversion; dual-redundant front-panel SFP ports for AoIP; choice of optical or copper network connections; ST2022-7 seamless protection switching; and twin active links to guard against audio loss.

Expandable, Power Core lets clients add more capacity with eight rear-panel card slots, which allow "a la carte" addition of analog, AES3, MADI and Dante interfaces, and the Studio I/O card that provides mic inputs and headphone and monitor outputs, the company says.

Info: www.lawo.com

DOUBLERADIUS LIGOPTP RAPIDFIRE 6-N WIRELESS BRIDGE

Wireless link equipment manufacturer DoubleRadius is launching a new line of "affordable" point-to-point wireless bridges using the 6 GHz range.

The weather-proof LigoPTP RapidFire 6-N offers up to 700 Mbps throughput with modulations of up to 256-QAM and 30dBm output power.

The unit is designed for set-and-forget operation. Or it can be remotely controlled via PC or phone/tablet app. An onboard 2.4 GHz radio allows for wireless control while dual Gigabit Ethernet network connections. One of the ports supports power over Ethernet. There's also an onboard surge protector.

Info: www.ligowave.com



Cleanfeed Offers Effective Remote Solution

Delivers multitrack, multiparty live audio and recording using only a browser

FROM THE FIELD

BY BRIAN KERKAN

Radio has become more competitive. Several of our broadcasters produce shows from their homes or offices. Up until recently, we have used traditional codec solutions. We have a rack full of different manufacturers' codecs to provide flexibility, but sometimes the cost to buy and set up broadcasting equipment is too high for some small- to medium-sized businesses to commit to, for a once-a-week broadcast.

So why not use the power of the computer and virtualization? The key to delighting customers is to provide cost-effective quality solutions. One such offering is Cleanfeed.

NEW APPROACH

I was looking for a low-latency, great-sounding solution that was simple to use. I came across a Linux program called trx and Cleanfeed, a much-talked about



web-based solution that makes scheduling a remote broadcast easy.

Cleanfeed provides a high-quality remote solution that is cost-effective. In fact, they offer a free version that provides all the functionality needed for a basic remote broadcast.

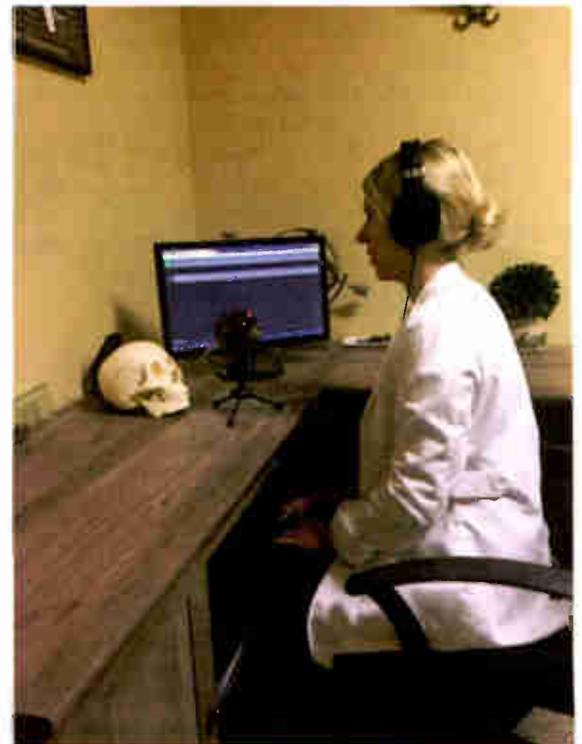
Mark Hill is the developer of trx and Cleanfeed. At the spring NAB Show, I had an opportunity to talk to him about the software.

He had wanted to find a way to make it easy to broadcast radio shows on the local college station. He imagined broadcasting from the living room or kitchen of an apartment. The cost of traditional hardware-based solutions made that difficult. This was the inspiration for Cleanfeed.

Cleanfeed is simple to use, is cross-platform and sounds great. It uses the open-source Opus codec and keeps up with any of our other hardware-based equipment.

At WRDT we had some experience using software-based applications to connect to our codecs. What I didn't like is that they require the user to install an application on their computer, tablet or other mobile device.

(continued on page 26)

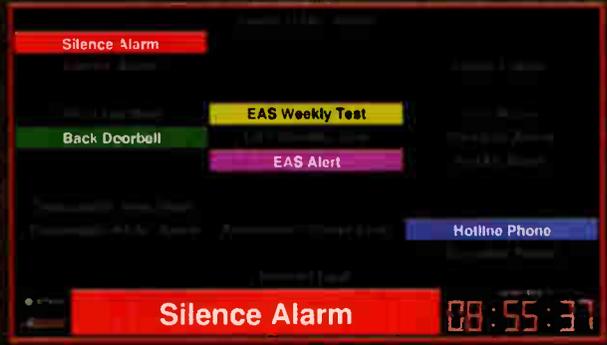


Dr. Morgan Crawley tests the Cleanfeed remote connection for her program.



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CLEANFEED

(continued from page 25)

What I like about Cleanfeed is that the remote user does not have to install anything, all they need to do is click on a connect button provided in an email that is sent to them.

The connection starts at the studio, which has a log-in to Cleanfeed. An account can be created at <https://cleanfeed.net>.

Once logged on, the studio puts together a connection request which includes the name and email address of the remote user. Cleanfeed also allows multiple connections.

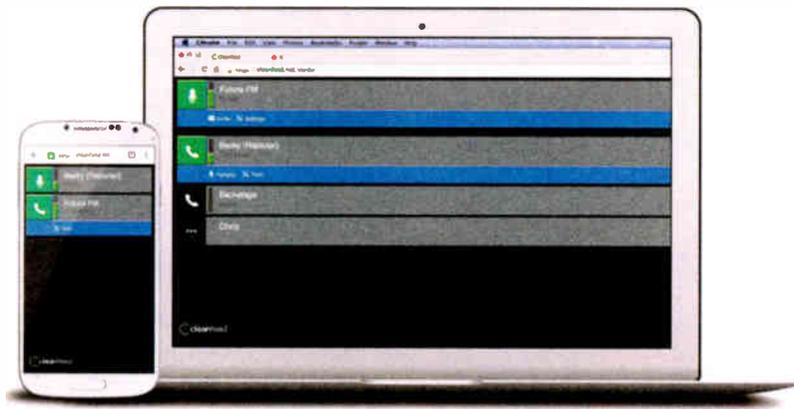
We had a new broadcaster interested in producing a show from their office. I spoke with the doctors from the firm and they were willing to try the new solution out.

THE OFFICE

Dr. Morgan Crawley from Upper Cervical Spine Centers of Michigan worked with me to set things up. We began by seeing how well an off-the-shelf USB microphone would perform through a Cleanfeed connection. A Blue Snowball iCE microphone was chosen for the first test.

The setup was easy. The microphone was detected automatically through a Windows 10 computer. In a few minutes we were up and running.

Dr. Crawley wanted to take calls during her show and we were able to test mix-minus and talkback. All worked very well.



For our next test we added another doctor. To make it interesting, we used her iPhone. Both doctors were able to hear each other and could hear the caller and producer in the studio. We have been airing their show for several months without issue. This configuration is so easy to use, and flexible.

We decided to expand our use of Cleanfeed for other broadcasters. The "Pro" version provides more functionality to select additional inputs, to limit connections to a specific time limit, and offers multitrack recording.

We also experimented with various configuration such as using multiple USB microphones through VB Audio's virtual soft mixer.

The software-based mixer worked well other than the amount of latency it adds to the local monitoring. The nice feature of using this mixer is the ability to mix in other applications such as Skype locally.

Since the mixer has multiple busses, you can set up

a local mix-minus and even play and record audio through its easy-to-use recorder. I like the added touch of using a cassette as the image for the recorder. The mixer also offers gating, compression and equalization on each input.

We will be adding a daily talk show that will be produced offsite and requires a two-microphone setup. In tests the latency for local monitoring on the software mixer was too much for our talent to do an hour-long show.

So we turned to a PreSonus AudioBox USB 96 interface for the show. It has zero latency on local monitoring along with a local monitor mix

control that makes setting the blend between local and remote audio easy.

We look forward to the broadcasts we will be able to air, and the happy clients being able to accomplish their goal of producing a high-quality broadcast for an affordable price.

The author is chief engineer for Crawford Broadcasting in Detroit.

FROM THE FIELD

From the Field articles illustrate accepted best practices as well as new experiments in radio broadcast production. If you have an interesting or unique story let us know about it. Write to Gear & Technology Editor Brett Moss at brett.moss@futurenet.com.

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MISCELLANEOUS

WANT TO SELL

I'm selling between 150 and 200 cassette tapes that consist of old-time radio shows, sports shows, some local New York radio talk shows, etc... Must take entire collection and the price is negotiable. Please call me for details and, my phone number is 925-284-5428.

Radio broadcasts of Major League Baseball, NFL, and some college football games that are on cassette tapes, approx 100 to 125 games, time period of entire collection os from the 1950's - 1970's, 80. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

WYBG 1050, Messina, NY, now off the air is selling: 250' tower w/building on 4 acres; 12' satellite dish on concrete base; prices drastically slashed or make offer. 315-287-1753 or 315-528-6040

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Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035 or ilg821@aol.com.

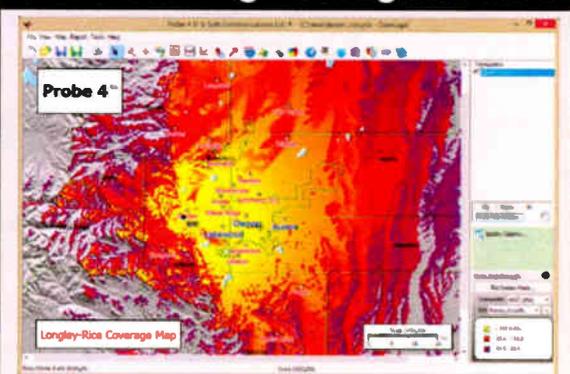
2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for KFRC radio special of Elvis Presley which aired on January 8, 1978. I'd be willing to pay for a digital copy. Ron, 925-284-5428.

I'm looking for the Ed Brady radio show in which he did a tribute to Duke Ellington, the station was KNBR, I'd be willing to pay for a digital copy. Ron, 925-284-5428.

Broadcast Engineering Software

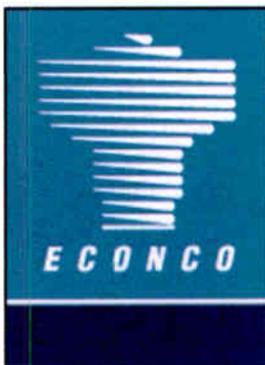


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MISCELLANEOUS

WANT TO BUY

I'm looking for KTIM, AM,FM radio shows from 1971-1988. The stations were located in San Rafael, Ca. Ron, 925-284-5428.

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example news-cast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSF, KOBY, KCBS, KQW, KRE, KTIM, KYA, etc. I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a home-run by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron,

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Looking for KSF radio shows, Disco 104 FM, 1975-1978. R Tamm, 925-284-5428.

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Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-684-6010.

Standard Short-tune series. Bill Cook, 719-684-6010.

(2) LPFM radio stations for sale, located in the NW part of central Florida on the gulf coast, covers the county, get out of the cold weather, come to Florida, call or write for particulars, 352-613-2289 or email boceey@hotmail.com or Bob, PO Box 1121, Crystal River, FL 34423.

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Why the FCC Should Reject NAB's FM Proposal

Read excerpts of iHeartMedia's arguments to the commission about easing FM ownership rules

ON THE RECORD

Big radio group owner iHeartMedia supports "targeted reform" of local radio ownership rules in the United States, including eliminating the limits on common ownership of AM stations or, at a minimum, removing AM subcaps. But the company told the FCC that it should reject an "exceedingly aggressive" proposal from the National Association of Broadcasters regarding limits on FM station ownership.

The following are excerpts about the latter from iHeart's reply comments, filed in May as part of the commission's quadrennial regulatory review. In sections preceding this excerpt, iHeart argued that the broadcast radio market is the relevant one for determining the need for modifying local radio ownership rules and that the FCC should reject the NAB's "radical redefinition" of the relevant market.

there is a disconnect between the NAB's solution that rests on cost efficiencies and economies of scale flowing from increasing the number of stations under common ownership in a market and what might be sufficient to enable broadcasters to meet the larger competitive challenge posed by digital media giants.

Many commenters share iHeart's view that the relevant market is broadcast radio and radio broadcasters simply do not compete in the same market as Internet-based platforms such as Facebook and Google. In its comments, NABOB quotes at length from an August 2, 2018, article by Eric Rhoads, a recognized expert in the radio and network radio business, owner, operator and programmer for 30 years, and chairman of Radio Ink:

"The FCC is made up of very smart people who, hopefully, understand that giving more radio stations is not going to solve the Google, Facebook, Instagram, Snapchat problem. I dare say that ship has sailed and that radio's ability to compete with the Internet isn't going to be impacted one ounce

by having more stations per owner. ... The only similarity between Google/Facebook and radio is that we are all in the advertising business. That's where it stops. Their approach to advertising is so utterly different that no one is going to spend more in radio because Company A or Company B has more stations."

In its comments, the Multicultural Media, Telecom and Internet Council (MMTC) quotes at length from Ronald Gordon and Ed Cherry's op-ed in the July 25, 2018, edition of Radio World:

"How would buying an additional four or five stations in a market allow a broadcaster to take on Google or Facebook? Individually, these big tech companies dwarf the annual revenues of the entire radio industry combined. How exactly would gutting the radio ownership rules drive advertising money away from tech and into radio industry's pocket? To the advertiser, what difference does it make who owns the station? Horizontal deregulation just shuffles the deck in favor of the big guys; it does nothing to improve radio's ability to compete with big tech."

Other broadcasters supportive of the NAB proposal make the same point as

the NAB that non-broadcast audio and digital platforms compete for audiences and advertising revenue in a fragmented marketplace. They rely heavily on a study by Borrell Associates, "documenting the commanding position of digital advertising giants in today's local advertising marketplace." Like the NAB, they conflate the advertising market with the audio services market and even within the advertising market fail to differentiate among the different purposes and inherent capabilities of broadcast radio advertising and digital media advertising. ...

[B]roadcast radio focuses on the top of the advertising funnel, reflecting its strengths in reach and branding. In essence, this strength of broadcast radio reflects the fundamental nature of the medium; it distributes content on a one-to-many basis. Digital media, such as Facebook and Google, are sought by advertisers because they focus on the bottom end of the advertising funnel where the vast amount of individualized data they collect from users gives them direct and often instantaneous impact on a one-to-one basis with prospective purchasers.

Moreover, digital platforms are the recipients of promotion from broadcast radio, further illustrating their comple-

The Record, Taken as a Whole, Demonstrates That the NAB's Overly Aggressive FM Local Radio Ownership Proposal Attempts to Address a Competition Problem Beyond the Relevant Market and Would Be Ineffective in Doing So

The NAB's proposal to eliminate the local ownership limits on FM stations in all markets below the top 75 and permit common ownership of eight FM stations (up to 10 with Incubator-related waivers) in the top 75 markets is designed to address a competition problem in a market consisting of broadcast radio, non-broadcast audio services such as satellite radio, and digital media platforms such as Facebook and Google. It makes no pretense of attempting to remedy competition problems within the relevant broadcast radio market. ...

iHeart contends that the NAB's prescription is not a solution for the competitive disparity between AM and FM stations, the only relevant market, but actually worsens that competition problem. Moreover, even assuming for the sake of argument that it might be proper to consider the broader audio ecosystem,

Getty Images/Stockbyte



mentary relationship. These fundamental differences between broadcast radio and digital media in advertising utility ... are why broadcast radio and digital platforms are not substitutable even from an advertising perspective, much less from a holistic perspective.

As so much of the focus of the NAB and its broadcaster supporters is on competition for advertising revenue, one would expect that its justification for lifting the ownership caps would address specifically how its proposal would strengthen broadcasters' ability to recapture lost advertising revenue to digital competitors.

Therefore, it is revealing that the BIA Study relied upon so heavily by the NAB to support its contention that radical reform of the ownership limits is necessary to compete for advertising revenue against Google and Facebook does not even attempt to quantify the purported impact of the changes it proposes on broadcast radio advertising revenue: "To err on the conservative side, however, we do not assume in our financial models below any increase in revenue per station resulting from the proposed combinations ..."

Although the BIA Study characterizes its reluctance to assess the impact of increased common ownership as "conservative," it also may be understood as an implicit admission that there is no evidentiary basis for concluding that lifting the ownership limits will enhance the broadcast radio industry's ability to compete against digital platforms for advertising revenue.

In fact, power ratio studies performed by iHeart provide further strong evidence that more stations in a cluster does not increase a radio broadcaster's ability to attract additional advertising revenue in that market. Power ratios are an accepted industry measure of how a radio station is converting its ratings into advertising revenue.

The power ratio is calculated by dividing a station's share of the total ad revenue in a market by the station's overall audience share. The higher the power ratio, the better the station is performing against expectations based upon audience share. For example, a power ratio of 1.0 would indicate that a station is performing consistent with expectations, whereas a station with a power ratio of 0.75 would be underperforming.

iHeart examined stations it licenses in 29 markets where common ownership of five FM stations is allowed under current law, compared to 25 markets where only four FM stations under common ownership is allowed. In the 29 markets where iHeart licenses five FM stations, the average power ratio decline between the top performing FM station and the least performing FM station was approximately 57 percent.

However, that same measurement in markets where iHeart owns only four FM stations yielded a decline of only 42 percent. Marketwide, the results suggest a better average power ratio performance where iHeart licenses four stations as opposed to five. In fact, the markets in which iHeart licenses five FM stations exhibited a 0.15 comparative power ratio dilution compared to those markets where only four FM stations are licensed.



[T]he NAB's proposal regarding FM stations would lead to a further weakening of the AM band and the possibility of mass migration from AM to FM.



This power ratio study is compelling evidence that adding a sixth, seventh or eighth FM station to a cluster in a top 75 market, as NAB proposes, will do little to nothing to enable radio broadcasters to compete more effectively for advertising dollars. This confirms the long-held view that station rank within a market and pricing are the dominant factors in attracting local advertising dollars, and demonstrates the disconnect between the remedy advocated by the NAB and the competition problem, albeit not in the relevant market, that it seeks to ameliorate.

Having failed to link its proposed remedy directly to enhanced ability to attract advertising dollars, the NAB falls back on the contention that allowing more consolidation will create cost efficiencies and economies of scale that will free up more resources to compete with non-broadcast media and digital platforms. Yet, even here the BIA Study upon which the NAB relies suffers from obvious inadequacies.

For example, it fails to consider the costs necessarily incurred in the acquisition of new stations and their integration into existing operations. Based on its extensive experience, iHeart is very familiar with such expenses, including legal fees, due diligence and financing. Such costs also could include new construction or expansion of facilities, additional management personnel, and relocation and moving expenses. Such omissions from the net impact of consolidation are equivalent to a balance sheet showing only assets and no liabilities. They overstate the net benefits of the efficiencies and economies of scale that would flow from increasing the

limits on FM stations or eliminating them altogether.

The BIA Study examines the extent to which AM stations are at a significant, indeed, distressing competitive disadvantage relative to FM stations. Its conclusions mirror those reached by iHeart. The BIA Study also recognizes that FM stations constrained by the current local radio ownership rules are far more numerous than AM stations and therefore the effect of eliminating or

opposes any deregulation of local radio ownership limits. Its rationale focuses squarely on the likely harmful impact on AM stations:

"Salem believes that a devaluation of the AM band could result if the commission were to deregulate subcap limits. This is because the possible resulting migration of leading radio brands to the FM band could accelerate a departure of the AM audience. Moreover, because the AM signal is far more amenable to wide area coverage, a policy decision that encourages station owners to consolidate their holdings in the FM band could leave many listeners disenfranchised, potentially eradicate certain formats, and increase risk in times of crisis."

Salem's comments delve into multiple major markets where sharp shifts in audience listening away from leading AM stations to sister FM stations have occurred. Salem describes the implications:

"If the AM band continues to be a 'less traveled' destination for listeners, diminishment would certainly result for popular AM brands. Should this occur, the AM band, instead of being a treasury of quality news and religious talk, sports and ethnic programming, will lose its audience appeal. The final result could be an asset devaluation of companies with sizeable AM radio station ownership."

Crawford Broadcasting Company articulates the same deep concern about the ramifications of removal of the FM subcaps on AM stations. Crawford observes that

"[I]t is only the existing subcaps holding some licensees back from acquiring many more FM signals. We have no doubt that if the subcaps are removed, existing independently-owned FM stations will in short order be sold to larger groups that will move lucrative talk formats from existing AM outlets to those FM stations."

Crawford then describes the foreseeable, indeed, probable consequences:

"The result will be much to the

(continued on page 30)

Adoption of the Overly Aggressive NAB Proposal for FM Stations Would Harm Competition in the Relevant Broadcast Radio Market and Would Not Be in the Public Interest

Many commenters express profound concern about the negative effect of adoption of the NAB proposal on the public interest. A subset of these commenters join iHeart in focusing on the harm to AM radio stations and the consequent harm to competition in the broadcast radio market, localism and diversity were the NAB proposal on FM station ownership reform accepted by the commission.

Salem Media Group, the nation's largest religious broadcast radio group,

Write to RW
Email radioworld@futurenet.com with "Letter to the Editor" in the subject field.
Please include issue date and story headline.

iHEARTMEDIA

(continued from page 29)

detriment of AM radio. With a drop in demand and an increase in supply, the value of AM stations will significantly drop, in many cases to less than the value of the land on which their antenna sites are built. That will in turn lead to stations going dark. In short, we believe that removal or easing of FM subcaps will do far more harm to AM radio than all the good the commission has so far achieved in its AM revitalization efforts. This will be a tremendous loss, one that could well start the short countdown to the end of AM radio as a viable medium."

In reply comments, Crawford reiterates these concerns, explicitly agreeing with iHeart about the risk of harm to AM radio that likely would result from adoption of the NAB proposal regarding ownership limits on FM stations.

The MMTC also embraced the

views of iHeart regarding the potentially devastating impact that adoption of the NAB's proposal regarding FM ownership could have on AM stations. Quoting from the writings of African American broadcaster, Glenn Cherry, and Latino broadcaster, Ronald Gordon, the MMTC explained that greater FM common ownership would eviscerate "AM station asset value and marketability, and even repair-ability."

In sum, there is abundant support in the record of this proceeding for the position expressed at length in iHeart's comments that the risk of harm to AM radio and all of its public interest benefits, specifically advancing localism, diversity and national security, militate against adoption of the NAB's overly aggressive proposal regarding FM ownership limits.

Read iHeartMedia's full filing at <https://tinyurl.com/rw-iheart>. Comment on this or any story. Email radioworld@futurenet.com.

READER'S FORUM CONVERSION MISREPRESENTATION

Responding to "Understand Your Dish to Keep Your Audio Online," *RW June 5:*

At 2.54 cm per inch, "a few centimeters" is much more than "fractions of an inch." A few (like maybe three?) cm is greater than an inch. Perhaps he meant that centimeters are fractions of an inch. It still could have been edited for better clarity.

Gary Sharpe



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NOSTALGIA

Just read Harry Hoyler's article in the June 5th issue, "Nostalgia for the Good Ol' Days." He hit the nail right on the head. Great article! It brought back all kinds of memories.

I started in radio in 1962. Now at 75, I'm still behind the mic, if only part-time. I can relate to everything Harry said, except I never did sit in the basket of a 100-foot crane.

DXing AM stations was a way of life back in the '50s and '60s. I agree that the static was not an issue at all; it added to the experience. I live in the Northeast, so my favorites were WKBW, WPTR, WOWO, WWVA and many others.

But, as Harry said, that's all gone now. There's nothing special about trying to pull in a 6 watt AM station at night 10 miles away.

Thanks to Harry for that nostalgic trip down memory lane and to Radio World for publishing it.

Rick Foster

June 5, 2019
OPINION

Nostalgia for the Good Ol' Days

A broadcaster reflects on four decades of radio and predicts what's to come.

COMMENTARY
BY HARRY HOYLER

This year will mark my 47th year in broadcasting. I, like many of our fellow broadcasters, have been in and out of the box on several occasions. I recently began writing and talking about broadcasting and the ups and downs I substitute teach in a local school district and broadcast high school sports (this year, when I teach the subject of broadcasting comes up).

I am sad to say, but I have to be honest with young people by telling them there appears to be no future in broadcasting. The FCC, satellite, corporate ownership and automation have almost put the final nail in its coffin. When I first sat in front of a mic, there were still plenty of moon-and-pop operations.

Automation was basically still a future thing. The closest techniques were as alternative (that I witnessed) were as alternative and reel-to-reel tape with hours of music recorded. The stations where I worked used the tapes as the

is a fortunate, we did it ourselves. Same with lights on the board, drive wheels on cart machines and the forever weekly content cart rack.

Today, with only a few exceptions, we get to hear the very mechanical voice of someone sitting in a sterile control room who is totally clueless about broadcasting. Most appear to be rather brainless and without any talent.

Over the years I have automated about radio. That's not really auto stations, but have never fully auto in the public interest and are the line for news and weather.

But of the 15 or so stations here, it is probably safe to say that 95% of the broadcast day is satellite. Live news is minimal and is delivered in the rip-and-read format (pigeonholed from the

The commission simply is not as interested in radio as they were before the early '70s.

I am an avid radio listener to local news, sports and any of the stations. Weather is the saddest of all. I recently experienced a crippling snow storm. Not a peep from any of the stations. I called one station and questioned my weather, road, electricity and shelter reports, road, electricity and shelter reports were all being aired. You'll have this. "Oh, we're satellite and answer was, "Oh, we're satellite and only self advertising" welcome to

ADVERTISING

I enjoy speaking with youngsters about radio. Their eyes actually light up when I tell them about the excitement we pulled at revenues. "Setting a horse through a full of cherry left (I thought that was the skin!" Setting in the back of a 100-foot crane hanging over a car dealership. Holding Calabar over at businesses. Hoping they remain at businesses. Hoping they are in a muddy rodeo arena. Pushing them over a creek down the long overpass of a shopping mall with our noses and, of course, no remote resume would be a monopoly on radio broadcasting.

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