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DC's Frank Montero Comtemplates Trump Policies

Attorney discusses how the president-elect's administration is likely to handle broadcast issues

NEWSMAKER

BY SCOTT FYBUSH

In a long and distinguished Washington career, Fernando "Frank" Montero has served both at the Federal Communications Commission and in the D.C. legal community. He is a manag-

ing member at the firm of Fletcher, Heald and Hildreth. During the Clinton administration, Montero served as director of the FCC's Office of Communications Business Opportunities.

His work has long included a focus on Hispanic broadcasters, especially with his service on the board of directors of the Minority Media and Telecommunications Council. He represents the Puerto Rico Broadcasters Association in Washington and has been a key player with the American Hispanic Owned Radio Association, the Spanish Broadcasters Association and the National Association of Minority Media Executives.

Radio World profiled Montero in 1998, and with upheaval in political Washington, we reached out to him at the end of 2016 for insight into what might be ahead at the Portals, especially where minority broadcasters are concerned.

Radio World: What stands out to you as
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WATD(FM): Live, Local and Relevant for 39 Years

"The South Shore's Radio Station" takes pride in a full-service approach

BY DONNA L. HALPER

This is one in a series of profiles of successful stations in all market sizes.

It is no secret that some small radio stations struggle financially. This certainly is true for many that operate in the shadow of larger markets, a situation that leads some to go silent or rely almost entirely on syndicated

programming.

Then there's WATD(FM), in Marshfield, Mass., about 30 miles from Boston. WATD feels increasingly like a rarity: It has had the same local owners, Edward F. "Ed" Perry and his wife Carol, since it debuted in 1977, and still offers live and local programming 24 hours a day, seven days a week. It is an active and visible

(continued on page 6)

Frank Montero addresses the 2012 MMTC conference.



Broadcasters Doing Good Page 21



WYCD(FM) held its 16th annual 99.5 WYCD Country Cares for St. Jude Kids Radiothon Dec. 8-9. Over the course of the two days, 99.5 WYCD listeners called in with donations totaling \$51,272 for St. Jude Children's Research Hospital.

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Photo by Rob Goldberg
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Jebbit Sees Opportunity in Mobile

SUPPLYSIDE

Jonathan Lacoste

BY BRETT MOSS

A company that is working to marry radio and mobile is Jebbit, whose co-founders dropped out of school to focus on their growing firm. Their website states: "We help media companies drive revenue by providing interactive mobile content solutions as part of their digital offerings."



Radio World asked Jonathan Lacoste, president and co-founder, for details.

Radio World: Tell us about Jebbit.

Jonathan Lacoste: Jebbit is a mobile marketing company founded by Tom Coburn and myself. It's headquartered in Boston, Mass., and works with brands like Tribune Media, CBS Radio, TripAdvisor and Expedia.

RW: What is your product or service?

Lacoste: Jebbit's platform creates mobile interactive content that drives digital revenue. It gives radio sales reps a fresh, new solution to add to any media package, creating a differentiator for the station. The sales rep doesn't have to do any extra work, because they white-label our technology.

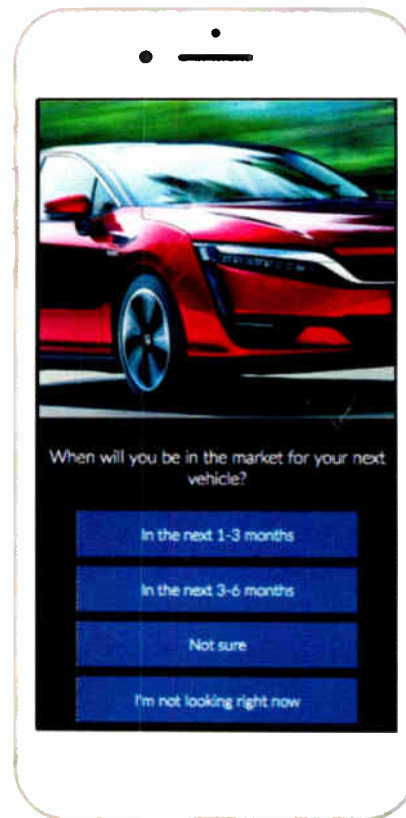
Our industry experts create custom interactive content for our clients, ranging from virtual tours to personality quizzes to lookbooks. These pieces of interactive content replace typical content like landing pages and blog posts, creating a smarter option to drive online consumers to.

RW: What does it do?

Lacoste: Jebbit content increases engagement and lead generation because it gives users the chance to interact with it on their own terms. As a consumer interacts, the Jebbit platform captures data from their responses and ties it to their contact information. This content can be launched via any channel: social media, email, sponsored content, display ads and on-air commercials. Brands use content like trivia, quizzes, interactive videos and virtual tours to better educate and convert their customers. Broadcasters sell Jebbit experiences to their advertisers, to help them increase their engagement, lead generation and conversions.

RW: Why was it developed?

Lacoste: While in an airport, Tom



Jebbit says Beasley's Boston market used its technology to close a deal with a regional auto dealership and launched a "Find Your Perfect Car" quiz (above) as a piece of sponsored content. According to Jebbit, the quiz engaged listeners on mobile devices and provided qualified leads to the dealership.

Coburn pulled out his laptop and went to Hulu. He clicked on his favorite show, and instead of starting, a pre-roll video ad played. Like everyone else, Tom opened a new tab to check his email and Facebook while the ad played. Unlike everyone else, Tom realized: A brand had paid money to show him some-

thing, and he couldn't even remember the brand's name now that he had his email open.

He realized how much money must be wasted and how many consumers must be annoyed. And he decided to do something about it.

Tom wanted to create the most efficient way for a company to understand, educate and influence any audience, one person at a time. That vision evolved into Jebbit. Tom and I dropped out of college to run Jebbit full-time.

RW: How does it help broadcasters?

Lacoste: We drive digital revenue and prove the ROI of hybrid radio and digital campaigns. We work with broadcasters' digital sales teams to help them create engaging mobile solutions to win new business and upsell current clients. Each interactive experience is completely customized to the brand and can be launched on air with a vanity URL, or via any digital channel within a media buy.

RW: Does it work with other infrastructure that radio broadcasters use?

Lacoste: Jebbit integrates with numerous other software, but requires no code to implement. Our broadcast partners frequently comment on how easy it is to add into their media packages. It can be used on any device — mobile, tablet and desktop — and across any channel, including spots.

RW: Is anyone in the radio industry using this?

Lacoste: We have several radio partners, including CBS Radio and Beasley's Boston market.

For info see www.jebbit.com.

Supply Side is a series of occasional profiles of new or unfamiliar manufacturers and service providers.

U.S. Radio Reached Over the Border

Canadian stations were part of American networks and carried American programming

BY ANNE F. MACLENNAN

This article includes research presented at the 2016 Saving America's Radio Heritage Conference held by the Radio Preservation Task Force in Washington.

The Radio Preservation Task Force faces a mammoth undertaking: It is tasked with preserving and archiving American broadcasting.

The reach of that broadcasting, however, is not confined to the boundaries of the United States of America. In fact, in the 1920s and 1930s, NBC, CBS and MBS all established affiliates within the boundaries of Canada.

Material evidence of American radio persists in Canadian archives and forms part of the early history of the country's broadcasting, not only as stations that could be heard over a signal-porous border but from within Canada itself.

SCRUTINY

As regulations tightened in the United States and Canada in the 1920s and 1930s, American radio signals broadcasting across the border and American affiliate stations established in Canadian cities both came under scrutiny.

Most Canadians lived close enough to pick up powerful American stations on clear channels in the evenings. Technical changes were put in place so that powerful U.S. stations did not dominate, including the use of directional antennas and regulation of frequency utilization.

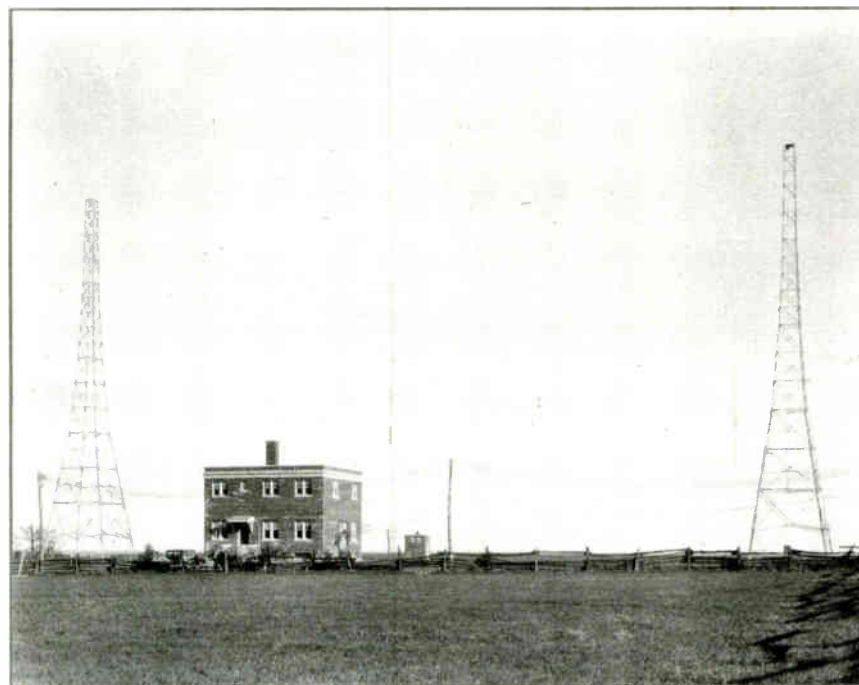
Immediately after World War I, amateur broadcasters prevailed under light regulation. But as more stations filled the airwaves, interference from distant stations, weather conditions and finally the reallocation of radio frequencies disrupted the audience's enjoyment of radio programs. Radio became dominated less by hobbyists and increasingly was influenced by listeners who wanted to hear their favorite programs. Regulation became more important.

NBC and CBS stations that crossed the northern border were broadcasting to Canadians and were part of the American networks.

The popular misconception that Canadians listened almost exclusively to U.S.-based stations was disproved by the establishment of American-affiliated stations in Toronto, Montreal and later Windsor.

CKGW in Toronto and CFCF Montreal were NBC-affiliated stations that enabled the network's programs

to broadcast over Canadian airwaves. CBS provided a more select variety of programs on CFRB in Toronto and on CKAC (now the largest French-language station in Montreal), which existed as a bilingual station with local English and French content and also included CBS content in the mix during the '20s and early '30s.



An image of the CKGW transmitter site in Bowmanville in 1928, before the station moved to Toronto and affiliated with NBC.

The American Radio Act of 1927 and creation of the Federal Radio Commission were followed by reallocation of radio wavelengths across North America. Strict technical requirements forced many small American stations off the air; but small, private, local stations, not part of any chain, persisted in Canada.

In Canada, the Radio Broadcasting Act was not enacted until 1932, but in the intervening five to six years, stations in Canada joined NBC and CBS.

Following the reallocation, Canadians and Americans were dismayed by the loss of favorite stations and programs. A convergence of factors following this disruption permitted drastic changes in Canada.

ONE PER CITY

With the exception of Montreal and Toronto, Canadian cities were limited to one frequency per city, in order to serve listeners who were tuning in with crystal sets rather than expensive radios with tuning knobs. Crystal sets were

more likely to be found in American and Canadian cities until the introduction of tabletop radios in 1931.

The shortage of radio frequencies assigned to Canada in the North American Gentleman's Agreement of 1924 — allowing only six exclusive wavelengths and 11 shared wavelengths — forced a variety of Canadian cities to share wavelengths. Larger companies that hoped to acquire a city radio station often had to settle for a signal outside the city, sometimes outside of the prov-

FROM THE EDITOR



Radio World supports efforts to save our radio heritage including the work now being done by the Radio Preservation Task Force (<http://radiopreservation.org>). Here is the fourth in a series of guest commentaries by or about those involved in that effort. Author Anne F. MacLennan is an associate professor in the Department of Communication Studies and former graduate program director of the Joint Graduate Program in Communication & Culture at York University, Toronto, Ontario.

— Paul McLane

Broadcasting, commonly known as the Aird Commission.

Soon NBC became the first of the American networks to enter Canada with the physical presence of an affiliate station. On Nov. 16, 1929, R.W. Ashcroft, manager of the Trans-Canada Broadcasting Company, announced that CKGW would begin to broadcast programs from NBC's Red and Blue networks, making it the first American affiliate to offer American programming in Canada.

Shortly thereafter, Montreal's CFCF became an NBC affiliate. CFRB affiliated with CBS. And CKAC added CBS programs when it became an affiliate.

While Canada moved tentatively toward regulation and the creation of a national public radio broadcasting network, Canadian stations continued to join American networks and carry American programming. After the Radio Broadcasting Act, the Canadian Radio Broadcasting Commission broadcast select programs on the national network as well. The Canadian Broadcasting Act of 1936 established the Canadian Broadcasting Corp., which introduced more American programming on its own stations and permitted its continued inclusion in the schedules of private Canadian broadcasters throughout the interwar years.

Anne F. MacLennan's research on radio has been published in "Journal of Radio & Audio Media," "Women's Studies: An Interdisciplinary Journal" and "The Radio Journal." Her ongoing research focuses on radio programming in the 1930s, the radio audience in the 1930s, broadcasters, and the design and promotion of early radio.

Radio World welcomes your own stores about the preservation of radio content as part of our ongoing coverage of the RPTF effort. Email ideas to radioworld@nbmedia.com.

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Photo by Jennifer Waits

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Photo by Ira Willner

NEWSROUNDUP

WHEELER: President Obama's FCC Chairman Tom Wheeler made it official that he will step down from the commission when President Trump takes office. The news in mid-December ended speculation about a possible muddled or prolonged transition in the makeup of the board between a Democratic-led commission into a GOP administration, though the eventual composition of the five-seat panel will probably not be clear for some time. Fellow Democrat Jessica Rosenworcel was not reconfirmed. Until she or another Democrat is named, and until a replacement for Wheeler is confirmed, the GOP will have a 2-1 majority come Jan. 21. Republican Commissioners Ajit Pai and Michael O'Rielly were considered likely candidates for acting chair. Democrat Mignon Clyburn is the other remaining commissioner.

EAS: Chairman Wheeler's Emergency Alert System revamp was pulled from the Dec. 15 meeting agenda, its future unclear. The proposal is intended to improve alerting organization at state and local levels, build stronger community-based alerting exercise programs and protect the system against accidental misuse and malicious intrusion. The FCC had also planned to vote on a further notice of proposed rulemaking seeking comment on "proposals to leverage technological advances to improve alerting and additional measures to preserve EAS security."

SMITTY: Milford Smith is out of a job. Greater Media Inc.'s longtime vice president of engineering had been with the company for 32 years but his position was eliminated when Beasley Broadcast Group acquired the company. Smith, 68, told RW he is still doing some contract work for Beasley, and his corporate contact information remains in effect for the time being. Before Greater Media, he worked for Tribune Broadcasting and First Media Corp. In 2005, he received the Radio Engineering Achievement Award from the National Association of Broadcasters; in 2010, he was honored with the Radio World Excellence in Engineering Award. He has chaired the standards-setting National Radio Systems Committee since 2007 and was prominent in the group's effort on a digital radio standard when he chaired its DAB Subcommittee. "I still very much enjoy the work — especially the people — and would surely love to continue in the industry in some capacity," he said.

GEHMAN: Alternative Broadcast Inspection Program inspector R. Dale Gehman died at age 59, according to the Michigan Association of Broadcasters. He passed away after nearly a decade fighting cancer.



Despite his diagnosis, Gehman continued to work and most recently conducted ABIP inspections on behalf of the MAB in October. He also worked in Indiana, Kentucky, New Jersey and Arizona, among other states. Gehman had experience in station ownership, management, sales and marketing, programming, as well as traffic and billing systems.

Gehman also served on the boards of the Alabama Broadcasters Association and Pennsylvania Association of Broadcasters.

BBG: A major overhaul atop U.S. federal radio and television broadcasting entities could be on the way. An amendment to a defense spending bill passed by Congress would change the

leadership of those entities by placing the five broadcast networks including VOA under the control of a CEO with expanded powers who is appointed by the president and requires Senate confirmation. At press time, the defense bill had not been signed by the president. Critics of BBG have been beating the drum for an overhaul for years, and the board has been the subject of some reform efforts already. Industry observers say the latest proposal leaves open the possibility of drastically changing the scope of U.S. international broadcasting. "I've always favored a CEO, with the board playing more of an advisory role," said James Glassman, former BBG chairman. "A bigger problem for international broadcasting is its position outside the foreign policy structure. The new legislation moves in that direction but not forcefully enough." The Radio Television Digital News Association opposes the legislation, saying it "would threaten the independence of the organization."



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WATD

(continued from page 1)

presence in the communities it serves; it has won numerous awards for its news and public affairs programming. And the station is financially successful; in fact, according to Perry, “We’ll have our best billing year ever [in 2016]. We’ll bill over a million dollars this year.”

As a Class A FM station with 3,000 watts at 95.9 MHz, WATD serves an area known as the South Shore — cities and towns to the south of Boston, including Marshfield, Pembroke, Abington, Duxbury and Plymouth.

The call letters tell an interesting story too: They stand for “We’re At The Dump.” When Perry first tried to put his station on the air, he ran into various objections about where to locate the transmitter. He was finally able to find some land near the Marshfield town dump; after the zoning board approved it, he and the staff chose the call sign.

The station officially went on the air on Dec. 6, 1977; thirty-nine years later, WATD’s 460-foot tower remains in the same location, supporting the main two-bay antenna. There is also a 330-foot tower supporting the single-bay 1,000-watt auxiliary antenna. WATD has several backup generators, another part of what makes it unusual for a station of its size; even during extreme weather, including blizzards and hurricanes, WATD stays on the air when other stations have lost power.

“That’s the key to community service,” Perry said. “People know we will be there for them. And if you’re always there, people trust you.” (The station even maintains a web page that explains its technical infrastructure to visitors in layman’s terms; see it at <http://959watd.com/how-watd-works>.)

LOVE OF RADIO

The station’s studios are in a Marshfield office park, and from the moment you enter the building, it is immediately obvious that Ed Perry loves radio. For one thing, the vestibule contains a collection of antique radio receivers, and the door features a bumper sticker that says “Kill Your Television.”

When you walk into the lobby, you see a jukebox, and then several walls filled with plaques, displaying the many honors WATD has earned over



Stations photo courtesy Marie Reed/WATD



Ed Perry

the years. Among them are numerous Edward R. Murrow Awards, given annually by the Radio Television Digital News Association for excellence in such categories as breaking news, investigative reporting, feature reporting and overall excellence in news. WATD has also won awards from the Associated Press, including AP Station of the Year in 2014. Perry was awarded the Broadcaster of the Year Award by the Massachusetts Broadcasters Association in 2014 and was inducted into the Massachusetts Broadcasters Hall of Fame the next year.

The station is proud of its numerous news awards. In 2010, Managing Editor/News Director Christine James accepted an RTDNA Edward R. Murrow Award for best audio newscast from Harry Smith of CBS.



Perry remains a dominant figure at WATD; in addition to running the station, he does on-air commentary three times a week and helps with the engineering, though he is quick to say that his staff makes the station’s success possible. For

instance, mid-day host Larry Nelson also sets up remotes and does some of WATD’s tech work.

“I’m pretty good at finding good people,” Perry says, including folks who are as passionate about radio, and as loyal to the station, as he is.

Managing Editor/News Director Christine James has spent 25 years here. Morning show co-host Rob Hakala has put in 16 years; and Larry Nelson arrived in 1991. Afternoon drive personality Cathy Dee has the most longevity other than Perry himself; she has been with the station since it went

on the air except for a two-year hiatus when she worked in Boston radio. Music Director John Shea started out with the station as an intern and has been there for 12 years. Jackie McGoodwin, a 32-year station veteran, is vice president and sales manager, overseeing three full-time salespeople; several announcers sell part-time.

The reason for such longevity, says Cathy Dee, is “the station is like an extended family. It’s a great place to work.”

FULL-SERVICE

WATD’s format is what used to be called full-service, a blend of adult contemporary music (with a target audience of 35–54), along with lots of news, local sports and specialty programming.

Dave Skill, who has spent 25 years with WATD in news and sales, hosts a Saturday afternoon oldies show. When John Shea is not music directing or helping with public service programs, he hosts a popular local music show called

(continued on page 8)



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WATD*(continued from page 6)*

"Almost Famous" on Tuesday evenings. It features interviews with local bands, as well as in-studio performances from the best new and up-and-coming musicians. Station announcers have the flexibility to play some requests, as long as the song fits the overall sound of the station.

The station is known for thorough coverage of politics and current events. While the recent presidential election was making big news, there were also local races and state ballot initiatives that mattered to people on the South Shore. WATD hosted a debate between Republican and Democratic

crooks or politicians. We're also looking for quirky stories."

James says perhaps WATD is something of a dinosaur in that it focuses on doing radio the way it used to be done, by being a presence in the market. She speaks of the importance of credibility, of keeping your word and of building relationships in the communities the station serves: the mayors, librarians, chiefs of police and the coaches of the local teams.

Local sports coverage, especially high school football, is another area where WATD excels. Sports Director Bill Wilhelm even hosts a high school sports show that features conversations with the student-athletes and their coaches. The sports programs are



Lisa Azizian and Rob Hakala are morning co-hosts.

candidates for the state legislature as well as a debate between advocates and opponents of legalizing marijuana. In fact, the station aired about 12 political forums and debates. Says News Director Christine James, "Along with the debates, we [had] big primary and election night shows with live coverage starting at 7 ... and typically going until 11 or 12, and sometimes later. We [had] close to 20 reporters covering campaigns, others at key town halls, a newsroom crew to compile the numbers, post them, keep me updated, and write stories for the next day."

WATD has about a dozen full-time employees, plus a number of stringers and freelancers, which allows the station to cover every kind of political event, large and small: There are reporters at school board and city council meetings, and the station covers stories that would not be covered by the Boston media. "We do the news that matters most to people," James says. "We're not just looking for stories about cops,

popular with the parents of the players, but also with advertisers, who get good results from sponsoring high school sports. Said Perry, "People who are listening to high school football want to support the advertisers, since they are helping to bring them the games."

NOT A NUMBERS GAME

WATD may seem old-school in its programming approach but it has embraced social media; its Facebook page, Twitter and Instagram accounts and website are maintained by Perry's son Will, assisted by Mariel Reed. The website generates revenue from features such as a sponsored "WATD Pet of the Week" box ad. WATD also offers streaming audio; this too has been a hit, because listeners can stay connected to the station (and to their community) even if they are outside of the station's coverage area.

WATD does not subscribe to a ratings service, and that is intentional. "Radio is not a numbers game for us,

BACK IN HIS PIRATE YEARS ...

Ed Perry grew up in Natick, Mass., the child of two teachers. He tells the story of receiving a wireless mic as a birthday gift at age 7 and entertaining neighbors on the AM dial by broadcasting songs played on a wind-up Victrola that is now in the station lobby.

During high school he and some friends set up a more powerful unlicensed signal that drew the attention of the FCC, which shut it down. According to a bio on the WATD website, Perry later worked as a DJ and in various writing, teaching and sales jobs; he taught himself about radio engineering and "became reasonably good at finding places and frequencies for new radio stations." He became a consultant and eventually an owner.

The idea for WATD came about during a prospecting trip in the early 1970s with Carol Ebert, who would become Ed's wife. "We discovered an FM channel then in use on Martha's Vineyard could be used in a wide area of Cape Cod and the South Shore if the FCC would agree to assign a different frequency to the Vineyard station," Perry wrote. "Our mission on the trip was to try and guess which areas would offer the best chance for economic success five years later. ... After touring a dozen towns we decided the Marshfield area held the greatest promise. In February 1973 we filed the first round of paperwork with the FCC."

They secured funding help from neighbor Bill Blackmore and Rockland Trust bank, and secured an FCC construction permit despite objections from other area stations and early concerns from locals about the tower site. WATD's coverage of the Blizzard of 1978 was an early success that helped build audience. That same year, WATD also began operating the first studio radio reading service for the blind in New England; Talking Information Center airs on an FM subcarrier and grew into a statewide network.

The station moved into its own new studio facility in 1986.



Ed Perry in an undated photo on the station website.

Radio is not a numbers game for us, like it is for the Boston stations.

— Ed Perry

like it is for the Boston stations," Perry says. "As a non-rated station, we can do things that other stations might not."

Sales Manager McGoodwin says, "Most Boston business comes from ad agencies, and they use the ratings. At WATD, we establish a personal relationship with our clients, and that means the ads we produce are personal to the [South Shore] area."

Perry also once owned an AM in Brockton, Mass., and he plans a return to that community with another AM that he has acquired that is now silent. This will be WATD(AM), expected to go on the air in the spring. According to a 2015 story in *Northeast Radio Watch*, Perry plans a news-talk format.

Ed Perry is always watching for changes in what his audience wants. He

understands that a successful radio station must provide good content; it's the content that gets both loyal listeners and long-term advertisers. His management philosophy is simple: "We invest in people who can produce the content, treat them fairly, [and] pay them fairly." He also encourages his on-air people to care about the audience. "The listeners are your customers. Worry about them first."

Despite competition from social media as well as those Boston stations, Perry remains optimistic about radio thanks to its unique ability to be a friend to its listeners. "Because we can make decisions locally, we can be there whenever our audience needs us; we are their community station. And we can be there for the advertisers. In fact, there is a demand to advertise on WATD."

For 39 years, WATD has continued to be a friend to people on the South Shore, proving that a live and local radio station can not only survive; it can thrive.

Got a suggestion for this series? Email radioworld@nbmedia.com.

Donna L. Halper is a former broadcaster and radio consultant who spent more than three decades in radio. She is a professor of communication and media studies at Lesley University, Cambridge Mass. She wrote here recently about Hubbard Radio's KSTP(FM) in Minneapolis/St. Paul.

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Fig. 1: Salem Minneapolis' monitor wall.



News comes from Dawnco that the new main satellite for U.S. commercial radio networks will be AMC-18 at 105 degrees west longitude. The change will affect almost every radio station.

Some will simply re-aim their dishes during an off-peak time; but other stations with older dishes may need a new 3.7-meter dish to receive signals from the new satellite properly.

Since this change is so widespread, Dawnco is a source for advice on how to get the best satellite reception. They can be reached at (248) 391-9200. Ask for John at ext. 224.

So what's the background here? The majority of national radio content providers use one satellite: AMC-8, located at 139 degrees in the western sky. After 15 years the satellite is reaching its

(continued on page 12)

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

It's a neat feeling when you purchase a piece of equipment or software and discover a totally unrelated additional use.

Salem Minneapolis Market Chief Steve Smit did just that with his Axia Pathfinder Pro Router Control Software, and he shares his alternative use with Workbench readers. Pathfinder Pro is Windows-based software that primarily controls an unlimited number of devices or performs complex operational requirements. [Disclaimer: I work for Telos in my day job.] Steve's idea was to provide audio monitoring bar graphs for his cluster of stations.

A monitoring "wall," shown in Fig. 1, displays monitors that are connected to each hard drive playout server, seen in Fig. 2. This permits operators to assess the programming on each station visually.

Steve uses Pathfinder Pro to provide audio bar graphs for each of his stations, as seen in Fig. 3. Fig. 4 shows two panels. The first is a satellite panel, which displays audio output from each satellite receiver. To the right of the display is the on-air Ops Desk panel. Three bar graphs are designated for most of the stations. The first bar graph permits monitoring the audio being fed to the transmitter. The Delay bar graph



Fig. 2: Station audio output is monitored from the playout servers. (View is toward the floor.)

shows the audio from the seven-second delay. The "Air" bar graph gives a visual indication of the signal coming out of the transmitter. The "Air" bar graph is also helpful when the night-time power is reduced to a point where it cannot be reliably detected at the studio.

The obvious benefit of this monitoring is that non-engineers can give Steve a status check, even if he's not in the building. Assessment of the bar graph displays helps Steve troubleshoot a problem without being in the building. It's saved him plenty of trips to the transmitter site when the problem exists at the studio.

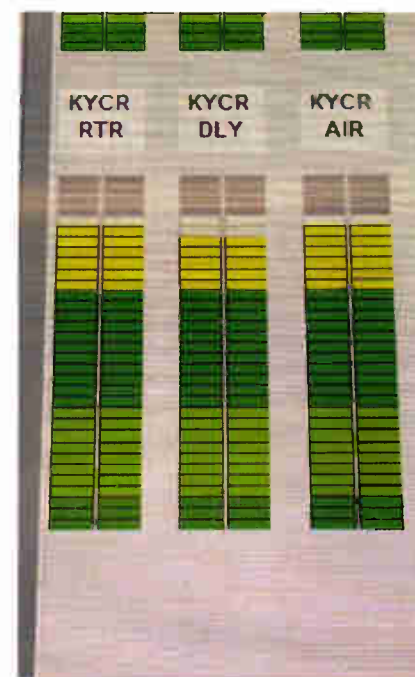


Fig. 3: Bar graphs are shown for each station.

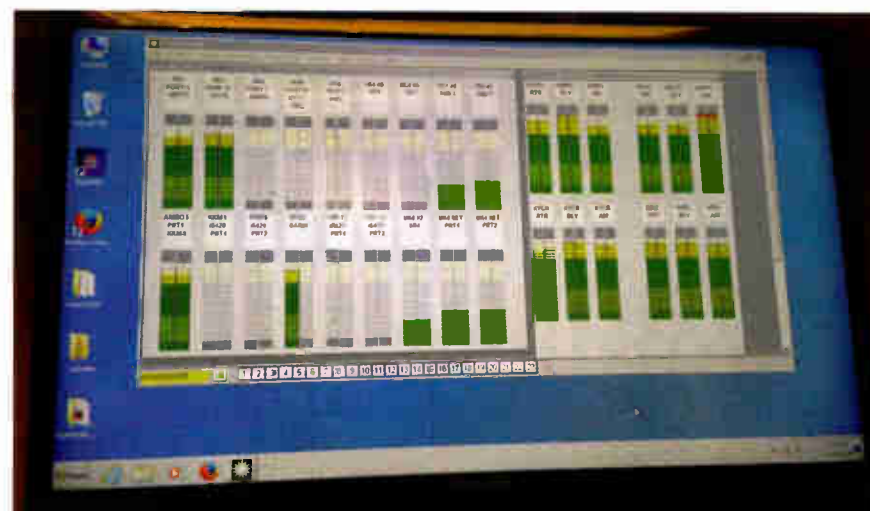


Fig. 4: Two Pathfinder panels monitor all of Steve's stations.

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MONTERO

(continued from page 1)

one of the biggest changes in the industry since 1998?

Frank Montero: Eighteen years ago, we were on the heels of what was a pretty dramatic deregulatory step. You had some pretty dramatic lifting of media ownership caps in the wake of the 1996 Telecommunications Act that triggered a feeding frenzy driving radio prices and radio multiples sky-high. Back then, stations were trading at 16, 17, 18 times cash flow. It was absolutely insane. You had companies like Chancellor, SFX and Clear Channel, just buying each other out like crazy.

Clearly, this new administration is making rumbling noises about taking an even more deregulatory stand toward the media landscape. You have two Republican commissioners who are likely to stay, Michael O'Rielly and Ajit Pai, both of whom have been, comparatively speaking, friendly to the broadcast industry, and especially to the radio industry.

Ajit Pai in particular has taken an interest in creating a new class of FM station and in AM revitalization; O'Rielly has taken a stand against pirates.

But this president-elect has not exactly been a huge fan of what he calls the "liberal media" and has already made some noises that he would not favor something like the Time Warner-AT&T merger and may not be a big fan of any further media consolidation.

RW: How does the commission itself change as the Trump administration takes power?

Montero: Let's walk through a couple of scenarios. It now appears that [Democratic Commissioner Jessica] Rosenworcel will not be confirmed. [Republican Commissioner] Pai will likely become the Acting Chair.

When [Democratic Chairman] Tom Wheeler leaves, you've got three FCC commissioners, and Republicans will have a majority of the votes, 2-1, that's a quorum, and they can really start getting into gear.

But there's another interesting scenario ... what if [Democratic Commissioner] Mignon Clyburn leaves also? Now you don't have a quorum, and you have two Republican commissioners,

but everything is held up until you're able to get a third or more commissioners appointed and passed through Senate confirmation to get things moving again.

RW: What are some of the priorities you expect a new FCC to tackle?

Montero: One that I've heard a lot of people discuss on the radio side are the sub-caps on radio ownership, the ability to have a greater allocation of FM versus AM or AM versus FM. Right now, if you can have seven stations in a market, you're limited to four FMs and three

The only thing is, if they are lifted, I would be a little worried for AM. I think that AM is struggling now. I would be a little worried that if there were no sub-cap and a limit of eight stations in a market and all eight could be FM, that current group owners might start shedding AMs like crazy. It would be a good little shot in the arm for FM, but you could see it further depress the value of AMs.

RW: Is that ultimately a good or a bad thing for minority owners, if it were to put some bigger AM signals on the

Los Angeles or Chicago was still a relatively new thing.

What you had not really seen yet was the infiltration of Spanish-language into secondary and tertiary markets in places like Birmingham, Raleigh or Charlotte, or even places like Boise or Milwaukee. Now those markets have exploded. So Spanish-language media today is very much mainstream.

But having said that, it's still something that can flourish in the AM band. For Latino broadcasters who are looking to get in, AM still has a low barrier to entry and affordable prices. If you happen to be in a small, emerging Spanish-language market, you can get a foothold and grow. I have seen an extraordinary number of broadcasters taking advantage of the FM translator window as a way to expand their signals and audience.

Access to capital in those markets has been difficult. There hasn't been the ability to get a lot of financing. Banks are not racing to make broadcast loans the way they had been 20 years ago. Local, regional and community banks are, frankly, afraid to get into broadcasting because they're not familiar with it. They don't understand how broadcasting works, and so even though they have a good relationship with local broadcasters, they're a little hesitant.

This is an area I've gotten very involved with, working on educating banks to familiarize them with the process of making broadcast loans — how such loans are structured, how valuations work, on the difference between stick valuation and cashflow valuation,

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This president-elect has not exactly been a huge fan of what he calls the "liberal media."

— Frank Montero

AMs, but a complete lifting would allow you to go to the full limit within one service, which could have a much bigger impact than might be appreciated.

RW: Do you think they'd allow, say, one company to own eight FMs in Los Angeles or New York?

Montero: Even with this president-elect, I think they might see a complete lifting of the sub-caps as a "safe" step without going to a complete lifting of the ownership caps and without undercutting the position they may take on larger mergers that may impact the whole telecommunications landscape.

market at low prices?

Montero: In the late 1990s, [Spanish-language radio] was a market that was on fire in terms of how quickly it was growing, but it was still in its early phases of development. I attribute the change in the landscape to the 1990 Census. That's when things started turning around, when Jerry Perenchio bought a sleepy little network called Univision, when a retired U.S. senator, Cecil Hefel, started the company that became HBC and then Univision Radio. By the late 1990s, it was running on all cylinders, but even then, breaking in on FM in a major market like New York,

WORKBENCH

(continued from page 10)

end of life, and there will be no replacement satellite at the 139-degree arc slot.

The current AMC-8 satellite has one adjacent satellite that is 2 degrees away, and on the other side, the adjacent satellite is 3 degrees away. Because one of the satellites is not close enough to cause interference, the older dishes may work. Older "junky" dishes were not made for 2-degree spacing, however, as is now used. Plus, the new satellite has high-powered neighboring satellites that are 2 degrees away on both sides.

There will be a five-month period when signals will be transmitted simultaneously from the old and new satellites. This will permit re-aiming or replacement, if needed. Engineers are encouraged to act now to ensure uninterrupted operation. If your current dish is rated for 2-degree spacing and is structurally sound, re-aiming to the new satellite may be all that's required.

Dawnco sells a FLEXtest satellite meter that helps you peak your dish. The company also offers a C band LNB that can significantly boost the signal quality readings on digital satellite receivers. Find out more at www.dawnsat.com.

Frank McLemore, CPBE, is with Communications and Electronics Inc. He is also an Alternative Broadcast

Inspection Program inspector for Georgia. Frank writes with a caution for engineers regarding transmitter ventilation.

He encountered a site with two transmitters, both vented by separate ducts to the outside. One of these transmitters became the backup and was turned off. Its vent, however, was never blocked or louvered, and over a period of time, the operating transmitter used the non-operating transmitter for makeup air. Moist air was drawn backwards through the idle transmitter's vent and final cavity. This caused final tube socket corrosion, along with damage to other final components.

The lesson here is two-fold: One, don't directly couple the vent to the top of the transmitter; use a vent/hood arrangement. Two, leave the idle transmitter blower on, block the vent or have an exhaust fan on in the duct.

Good judgment comes from experience; experience comes from bad judgment!

Contribute to Workbench. You'll help your fellow engineers and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. Fax to (603) 472-4944.

Author John Bisset has spent 46 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

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—Daniel Hyatt, SVP Engineer, Max Media, Denver, Colorado

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—Chris Tarr, Director of Technical Operations, Entercom Wisconsin, Milwaukee

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—Stephen Wilkinson, Technical Operations Manager, Hope Media, Sydney, Australia

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Student Broadcasters Mingle in the City of Brotherly Love

Philadelphia hosted the fifth annual National Student Electronic Media Convention

Awards lined up prior to the 2016 National Student Production Awards ceremony.



COLLEGE BROADCASTERS

BY JENNIFER WAITS

Podcasting, social media, 'zines, LPFM, the FCC and journalism were among the topics tackled at College Broadcasters Inc.'s fifth annual National Student Electronic Media Convention. Held in Philadelphia in October, the event drew a crowd of some 420 paid

attendees in addition to guest speakers and sponsors.

With an emphasis on radio, television and multimedia, the NSEMC is geared toward students and staff working at high school and college electronic media organizations, primarily mainly radio and TV stations.

FORGING STATION CONNECTIONS

Sessions included a mix of practical advice, hands-on learning and wide-ranging discussions. A big draw was the opportunity to network with other student radio/TV participants as well with established industry



CBI IT Content Director Jessica Clary of SCAD Atlanta tests out the photo station before the awards ceremony.

professionals. To that end, there were numerous roundtable discussions during which students and station advisers could chat with their peers about common goals and challenges.

CBI Student Representative Evan Boyd said that his favorite parts of the event related to connecting with students from other stations. He was the driving force behind a new "Student Social," which took place the night before the conference opened.

Boyd, a University of Wisconsin-Madison senior and WSUM(FM)'s station manager, said the social went well. "It helped [us] get to know people before everything started, and I think it will help stations collaborate in the future. I even know that right after, different stations went out together to visit an art museum — hearing that they socialized after the event made it all worth it."

Those ties grew even stronger throughout the conference, and Boyd said his "favorite part of the conference was leading a Program Director Roundtable, in which I was able to get to know a lot of the different

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MONTERO

(continued from page 12)

so that loan applications can get through their loan committees more readily to help small broadcasters get into the marketplace and grow their businesses. Because otherwise, with a lifting of ownership caps and subcaps, it will help the larger players and some of the regional, midsize players, but if you don't have a foot in the door, it's going to be very difficult.

RW: In the political climate now, is there danger to Spanish-language and other minority broadcasters?

Montero: If anything, the last election campaign, as ugly as it got ... put a bright spotlight on the importance and integral role of the Hispanic community in American politics, culture and the economy.

The Latino population wields a

great influence. It can tip elections; it can make or break businesses; and it has attracted the attention of political candidates and of mainstream media. The point that has not been lost on either side of the political aisle nor on Madison Avenue is that there are elements of the Latino population that are completely juiced up over this election. They're going to want to have their voices heard.

There are others who may not be as strongly opposed to the Trump administration but may want to further develop the political influence that was seen during this election campaign, and their voices are all going to be heard more and more in the media. This segment of the population is not going to be stifled. If anything, you're going to see more attention paid to them, more content on the airwaves.

I work with a great number of Spanish-language media companies that are based in Latin America. You have radio

networks, TV networks, content providers throughout Latin America and Spain falling over each other to get access to the U.S. market.

If we were to see any stifling of this market ... if a wall is built by this administration, or they take action to try to round up or deport aliens that are here illegally, that's going to be huge news. Radio, I think, is going to play an integral role in disseminating that information, and that's also a medium that politicians and PACs are going to want to have access to.

RW: What becomes of the FCC's current push to allow more foreign ownership of broadcasters? Will that be reversed, given the Trump platform's isolationist stances?

Montero: I'm inclined to think not. The broadcasting community has made it pretty clear that they favor these changes. It facilitates the ability of foreign capital to come into this industry, and

that's good for station values and for the market generally. Right now, you have two Republican commissioners who are very favorable to the broadcast community, and actually listen to broadcasters and go to conventions ... so I'm inclined to think that these commissioners are going to be receptive to what the issues are in the broadcast community and not do a reversal.

RW: Are you concerned about First Amendment issues for broadcasters in a Trump administration?

Montero: I personally think that any attempts by this administration, or any administration for that matter, to try to dramatically change the laws is going to be very difficult. So much of this is based on judicial precedent. While the president could end up appointing one or more Supreme Court justices, the Supreme Court will surprise you. They won't always vote the way the president that appointed them wants them to.



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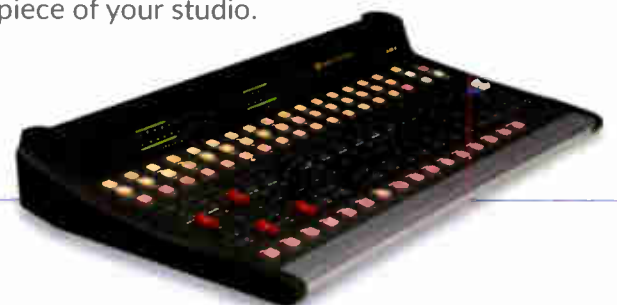
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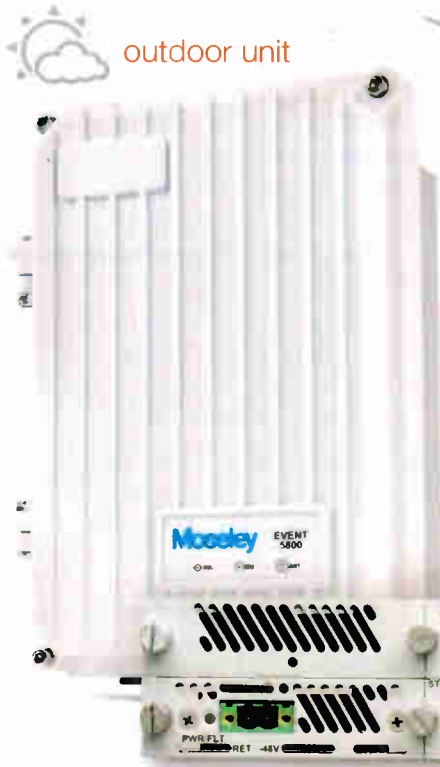
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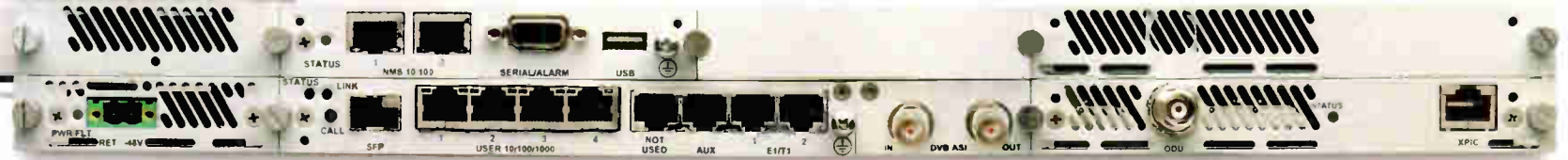
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How Resilient Is Your Station?

Hopefully, you are not the weakest link in your operating chain

MANAGEMENT

BY THOMAS G. OSENKOWSKY

The recent computer-related failures that grounded several major airlines remind us that even simple issues can produce massive system failures.

An engineer charged with maintaining a broadcast facility is (or should be) familiar with the many elements that comprise the system. When something happens that takes the station(s) off the air, he or she will investigate the possibilities in a logical manner in order to determine and remedy the cause.

The engineer or manager should know how all the elements in their operation combine to craft the final product. These involve technical and human components.

For the purpose of this article, I urge you to do the opposite of what you normally do: The engineer should consider how you would cause your station to go off the air, not remain on the air with normal programming as is usually the goal. The manager should consider how your station would operate seamlessly without one or more key employees.

I'm asking you to play the part of British game show host Anne Robinson and find the weakest link.

QUESTIONS TO ASK

Once you've identified the weak links, consider how best to operate with a substitute or how to fortify the weakness. A substitute may not be ideal, but if it allows continuity in an emergency, it is considered acceptable.

Let's look first at some examples of the human element.

Commercial stations typically employ a person who schedules commercials, promotional announcements, etc. This is often the traffic manager. Is there someone else who can perform this task in the absence of the traffic manager? Is he/she familiar with the advertising contracts, dayparts and spe-



cial sponsorships? Is required access log-in information available to those who might perform the task in a pinch?

For music stations, the music director typically assembles the music log. Is there more than one individual qualified to perform this task? Does he/she know the rules established by the program director? Is the scheduling program login information available? Does your station use a research program to select new title adds and drops? If so, is that login information available? Is the substitute familiar with the criteria employed to make the necessary decisions?

You probably employ a full-time, part-time or contract engineer. What if he/she becomes unavailable due to illness, injury or voluntary/involuntary termination? Do you have a qualified substitute? Is he/she familiar with your facility, and have access to the transmitter site(s) and, where appropriate, computer systems? Are procedures and facility interconnection wiring documented and securely maintained? Is there an available list of contractors who perform duties such as field clearing, annual FCC-required AM emissions measurements, satellite dish maintenance and other critical tasks?

For stations with transmitter facilities that are separate from the studio, how do you transfer audio and data between sites? If you use wireless STL and it fails, do you have a backup?

Today, it's more than just primary audio being sent from studio to transmitter in many instances. If you employ HD Radio, the secondary programs, data and other information must also be sent to the transmitter. Perhaps the traditional 950 MHz STL no longer meets your needs. If you use an unli-

censed link, you have no guarantee against interference from other unlicensed devices such as Wi-Fi, routers, baby monitors and other such consumer products. If your studio-to-transmitter link fails, what is your backup plan?

What about remote control for the transmitter(s)? If you depend on a land-line link, it may be vulnerable to failure from vehicular contact with a pole, central office equipment malfunction, cable outage due to insects or rodents, etc.

Some means of at least transferring primary audio should be at hand in the event of emergency. This may include but is not limited to using an RPU, broadcasting from the transmitter site using prerecorded (and regularly updated) programming stored at the site — even a dialup connection just to maintain continuity.

Plans should be in place to prepare for such occurrences and procedures rehearsed to account for new personnel, new technology and keeping procedures fresh in everyone's minds.

PREVENTION IS THE BEST MEDICINE

As you think of ways to take down your facility, consider how you would prevent them.

People familiar with a facility are the best qualified to know its weak points and how to buttress them. What investments are wise to make to ensure staying on the air? These include spare parts, equipment and the training to employ these when it becomes necessary.

Notice I used the word "investments," not "purchases." That is what you are doing: investing in an insurance program to keep your station on the air and functioning as close to normal as possible, given a natural or manmade event.

Backup power generators, standby transmitters, switchable studios, alternate audio storage systems and the like are of little use if staff does not know how to engage them. Post an easy-to-understand checklist in the control room so even a non-technical person can perform the step-by-step procedures to engage backup systems should the need arise.

If you can take the time to consider how to take your facility down, so can others.

It is unfortunate, but hackers, disgruntled employees and inadvertent acts can cripple an operation. The latter might include ceiling leaks, mandatory

If you can take the time to consider how to take your facility down, so can others.

evacuation due to a crisis in your or nearby building, fire, carbon monoxide, nearby police activity, earth movement and acts of God. Being prepared is your best defense.

Most stations depend on computers and the internet for their basic daily activities. Defending against unauthorized intruders, malware and viruses is a task best left to professionals.

A firewall, continuously updated antivirus and antispyware software are "musts" for every computer network. All it takes is one click on a malicious link and your entire network and automation can be brought down. Investing in a well-and secure network is not only wise but mandatory.

Is your data securely backed up off-site? Can you access the backed up data at will (off-hours, weekends, holidays, etc.)?

Hopefully, you've gained some insight on how and why to analyze and fortify your facility. Do this often. With the pace of technology ever increasing, an ongoing defense is a necessity.

Share your own preparedness tips. Email radioworld@nbmedia.com with "Letter to the Editor" in the subject field.

Tom Osenkowsky is a radio engineering consultant in Brookfield, Conn., and a longtime RW contributor. He has been in the radio broadcast industry since 1975.



Radio, Doing Good to Do Well

Kick off your New Year with these heartwarming success stories

**PROMO
POWER**



Mark Lapidus

When I compile stories of radio stations making a difference in their local communities, I get emotional. I feel happy because our industry is making a difference. I feel optimistic because humanity is hearing the need and answering with a resounding, "Yes, we can help." Mostly, I feel proud.

Kick off your New Year by checking out these heartwarming success stories, collected from announcements received at Radio World.

FOR THE KIDS AND CURES

● Imagine 57 busses jammed with toys for kids. That was the scene last month in Pittsburgh as WKST(FM) "KISS" 96.1 held its 13th annual "Stuff A Bus" event. KISS received toys from listeners, local schools, public safety departments and businesses. They beat last year's total by five full busses.

● During its 16th annual St. Jude Kids Radiothon, Detroit's WYCD(FM) raised \$551,272 for the national research hospital. This event was especially emotional for the station because many donations were dedicated in honor of WYCD's own Linda



An iHeartMedia Milwaukee radiothon raised \$293,500 for Make-A-Wish Wisconsin, an organization that grants wishes to children diagnosed with life-threatening medical conditions. Pictured holding the "total raised" sign are Dave Murphy and Meg McKenzie mornings on 97.5 BIG FM surrounded by staff and volunteers from Make-A-Wish.

(continued on page 22)

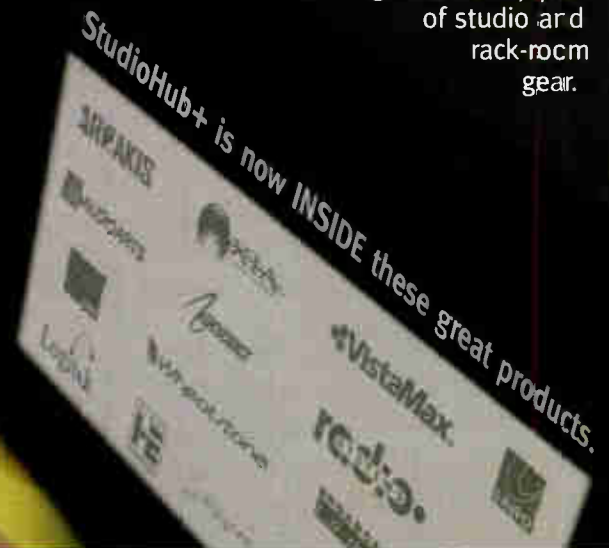
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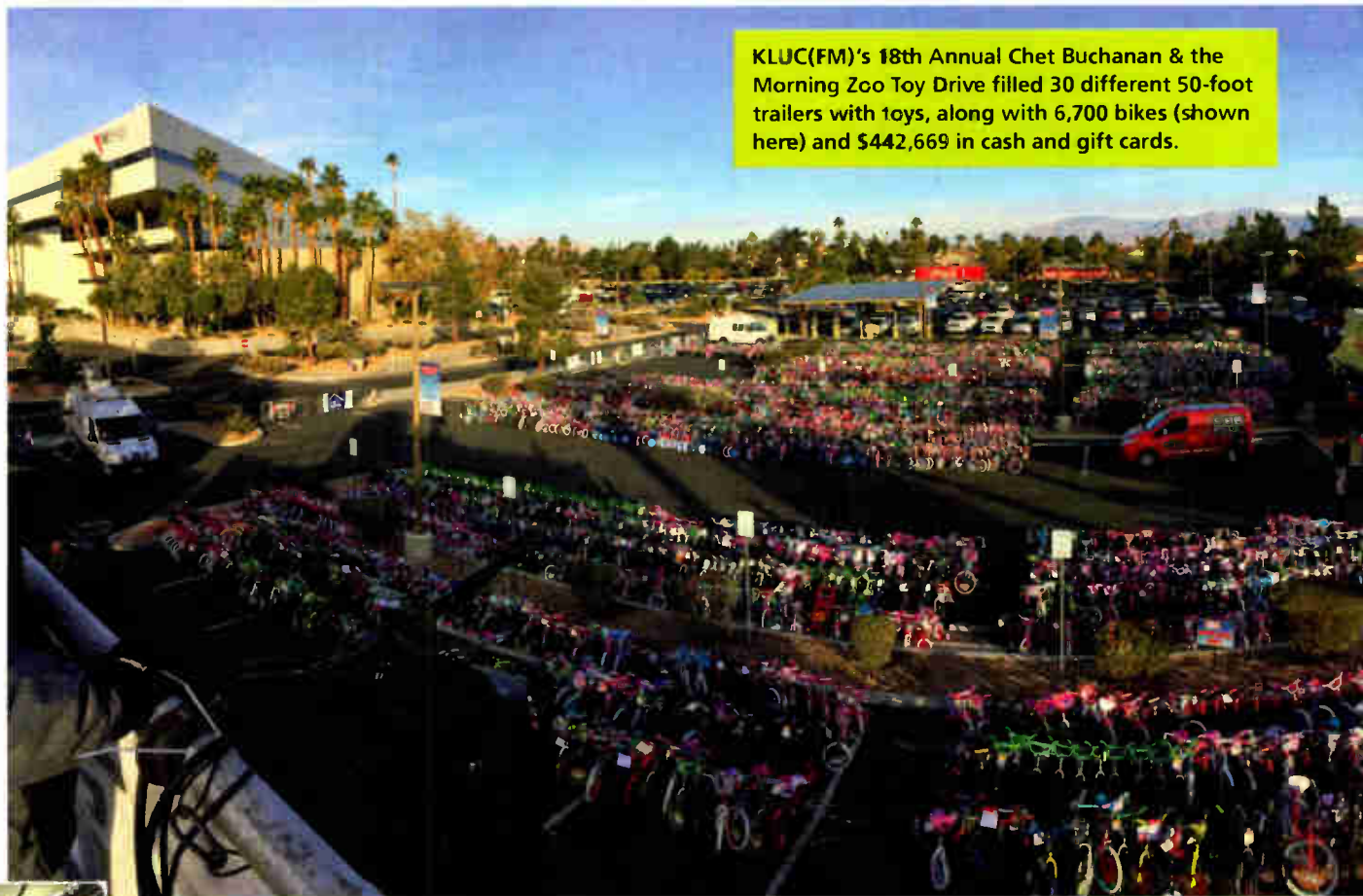
(continued from page 21)

Lee, who has been on the country station's airwaves for 20 years. Linda had been diagnosed with stage 4 lung cancer just a few months before the event, and while at the hospital, she urged listeners to be "partners in hope" by pledging \$20 per month for a year.

Kip Moore, who was wrapping up 2016 with 20 sold-out shows, took time out of his busy schedule to appear at the radiothon and encourage listeners to join the battle against childhood cancer. This was a near-record year for WYCD.

● Nashville FM stations WKDF, WGFX, WQQK, WWTN and WSM collected thousands of toys for kids as well as gifts for seniors in need during their 9th annual Salvation Army Forgotten Angel program. "Today was a great day that will help us provide for those in need in our community." Major Ed Lee, Salvation Army area commander, said of the event.

● Bexar County, Texas, has 25,000 kids in need who will have a sweeter holiday season thanks to WOAI(AM/TV) in San Antonio. During their Radiothon



KLUC(FM)'s 18th Annual Chet Buchanan & the Morning Zoo Toy Drive filled 30 different 50-foot trailers with toys, along with 6,700 bikes (shown here) and \$442,669 in cash and gift cards.



What's more fun than a bus stuffed full of toys? Pittsburgh's WKST(FM) has been doing a fundraiser that involves just that for 13 years now.

and Silent Auction, the staff raised \$243,034 in just two days.

Louise Locker is the woman behind the Elf Louise Christmas Project. She is in her 48th year of delivering toys and other gifts.

"I can't begin to thank you enough," said Locker. "The spirit was amazing and kept everyone going. So many children will have a happier Christmas this year, thanks to all of

you!" Nearly 5,000 volunteers process applications, wrap presents and route the Santa team to deliver gifts.

● The Children's Miracle Network at

Children's Hospital of Philadelphia was the beneficiary of \$309,925 raised by 98.1 WOGL during their "WOGL Loves Our Kids Radiothon." Funds raised are earmarked for patient care programs such as support groups, creative arts therapies and social workers. Services are offered to every child at the Children's Hospital.

● In just 13 hours, Cleveland's Star 102 raised \$247,620 to benefit UH Rainbow Babies & Children's Hospital. Morning show hosts Jen Toohey and Tim Richards interviewed patients and doctors to help raise the funds.

"If I don't have a coat, I'm going to be very cold, and if I do, I'm going to be very happy, because I won't be cold, and I'll stay warm for the whole winter," said nine-year-old Tristan Jenkins. Thanks to

the Charm City's WBAL(AM), Tristan and lots of other people will be warmer this winter in Baltimore. The station collected 816 coats for local kids during their "Warm Coats & Warm Hearts Coat Drive."

● KFI(AM) Los Angeles' Tim Conway Jr. made a huge difference for 11-year-old Jack Chavez. Jack had lost his Dad three years earlier and called the show because his father used to listen to the station while he was getting dialysis. Conway engaged him in conversation, and Jack — who has congenital heart



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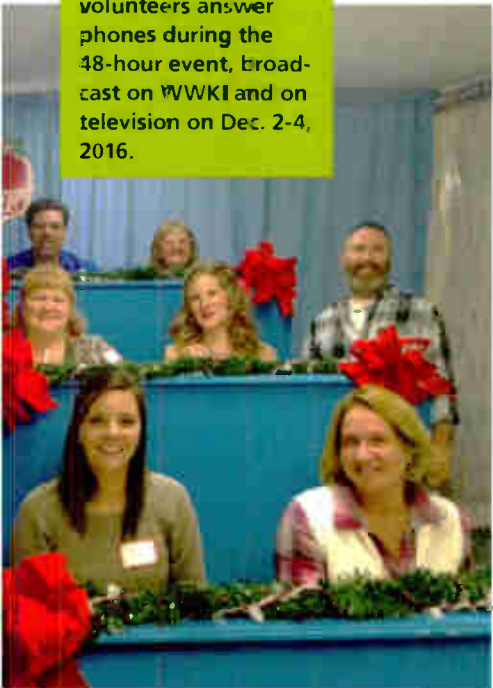
At right, "Todd & Jayde in the Morning" co-hosts are shown on stage with psychic John Edward, as well as Phil Salerno, president & chief development officer of the Children's Specialized Hospital Foundation at the third annual live broadcast and Holiday Party for the Kids in New York.



disease — mentioned that he would be spending his birthday in the hospital. Conway responded with a GoFundMe page, which enabled the station to raise \$34,000 to help pay off bills and to help fund the college education that Jack's father always wanted for him. They also sent Jack and his mother to Disneyland to help him celebrate his birthday.



Below: Cumulus' WWKI(FM) of Kokomo, Ind., recently helped We Care raise \$436,192, which was donated to the local Salvation Army, The Goodfellows, Kokomo Rescue Mission, Bona Vista and Mental Health Association. The 44th We Care Telethon volunteers answer phones during the 48-hour event, broadcast on WWKI and on television on Dec. 2-4, 2016.



FOR THE TROOPS

In the nation's capital, WMAL's 13th Annual WMAL(AM/FM) / Fisher House Radiothon raised \$491,064 so that families of injured servicemen and women have a place to stay while their loved ones are being treated. WMAL PD Bill Hess commented, "I remain in awe of WMAL listeners. They have generously donated some \$5.4 million over the last 13 years in support of this wonderful organization and its mission."

The coolest part about this list is that we have so many more to share and will do so in upcoming issues of Radio World. I hope this inspires you to take a close look at the calendar this month and then plan to do good!

The author is president of Lapidus Media. Email him at marklapidus@verizon.net.

Tell Mark about your own community benefit success story, and include a fun photo or two of your own.

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We Try Out the Siglent SDS-1102X

Ira runs across a bargain-priced DSO; is it all it's cracked up to be?

FROM THE LAB

BY IRA WILNER

I previously authored an article in Radio World Engineering Extra (April 18, 2012) comparing the performance of high- and low-end analog oscilloscopes to a very inexpensive digital storage oscilloscope or DSO. At the time, the price/performance leader for entry-level products was China-based Rigol with their DS-1102E at \$400.

It has been a very popular scope, boasting two 100 MHz channels and lots of built-in measurement and math capability. Compared to its older analog brethren it produced a brighter, easier-to-read screen, and replay from storage memory was far superior to analog storage CRT technology. But it wasn't without its limitations.

The LCD vector waveform display's resolution was not as good as an analog CRT. Waveforms had obvious jaggies and it did not have the look of phosphor as there was no brightness information that the eye can see from the refresh or scan rate of conventional electron beam writing. The one-button automatic setup mode — though a timesaver, especially for younger folks who never before used a scope — wasn't always successful in capturing a waveform.

DISPLAYS

The big names in test equipment, back in 2008, had introduced phosphor-like DSO displays, but these were expensive instruments costing far more than analog scopes available on the used equipment market, sometimes for pennies on the dollar.

Recently, other Chinese-based manufacturers have come along to challenge Rigol for the entry-level or low-cost scope market. You can buy a Hantek DS 050202P-INT dual-channel 200 MHz bandwidth widescreen DSO for just shy of \$300! While it gives you 200 MHz analog input bandwidth, the sample rate is limited to 1 GSps, which is considered insufficient for 200 MHz. Its channel noise is average for low-end DSOs. But it does come with a good array of features. It is an excellent bargain buy.

GW Instek offers the GDS-1102B DSO with 100 MHz bandwidth for \$404; it has a much higher waveform update rate but the same 1 GSps real-time sample rate. It also has a better display capable of 256 grades in a special

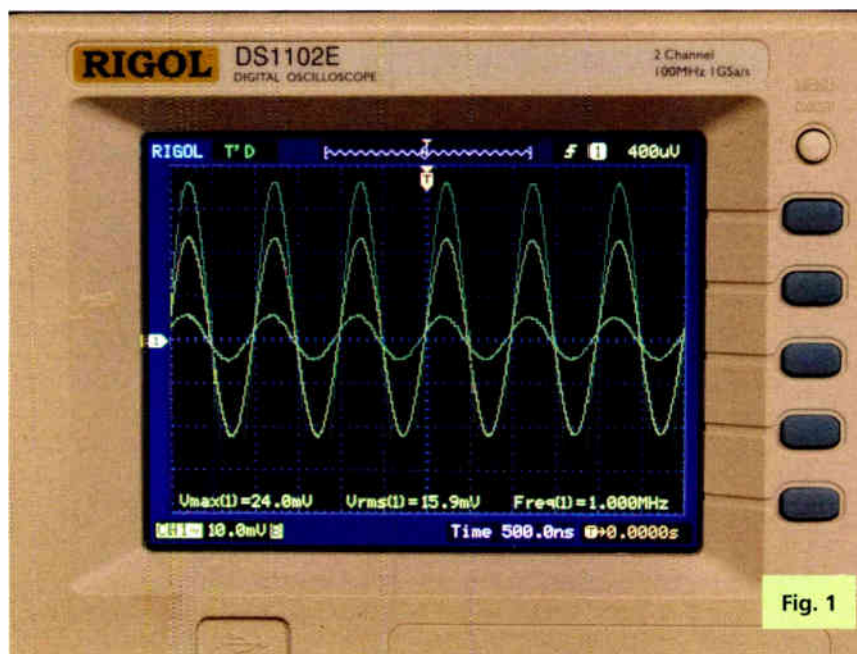


Fig. 1

Photos by Ira Wilner

color grade mode and has a phosphor style display that gives the waveform a more analog look. The GDS-1104B gives you four input channels for \$695.

Why would you want more than two channels? If you are troubleshooting digital circuits, quite often you may need to look at two inputs that will cause one specific output to change. And sometimes that output may be split into two logic outputs. A four-channel DSO may therefore be handy.

Keep in mind that unless you buy a much more costly high-end instrument, every input channel shares the DSP and thus reduces the available sample rate, lowering bandwidth and accuracy. Two channels will reduce the acquisition rate to 500 MSps. Lower sample rates will create greater aliasing products.

Another issue is dead time between samples and sweeps. It can be long enough to make it impossible to detect short transient pulses, especially one with a random slow repetition rate. It might never be captured in the DSO's memory. Many pricy high-end DSOs cannot catch quick transient pulses. So don't expect low-cost instruments to be any better.

But wait, there is one recent model that has demonstrated its ability to capture that elusive pulse. The Siglent SDS-1102X two-channel 100 MHz DSO will capture them with its 14M point memory depth. And its LCD phosphor screen emulating display is gorgeous. The price is \$424 and, as I write this, includes their serial bus decoding firmware option package for troubleshooting

packed with high-end features and performs in some ways better than many of the high-end name brand scopes. For the price it is a remarkable instrument, well worth owning. In fact, if you have a large shop you could afford to buy several for your staff without breaking a sweat.

In comparing the older-technology Rigol DS-1102E, which retails for between \$350–400, close to the cost of the Siglent SDS-1102X, it's like apples and oranges. Basic functionality is the same. But the Siglent can decode serial data pulses, has more switches and rotary encoders, so you do not have to share controls with the two input channels. The display is much brighter and larger. The digital phosphor intensity modulation paints far more analog-like waveforms with much greater visual fidelity. And the manual controls seem to work better.

ENVELOPES

One basic broadcast use of an oscilloscope is to determine peak AM modulation for calibration purposes. The

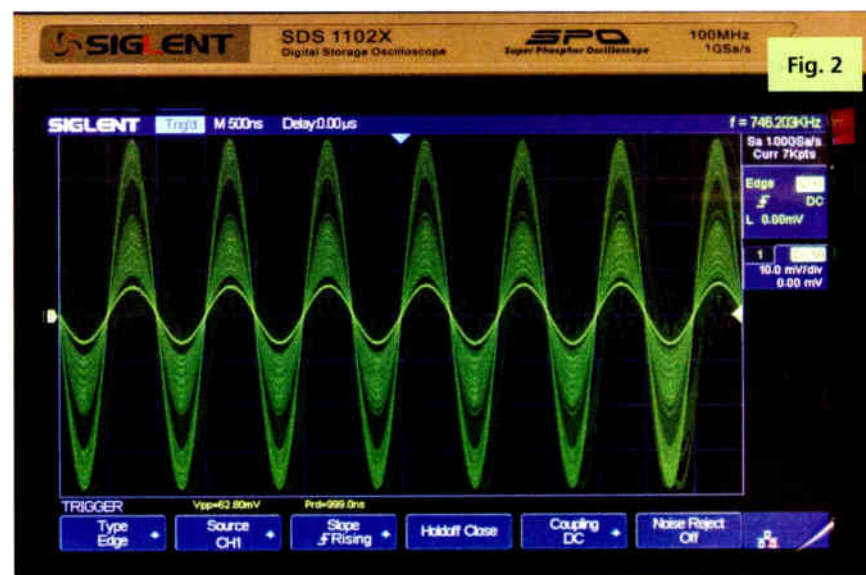


Fig. 2

UART devices, CAN Bus and other data protocols.

In comparison, if you want serial decoding and digital phosphor display in a Tektronix product you'll need at least the DPO-2000B, priced at \$2,130 compared to \$424 for the similarly equipped Siglent, which has a far higher capture rate and is more likely to find brief glitches.

So, what do you get for a 500 percent higher price? The menus and control layout are better on the Tektronix and you get more context related on screen help. The controls feel somewhat more responsive and there are fewer if any firmware bugs. The physical build is excellent.

On the other hand, the Siglent is also

Rigol can hardly sync to the envelope at all and cannot show multiple samples of the 1 kHz modulation envelope (Fig. 4, left instrument).

The Siglent can be dialed to show any number of envelope peaks. And it is far easier to judge carrier pinch-off with its display (Fig. 4, right instrument). With the far greater sample rate, the Siglent's FFT display, frequency domain, as in a spectrum analyzer, is much more accurate than the Rigol.

The Rigol in automatic mode doesn't choose the correct screen mode to show the modulated carrier waveform (see Fig. 1), while the Siglent does (see Fig. 2). The correct screen display mode is persistence on. The Siglent with its Super Phosphor display (see Fig. 3) pres-

ents a view identical to what you would expect from an analog CRT scope.

Both scopes look at the RF carrier frequency as the signal to synchronize to. If you want to see the AM envelope you have to force both instruments to sweep at a much slower rate than chosen and do some low-pass filtering of the sync signal to help them lock onto the modulation rate, in this instance 1 kHz. Neither scope had 100 percent sync stability. But neither will an analog scope (Fig. 4).

The Rigol showed a firmware issue in that it could not display more than one cycle of the envelope. When attempting to do so it would revert to the previous image above at a low repetition rate. The Siglent's sweep time could be slowed to provide any number of 1 kHz amplitude excursions. The RF generator was set to approximately 98 percent modulation.

The displays differ in other ways. See Figs. 5 and 6 on page 26. Besides the obvious brightness modulation mimicking an analog CRT scope's trace, the Siglent's image detail has far fewer jaggies, a much smoother display. And the overall noise is much lower too. Both scopes are displaying a 170 MHz signal, excellent for instruments rated for only 100 MHz.

The noise jitter and jaggies are very
(continued on page 26)

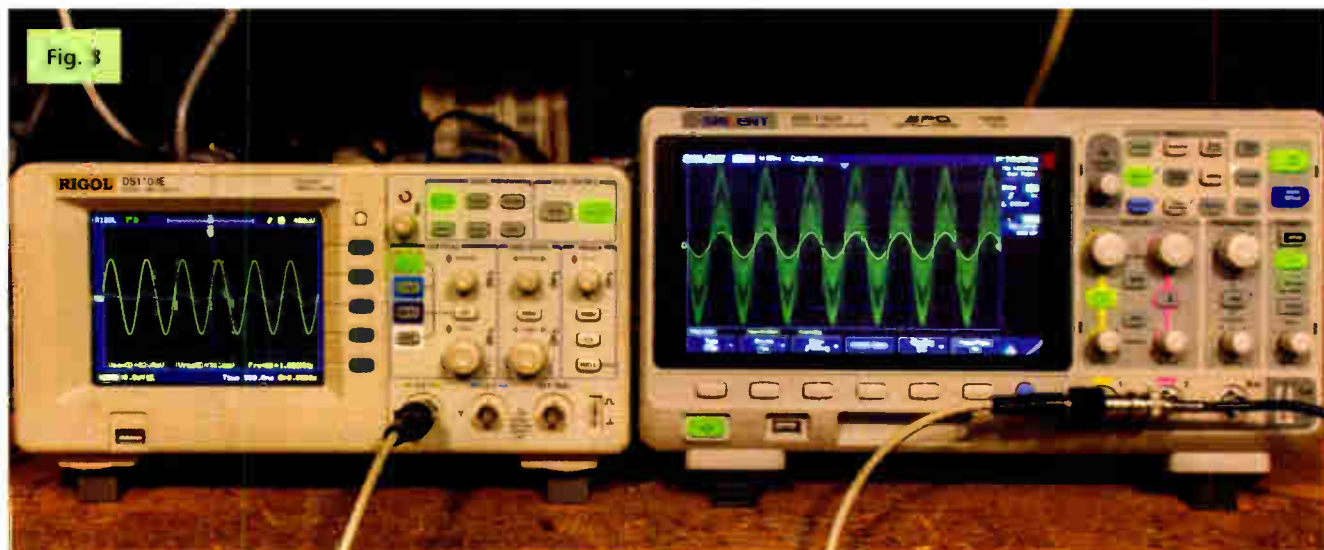


Fig. 3



Fig. 4

Photos by Ira Wiltner

PRODUCT CAPSULE

SIGLENT SDS-1102X
Two-Channel 100 MHz DSO

Thumbs Up

- + Large super phosphor color display looks like an analog CRT scope, providing same waveform image detail
- + Automatic waveform acquisition modes are excellent
- + Display crisp and noise-free
- + Waveform memory depth and max sample rates capable of capturing elusive transients, something more expensive instruments fail to do
- + Fan very quiet
- + Numerous math functions

Thumbs Down

- Has only a single time-base shared by both channels
- Has only two fixed trigger filters, low-pass and high-pass
- Supplied switched 1X/10X probes are flimsy
- Firmware is a bit buggy and may require restart to clear on occasion

For information, contact Siglent Technologies America in Ohio at (877) 515-5551 or visit <http://siglentamerica.com>.

PRODUCTS & SERVICES SHOWCASE



The CAP-DEC1, Gorman-Redlich is a stand-alone CAP-to-EAS converter for use with your existing emergency alerting equipment. This cost-effective device allows broadcasters to easily meet Common Alerting Protocol (CAP) compliance requirements mandated by the FCC without requiring the purchase of an additional encoder/decoder system or other costly

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DSO

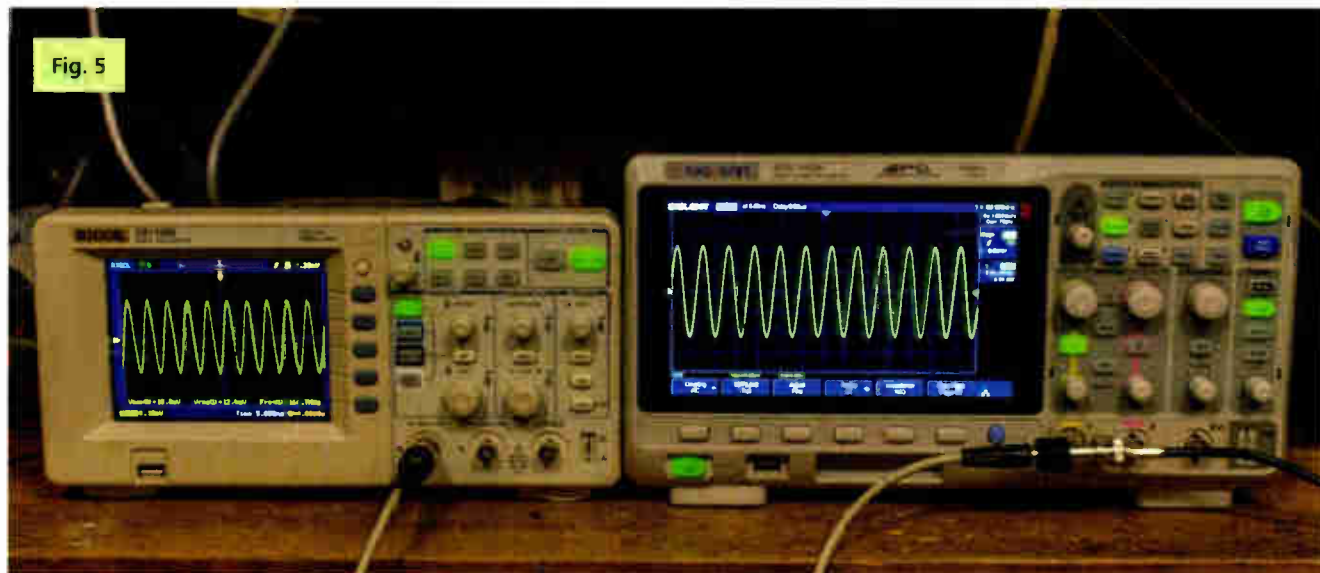
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prominent on the Rigol at high gain with a 149 MHz signal. While the same signal on the Siglent (Fig. 7) is very clean. I chose a demanding signal beyond the normal specifications of the instruments to illustrate the difference in actual maximum sample storage rate, display resolution and noise.

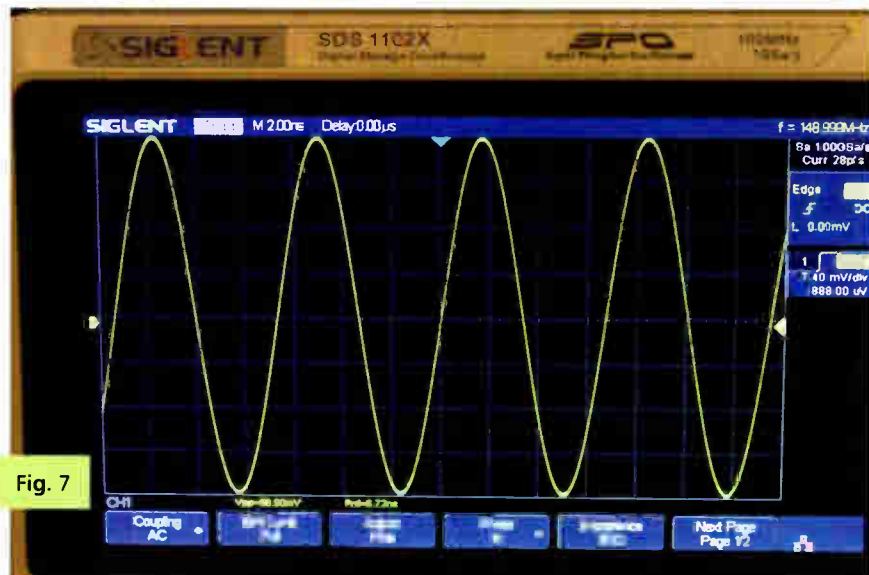
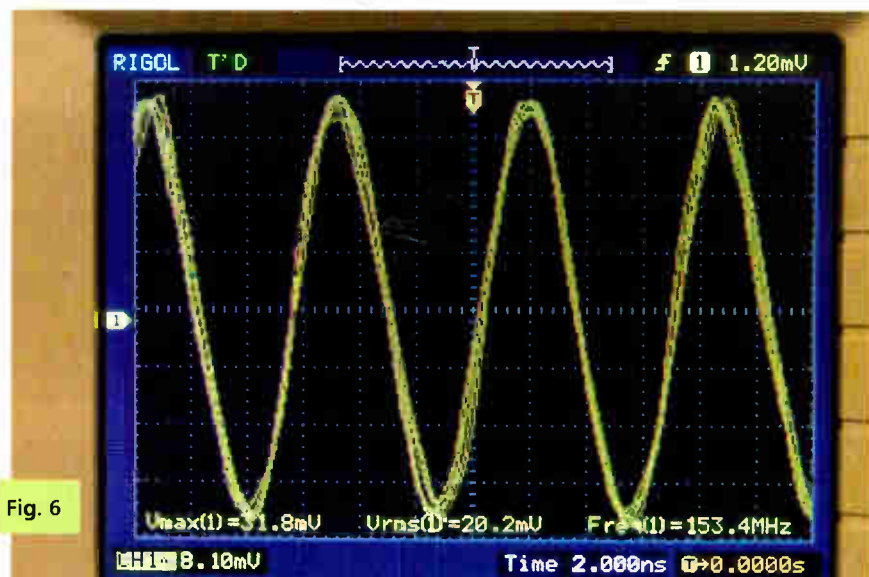
Also note the frequency readout of the Rigol is quite inaccurate. The actual frequency (see Fig. 6) was exactly 149.000 MHz because the generator was locked to a Rubidium atomic oscillator.

Finally, I tested the bandwidth of both scopes by applying test signals at -20 dBm at 50 ohms. The standard for bandwidth is the -3 dB rolloff point. The Rigol was down 2.1 dB at 100 MHz compared to 1 MHz, which is excellent while the Siglent was down 2.5 dB, also very good. However, the Rigol was down 3 dB at 129 MHz while the Siglent was down 3 dB at 149 MHz, which is excellent.

Analog oscilloscopes might still be a good choice for those without much



engineering and measurement experience as they are easier to operate and the controls are more intuitive. For those who desire the benefits of a storage display, you cannot beat the capability of modern digital storage oscilloscopes. Not only can they provide clearer views but the onscreen measurement capabil-



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ity for time and amplitude yields greater accuracy than their analog counterparts. An entry-level price can now buy you a better digital scope with features and performance rivaling those of previous mid- to high- end models. But be prepared for some minor bugs since modern DSOs are software-driven instruments.

Purchased a recently introduced product and want to review it? Email radioworld@nbmedia.com and let us know.

Ira Wilner has been the chief engineer for the Monadnock Broadcasting Group of Saga Communications for 15 years and is the owner of contract broadcast engineering company Wilner Associates.

Photos by Ira Wilner

MARKET PLACE

ADDED FEATURES: The AirAura X3 processor from Wheatstone is now capable of off-air monitoring, measurement and real-time correction of HD Radio diversity delay, sans external gear, thanks to the addition of HD/FM time-alignment.

Wheatstone has embedded the diversity delay, as well as its measurement and correction, within the AirAura X3 audio processor.

The goal of this is minimize listener tune-outs when the HD signal blends to analog at the fringes of a station's coverage. The diversity delay is kept in alignment, removing the need for outboard hardware.

Info: www.wheatstone.com



INTERFACING: Logitek has announced an addition of an interface to its JetStream Plus IP network router.

The new interface works with automixers from Dan Dugan Sound Design. This allows for the addition of eight post-fader inserts, ana-

log, AES or audio over IP, that will work with the Dugan Speech System algorithm for automixing duties with broadcast profiles featuring multiple microphones.

Logitek President Tag Borland said, "Customers have been asking us for Dugan interconnectivity for some time," adding, "Automixers are widely used for talk shows, sports-casts and live events where multiple live microphones need to be supported. With the addition of these insert points to the JetStream Plus, we can now offer customers a mixing console with full broadcast functionality along with the convenience of automixing."

Info: www.logitekaudio.com



WATCHING THE STREAM: Content delivery network and streaming media provider StreamGuys is offering a subscription-based monitoring service for internet streams, critical content assets and production workflows.

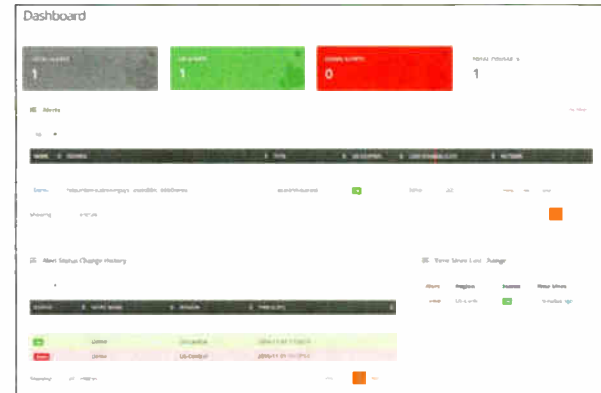
Called IsMyStreamUp, the tool is cloud-based and works for any CDN or streaming platform, the company says.

StreamGuys' COO Jonathan Speaker said, "Ensuring stream integrity and accessibility is important for audience retention and advertiser satisfaction for every internet radio outlet." He said the service makes automated, 24/7 stream monitoring easier and more accessible as well as affordable.

Through a user interface, IsMyStreamUp allows users to configure alerts for one or more streams or content assets and can monitor from multiple geographic regions. Also, service alerts can be sent to multiple recipients.

The monitoring service works through a monthly subscription and gives customers the option to add or remove service options at any time during the month at a pro-rated value.

Info: <https://ismystreamup.streamguys.com/>



WINNERS OF 2016 PRODUCT INNOVATION AWARDS ANNOUNCED

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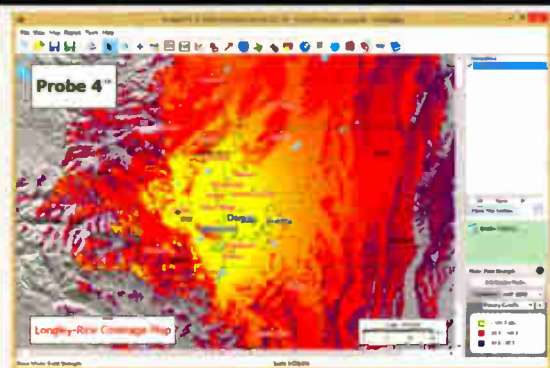
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READER'S FORUM

CLASS C4

As a small-market rural broadcaster in southern Illinois, I am generally in support of a more efficient use of the FM spectrum.

The commentary "FM Class C4 Would Bring Welcome Relief," (Oct. 12 RW) implied that the rulemaking for C4 class would be in Zone II. I would like to see a change in the area of Zone II. Since the zone was created, the nation's population has shifted south and west. The lower half of Illinois, Indiana and Ohio have had population declines.

In addition, the Class C0 is still an inefficient use of spectrum. For example, FM stations in St. Louis that are C0 status are barely above the minimum height for C1, yet are protected from rural southern Illinois stations. Communities in which corn and pigs dominate cannot have a local station because corporate stations are protected by an extra 10-20 miles.

It may be time to eliminate the zones or radically change them, given the nation's population migration.

*Ben Stratemeyer
WIBV(FM)
Mount Vernon, Ill.*

DRONES

I enjoyed reading the Radio World article on drones ("Sky Is the Limit for Drones," RW Oct. 26).

We have been blessed to have the resources of a helicopter for ENG. (Many videos can be found on YouTube under FHI100.) We have not ventured into the "drone world." There is one company here in Warsaw using a drone on a limited basis. That company's main focus is video production commercials for clients.

Area TV and newspapers fly occasionally to take pictures and video of flooding, tornado damage and train derailments. The rest of the time we get asked to fly proms, weddings, retirement parties, birthdays and anniversaries, area fairs, BMX racing, car shows, Boys & Girls Club fundraisers. RF transmission from the helicopter is both aural and visual. High school students operate the video camera over school events.



*Brian Walsh
WIOE(FM)
Warsaw, Ind.*

DIGITAL RADIO

Regarding "Who Is Looking After the Little Guy?" on radioworld.com, Oct. 6:

I'm not so convinced that digital is the future of radio, even though everyone likes to say that it is. FM radio is a simple, robust and ubiquitous technology — and I've yet to see any digital "enhancements" to analog FM that I think are likely to drive people to replace the zillion radios that are sitting around people's homes.

The bottom line is that digital radio has yet to come up with any sort of real "value proposition" for the listener versus analog, which means it is going to continue to drift along with marginal adaptation rates in most of the world.

*Thomas Desmond
Electrical Engineer*

AM, TRANSLATORS AND NOISE

Regarding "Media Bureau Calls Translator Windows a 'Resounding Success'" on radioworld.com, Nov. 3:

I see that the movement of FM translators for AM stations is a "resounding success" according to FCC Media Bureau Chief Bill Lake. But really, is that truly helping the AM revitalization efforts?

I personally don't think so. All that is doing is cluttering up the FM band. In my opinion, and only my opinion, the way to revitalize the AM band is to get something worth listening to on the AM dial. Scan the AM dial and it will be quite evident why it is failing: poor programming decisions. But those decisions are made by the owner of the stations; so, who am I to say?

I can only go by what I have in my local listening area, but the choices are Christian music and teaching, sports, talk, over-modulated Spanish music format, or some other I don't know — nor do I even want to know — format.

As Craig pointed out on the All Access page: "For daytime-only AM stations, this [translator opportunity] is a huge deal." And he is absolutely correct; it is a huge deal. It allows the small mom-and-pop stations to continue to keep their programming on the air after the AM transmitter goes off for the night. That helps the station keep revenue coming in, and the station can grow.

However, that's not revitalizing the AM band. It is just getting the listeners to tune to the FM translator. In my opinion, and only my opinion, here is the root of the problem. There are the conglomerates who have AM stations that are treated like red-headed stepchildren, for lack of a better term; they ignore them and just hope that the transmitter just continues to run. They put some who-cares-what format on there and just forget about it.

A friend of mine tested that theory. He shut off the AM transmitter, which is simulcasting an FM station, and left it off for a week and a half. And no one even noticed. And I mean *nobody* noticed.

The increase in the AM noise floor is being blamed on the power companies when in reality, the noise floor issue is being caused by all the latest and greatest technology. For example, network routers, network switches and just the overall computer processors in general. Grab an AM radio and walk into a server room somewhere and you will know what I am talking about. My office is in a server room with music servers, news servers, switches, routers and disk arrays. All I get on an AM radio receiver is just a whole lot of noise.

*Julie Renee
Broadcast Engineer
Alliance Broadcast Technical Services Group
Farmington, N.M.*

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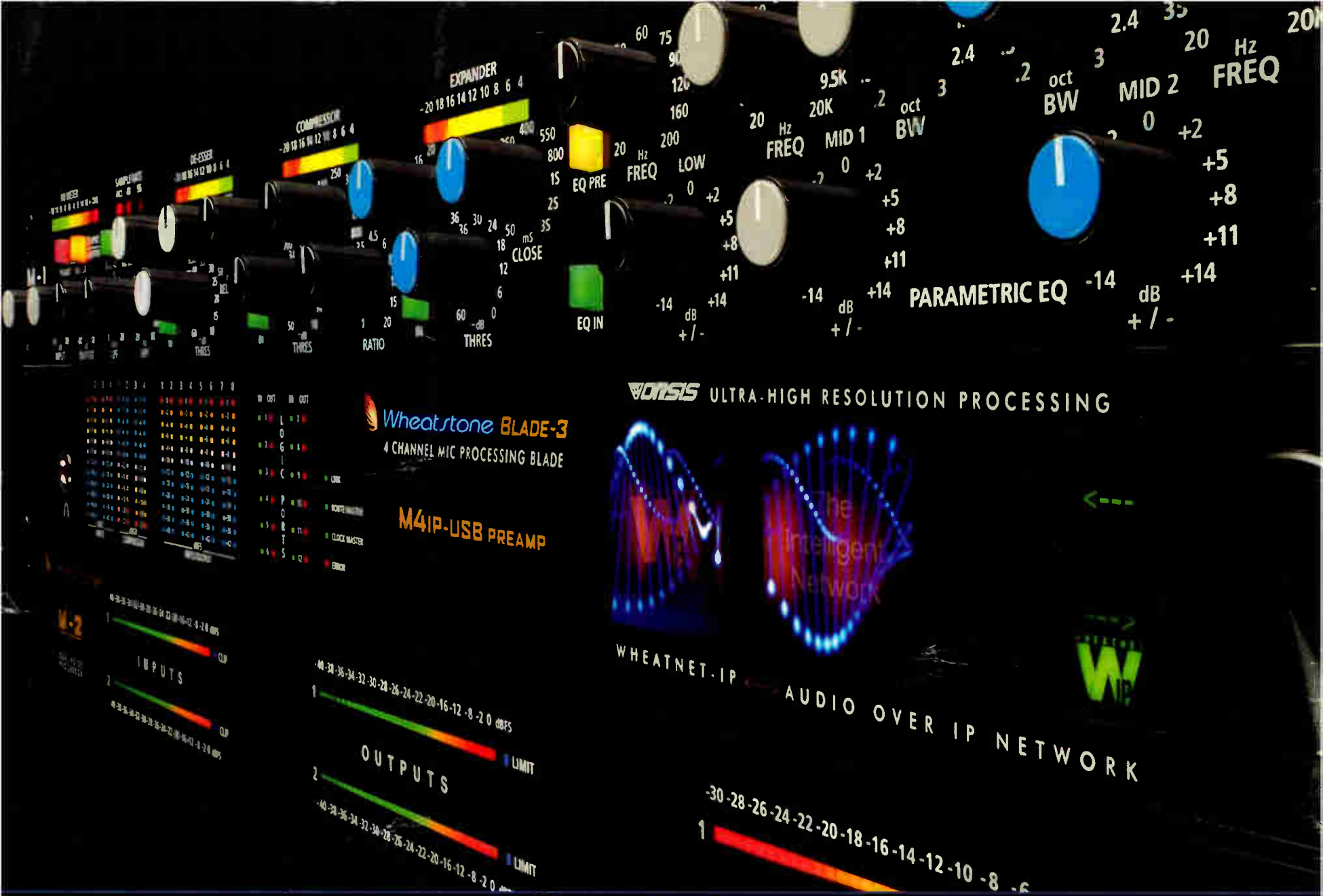
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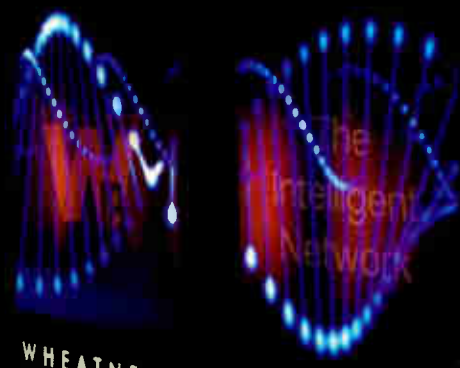
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