



# RADIO WORLD

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An aerial view of the IBB Germany transmitting station, taken from one of the short-wave antenna towers at the site in Biblis, Germany. The antennas transmit RFE/RL and other U.S. international broadcasting programming. No longer originating on AM from Moscow, Radio Liberty remains available on shortwave and via satellite.



## RFE/RL Ends Russian Service on AM

Radio Svoboda, America's broadcast voice in Russia, focuses efforts on digital platforms

BY RANDY J. STINE

**WASHINGTON** — A new Russian law that prohibits foreign-owned radio companies from broadcasting from that country has forced Radio Liberty's Russian service, Radio Svoboda, from the AM band. The broadcast service remains available on shortwave and

via satellite. The broadcaster has said it plans to expand its digital platforms.

While the development silences America's over-the-air broadcast voice in Russia, it also presents a clearer path to further development of Web and mobile content and places a premium on apps with multimedia and interactive content, according to U.S. international broadcasting officials.

The station, which began broadcasting in 1953 and opened a Moscow bureau after the fall of the Soviet government, has let go a large portion of its staff [see sidebar, page 10].

International broadcasting analysts said the development will challenge the Broadcasting Board of Governors to find ways to cope with the loss of the terrestrial AM signal in Russia and increase

listenership at a time when it's increasingly splintered among media platforms. It will be increasingly difficult to reach older demographics, they said.

The BBG sets policies and provides oversight of U.S. government-funded operations that broadcast overseas. This includes the Voice of America, Radio and TV Martí, Radio Free Europe/Radio Liberty, Radio Free Asia and the Middle East Broadcasting Network.

Radio Svoboda broadcast on medium-wave frequency 1044 kHz with a 20 kW transmitter in Moscow until Nov. 10, when new amendments made it illegal for an entity that directly or indirectly has more than 48 percent foreign ownership to hold a broadcast license in Russia. Similar limitations on broadcast licenses exist in the United States, according to BBG Governor Michael Lynton, who criticized recent developments in Russia.

(continued on page 8)

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World Radio History

# Why WTCJ(AM) Asked for a Waiver

Walters, Garziglia also discuss Commissioner Pai's AM efforts

## COMMENTARY

BY BUD WALTERS & JOHN GARZIGLIA

*FCC Commissioner Ajit Pai in September talked about AM radio. He called upon his fellow commissioners and the agency's staffers to "focus on one basic question: Are there regulatory barriers we can remove to help this sector rebound?" (Read Pai's remarks at radioworld.com/links.)*

*Here, Cromwell Radio Group owner Bud Walters and Womble Carlyle communications law attorney John Garziglia discuss AM revitalization — in particular, Walters' proposal to make it easier for AM stations to move existing FM translators farther, and thus allow more of them to re-broadcast their AM signals.*

tion from this perspective. AM radio as a technical matter has been hit so hard from so many angles. The noise levels affecting AM reception have risen dramatically with the proliferation of computers, noisy light bulbs and dirty power lines. AM signals do not penetrate most office buildings. Listeners are not willing to tolerate different night and day patterns, or no nighttime service at all, from AM radio stations. Automobile manufacturers are installing horrible AM antennas on newer cars. There just are not any feasible fixes to the AM technical facility that

its days are likely numbered.

**Garziglia:** Other proposals for AM revitalization include moving AM to all-digital, or to TV Channels 5 and 6. Those proposals fall into the "enhancement of service to the community" approach. But with these types of approaches, the billion or so radio receivers in our country that currently receive AM would be obsolete.

**Walters:** Either all-digital or moving current AM stations to a new band sounds exciting. My concern is how many years that's likely to take. Saying to AM broadcasters, "Just wait 15 years or so until



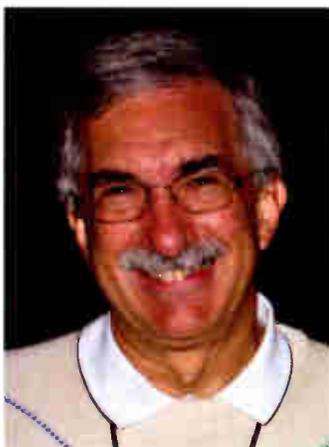
Cromwell Owner Bud Walters

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**Garziglia:** There are two ways to look at AM revitalization. One way is to think about just the AM technical facility and what can be done to make that facility sound better, be better received, and be more listenable. The other way to look at AM revitalization is to think about what can be done to enhance the service to the community now provided by the AM station.



Womble Carlyle's John Garziglia

**Walters:** I look at AM revitalization from the aspect of how to best continue to serve the AM's community with the radio service that in many cases has been part of that community for decades.

**Garziglia:** I also view AM revitaliza-

can overcome these issues.

**Walters:** All of this noise interference might be somewhat mitigated if the FCC allowed for dramatic power increases for all AM stations. But, a huge capital expenditure in the tens of thousands of dollars for new transmission equipment is just not possible for most AM broadcasters, let alone paying a power bill that would be 10 times what

it now costs for electricity. A large power increase for AM stations is a non-starter even if it comes with the benefit of 10 times the current AM power. Thus, as much as I would love to save the AM technical facility as we know it,

2028 and AM radio will be resuscitated on a new band" appears to be not much of a solution at all. I believe that if the FCC wishes to continue the AM service now provided to communities, it must come up with something that can be implemented much more quickly.

**Garziglia:** That really leaves the FCC with only one immediately implementable solution to AM revitalization, which is to remove regulatory barriers to AM stations acquiring FM translators. FM translators are here now. There are enough of them out there, both licensed and applied-for, that removing commission regulatory barriers to AM stations acquiring FM translators would be a win for AM revitalization as well as for the listening public.

**Walters:** My experience in pairing an FM translator with an AM station is that there is an immediate increased

(continued on page 5)

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# Let's Get the Band Back Together

Readers Offer Alt Name Choices For 'High Capacity & the Resistors'

Readers enjoyed the photos that I shared here of Willie Barnett's component sculpture.

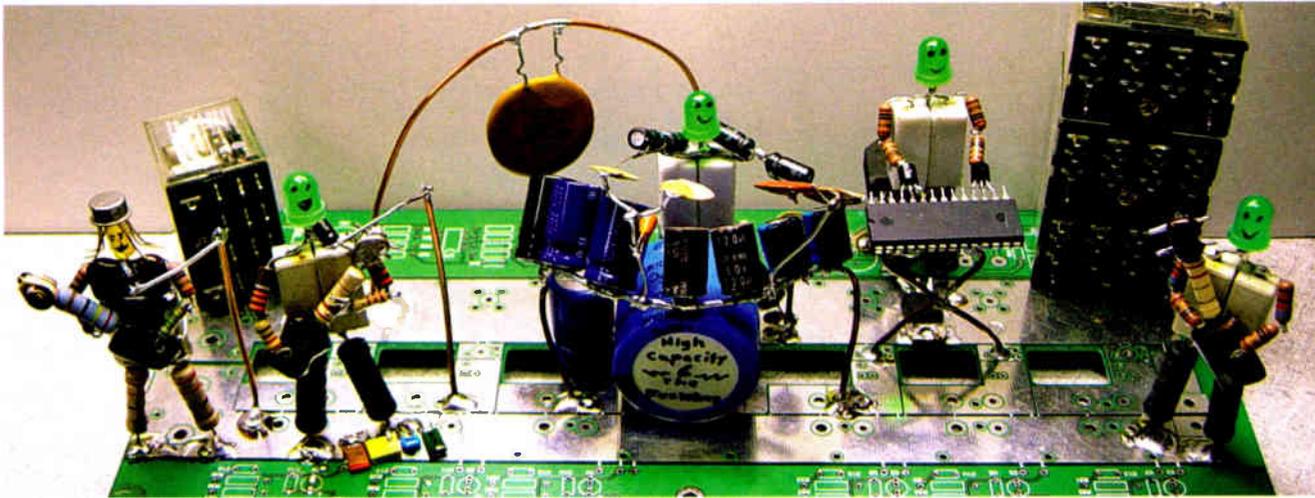
Ralph Haneman of WDAC(FM) in Pennsylvania told Willie in an online post that his little masterpiece "will gain more interest than the pieces of equipment from which the parts were taken. Good job." Barnett told him that most

at NPR. (You can find photos of her creations via [radioworld.com/links](http://radioworld.com/links).)

Willie and his wife Kim named their creation "High Capacity & the Resistors," though they also liked the band names "High Fidelity," "Clear Circuitry" and "The Components." The name "L.E.D. Zeppelin" is my fave, though not original to this project.

pelin). He also likes "Borg" ("resistance is futile"), or "The Circuitones," or "The Ohmanators."

Karl DeMay of WOTC(FM) in Edinburg, Va., favors "Modern Circuitry." Jon Vaught of WFIF(AM) in Milford, Conn., wrote, "How about The Short Circuits?" Rick Heerema of EMF Broadcasting in Sacramento suggested "Basik



Fred Hopengarten snagged a T-shirt for the best band name.

of the parts had been diverted from the trash bin after being removed from Krell audio amplifiers sent in for repair.

The band photos reminded Bud Aiello of the creations of Petra Mayer, who worked in NPR's Engineering Services Shop and "proved to be pretty good with a soldering iron and lots of old parts." Her "Zords" still line the tops of desks

I invited you to suggest others.

"So many good names," replied Kenneth Raisanen of WOAS(FM) in Ontonagon, Mich. "I wish I had paid better attention in Mr. Adamson's physics class."

Kenneth suggested "Resistance" (a choice that would provide its own "runic" symbol for ohms, a la Led Zep-

Elektroniks," while Barton Jones of KFKX Radio in Hastings, Neb., offered "LED Hedz" or perhaps "Passive Componentry" (featuring special guests P.C. Board and I.C. Keyes).

And the winner of the coveted Radio World T-shirt for best name goes to (electrolytic drum roll please): Fred Hopengarten of [antennazoning.com](http://antennazoning.com), for his simple and classic choice:

"The Radio Band."

FROM THE  
EDITOR



Paul McLane

It's hard to retain your dignity while wearing a cheesehead but who can say no to the good folks at the Wisconsin Broadcasters Association?

Congratulations to WBA for its recent successful Broadcaster's Clinic, including leaders Michelle Vetterkind, Leonard Charles, the clinic planning committee, Mandy Endicott and the indefatigable Linda Baun. Their event is a model of a successful regional conference; I recommend it highly.



Ah, what I do for my art. ...

With the end of another year upon us, I want to wish happy holidays to the advertisers, contributors and staff who help make Radio World such an important part of our readers' lives.

RW celebrated our 35th birthday this summer, a notable milestone in any regard but particularly so in the fast-changing spheres of radio (which we cover) and business media (of which we are a part).

In 2013 we will continue to explore the ever-changing nature of the radio business through our unique editorial mix — scrutinizing the impact of new technologies and business models while honoring radio's rich and varied history. This balance of "new and old" is meaningful, as is our emphasis on reader opinion and involvement. I want RW constantly to be asking, "Where are we going?" ... while also remembering where radio has been.

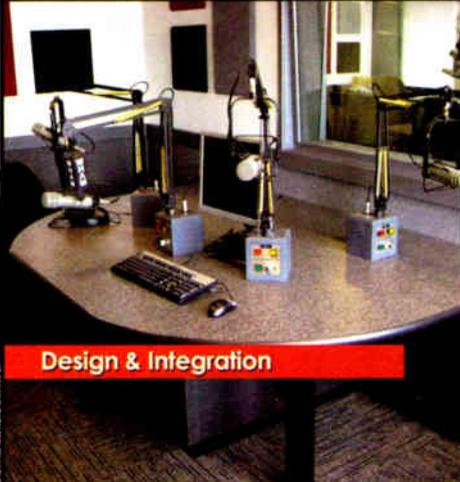
Most of all, happy holidays to you, and thank you — for your loyalty to RW, for your patronage of our advertisers, for willingly trying out the new forms of publishing we have explored ... for reading us, questioning us and contributing your comments, letters and other forms of opinion.

For more than 35 years, Radio World has been the focus of a real community; and that's worth celebrating. You make it possible for us to be here.

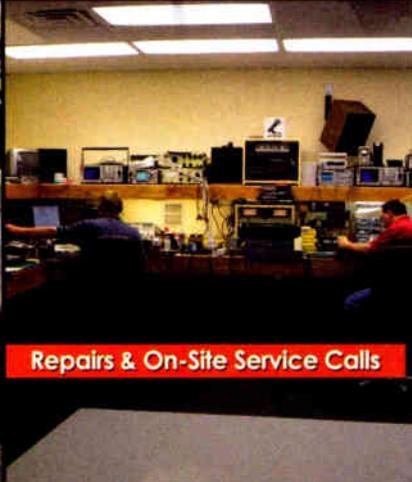
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**THIS ISSUE**

DECEMBER 19, 2012

**NEWS**

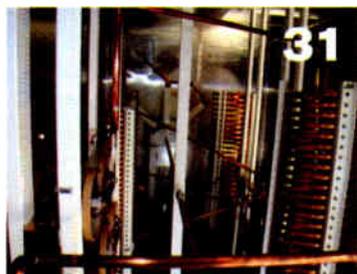
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**AM REVITALIZATION***(continued from page 3)*

acceptance for the AM station in the community. As with any business, if there is not enough revenue coming in, it is impossible for the business to keep operating.

AMs have suffered diminished revenue not only due the technical challenges to AM reception but also as a result of the public's perception of AM. When advertisers have the perception that people are not listening to AM stations, it is next to impossible to bring in enough revenue to support even minimal programming on an AM station. The carriage of an AM station on an FM translator makes a dramatic difference.

**Garziglia:** This discussion illustrates the importance of your WTCJ(AM), Tell City, Ind. waiver request for the transmitter site and channel move of the Central City, Ky. FM translator to carry WTCJ (FCC File No. BPFT-20121116ALE). [For original news story see [radioworld.com/links](http://radioworld.com/links).]

Commissioner Pai is seeking to eliminate regulatory barriers that hinder the AM radio sector. Unfortunately, for many AM stations including WTCJ, there simply is not an FM translator available for acquisition within the minimal several miles radius within which the FCC now limits FM translator moves. The agency's restriction on moving FM translators more than several miles is a huge regulatory barrier to bringing FM translator service to many AM stations.

**Walters:** The removal of that FCC regulatory barrier prohibiting FM translator moves of an appreciable distance is an immediate, substantive step that the FCC could take to revitalize AM stations. If an AM station is allowed to search fifty or more miles from its transmitter site for an FM translator it might acquire and move, it is more likely that such an FM translator can be found.

**Garziglia:** Assuming that there must be a definitive regulatory distance limit to the moves of FM translators, the WTCJ waiver request proposes that an AM station's interfering contour specified in Section 73.37(a) of the commission's rules, the 0.025 mV/m contour, be the outer limit within which an AM station can seek an FM translator to move to serve the AM station. The WTCJ application proposes that if an FM translator's transmitter site is within the AM station's 0.025 mV/m contour and a move is not proposed into an LPFM spectrum-limited market, the AM licensee may replace that FM translator's current service with a move of

**NEWS**

the FM translator to serve the AM station as its primary station provided the move is in compliance with other FCC technical rules.

**Walters:** Too often, government agencies such as the FCC look at things in terms of big solutions. Big solutions, however, often take years to implement. It has taken the FCC almost a decade to process the FM translator applications

translator moves is something the commission can legally do now that will have an immediate, substantial, beneficial effect upon many AM stations.

**Garziglia:** The WTCJ waiver request is premised upon a replacement of service theory. Just as a full-service FM station can now apply to move from one channel to another even though the channels may not be mutually-exclu-

**As much as I would love to save the AM technical facility as we know it, its days are likely numbered.**

– Bud Walters

filed in 2003. While another FM translator filing window in the future would be beneficial, an FM translator window for AM stations would not provide actual relief to AMs for many years.

While not all AM stations will benefit from the FCC's grant of a waiver to allow for more substantial FM translator moves to serve AM stations, many will benefit. It appears that the removal of the current regulatory barrier on FM

sive with one another and both facilities could co-exist, WTCJ is asking the FCC to apply the same rationale to the replacement of an existing translator service area with another service area. While there is no FCC rule or policy that requires the agency to allow this, we make the case in the WTCJ waiver request that there is likewise no FCC rule or policy that prohibits this if the

*(continued on page 6)*

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# EBU Eyes Digital Radio's Future

Familiar questions: How to keep radio relevant in the dash, mobile

BY DAVIDE MORO

**BRUSSELS** — Digital radio in Europe is 18 years old. That compares to a century or more for analog radio, depending on how one is counting.

At the European Broadcasting Union Digital Radio Conference in October, some 50 senior managers from public service radio broadcasters discussed digital radio's future. Their conversations involve questions familiar to any advocate of digital radio in the United States.

DAB has not had the easiest childhood, and now, during its adolescence, EBU members — as well as many other radio enthusiasts — are striving to find the best way to ensure that this medium reaches its potential.

Attendees discussed various issues at the Brussels' gathering. One recurring question was that of the "chicken or egg" dilemma of what comes first: DAB receivers or DAB programs?

"We are the chicken, we must move first," said EBU Senior Project Manager Mathias Coinchon. "Broadcasters have to agree on a single strategy and then move forward together in an attempt to gain the confidence of receiver manufacturers."

The event focused on three listening scenarios: in-house, in-car and mobile. While in-house receivers are no longer a concern, with a wide choice of devices at any price level now available, in-car listening is crucial for the success of digital radio. Specific car receivers, multi-tuners capable of switching program content seamlessly from FM analog to DAB and vice-versa, are on their way.

Frank Nowack, function owner multimedia at Ford, reported that almost every car manufacturer will offer a DAB/DAB+ tuner as standard or an option on almost every listed car model sold in Europe by the middle of 2013. He also named 13 manufacturers capable of offering after-market solutions for existing vehicles.

"We must focus on the added value of digital radio rather than only on audio quality," he said, noting that it's

also important to avoid any potential driver distraction, even when broadcast and Internet technologies are converging in the dashboard. Suitable chipsets for in-car reception are ready to enter the mass production phase.

Ron Schiffelers, director of program management, business line car entertainment for chipmaker NXP, highlighted the importance of the receiver to be able to switch from FM to DAB, and in doing so, guarantee the compensation of any possible time delay and



Mathias Coinchon

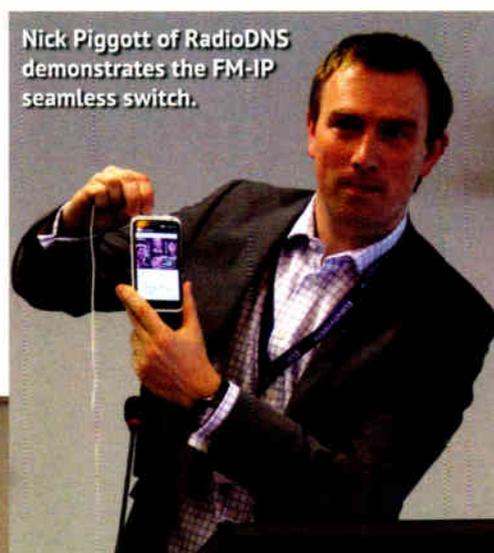
loudness discrepancy between analog and digital. He also explained that specific audio processing is required in order to avoid any "beep" or "scratch" sound that could distract the driver, according to Schiffelers.

## MAGNETIZING MOBILE

But the ultimate and hardest challenge concerns mobile, battery-powered devices. Most mobile phones in Europe already include an FM receiver, and adding a DAB tuner is, technically speaking, not an issue, according to the experts.

"We have to find an effective way to drive smartphone manufacturers to include DAB chipsets inside their [devices]," Coinchon said, "and they won't do so until their top customers — telco operators — ask them to." Thus the next step for broadcasters is to foster a viable scenario in which the telcos can also earn money from digital radio.

"The Future Is Hybrid" was another key message during this year's conference. "We must change radio into something that looks like an app," said Nick Piggott, head of creative technology at



Nick Piggott of RadioDNS demonstrates the FM-IP seamless switch.



Global Radio and chair of RadioDNS.

RadioDNS enables radio broadcasters to link their FM/DAB signal to

IP-delivered services, meaning an FM/DAB radio or mobile phone with WiFi can identify a radio station from its DAB or FM signal. Using that information it can connect to the station Web server to display additional content on the receiver.

"We have to take the best from broadcasting and the best from IP," Piggott said, "and integrate these features to obtain a powerful medium capable of engaging listeners." He outlined the possibility of "bookmarking" a song, or downloading a podcast to one's home PC from a mobile device.

"We must achieve a single radio app that is capable of tuning everything. This is the only way to have it factory-installed on every terminal, which is our real goal," said Coinchon. "There needs to be a single app that allows a powerful and exciting new way for people to enjoy the radio." It's possible to download, for free, turnkey packages to implement a RadioDNS platform and Visual Radio from the EBU Technical website ([www.ebulabs.org](http://www.ebulabs.org)).

EBU managers have great expectations for the future of digital radio.

The consensus from this meeting is that EBU members should implement at least one hybrid and interactive service as soon as possible, to prove the capabilities of digital hybrid radio to the mobile operators.

This would allow the latter to visualize and design a new business model, based on digital radio, that could foster the use of their wireless data services, eventually bringing them more revenue.

*Davide Moro reports on the industry for the international edition of Radio World from Bergamo, Italy.*

## AM REVITALIZATION

(continued from page 5)

commission wishes to grant such a waiver to encourage AM revitalization.

**Walters:** Making it easier for AM stations to obtain FM translators is an AM revitalization solution staring the FCC in the face. It is an action that the FCC can take today.

**Garziglia:** FM translators are not authorized on a Section 307(b) basis to provide service to particular community. Therefore, it makes public interest sense to allow for substantial FM translator transmitter site moves where the listening public can be better served by the replacement of

translator service at one location in order to serve an AM station's audience at another location.

**Walters:** I am hoping that Commissioner Pai is serious in his call for AM revitalization and that he, and the FCC chairman and other commissioners will make it happen quickly. The WTCJ waiver is an action that the FCC's Audio Division can take right now to eliminate an agency regulatory barrier and help revitalize AM stations. Having the WTCJ waiver granted would serve as an important FCC precedent. The availability of the waiver enabling a move of FM translators within a wider area to re-broadcast AM stations would have an immediate, substantive, effect upon the vitality of many AM stations.





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1876: Alexander Graham Bell's commercially viable telephone.



1900: Phones become fixtures in more well-to-do and steam-punk homes.



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1936: The advent of the dial desk phone. No more asking the operator to connect you.



1963: Push buttons usher in the thoroughly modern world. Touch tones enter pop culture.



1983: The mobile phone is a reality. Plots in all TV shows get a boost!



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# RADIO SVOBODA

(continued from page 1)

“During the first 100 days of his second incarnation as president of Russia, Vladimir Putin has taken steps that sharply curtail freedom of expression,” Lynton said in remarks about RFE/RL in October.

“Putin has enacted a series of laws that raise fines on protestors, impose limits on the Internet, make slander a criminal offense and require non-governmental organizations that receive funding from abroad to register as foreign agents.”

RFE/RL reports in 21 countries, including Afghanistan, Pakistan, Iran, Russia and Central Asia. It is facing challenges in Russia “where media regulations have curtailed audience distribution,” according to a BBG press release on audience measurement.

The loss of the AM signal in Moscow will be minimized by moving quickly toward new digital strategy and platforms, said Martins Zvaners, RFE/RL deputy director of communications.

“Reception of Radio Svoboda programming in central Moscow was difficult because of electricity generated from overhead cables used to power the city’s network of trams, which makes it very difficult to listen to any AM broadcast signal in the city. The footprint of

the AM signal covered Moscow and the suburbs,” Zvaners said.

Observers agree that the pursuit of new digital platforms will be critical to future success but also believe losing the AM presence will cost Radio Svoboda listenership.

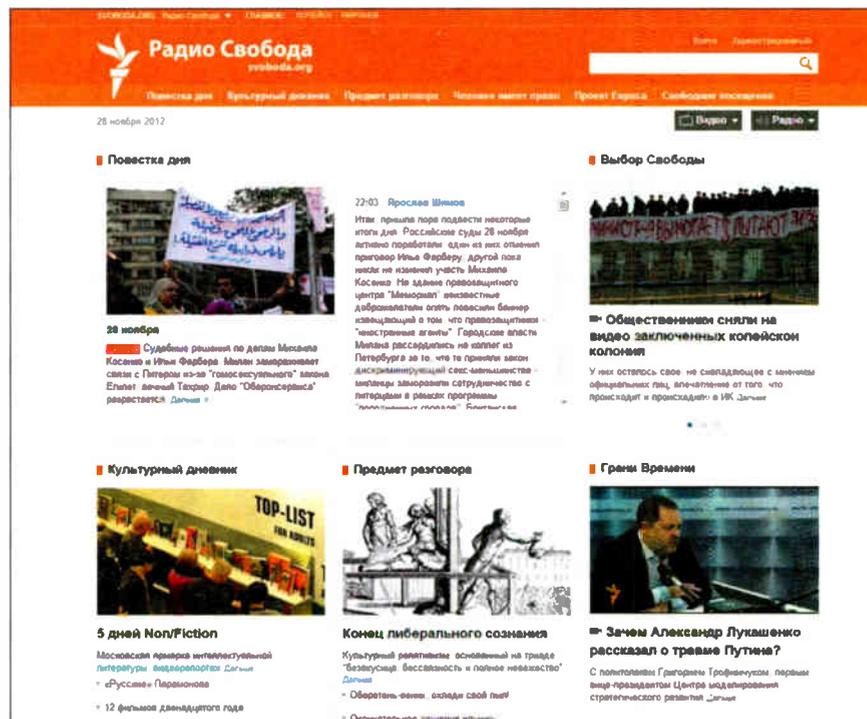
“Even if overall penetration [of digital] is substantial, if there are the kind of generational demographic differences in adoption that we see here, the loss of AM radio may be leaving a big hole in the reach to older adults,” said Dr. Gregory Newton, an associate professor and associate director in the School of Media Arts and Studies at Ohio University.

“Evolution is clearly in a digital direction, but the move to emphasizing digital platforms over traditional services is a question of the appropriate timing. Where’s the tipping point?”

Newton, who follows international broadcasting developments, said he is inclined to believe that, at least among older Russians, significant portions of the shortwave and AM service were duplicative.

“Therefore, losing one may have minimal consequences for access to information,” Newton said. “However, it might never be a good idea to completely abandon traditional broadcast platforms.”

Newton said as Russian audiences



The website for Radio Liberty's Russian service Radio Svoboda.

become increasingly tied to mobile digital services, digital platforms will provide opportunities for deeper engagement with the population.

Another U.S. international broadcasting analyst suggests there was little the United States could do to avoid

Radio Svoboda's AM fate in the face of the new Russian law barring foreign ownership of airwaves.

“Given the law, there is little the BBG can do, other than lobby for more aggressive pressure from the State

(continued on page 10)

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## RADIO SVOBODA

(continued from page 8)

Department or White House. That said, America too, has restrictions on foreign ownership of media, so it would be hard to make a compelling case to the Russian government regarding the faulty logic of the new law," said Shawn Powers, associate director of the Center for International Media Education at Georgia State University.

RFE/RL President Steve Korn said the broadcaster explored a deal with a Russian businessman to assume majority control of the license to avoid losing it. "Our aim was at keeping our AM programming on the air. Unfortunately, this fell through," Korn said in a statement.

In a letter on the RFE/RL website in September, Korn wrote to listeners, "We want to assure you that despite what you may have heard or read, we are not giving up on our commitment to provide you with Svoboda's unique perspective on news and events in Russia. But big changes are indeed under way. ... Although we will still be available on short waves and via satellite, our attention will now be focused on providing you with content across all digital platforms."

Powers said it appears BBG is embracing digital media as a powerful, interactive and fast medium.

"The BBG is smart to move in this direction and cut its losses where appropriate. I haven't seen audience data on Radio Svoboda, but AM is a weak, unpopular and typically ignored part of the spectrum," Powers said. "Losing access to AM frequencies, in the grand scheme of things, is insignificant."

As recently as 2005, Radio Svoboda

## SOME CONDEMN RFE/RL FOR LAYOFFS

The Committee for U.S. International Broadcasting and others have criticized RFE/RL leadership for terminating staff at the Radio Svoboda Moscow Bureau. Some observers estimate that 40 staffers were let go. RFE/RL would not confirm that number.

According to the RFE/RL website, last updated in June 2012 and prior to the cuts, there were 82 staffers in Prague and Moscow. It also had approximately 100 stringers across the Russian Federation.

CUSIB said in a statement in October that its members were "standing in solidarity" with activist Lyudmila Alexeeva, chairwoman of the Moscow Helsinki Group, who called for expansion of the Radio Liberty bureau in Moscow after dozens of human rights journalists were fired in September.

CUSIB, a group that describes itself as "a nonpartisan, nongovernmental organization that works to strengthen the flow of uncensored news from the United States to countries with restricted and developing media environments," said in the statement sent to Secretary of State Hillary Clinton that it condemned "RFE/RL executives for engineering a mass firing of Radio Liberty journalists precisely at the time when the Kremlin bans RL broadcasts in Moscow."

RFE/RL spokesman Martins Zvaners said all Radio Svoboda Moscow Bureau staffers were offered voluntary separation packages. "Many accepted the separation offers and left RFE/RL," he said.

The employee moves were part of a restructuring designed to create a robust, unified team of journalists

with diverse skills, Zvaners said.

"A number of journalists with cross-platform skills have been hired to fill need roles at the Moscow Bureau. Radio Svoboda also has a talented and diverse corps of journalists based at RFE/RL's Prague headquarters," Zvaners said.

Radio Svoboda officials believe future success in Russia will be on digital, Internet and social media producing video, audio and text content that urban, educated people in their 20s to 40s now demand, which demands a new skill set from employees, he said.

A former insider at RFE/RL told The Washington Free Beacon, an online newspaper that covers public policy, they believe the RFE's leadership used the new Russian law that that required Radio Svoboda's AM signal be shut down as an excuse to abandon the radio businesses, which had become costly.

"I think they have destroyed the radio so much loved and followed by those Russian listeners who stand for freedom and democracy," Mario Corti, a former director of Radio Liberty's Russian Service, told the Free Beacon. "They are lying to the media by playing down the scale of the firings."

Another observer of U.S. international broadcasting said downsizing can sometimes increase efficiency.

"It can free up resources for new and innovative initiatives. That said, when it comes to journalism, bodies on the ground are the foundation of any successful news organization. Cutting 40 journalists can't be a good thing when it comes to reporting on the day-to-day events in Moscow and throughout Russia," said Shawn Powers, associate director of the Center for International Media Education at Georgia.

— Randy J. Stine

had almost 30 local radio affiliates across Russia, according to the RFE/RL website. The broadcaster said many stations stopped carrying programming in response to political pressure.

Radio Svoboda, long considered by observers as the leading international broadcaster in Russia and a local

alternative to state-controlled media, is available on social networking sites such as vKontakte and MoiMir. The station is on Facebook, Twitter and online comment forums, according to the broadcaster.

Its website attracts around 100,000 unique visitors each day and 1.8 million

unique visitors per month, according to the broadcaster. Sixty percent of those visitors are from Moscow and St. Petersburg.

U.S. international broadcast programming to Russia has decreased through the years. Voice of America, the largest U.S. international broadcaster, has adopted a Web-only strategy in Russia.

## NEWSROUNDUP

**LPFM:** The FCC plans to open a filing window for new low-power FMs in October 2013. In adopting more rules to expand the LPFM service, the commission relaxed the criteria for LPFMs seeking a waiver for the second-adjacent channel spacing requirement in order to locate a new LPFM. The commission also explained how it will treat the some 6,000 pending FM translator applications. The agency bumped up the national cap on pending FM translator applications that one entity can pursue from 50 to 70, as long as no more than 50 are in the top 150 markets. It relaxed the local cap of one application per entity to up to three applications one company can pursue in more rural markets.

**FM CHIP:** NAB continues to press cellphone carriers and handset manufacturers to activate or embed an FM chip in their devices. President/CEO Gordon Smith told host Jim Bohannon on his radio show there's a public service aspect to the chip issue: "People love Pandora but they didn't turn to Pandora during the storm," he said, referring to

Hurricane Sandy. "They tuned to their local radio station." Smith reiterated the NAB has chosen not to ask for a congressional mandate for the chip but hopes to persuade the phones companies having a radio station available on a phone is a good use of spectrum. He thinks "it will happen."

**HD RADIO:** Digital radio company iBiquity Digital says more than 10 million HD Radio receivers have been sold to date. Company President/CEO Bob Struble told Radio World 11 million isn't far behind as more than a million HD Radio receivers were sold in the last two quarters of its fiscal year. Heading into the heavy holiday shopping period, he anticipated an uptick on receiver sales, both standalone devices and car sales, "which will lead to more growth. It's slow and steady progress."

**BILL DALTON:** Radio pioneer and entrepreneur Bill Dalton died in November at age 80. Dalton began his radio career with Metromedia at WHK(AM) in Cleveland. In 1968, he went on to manage WASH, then a new FM in the Washington market, for Metromedia. Dalton helped popularize FM,



**Bill Dalton**

according to his daughter, Diane Dalton Warren, founder of marketer BounceOLOGY.com and president of operations of the HD Radio Alliance. Bill and his wife Susan formed The Dalton Group in 1981 with the purchase of their first station in the Washington area, WXTR(AM/FM). The business was successful and her father's leadership in the broadcast business was the training ground for many future broadcast managers, executives and entrepreneurs, according to Warren.

**BILL KLERONOMOS:** Bill Kleronomos, chief engineer for KBCO(FM), Boulder, Colo., since 1995, died in November at the age of 61. "While Bill was an integral part of the Denver engineering team there are many of us in this company that have also been touched by his willingness to help at any time. He was also very popular in the ham radio community, KD0HG," said Mike Irby, director of engineering & IT for Clear Channel's Denver cluster.



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World Radio History

# An Unofficial History of KMAX Radio

'Informal Voice of the San Gabriel Valley' went on the air 52 years ago this month

## FIRSTPERSON

BY HANK LANDSBERG

*The author is known to many in our industry as president of equipment maker Henry Engineering, but in the early 1970s he was a DJ for an FM station in Sierra Madre, Calif., called KMAX (no relation to the current Colorado station of that name).*

*For this holiday issue of Radio World we excerpt some of Hank's recollections of the station, which he remembers as "informal radio at its best."*

Max was a "radioaholic" almost since the day he was born in 1918. His first foray into broadcasting was as a kid of 13, playing records on the ham radio bands. This caught the attention of the local radio inspector, who made a visit to "W6MAX."

*"In a chair sat a badly frightened boy while his father paced the floor. Upon the table was a letter with the heading 'Department of Commerce, Radio Division.' It instructed Max to appear at the Supervisor's Office to explain why he had been broadcasting music, operating without a station license, and using a fictitious call..."*

The whole story appeared in an article entitled "Bootleg," in the July 1932 edition of QST magazine.

Sometime later, Max did get his amateur radio license, with the somewhat prophetic call sign of W6DJJ. And years after that, he again was broadcasting music, but this time legally on KMAX, the FM radio station he put on the air in Sierra Madre, Calif.

It had been Max's dream to put his own FM radio station on the air. He fought for three years against several parties who wanted the channel that was assigned to Sierra Madre. Eventually

he prevailed; the FCC granted him the license. The call letters "KMAX" were in use by a U.S. Navy ship. Somehow, Max convinced the Navy to change the ship's call sign, and make KMAX(FM) available for his station. The FCC agreed, and on Dec. 3, 1960, it signed on the air.

### COLLINS GEAR

KMAX, "The Informal Voice of the San Gabriel Valley at 107.1 on your FM dial," was located at the back of a hotel building in Sierra Madre.

The original studio consisted of a Collins 212G 10-pot mono console, two Collins turntables with 16-inch arms, and a few Craig and Sony consumer-type quarter-track tape decks. There were no cart machines. A Hewlett-Packard FM frequency and modulation monitor was used to track the signal, which was generated by a 250 watt ITA transmitter, which used a serasoid-type exciter. The audio was "limited" using a Teletronix LA-2 limiter, though plenty of peaks got through. A 100-foot tower was mounted atop the two-story hotel building.

KMAX's audio always sounded clean and rather bright, with more "sizzle" than other stations across the FM dial. I discovered the reason why when I worked for "Max" in 1971.

The turntables didn't have preamps but instead used passive equalizers made by Gray Research. The outputs of these equalizers were fed into mic channels on the console, not an unusual approach for the day. Each equalizer had a knob to select the equalization appropriate for the record being played: Flat, Roll-Off or 78.

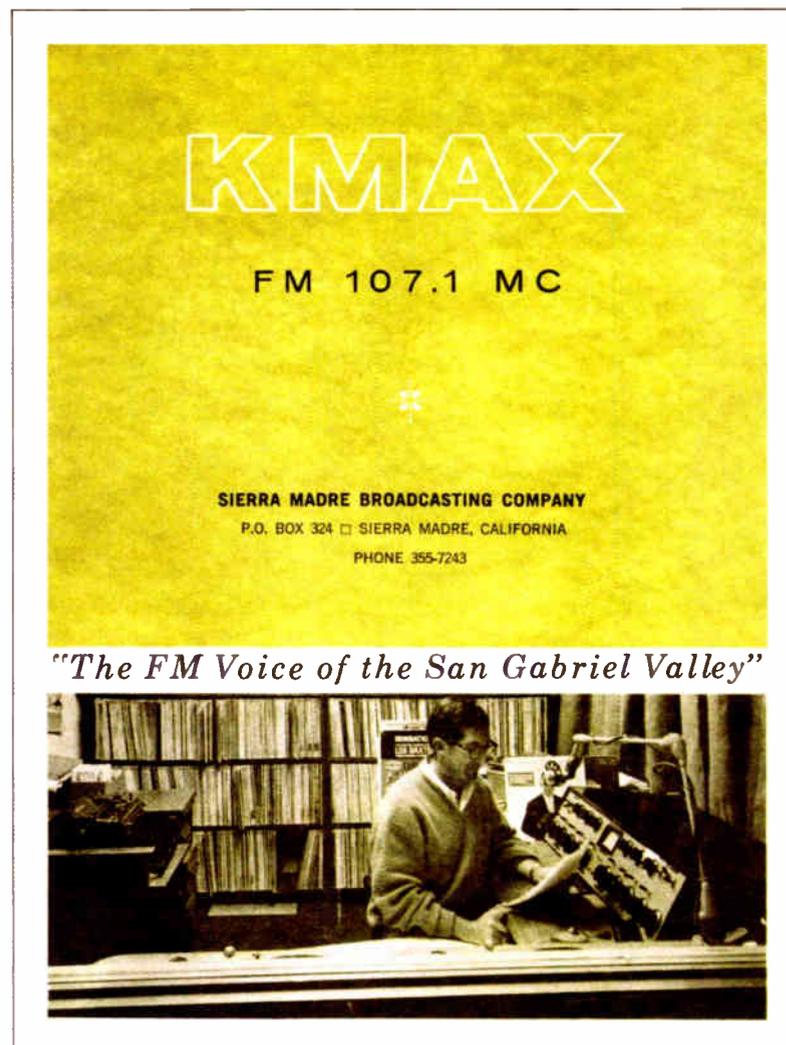
Max assumed that "Flat" was the way to go. In reality, the "Flat" position defeated the RIAA high-frequency roll-off (but kept the RIAA low-frequency boost). So for 15 years, KMAX was playing records with an extra 75  $\mu$ s pre-emphasis, boosting highs at 10 kHz by an extra 10 dB or so. No wonder it sounded bright! Certain records, Les Elgart LPs in particular, would cause modulation peaks around 150 percent on a regular basis.

When Max started KMAX, FM was still

"the new kid on the block." Sierra Madre was a small community with a handful of mom-and-pop businesses. When he went on the air, Max couldn't

the ads produced any results. The merchants weren't interested. They barely knew what FM radio was, let alone want to bother with advertising on it.

Max quickly got discouraged and practically gave up trying to sell spots. The few spots that ever ran on KMAX were usually trade-outs.

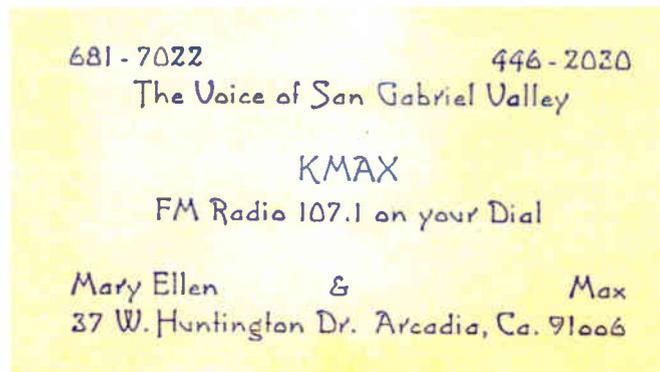


Max appears on the cover of a promotional folder about the station. Note the mixer, LPs and typewriter, and the use of 'MC' to describe the frequency.

give away commercial time. He offered the local merchants free advertising: if they wrote the copy, he'd read the spots *for free* for a few months to see if

There was one GTE spot per day, a trade-out for the phone bill. There would be spots for a local tire company if Max got new tires on his car. And he actually traded a few spots for burgers at Tommy's hamburger stand in Los Angeles.

The coverage provided by 250 watts atop the hotel was less than spectacular, so in the mid-'60s, Max moved the transmitter to the foothills of nearby Arcadia, and increased power by adding a Teletronix 3 kW amplifier built by Jim Lawrence. A Teletronix remote control system was added, and a 100-foot tower was installed, with four horizontal and three vertical

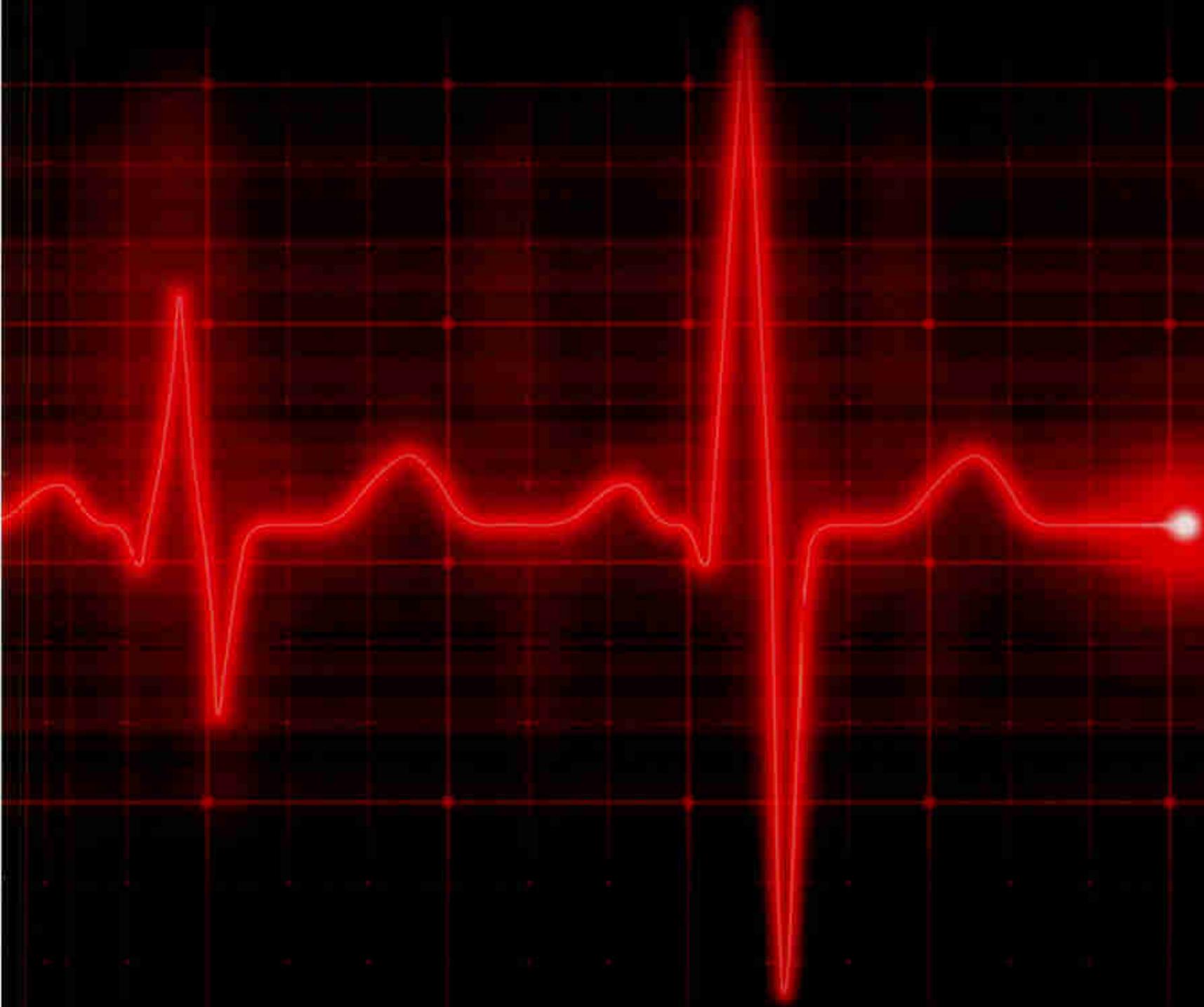


Business card for 'Mary Ellen & Max'



(continued on page 14)

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Omnia

**KMAX**

(continued from page 12)

bays. Somehow that added up to an ERP of "3 kW horizontal and 3 kW vertical watts, high in the foothills overlooking the entire San Gabriel Valley."

The signal (still mono) was potent, with coverage of over 75 miles. There were regular listeners as far south as Rosarito Beach in Mexico.

**PROGRAMMING**

Music programming consisted of easy-listening, big bands, top-40, pol-

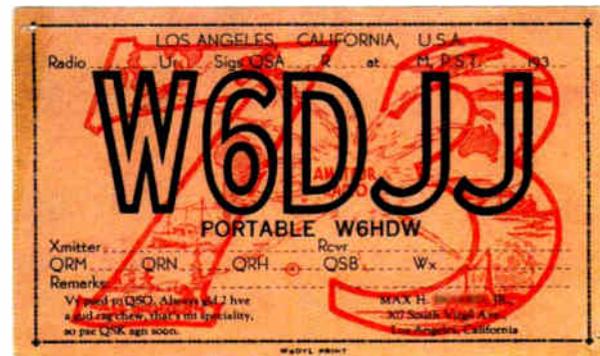
kas, old jazz, classical, Hawaiian, pipe organ, movie soundtracks ... you name it, KMAX played it.

KMAX probably was the first FM station in the metro Los Angeles area to play top-40 artists that were normally heard only on the area's am stations. In addition to music, there were remote broadcasts from churches (paid), foreign language programs (paid), and live remotes of local schools football games.

Both and his wife Mary Ellen were daily DJs on KMAX. All music came from their record library. The records were kept in good condition and sound-

ed clean. Occasionally Max would do a show called "Max's Old 78s" during which he'd play his old jazz 78 rpm records from the 1920s and '30s.

Sprinkled throughout the day were various PSAs, some read live and some recorded. There were news actualities provided by the armed forces ("Our Boys in the Service") and a few recorded religious programs and vignettes. The Rosary was



A QSL card for W6DJJ.

played daily at 6:45 p.m. Mary Ellen's mother had prayed for Max to get the license for KMAX. He promised he'd play the Rosary every day as a tribute to her.

Max would often do morning music shows from nearby Santa Anita Racetrack. He had telco lines between the racetrack and the studio, with a turntable, mic and mixer set up in the press box. He'd play records from the racetrack, and comment on the pre-race sights and sounds of Santa Anita. Only from Santa Anita could Max play his Ann-Margret records.

Max had a "thing" about Ann-Margret ... and Mary Ellen didn't like it! She forbid him from playing Ann-Margret records, and would take the tone arm right off the record if she heard one on the air. So Max would hide Ann-Margret LPs in other artists' record jackets so he could sneak them over to the Santa Anita racetrack studio. He'd play them from the racetrack, but as soon as Mary Ellen heard them she'd shut off his audio feed and play something else from the studio.

**LEISURELY PACE**

The show that was perhaps the most fun for listeners was "Operation Request," hosted weekday afternoons by Mary Ellen.

"Operation Request" was an all-request record program, where listeners called in to make requests. Mary Ellen was the entire staff of the show. She answered the phones, took the requests, searched and founds the records, and got them on the air, announcing who made each request and to whom it was dedicated.

The show was two hours of daily chaos. Very often, a record would end (tick ... tick ... tick ...) before the next one was ready to go. After a few second of silence, you'd hear Mary Ellen talking to a listener on the phone, cueing up the next 45 while she was announcing who called in to request it, then put the song on the air.

The program was ideal for someone who wanted to tape songs off the radio. If you made a request and told Mary Ellen that your were going to record

(continued on page 16)

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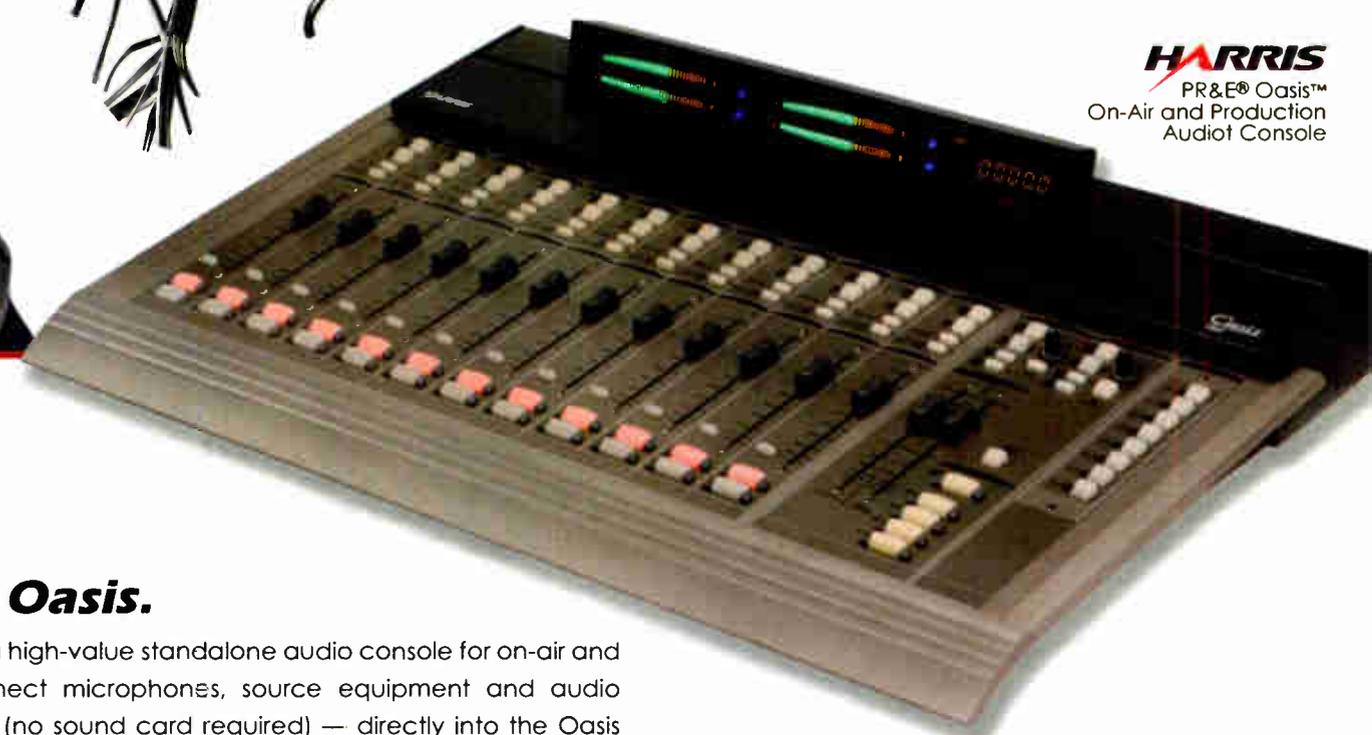
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# KMAX

(continued from page 14)

the song off the air, she would say "... and this next song is going out to Hank, who is taping" ... then she'd leave a few seconds of dead air before starting the turntable just so you'd have time to get your tape recorder rolling.

It was "informal radio" at its finest. Another request program was the "Polka Party." Max and Mary Ellen had a big collection of polka records, and each Saturday night he'd do a request show of polka music. This show had a large and loyal audience, since KMAX was the only L.A. station playing polka music. Another popular Saturday night show was "Request Dance Party," where Max and Mary Ellen played music of the big band era, taking requests and playing the music they loved.

But it was the weekend religious and foreign language programming that paid the bills.

"If you've got the money, I've got the time" was Max's favorite expression. There were dozens of church remotes, plus various foreign language programs in Spanish, German, Dutch, Italian, Greek, Croatia, etc.

The foreign language shows varied greatly in quality. Nearly all were pre-recorded on consumer quarter-track tape recorders. The "Holland Hour" was polished and sounded very good. At the other end of the sound-quality spectrum was "Italian Words & Music," hosted by Johnny Lauro. He recorded his show by holding a cheap crystal microphone in front of the speaker of a child's record player. While music was playing, you could hear his kids

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Hours: Monday Thru Friday 6AM - 11 PM - Sat. 7:45 - Sun. 6:00 - 12 Midnight  
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Program Highlights	Daily	Sunday	
Rev. Jones	6AM - 7AM - Mon-Fri.	Living Christ Baptist Ch.	6-7 AM
Calvary Temple	7 - 7:15 "	Calvary Temple	7-7:45
International Church	7:15- 7:30 "	Tree of Life	8-9 AM
Miracle Temple	7:30- 7:45 "	Holland Hour	9-10
Early Bird Show	7:45- 9:00 "	German Hour	10-11
Mary Ellen Show	9 - 10:00 "	Holland Hour	11-12 Noon
" Exercises	9:30 "	Italians Words & Music	12- 1 PM
Caffeine Club	10:00-12 Noon "	All Nations Prayer Chapel -R-	1- 2 PM
Afternoon Concert	1:00- 3:00 PM "	Pirozzi's Italian Hour	2- 3 PM
Afternoon Show	3:00- 6:45 PM "	Rose Sharon Church	3- 4 PM
The Rosary	6:45- 7:00 "	Buona Novella	4- 4:30
KMAX Featured Albums	7:00- 8:00 "	Pirat Akasha Church	-R- 4:30- 5
Music in the Night	8:00-11:00PM "	Tree of Life	-R- 5- 6 PM
Hawaii Calls	8:00- 8:30PM Mon. Only	Miracle City Apostolic Ch.	6- 7 PM
Pipes on Parade	9:00- 9:30 " Tues. Only	Bible Way Church	-R- 7- 7:30
Athenian Voice	9:00-10:00 " Wed. "	Greater Star Lite B/Ch	-R- 7:30-8
Holland Hour	10:00- 1:00 " Sat. "	Mt. Olive	-R- 8- 9 PM
Voice of Indonesia	1:00- 2:00 " " "	Alfa-Omega Church	-R- 9-10 "
Music of the Masters	2:00- 3:00 " " "	Miracle Temple	-R- 10-11 "
Light Classics	3:00- 4:00 " " "	Holy Deliverance	-R- 11-12Midnt
Phoenix Hour	4:00- 5:00 " " "		
Melodies of Yugoslavia	5:00- 6:00 " " "		
Polka Party *****	6:30- 7:25 " " "		
Makes Believe Ballroom	10:00-11:00 " " "		
Holy Tabernacle AOH Ch.	11:00-11:30 " " "		
Naked Truth Broadcast	11:30-12:00Md " " "		

October Highlights	Showtime	Golden Era Dance Bands
Wednesday	4 - 4 PM	Monday 9 - 11 PM
3 The Helen Morgan Story - Gogi Grant		1 Barry James Glenn Miller Bill Bradley Masters of Rhythm
10 The Pajama Game - Doris Day - John Raitt		8 Gene Krupa Stan Kenton Claude Thornhill Masters of Rhythm
17 Milk And Honey - R. Weede, M. Benzell, M. Picon		15 Artie Shaw Benny Goodman Count Basie Masters of Rhythm
24 Fade Out - Fade In - Carol Burnett, J. Cassidy		22 Les Brown Tommy Dorsey Glenn Miller Masters of Rhythm
31 Subways Are For Sleeping - C. Lawrence, S. Chaplin		29 Bob Crosby Johnny Long Jimmy Dorsey Masters of Rhythm

MAX'S FEATURED ARTISTS: Monday 3 - 4 PM -- Oct. 1 - The Pastors // Oct. 8 - Sammy Davis // Oct. 15 - Ray Noble // Oct. 22 - Johnny Mann Singers // Oct. 29 - Shirley Temple.

Country -Western Show - Mon. & Wed. 7:45 - 9AM // Max's Old 78's - Friday 7:45 - 9AM 1111

The Rosary - Sat. & Sun. - 7:45 - 8:00 AM // Crossroads - Sat. - 8:00 - 8:30AM

The Lawrence Walk Show - Weekdays 5-6PM // Citrus College Football Games - Saturday 7:30PM

7:55PM ARCADIA & TEMPLE CITY FOOTBALL \* THE AWAY GAMES ONLY \* 10-4/5/12/19 & 26

A program guide – perhaps written on the typewriter in the photo on page 12.

making noise in the background. And to make his show audible by the largest audience, he would scream into the mic, producing distortion beyond belief. But his show was on for many years, with all

its miserable fidelity.

George Rozos did a live weekly show called "The Athenian Voice Hour" each Wednesday at 9 p.m. George owned a Greek delicatessen in nearby Pasadena.

He would arrive at the studio each Wednesday evening with records, Greek newspapers, and (best of all) a few sweets from the deli.

Needless to say, I was happy to engineer his show. I'd snack on baklava, trying my best to keep my sticky fingers from getting grease on his records. He'd do commentary and read the news from Greece, and I'd spin the records. It was a fun show.

## WORKING THERE

To get a job as a KMAX DJ, you needed to have a "First Phone" FCC license, because Max, though he owned the station, had only a Third Class license. In those days FCC regulations required the "chief operator" to have a First Class license. All was kept legal by hiring only those who held a First Class license.

I worked as a KMAX DJ starting in 1971. Shortly after, my friend Dave Whited was hired. The combination of Dave and I would prove to be "entertaining" to Max and Mary Ellen, as we were both habitual practical jokers. In fact, before either of us joined the KMAX gang, we produced a 15 minute spoof of the station. We anonymously sent the tape to Max, who got quite a kick out of it. When Max hired us, we dared not confess that it was us who'd sent this recording. Only after several years did we admit to it.

One memorable Christmas Eve Dave and I decided to "redecorate" the studio. We built some badly needed shelves to hold tapes, records, etc. We strung hundreds of Christmas lights around the studio, and wired them into the console so when the mic was turned on, the place literally "lit up like a Christmas tree."

After running KMAX for 15 years, Max decided to sell the station. On April 1, 1975, it was sold to Universal Broadcasting. The "Polka Party" broadcast of March 29, 1975, was the last time Max and Mary were heard on the air. By coincidence, that day was also Max's 57th birthday. Mary Ellen gave him a special gift during the show: She played some Ann-Margret records.

For more historical (and hysterical!) information about KMAX, please visit [www.henryeng.com/kmax.html](http://www.henryeng.com/kmax.html). Airchecks of the station are also welcome.



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Time-of-day clock can slave to your NTP server.

Onboard headphone control with Preview option. Cheesy outboard amps need not apply.

Four-position monitor selector lets you switch between Program or External monitor feeds on the fly.

OLED channel displays have an audio confidence meter, too.

Smooth 100mm, premium faders are side-loading to foil dirt and debris.

Machined-aluminum work surfaces are made tough, to stand up to what jocks dish out.

Avionics-grade switches with LED lighting.

Can a super-duty, high-performance rotary gain control still be called a fader? Just don't call it a "pot" - that's old tech.

Four Show Profiles for instant recall of console configurations. Try that on a PA mixer.

The more you saw, the more convinced you were that IP consoles made sense for your station. Problem was, you had small spaces to work in. Some behemoth board that looks like a '78 Oldsmobile just wouldn't fit. But there was no way you'd settle for some cheap plastic PA mixer that looked like a refugee from the church basement. "Wouldn't it be great," you thought, "if someone made an IP console that didn't take up a whole room?"

Then you saw the new RAQ and DESQ consoles from Axia, and your problems were solved. With the power and features of a big console, but minus the ginormous space requirements. RAQ will drop right into those turrets in your news station's bullpen -

the reporters can send their finished stories right to the studio. And DESQ is perfect for the auxiliary production rooms.

But what sealed the deal was finding out you could run two RAQ or DESQ consoles with just one Axia QOR.16 mixing engine — you know, the one with all of the audio I/O, the power supply and the Ethernet switch built in. That brought the cost down so low that when you told your GM the price, he actually didn't swear at you (for once). Make another decision like this, and you might just be changing the sign on your door from "Chief Engineer" to "Genius."

Available in the U.S. from BGS: (352) 622-7700

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[AxiaAudio.com/RAQ](http://AxiaAudio.com/RAQ) | [AxiaAudio.com/DESQ](http://AxiaAudio.com/DESQ)



# Create an Old-Timey Radio Feel

You don't need a magic wand to conjure holiday spirit

**A**lan Peterson, a longtime Radio World colleague who works for the Radio America Network, writes about an antique radio in the network's lobby. The beautiful old General Electric floor radio you see in

## WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Fig. 1 isn't functioning, but it is the centerpiece of the Network's lobby, based in Arlington, Va.

Throughout the year it sits silently, looking majestic and historical, enjoying its retirement. But once a year, during the holidays, it magically comes to life, playing seasonal tunes 24/7 for guests and the front office staff.



Fig. 1: Turn an old-time radio into a holiday jukebox.

Ok, it's doesn't run by magic, Alan admits. Turn the cabinet around and you would find a spare office computer inside running Rivendell Radio Automation, packed with 11 hours of Christmas tunes and connected to a KRK Rockit 5 monitor speaker.

With the bass bumped up a bit and placed against a wall to spread the sound, and a yellow bulb behind the dial, the illusion of a comfy old AM parlor radio at Christmastime is complete.

The radio is owned by Fred Gleason, the network's chief engineer (who is also the lead developer of the open-source Rivendell software). Assistant Chief Alan Peterson breathes the holiday magic into the old chassis every year.

The takeaway? You can create a bit of fun for your staff and visitors over the holidays next year by placing an old receiver or jukebox as a prop in the lobby of your station. An automation computer is unnecessary; this can be done with WinAmp on a junk computer, or by just connecting a portable MP3 player to an amp attached to the cabinet's speakers.

Reach Alan Peterson at [apeterson@radioamerica.org](mailto:apeterson@radioamerica.org). For information on Rivendell Automation, visit [www.rivendellaudio.org](http://www.rivendellaudio.org). And email me your own fun ideas for creative lobby displays, for Christmas or anytime. I'm at [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

**F**ranks Hertel of Newman-Kees RF Measurements and Engineering writes in with a quick easy project, one that most every engineer will want to build.

If you service RF amplifier modules as used in most of today's solid-state AM and FM transmitters, you will come to know that sometimes a MOSFET doesn't blow up when it fails. Over time, Frank began to recognize that the "gate" junction of a MOSFET

could become "leaky" — still working but with degraded performance. However, a "leaky" gate can be tricky to diagnose.

Some repairs are akin to "throwing the baby out with the bathwater" in that some individuals will simply replace all of the MOSFETs. Good (and expensive) MOSFETs end up being thrown away.

Frank doesn't like using this "shotgun approach" when doing repairs, given the cost of several hundred dollars each. It's also a personal thing for him to not

(continued on page 22)

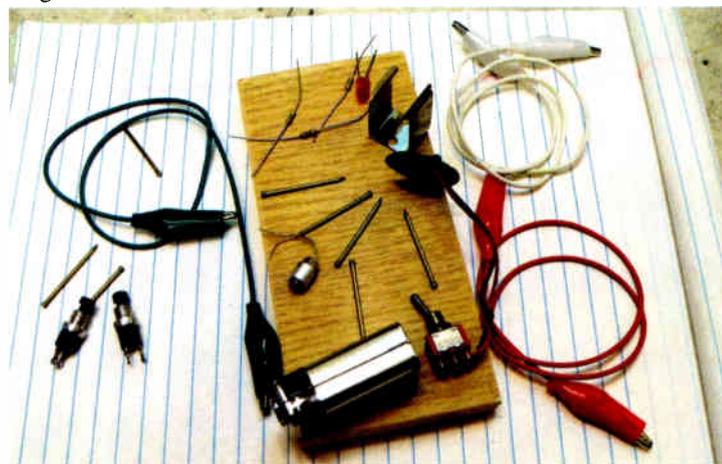


Fig. 2: Use this assortment of parts to build an RF MOSFET tester.

1. Connect MOSFET and press "Charge Gate" button and release
2. LED should light and then fade out very slowly — If LED goes out immediately, the MOSFET has a "Leaky" Gate
3. Push the "Discharge Gate" button and LED should turn OFF
4. If the LED is always lighted, the MOSFET has a BAD Gate or a source to drain short, or both

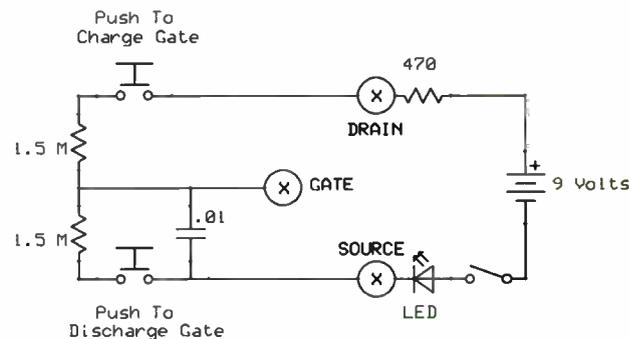


Fig. 3: Non-destructive go/no go MOSFET tester.

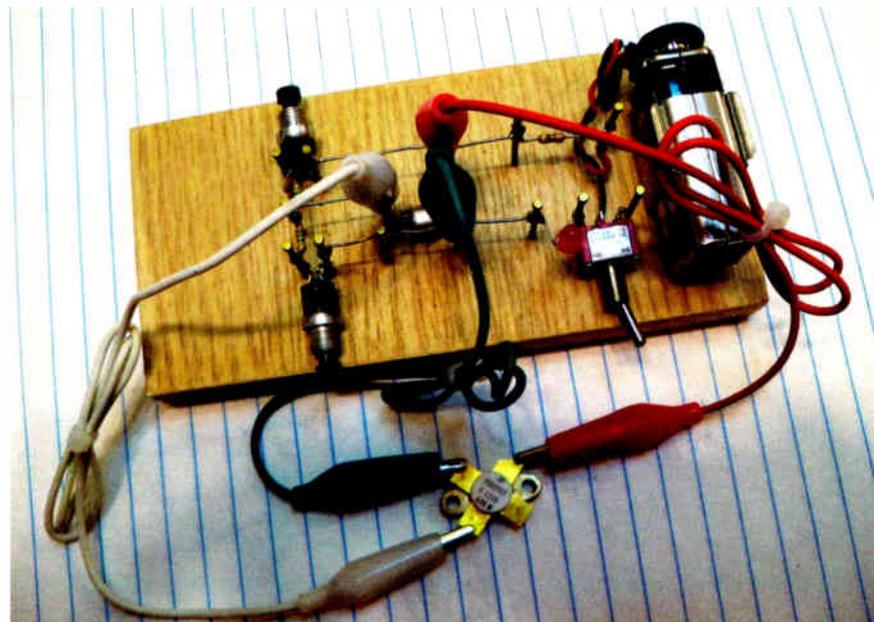


Fig. 4: Brads and buss wire serve as solder points for the components.

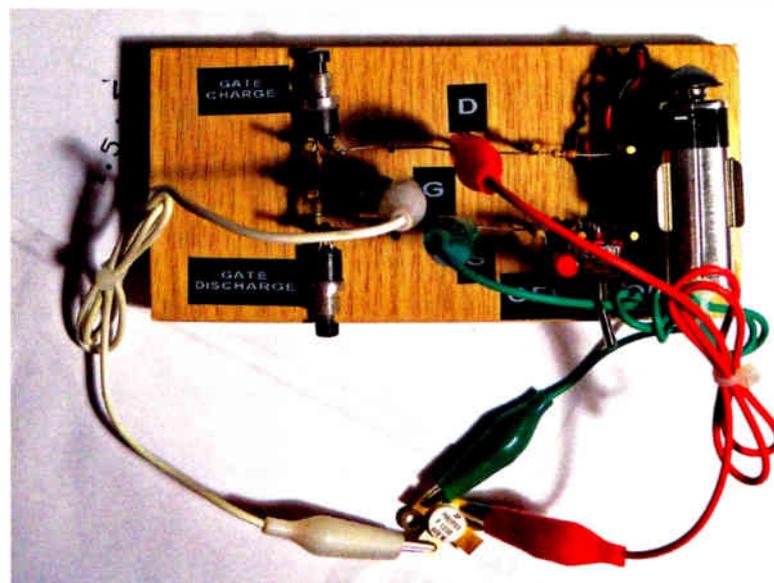


Fig. 5: As built, with components labeled.

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\*Optional 19" rack adaptor holds up to three units.



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this simple setup runs rings around any other AoIP network - at any



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Assign any source of any type anywhere on your network to any fader. Each input channel can be assigned to four stereo busses, plus four pre/post-selectable aux sends, a stereo CUE bus, four mix-minuses and the panel's own bus-minus. Full Voris EQ and Dynamics let you sculpt and control your sound with the quality of the finest dedicated outboard

processors. The visually-stunning meter bridge features up to four sets of bright, high resolution LED meters, as well as circular LED displays for auxiliary send levels and pan control. A digital count-up/count-down timer is also included.

The LX-24 is advanced in ways that can make a HUGE difference in your capabilities. But it's also immediately familiar to anyone who has ever sat behind a board at a radio station. Use it to make your programming the best it can be. Just plug it into your WheatNet-IP Intelligent Network - with it, and the BLADES across the page, you can, dare we say it, rule the world.

**THE LX-24 CONSOLE CONTROL SURFACE FEATURES**

**Low-profile** table-top design - no cutout required

**Meter bridge** with up to four bright, high-res LED meter sets

**Control room and headphone outputs** with level control and source selection

**Two independent studio outputs**

**Stereo cue speakers and amplifier**, built-into meter bridge

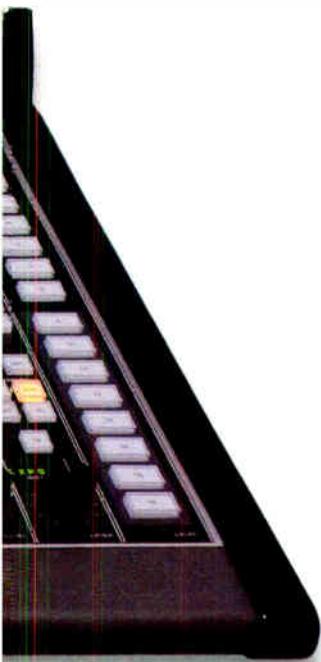
**Onboard VGA and USB-Mouse connectors**

**Event storage** (snapshots) and recall

**Each input channel features:**

- Four stereo bus assigns
- Four pre/post-fader aux sends
- Four mix-minuses
- Bus-Minus®
- Source name display
- A/B source selector
- 2 programmable buttons
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price. it's called The WheatNet-IP Intelligent Network, and it rules.



**Our BLADES carry out your orders network-wide at Gigabit Ethernet speeds - no bottlenecks**

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Use them organically with our control surfaces, run them from our Glass-E software wherever you have internet access, or control them from the front panels. BLADES make your life incredibly easy and secure.

As you need more functionality, just plug in more BLADES - they come in configurations to handle whatever you need (analog, digital, a/d, mic, MAD!). Each BLADE is self-configuring and has the DNA of the entire self-healing network.

With BLADES, you can do everything from a simple (or complex, if you like) snake to STL-over-IP to full-on multi-studio/facility networking - even processing. And because of Wheatstone's partnership with the top suppliers of automation and remote gear, you'll have control over your entire system right from WheatNet-IP. Ruling the world has never been easier.

**And this is ALL the extra stuff you need to wire-up the Intelligent Network:**

Four CAT-6 cables and a low-cost switch that handles the gigabit speed WheatNet-IP runs at.

Let's do the math - plug in eight connectors, power up a console and three BLADES, add your audio and you are ready to rock, roll and rule the radio world. Brilliant, you ask? Nah - just really, really intelligent.



**Want to know more?**

WheatNet-IP outperforms the other AoIP systems exponentially and is, by far, the most reliable network you can get. Log onto [wheatip.com](http://wheatip.com). There is a world of *real* information there. Or, give us a call. There's nothing we like better than talking about this stuff.



**EVERY BLADE FEATURES**

**Two 8x2 stereo virtual Utility Mixers** that can be used for a wide range of applications; for example, using Wheatstone's ACI Automation Control Interface, your automation system can control the mix for satellite or local insertion switching

**Front panel bar graph meters** switchable to display source input level or destination output level after gain trim

**Front panel routing control** - any system source to any destination on that BLADE

**Front panel headphone jack** with source select and level control - monitor any system source

**Flexible GPI logic** - 12 universal logic ports, programmable as inputs or outputs, routable throughout the entire system

**Built-in web server** so you can configure and control locally or remotely without having to run dedicated software

**SNMP messaging** for alerts

**Silence detection** on each output that can trigger alarms or make a routing change

**Silent - no fans** - can safely be located in a studio with live mics



# Take Radio World's Year-End Quiz

Who said there are no tests to take once the holidays roll around?

*Test your comprehension and memory of Radio World's 2012 coverage of news, technology and regulation. Answers are on page 33.*

## 1. What is "Artist Experience"?

- A website in support of performance royalties
- A channel on iHeartRadio
- A way to embed visuals to accompany on-air audio
- A lounge at the spring NAB Show

## 2. The legal fight over patents involving radio automation was brought by Mission Abstract Data. What associated company name have the plaintiffs used?

- Fletcher Heald and Hildreth
- Shapiro Smith and Genachowski Inc.
- DigiMedia Holding Group LLC
- Straight Wire Audio

## 3. Identify the man at left in the photo.



- David Layer
- David Pogue
- Victor Tawil
- Kevin Gage
- George Clooney

## 4. Engineering innovator and AM stereo advocate Leonard Kahn died in June. Which of these products was associated with Kahn?

- CBS Audimax
- Symmetra-Peak
- Gates Sta-Level
- Henry Matchbox

## 5. What does the Smith-Mundt Act forbid, as generally interpreted?

- Ownership of more than one radio or TV station in the same market as a newspaper owned by the same entity.

- Ownership of more than 49 percent of a U.S. broadcast license by a foreign entity.
- Domestic dissemination by the U.S. government's international broadcasting organizations.
- Claiming a minority ownership tax credit when an FM translator is used by an AM station.

## 6. What is AES-X192?

- An AES standards task group for audio interoperability over high-performance IP networks
- An AES standards task group for compatibility of metadata as commonly used in "infotainment" systems
- An AES conference set for summer 2013 focusing on new consumer electronics technologies
- The working name for a proposed revision to the AES3 standard for the transport of digital audio signals between pro audio devices.

## 7. What is the main benefit of MDCL?

- Energy-saving transmitter control for AM stations
- Higher efficiency in FM station transmitters
- Management of multiple EAS receivers serving a single station cluster
- Compatibility among devices connected to Internet protocol networks of differing standards

## WORKBENCH

*(continued from page 18)*

waste. Frank's simple project will give you a method to verify the "usable" performance of the RF MOSFET in question.

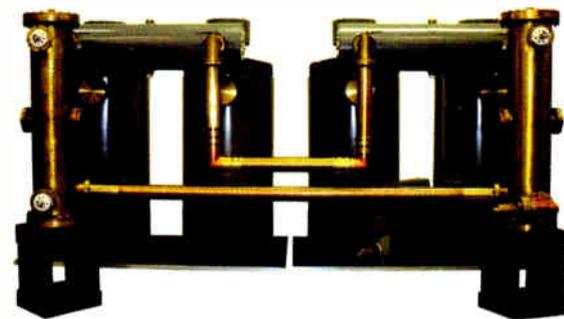
You likely have all of the parts somewhere in your shop. If you don't, a visit to your parts store will produce everything you'll need for around \$10 or so.

Construction can be simple. Frank used a small block of plywood and some 1-1/2-inch brass brads as the solder points, as shown in Fig. 2. The resistor values are on the schematic in Fig. 3.

Build it any way you desire; layout is not critical. Frank chose to use the old "breadboard" technique, which reminds him of the "good ol' days" and satisfies his desire to avoid buying an expensive enclosure.

As you use the tester you will become familiar with its use — and how a good vs. questionable/bad MOSFET will react.

Thanks, Frank, for a great little project that will save the station money. Frank Hertel can be reached at [nkeng@insightbb.com](mailto:nkeng@insightbb.com).



## 8. Which entity earned a Radio World "Cool Stuff" Award for its new method of high-level IBOC combining for single-input antenna systems?

- Altronic Research
- Belar Electronics Lab
- Electronics Research Inc.- ERI
- NPR Labs

## 9. Which organization had the U.S. radio rights to cover the London Olympics?

- Triton Digital
- CBS
- Cumulus Media
- Dial Global

## 10. This organization reviewed its FM translator applications to comply with a presumed national cap of 50. It withdrew about 200 applications but had 300 remaining from an earlier window.

- Prometheus Radio Project
- REC Networks
- Womble Carlyle
- Educational Media Foundation

*(continued on page 24)*

**R**emOutlet is a unique solution that provides power control for remotely located equipment. When equipment is connected to RemOutlet, it can be turned on or off, or power cycled by remote control. Regardless of the equipment, you'll save travel time and quickly reset or reboot the power function of the device connected to it.

Not only will this device reboot anything with a microprocessor in it, but modems or Ethernet routers that can get hung up can also be power-recycled.

*Workbench* contributor Joe Stack is the genius behind the simple-yet-effective RemOutlet product line, along with a number of other useful products that you can find at [www.stackleydevices.com](http://www.stackleydevices.com).

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

*Author John Bisset has spent 43 years in the broadcasting industry and is still learning. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award. He works for Elenos USA.*

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## QUIZ

(continued from page 22)

11. In comments to the FCC, iBiquity Digital wrote the following; fill in the blank: "The comments demonstrate a broad industry consensus that the use of \_\_\_\_\_ will allow broadcasters to enhance their digital service and that the FCC should authorize this mode of operation."

- Artist Experience
- Modulation-dependent carrier level
- 10 dBc digital power
- Asymmetric sidebands

12. "As a child, our summer vacations were actually going to visit radio stations. We grew up in North Carolina. So when we were going to Florida we would stop at every radio station along the way. My dad would just go in and start talking to whoever was there." Who said it?



- Caroline Beasley
- Diane Warren
- Tommie King
- Tammy Silliman

13. What company this year announced it will start to make TV transmitters for the first time?

- Continental
- Nautel
- Harris
- Bext



14. Three museums — the Gray History of Wireless Museum, the National Voice of America Museum of Broadcasting, and the Media Heritage collection — share one facility here.

- Bethany, Md.
- Bethany, Ohio
- Greenville, N.C.
- New York, N.Y.

15. Thanks to updates to Part 101...

- Terrestrial broadcasters must now have EAS receivers in place that are compatible with the Common Alerting Protocol.
- Terrestrial broadcasters now have greater access to microwave spectrum to use as the final RF links in their program distribution chains.
- Satellite services XM and Sirius now provide 4 percent of their channels to minority-owned entities and community organizations.
- LPFM stations need no longer protect full-power broadcasters on second-adjacent frequencies.

16. He was SBE Member No. 1.

- John Battison
- Steve Church
- Jules Cohen
- John Verboon



17. Who said, "It takes me five minutes to get some of the most technologically innovative people to say, 'Radio is innovative again. You've married the open mic with a device that someone looks at 40 to 50 times a day.'"

- Paul Brenner, Emmis
- Bud Aiello, NPR
- Gordon Smith, NAB
- Milford Smith, Greater Media

18. Which two companies are exploring a concept called ZoneCasting?

- Nautel and Orban
- Wheatstone and Telos
- NAB and CEA, via the NRSC
- Geo-Broadcast Solutions and Harris

19. What is the goal of the Internet Radio Fairness Act?

- To assure that no single business entity enjoys a monopoly position in the evolving U.S. Internet radio industry.
- To adopt fair standards by which determinations of Copyright Royalty Judges are made with respect to webcasting.
- To require Internet streaming webcasters to provide equal time to opposing points of view.
- To encourage new entrants into Internet radio and streaming by providing a discount tax rate in the first three years of operation.

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20. Which FCC commissioner called for a review of AM rules in a speech at the fall Radio Show?

- Ajit Pai
- James Quello
- Mignon Clyburn
- Julius Genachowski

Find the answers on page 33.



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World Radio History

# Preparing for the Hoover Inaugural

BY JOHN SCHNEIDER

In this exceptionally clear and detailed photograph, we see three AT&T engineers testing the equipment that will be used for the NBC radio broadcast of the inauguration of President Herbert Hoover on March 4, 1929.

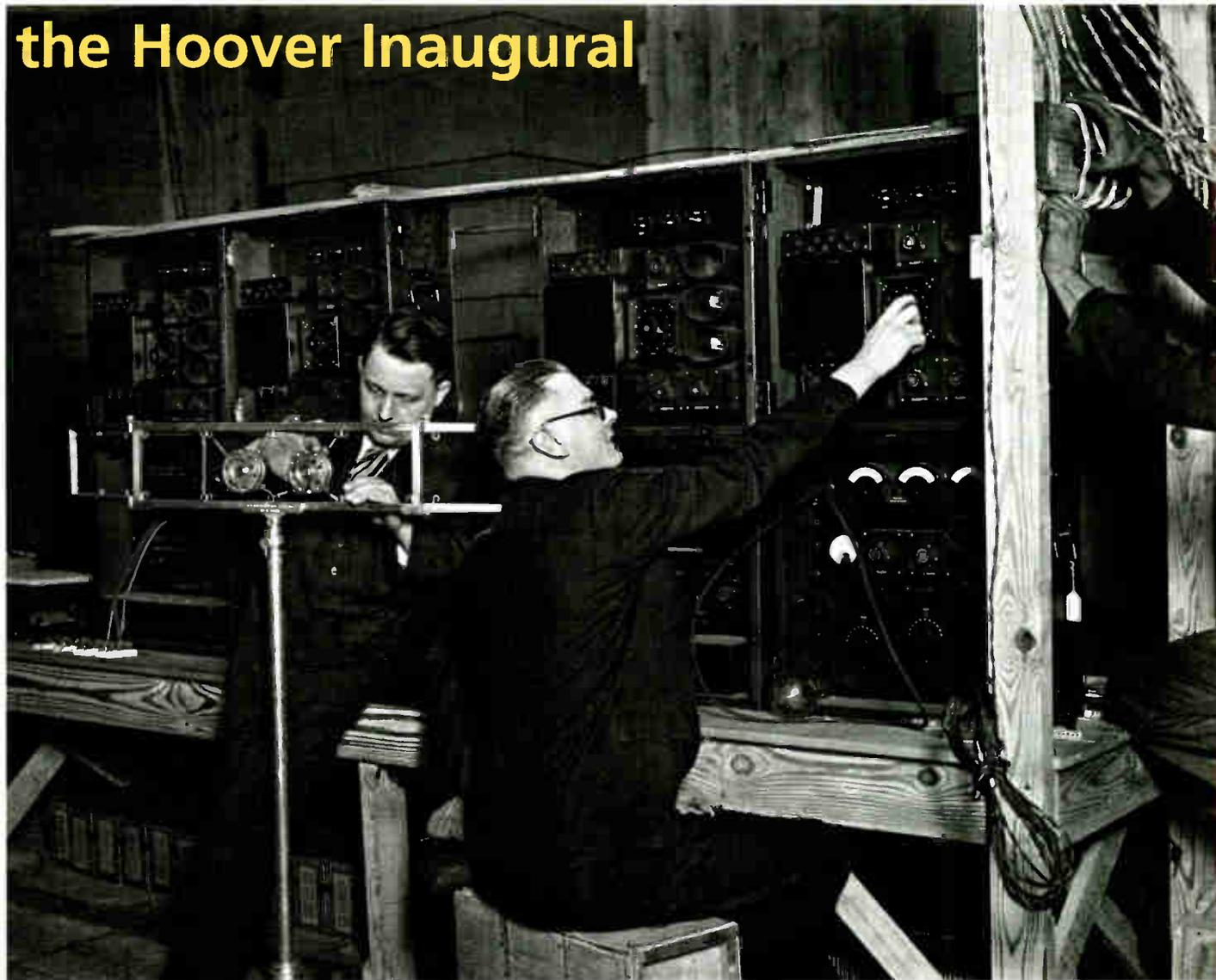
## ROOTS OF RADIO

This broadcast console was set up in a temporary location underneath the Capitol steps, just a short distance from the spot where announcers Milton Cross and Graham McNamee would describe the live event over a coast-to-coast hookup of NBC stations. The broadcast was even carried over KGU in Honolulu via a shortwave link.

### A HISTORIC RECORDING

Full redundancy was important in an era when tube equipment was not always reliable. There were two sets of line amplifiers available for each of the two network line feeds, requiring two operators to man the equipment during the broadcast.

The rectangular microphone frame held six carbon microphones, and was placed immediately in front of the president to pick up his inaugural address. Two microphones were used for each of three audio feeds — the two network lines and a newsreel camera. (The Hoover inauguration was the first to be



recorded by a "talkie" newsreel.)

A large bank of storage batteries, located under the table, powered all the

equipment. As was the custom in the early years of radio, the engineers were expected to wear a suit jacket and tie.

The 1929 inaugural began Herbert Hoover's tenure as the country's 31st president, just eight months before the stock market crash.

It was appropriate for his inaugural to be broadcast over the radio: Hoover was a trained engineer (he graduated from Stanford University) who had been the secretary of commerce from 1920 to 1928. In that position, he was responsible for the early regulation of radio communications and broadcasting.

Hoover paid great attention to the problems of broadcasting, and organized several national radio conferences designed to resolve the problems of radio interference. These eventually resulted in the formation of the Federal Radio Commission in 1927.

Hoover, despite his later unpopularity during the start of the Great Depression, may have done more for the early development of radio broadcasting than anyone else in government.

This image is from an original 4x5 glass negative that is a part of the National Photo Company collection at the Library of Congress.

*John Schneider is a lifelong radio history researcher. Write him at jschneid93@gmail.com.*

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# Grady's Mountaintop Challenge



Elenos and Shively help solve a last-minute problem

**USERREPORT**

A beautiful location for an FM antenna

**BY GRADY MOATES**  
**Owner**  
**Loud and Clean**

**BOSTON** — The beautiful mountain vista seen above is an excellent location for an FM station, don't you think? But

what do you do when your leased tower site falls through and no new tower construction is allowed?

This was my mountaintop challenge! In early 2012, I set out to complete construction of an FCC CP for a new station, WUMV(FM), with less than

two months before expiration. No big deal, I thought, until the tower owner we had been dealing with for two years informed us that the tower couldn't accept any additional antennas, and he offered us no options. So I got to work — I like a challenge!

I found a nearby neighbor who has a love for public radio, and some land on the side of the hill the previously-mentioned tower sits atop of. I made a deal with him to install a temporary antenna on a tree in his back yard! See the picture on the next page for the eventual resolution.

With this arrangement, we would still provide full coverage of the city of license. There was one problem: our effective radiated power and our transmitter power output would have to be double what we had planned at the first site, so I couldn't use my spare 250 watt exciter as I had planned.

The station is associated with University of Massachusetts Boston so I didn't have a large budget to work with. I started looking for cost-effective options. One potential problem — the

transmitter had to be small enough to fit into a weatherproof equipment cabinet I already had, along with all the peripherals needed, and be efficient enough to need only exhaust fan cooling.

**SOLUTIONS**

Our Shively 6810-2-SS-DA antenna mounted easily to a 4-inch pipe, which mounted to the tree with a special arrangement of custom mounting brackets and straps designed by Chris Loycano of Broadcast Tower Co. of West Bridgewater, Mass. We chose a nice, fat beech tree, and being a directional antenna, the orientation stake was located by the surveyor, according to Shively's measurements. Chris' mounting arrangement of rope and wood lattice allows the tree to breathe and grow, and doesn't damage its sapwood layer or bark, while permitting the antenna to be aligned to its required azimuth.

At a New England Radio Engineering Luncheon (hosted by Broadcast Signal Lab), I saw one of Elenos' cute little Indium series transmitters put through its paces and fell in love. The 1,000 watt unit is only 2 RU high, and its high efficiency results in little waste heat.

*(continued on page 28)*

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# BUYER'S GUIDE

## MOUNTAINTOP

(continued from page 27)

Unfortunately, the transmitter was a couple of inches too deep to fit within the donated enclosure with the doors closed.

So I fabricated special brackets that allowed the transmitter to be installed at a steep angle, with the front near the bottom front of the cabinet and the back near the top. This sleight of hand can be seen in the picture to the right. It provides a natural path for the air to flow, because the transmitter exhaust heat appears near the exhaust fans in the top of the cabinet.

The equipment enclosure sits comfortably on two pressure-treated wood, 6-by-6-inch boards staked into the ground with standard ground rods. Even though there's no steel structure in the air, I didn't skimp on grounding. The antenna, transmission line, and the enclosure and its contents are well grounded, tied into the ground rods anchoring the enclosure.

The site is fed with power from the landowner's garage, using 400 feet of 10-3 SO cord. All communications with the site are through a Verizon USB wireless data dongle. That includes program audio, remote control and TCP/IP management. The tower we planned to be on is only half-a-mile away, and I've got four bars of signal strength on the wireless router. We get around the lack of a static IP address by setting up an SSH tunnel from the site back to the studio, checking for existence of the tunnel every few minutes, and rebuilding it if it collapses — a great idea from Rob Landry, well known in these parts for his extensive bag of computer tricks.

Setup of the transmitter was a breeze, taking less than five minutes to set frequency, power output and modulation level directly from the front panel.

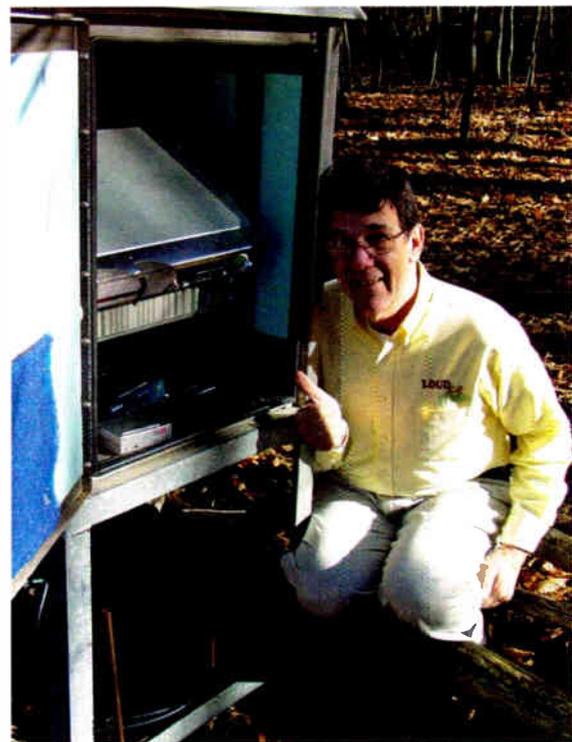
The site has been on-the-air for nearly six months now, and we've been very impressed with the operation. Unique transmitter site challenges sometimes require out-of-the-box thinking. This project was no exception!



If there's no tower there's always a tree!

For information about Elenos, contact Mary Ann Seidler in Florida at (855) 353-6670 or visit [www.elenos.com](http://www.elenos.com).

For information about Shively Labs, contact Bob Surette in Maine at (207) 647-3327 or visit [www.shively.com](http://www.shively.com).



The author and his transmitter box. Note the steeply angled Elenos transmitter: Its exhaust fans on the backplane are at the top of the box to vent excess heat.

# Control Freaks



**SITE Sentinel 16**



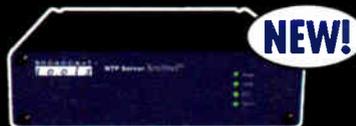
**WVRC-8**



**AC Power Sentinel 2**  
**AC Power Sentinel 2 Plus**



**WVRC-4**



**NTP Server Sentinel**



**SITE Sentinel 4**

**AES Switcher Sentinel 4 »Web**

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## COMPLETE REMOTE STUDIO **ON TWO WHEELS**



We are pretty sure this is a first – an open-air moving studio broadcast on two wheels (well, six, technically).



All audio was fed to a Comrex ACCESS Portable, complete with optional mixer, which Dan used to mix the live



Dan Jackson, engineer for 92.9 FM in Perth, Australia was faced with a unique challenge. Breakfast hosts Paul Hogan and Lisa Fernandez would be cycling for hours in strong winds and pouring rain as part of the 92.9 Kids Appeal for Telethon.

The unique solution was to equip Dan's bike as a mobile production facility. The talent wore wireless mics AND in-the-ear monitors which communicated with receivers and transmitters in a rack bag on Dan's bike.



on-air feed as the trio traversed the winding roads of Perth. How did it all work out? Absolutely flawlessly – the show went on without as much as a speed bump!

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# Bangladesh Betar Goes With Ampegon

Kabirpur transmitting station puts HP-RCA 2/2 to use

## **SPECIALREPORT**

BY NORBERT STANGL  
Head of Design & Engineering  
Ampegon

**KABIRPUR, BANGLADESH** — Bangladesh Betar is the state-owned radio broadcasting organization of Bangladesh. To optimize the international shortwave coverage, it was decided to upgrade the existing Kabirpur transmitting site with the new, flexible Ampegon HP-RCA 2/2.

Featuring easy integration with practically any shortwave broadcast station, this was a good choice for the extension. The new rotatable antenna was tested and handed over from Ampegon to Betar in September.

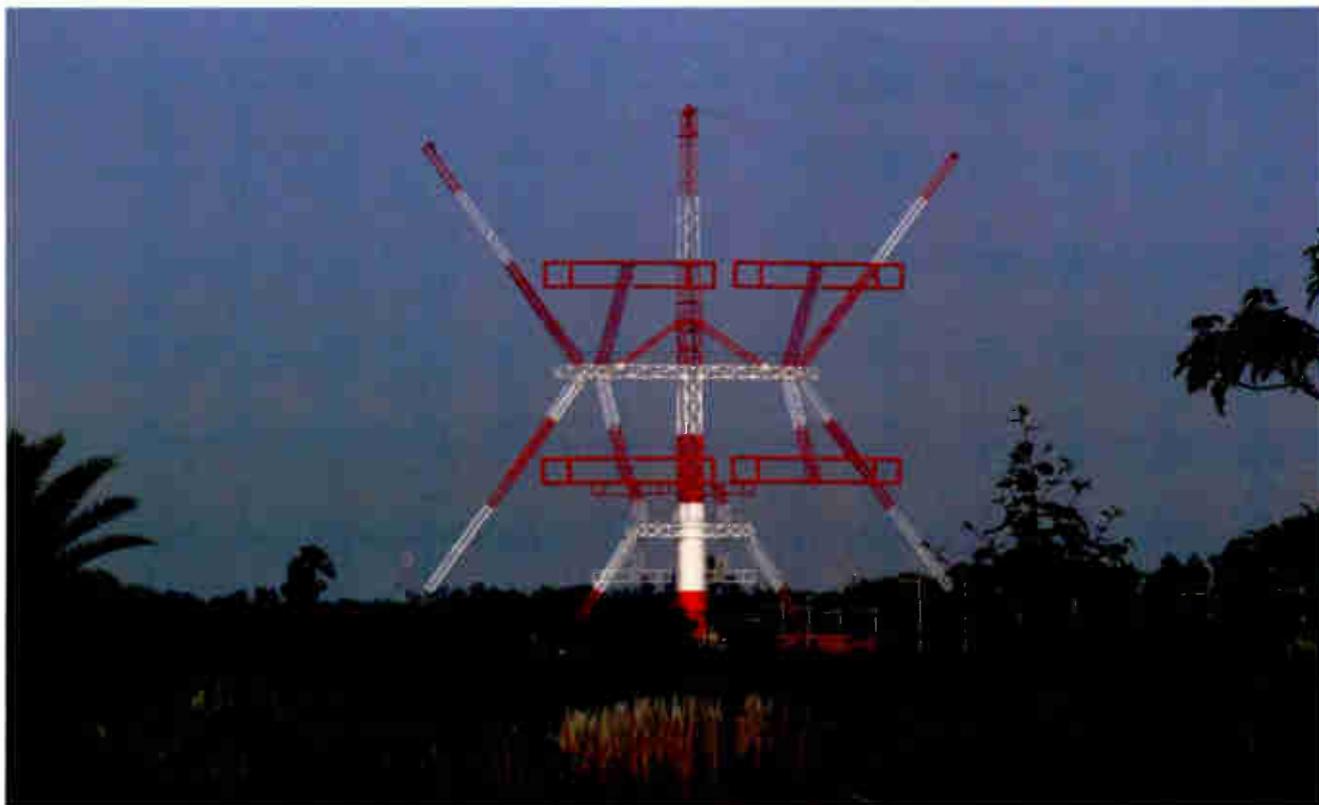
Based on a rigid dipole array and a tubular shaft, the HP-RCA 2/2 is a back-to-back arrangement of a low-band and a high-band curtain antenna equipped with reflector screens.

The 2/2 dipole array configuration gives a good radiation characteristic and the antenna gain of up to 19 dBi assures sufficient signal field strength in the

coverage area. The antenna operates to any azimuth and can rotate 180 degrees in less than three minutes.

To take into consideration the environmental conditions at the site, the antenna is designed for a maximum survival wind speed of 150 mph and a maximum operational wind speed of 75 mph.

By using rigid  $\lambda/2$  folded dipoles, which are mounted to the steel structure at their "zero potential" point, the need of insulators in structural parts is eliminated and perfect static grounding is assured. This and easy accessibility are the reasons we feel that the



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at 212-378-0400 ext. 511 or email [dcarson@nbmedia.com](mailto:dcarson@nbmedia.com).

HP-RCA 2/2 is one of the most reliable high-power shortwave broadcasting antennas available.

The antenna's enhanced power splitting and dipole feed system is optimized for outstanding bandwidth performance. This is even more important for Digital Radio Mondiale operation, for which the new transmission system at Kabirpur is prepared.

The proven design of the Ampegon rotatable shortwave antenna system is enabling broadcasters to make major savings, thanks to the high overall efficiency and the outstanding flexibility.

Ampegon is a new name to many. It was formed out of Thomson Broadcast's radio business along with several other technology businesses.

For information, contact Josef Troxler in Switzerland at 011-41-58-710-44 00 or visit [www.ampegon.com](http://www.ampegon.com).

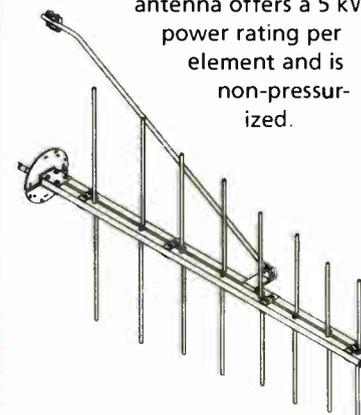
## **TECHUPDATE**

### SHIVELY LABS OFFERS NEW ANTENNAS

New from Shively is a log periodic antenna, Model 6025 (pictured).

The antenna provides the option of vertical, horizontal or slant (45 degree) polarization, with the vertical support and anti-rotation arms included. The

antenna offers a 5 kW power rating per element and is non-pressurized.



Shively says the antenna will become the "go-to" product with low VSWR of 1.3:1 or better. The company explains that the intent of the design is to be a structurally robust antenna with specific downward and anti-rotation arms to minimize movement on the tower.

Options for dual-boom mounting and variable slant positioning are available.

Shively is also introducing another low-power antenna. The system will be tunable onsite and have a compact design for shipping and easy assembly on site. Each element will handle 2,000 watts of power. It is expected to be available in the next two months.

And its Model 6812SBB is a low-power broadband system. Shively Labs says that it is the first antenna in broadcasting to utilize patented fractal technology. With the use of the fractal component, the standard Shively Model 6812B has been transformed into a broadband system with a VSWR of 1.3:1 across the band. According to the company, five have been shipped into the international market so far.

For information, contact Shively Labs in Maine at (207) 647-3327 or visit [www.shively.com](http://www.shively.com).

# Transradio Boosts Reliability of EFR

## Former radio broadcast site turned into a hub for broadcasting control signals

### SPECIALREPORT

BY MICHAEL SCHMOLKE  
Development Engineer  
Transradio SenderSysteme Berlin

**BURG, GERMANY** — Malfunction of a transmitting system can cause severe damage in sensitive broadcast-controlled customer equipment, affecting reliability and performance. To meet the specific requirements of communication services, Transradio realises transmitting systems offering redundancy of vital system components.

Transradio recently undertook the task of improving the operational stability of a communication service provided by Europäischen Funkrundsteuerung GmbH (EFR) for energy management, lighting control, smart metering and data services. The transmission from Burg, once one of the biggest German broadcast radio stations, is now operated by Media Broadcast on 139 kHz.

At the site, a 50 kW reserve Transradio

TRAM transmitter automatically backs up the main 100 kW TRAM transmitter in case of failure. Both transmitters are very efficient and perform well and thus are used for LF time signal broadcasting.

The Burg antenna system comprises a 324-meter/1,063-foot grounded lattice mast supporting a rhombic cage antenna and a 210-meter/670-foot base insulated tube mast. The height of the tube mast, originally designed for medium-wave broadcasting, is low compared to the LF wavelength. High voltages appeared at the mast base and caused unstable operation. By changing the tube mast isolation design and using part of the uppermost guy section as top-load capacitance, voltages at the mast base could be reduced to less than a half.

To maintain transmission of the signal in case of a disturbance in one of the antennas or antenna tuning units, Transradio implemented a sophisticated, customized antenna control and switchover system based on a programmable logic controller. This system takes

into account and covers all relevant parameters of the transmitting installation, including status monitoring of safety equipment such as UV detectors, access doors and earth grounds.

The antenna tuning unit of the old cage antenna was replaced by a carefully shielded container equipped with motor-driven grounding switches. After

completing antenna modification, the antenna tuning unit of the tube mast was upgraded for switchover and matched to the changed base impedance. Properly adjusted spark gaps at all relevant positions of the matching circuit protect the equipment against excess voltage when lightning strikes.

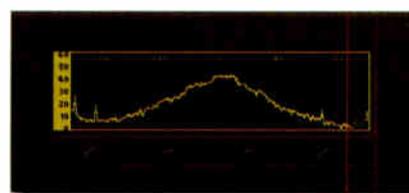
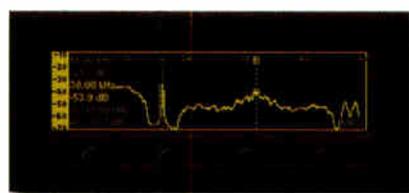
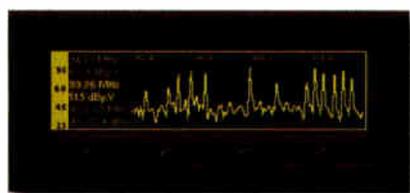
For information, contact Michael Schmolke at Transradio in Germany at 011-49-30-33978-305 or visit [www.tsb-ag.de](http://www.tsb-ag.de).



The Antenna Tuning Unit at Burg



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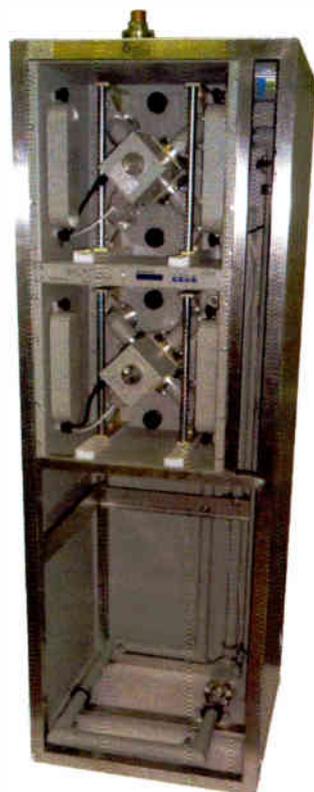
**TECHUPDATES****DELTA MECCANICA  
DELIVERS AUTOMATIC  
ANTENNA SWITCHING UNIT**

Delta Meccanica has developed an automatic antenna switching unit. The device, consisting of two motorized coaxial switches connected to a power splitter, will permit automated selection of antennas in multi-antenna configurations.

The Italian company recently delivered a unit to a broadcasting company in Qatar for use with its dual-antenna system. In Qatar the switcher chooses either a single antenna or halves of the two antennas that comprise the system.

Thanks to a simple design, continued transmission in case of electrical or mechanical failure can be assured by removing the coaxial switch not working properly and replacing it with a manual link.

For information, contact Delta Meccanica in Italy at 011-39-07-6331-6222 or visit [www.deltameccanica.com](http://www.deltameccanica.com).

**ERI PROVIDES FM  
CHANNEL COMBINING  
SOLUTIONS**

Electronics Research Inc. (ERI), known for its high-power FM and television combining systems, says it has spent the last few years completing FM filter and combiner module designs for low- and medium-power (up to 10 kilowatts) applications.

One new product is the 955 Series FM Band Pass Filter and Constant Impedance Combiner Module (pictured). It is capable of handling up to 5 kW (10 kW for the constant impedance version) and is a modular design available as 3-, 4-, or 5-section filters.

Another product is the 938 Series FM Band Pass Filter and Constant Impedance Combiner. It is a compact 3-section filter capable of handling 3.5 kW (7 kW for the constant impedance version).

A third product is the 935 Series FM Band Pass Filter and Constant Impedance Combiner. It is also a compact 3-section filter, but capable of handling 1.5 kW (3 kW for the constant impedance version).

The power handling capabilities listed refer to the convection-cooled versions of these filters. With optional forced air cooling, higher power handling capability can be achieved.

All of these filter and combiner configurations include temperature compensation permitting full transmitter output power from a cold start and maintaining performance parameters with changing ambient temperatures. The filter and combiner sets are tuned to an assigned frequency but can easily be retuned to other channels in the field if the need should arise.

For information contact ERI in Indiana at (812) 925-6000 or visit [www.eriinc.com](http://www.eriinc.com).

**ALDENA OFFERS  
NEW ANTENNAS**

Aldena, a leading manufacturer of transmitting antennas for TV (analog and digital) and radio (FM, DAB, DAB+, DRM), says it is involved in different projects/trials all over the world for new DAB networks.

Aldena has new antennas for DAB transmission suitable for medium- and high-power antenna systems along with a full range of high performance RF accessories (coaxial power splitters, indoor/outdoor fine matchers and outdoor RF monitor probes).

New is the AQP0404 series. This is an antenna panel with four dipoles for mixed or linear polarization designed for installation to square or round masts. It enables horizontal patterns with omnidirectional characteristic as well as specific directional patterns with outstanding VSWR values over the entire VHF band III, according to Aldena.

Also new is the ALP0704 series. Aldena describes the ALP0704 series as log-periodic high-gain antennas with seven elements and low wind load. The antennas can be installed with linear polarization (horizontal or vertical) suitable for stacked array and complex irradiation pattern antenna systems with suitable VSWR values over the full VHF band III.

In addition, Aldena provides network planning services for digital radio thanks to its EMLAB software tool.

EMLAB is a specialized software package that plots radiation patterns and calculates the coverage area of a single antenna all the way up to a complete network.

For information, contact Aldena in Italy at 011-39-02-90390461 or visit [www.aldena.it](http://www.aldena.it).





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## TUNWALL RADIO ADDS TRC-5C BACKUP SITE CONTROLLER

The PLC-based Tunwall Radio TRC-5C controls multiple transmitters and coaxial switches at a single backup site. Originally built for a five transmitter backup site, the controller is compatible with any combination of coaxial switch types and transmitters.

A front panel flowchart graphic with switch position indicators shows RF signal paths clearly. Transmitters can be turned on or off individually or as a group. Interlock and RF on/off closures are provided for each transmitter. Any single transmitter not switched on-air through the RF combiner is connected to the shared dummy load, and will be allowed to run depending on the state of the controller's automatic load interlock input.

If more than one transmitter is off-air, the controller's logic enables only the correct transmitter to run into the load. Any transmitters not switched to air can be switched in at once, with a single command. The antenna interlock input shuts down all transmitters immediately if the station's VSWR monitor detects an antenna problem.

Tunwall Radio says that installation is exceptionally convenient. There is nothing for the user to program. All transmitter, load, antenna interlock, and remote connections are made to barrier strip terminals — there are no high-density or solder-type connectors. Coaxial switches are connected to crimp-pin AMP connectors. Pre-made controller-to-switch cables are available.

For information contact Tunwall Radio in Ohio at (330) 995-9642 or visit [www.tunwallradio.com](http://www.tunwallradio.com).



## MYAT DEBUTS ALUMINUM ELBOWS & LINE, COAXIAL SWITCHES

Myat has introduced aluminum elbows intended for indoor use. Available sizes are 1-5/8 and 3-1/8 inch. The model 211-026 features integrated coupling sleeve and male connectors for interconnection, the model 211-025 is standard, non-slip sleeve. These elbows are intended to offer a lower-cost option to copper models.

The company also debuted two 50-ohm coaxial transfer switches. The 580-180-X series is a four-port model with 7-16 DIN connectors. The 101-180-X series is a four-port model with 7/8-inch EIA connectors. Each switch offers high power-handling capacity and has a specification of at least -70 dB port isolation and maximum VSWR of 1.03:1 from 54 through 1000 MHz. Switching time is less than two seconds. In the case of power loss, the switch will remain in position when power is restored. Manual override can be performed when AC power is disconnected. Both switches have four choices are available for 115/230 VAC drive power with 12 or 24 VDC control voltage.

For information, contact Myat in New Jersey at (201) 684-0100 or visit [www.myat.com](http://www.myat.com).



## JAMPRO JCPB IS AN FM BROADBAND BROADCAST ANTENNA

Jampro says that its JCPB sidemount antenna is ideal for broadband and multifrequency applications. The JCPB is a broadband version of the Jampro Penetrator antenna, with excellent VSWR and bandwidth characteristics.

Each bay consists of a Penetrator-style radiating element supported by a galvanized steel-mounting bracket. Standard round leg mounting brackets for a uniform face tower are included. Silver-plated inner conductor connectors are used throughout for maximum contact life and minimum power loss, says Jampro.

The antenna has a power rating of 2.5 kW for the JCPB-M unit, and 5 kW for the JCPB-H.

For information, contact Jampro Antennas at (916) 383-1177 or visit [www.jampro.com](http://www.jampro.com).



### Answers to Holiday Quiz on pages 22-24

1. c
2. c
3. d
4. b
5. c
6. a
7. a
8. c
9. d
10. d
11. d
12. a
13. b
14. b
15. b
16. a
17. a
18. d
19. b
20. a

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**TECHUPDATES****AM GROUND SYSTEMS OFFERS AM TRANSMISSION SITE SERVICES**

Specializing in grounding for AM broadcast and lightning protection, AM Ground Systems Co. offers comprehensive ground system inspection, evaluations and repair. The company says that by using state-of-the-art test equipment, it can locate faults and repair ground systems that would have required a full rebuild in the past.

According to the company, available services include new construction of AM ground systems, rebuilding AM ground systems, inspection and evaluation of lightning grounding, installation of lightning grounding, turnkey site work and tower tuning.

In addition, it specializes in Method of Moments (MoM) proof physical preparation work. This includes installation of new feed, sample or control lines as well as installation of new tuning equipment and retrofitting of existing tuning equipment for MoM equipment.

The company adds that it offers budgetary estimates and firm, competitive quotes to aid in planning a site construction or rehabilitation project and says that compressed timeline projects are handled efficiently.

For information, contact AM Ground Systems in Tennessee at (877) 766-2999 or visit [www.amgroundsystems.com](http://www.amgroundsystems.com).

**SINE CONTROL'S POWERCLAMP SURGE SUPPRESSORS IMPROVED**

According to Sine Control, the "PowerClamp" line of Transient Voltage Surge Suppressor units has recently been improved with an updated design that improves performance and reliability.

These devices eliminate spikes, surges and noise from AC power lines to prevent damage to electronic equipment. Several series of PowerClamp units are available, with capacities ranging from 60,000 to 200,000 surge amps. They will clamp transients to within a few volts of the AC waveform, and "scrub" noise and harmonics from the AC power line.

The improved units now employ internal fusing and shorter conductor lengths, which decreases the response time of the suppression circuitry. All PowerClamp models benefit from this enhancement, and will now respond to power line disturbances in less than one nanosecond.

Sine Control explains that PowerClamp TVSS units employ a combination of technologies that react to both the amplitude and the rise time of line disturbances. They instantly shunt voltage spikes to ground, preventing serious equipment damage and unreliability. The automatic sine wave tracking features monitors the average AC voltage and maintains a very narrow threshold over which the clamping circuitry activates. Spikes and surges are attenuated to within just a few volts normal voltage, without causing any clipping or distortion of the AC sine wave.

The other advantage of the faster response time is ultra-low power dissipation. This keeps the unit cool even under heavy use, and prevents any degradation in performance even after thousands of "hits."

Because PowerClamp units are installed in parallel with the incoming AC service, performance always remains constant under changing load conditions. The other advantages of parallel installation are that there is no insertion loss, and the PowerClamp unit will not interrupt power to the load. Your transmitter will remain on-the-air even if the PowerClamp fuse blows.

PowerClamp TVSS units are available for single-phase, three-phase wye, and three-phase delta power. They're suited for use at transmitter sites, studios, translators, computer rooms, and other mission-critical installations.

For more information, please Sine Control Technology in California at (562) 493-3589 or visit [www.sinecontrol.com](http://www.sinecontrol.com).

**LBA TECHNOLOGY'S CAMI FACILITATES AM REBROADCASTS**

With the blessing of the Federal Communications Commission, AM stations now can rebroadcast on FM translators in some circumstances, reaching a core service area using both FM and AM signals. LBA Technology says that it developed the CAMI series coaxial AM isolators for this cross-service translation mission.

The CAMI is a simple medium-power isocoupler. According to LBA its chief virtues are that it is cost-effective and applicable to several situations where an antenna is mounted on a "hot" AM tower. Some isocouplers isolate single

auxiliary broadcast coaxial cables for studio translator links, or FM translators, or low-power FM and television translators. CAMI works for all of these applications.

The CAMI also passes AC or DC current to tower top amplifiers and is resistant to extreme weather events and lightning. The device is lightweight, simply installed, and reliable.

For information, contact LBA Technology in North Carolina at (800) 522-4464 or visit [www.lbagroup.com](http://www.lbagroup.com).

**KATHREIN HAS VHF ANTENNAS FOR DAB/ DAB+ DIGITAL RADIO**

Kathrein offers an extended range of wideband VHF antennas, particularly suitable for DAB/DAB+ digital radio applications.

The top-mounted vertical polarized "plug-and-play" antennas offer excellent omnidirectional radiation characteristic over the entire VHF 174–240 MHz frequency range.

This easy-to-mount antenna consists of double dipoles and isolation grids, fixed to a central support tube. It also features simple assembly, a low wind load, low weight and high capacity of up to 8 kW per element.

Two elements can be stacked one above the other and the complete system gain is then approximately 7.5 dBd. Diverse feeding options are possible, including half-antenna operation.

These antennas are also characterized by low VSWR/return loss. A planned future option is making the antenna mountable on top of an existing GRP-cylinder antenna.

For information, contact Kathrein-Werke KG in Germany at 011-49-8031-184-813 or visit [www.kathrein.de/en/bca/index.htm](http://www.kathrein.de/en/bca/index.htm).



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# Radio World Talkback

Comments shown were posted by readers to stories that appear at radioworld.com. For links to the original stories, see radioworld.com/links



From the collection of Bill Newbrough

*"I love this! It reminds me that KPFA(FM) Berkeley, where I apprenticed in the late 70s, used to cool the transmitter pentodes and other large heat-emitting tubes with a cascading waterfall inside the transmitter cabinet. I'm wondering if I have that correct. At any rate, thanks for posting."*

— on "In the NBC Microphone Storage Room"

*"I am a former employee, and I wish words were enough to express how grateful I am to have known him. Bill was a brilliant businessman, a great employer and a true broadcaster to the end. We have lost a very good man. God bless him and his family."*

— Jim Blommel, on "Radio Owner Bill Dalton Dies at 80"

*"FM translators were designed to be filler for FM stations' programming in dead areas of their main contour area. It has since turned into a way to create a new radio station with different programming, thus creating additional market competition, via an embedded HD2 signal in another station transmitter owned by the same group. Do you really think this is a fair practice?"*

— on "LPFM, FM Translators, on FCC's Tentative Agenda"

**"What a crock. We DO NOT need any more religious programming. Do not give them more stations. In terms of running a local station: The costs are NOT high. \$10,000 (one time) for equipment and almost ALL personnel work gratis running it. Maybe \$3,000 (annual) for rent. We need LOCAL radio, not networks. We have plenty of networks already."**

— on "Internet Stations, Too, Want LPFMs"



*"This is the most ridiculous invention ever."*

— on "Mic Flag Goes High Tech," a mic flag with a small video screen

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# RADIO WORLD

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*"My favorite thing: The history pieces by James O'Neal. And John Bisset's Workbench is an excellent place to pick up useful tips."*

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**READER'S FORUM****WE'RE STILL THERE  
WHEN YOU NEED US**

I was aghast at an interview I saw with a New York area resident, a young 20-something guy, about the abysmal storm recovery response there. Toward the end of the interview, this guy blurts out, "We're getting no information at all here!"

Wow! What a lack of knowledge about the world around him. Consider: The New York area is the number one radio market in the United States. New York City has three 50,000-watt radio stations, whose signals blanket the area. Their signals are so strong, I can receive them here in Ohio at night: WOR(AM), WABC(AM) and WCBS(AM).

All three of these talk stations provided information during Hurricane Sandy. However, they also are all on the AM band.

Sadly, this young man and his friends don't seem to have heard of, much less bothered to listen to, any of these stations. Because *who listens to AM radio anymore?*

Welcome to the "new normal," broadcasters! You've been listening to people like me, who've been in the business for about 40 years, telling you about a whole new generation of Americans who think radio is totally irrelevant and not something to include as part of their lives. Here he is ... and consider it a slap in your faces.

This shows, in Day-Glo orange, that my industry is doing a terrible job of getting the word out about what they do and how radio can affect and improve their lives.

It might not be a bad idea for FM stations during a major storm to say, "Tonight is election night and our sister station X on the AM frequency is providing complete election returns right now, so tune in." Or, "For complete storm updates, tune to X on the AM dial."

Don't complain to me about Clear Channel, Entercom, Cumulus, Cox, voice-tracking and all the other excuses that allow you to complain and whine that radio is no longer "live and local" 24/7/365. Facts are, most all areas of the country have at least one station that goes "live and local" when these emergencies happen, for as long as needed until the emergency has passed. In some cases, they're FM music stations. In others, you'll have to flip the switch from "FM" to "AM."

Radio has now been around for just shy of 100 years. And today, you don't even have to have batteries for one. There are "emergency radios" that cost anywhere from \$19.95 to \$39.95. These can operate in any situation. And many will receive AM/FM and, in some cases, police band and shortwave. They're environmentally friendly.

With the exception of a few small daytime-only stations, the vast majority of radio stations now all operate 24/7/365.

Yes, listeners, you have to put up with some commercials. But that's the price you pay, other than the cost of the radio itself, for the information you're getting around the clock.

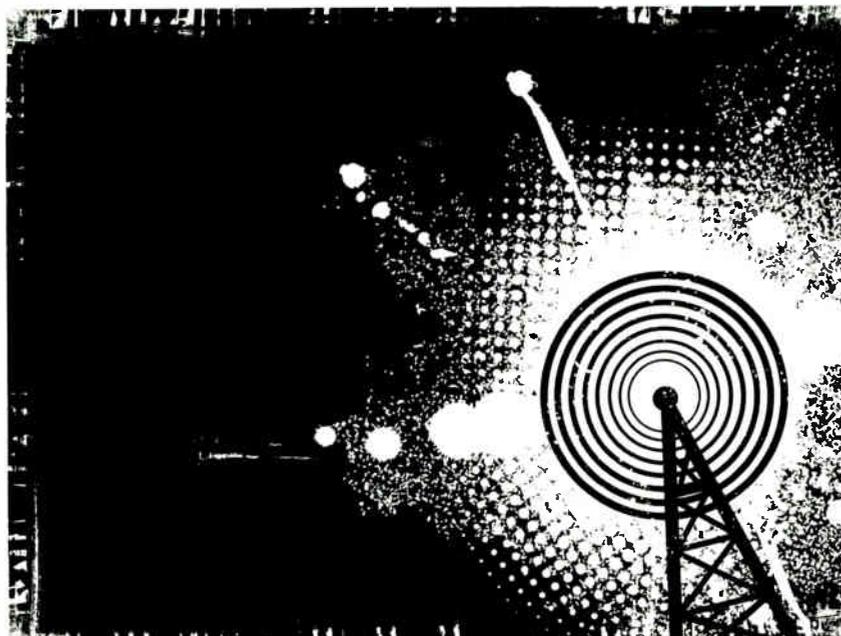
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ancient "old technology" of radio. We're still there when you need us.

Kevin Fodor  
News Anchor, Programming Assistant  
Cox Media Group  
Dayton, Ohio

**'HIGH TECH' OFTEN FAILS IN CRISES**

In his Nov. 19 column "Sandy Highlighted Radio's Enduring Power," Paul McLane wrote, "Radio received many such reviews (though sometime with a condescending subtext: 'Not bad for an otherwise outdated technology')." This reminds me of the comment made by a Motorola rep just after Katrina. With 35 percent of the cell and public service systems down, amateur radio operators stepped in to help with communications. It was a good demonstration of how ham radio can help, and also how fragile our cell/public service infrastructure is.

At a post-Katrina press conference, the FEMA director praised the hams, which led to the quote by the Motorola rep: "Their efforts were better than nothing, and ham radio is as close to nothing as one can get."

As a communications officer/deputy in our county, and co-chairman of our EAS district, I'm concerned about how our so-called high-tech infrastructure holds up under these emergencies. It seems that the more complex it is, the more the chance for failure.

I've seen our communications go down several times, and in those times, conditions were nowhere near the level of Katrina or Sandy.

On another note, here in the Midwest, we have a lot of big, corporate stations operating, mostly unattended. This past June, when we had our big windstorm, our TV station was on a full hour and a half before it hit Lima, Ohio, warning of the storm. Up to 10 minutes after the storm, the radio stations were still playing "more music," and one cluster vanished from the radio dials.

As a curmudgeon of the old days of public service, I really hate to see radio degraded like this. In bigger towns — Cleveland, Dayton, Columbus — they were on top of it. But markets 100+ in Ohio and Indiana suffered from the "station running on automation syndrome."

Frederick R. Vobbe  
Director of Engineering  
Block Communications Inc.  
Lima, Ohio

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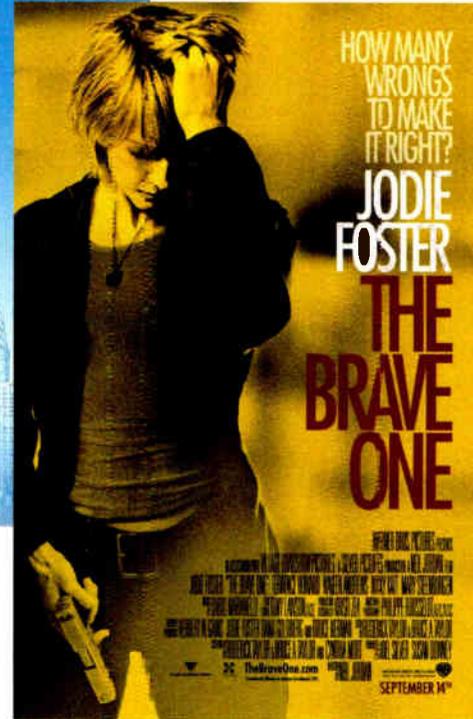
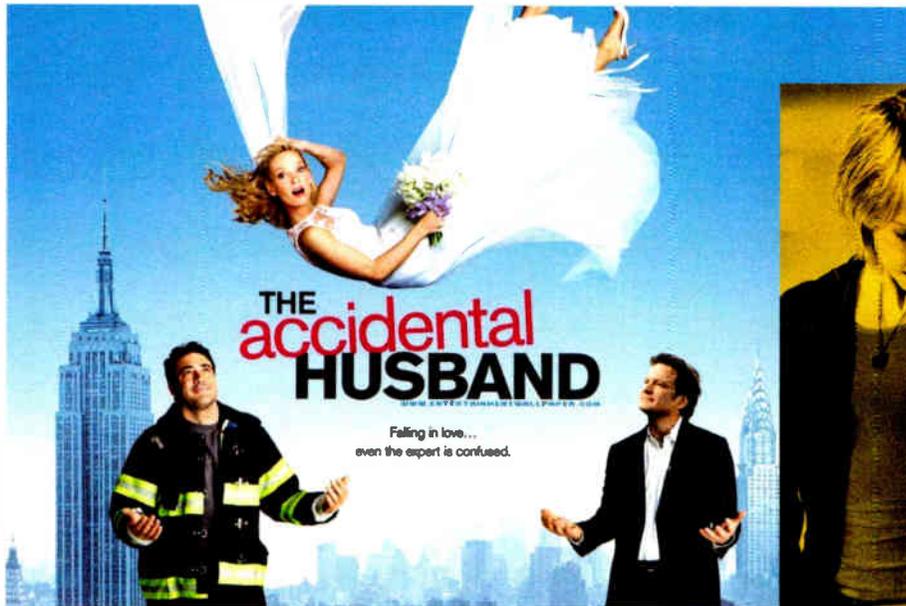
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## NEW YORK CITY, NEW YORK



 \*Lydia now does interior design as well as set decoration. We have yet to get her to specify StudioHub+ for any of the beautiful Manhattan apartments she decorates, but you can see her new work at [www.marksandfrantz.com](http://www.marksandfrantz.com)

 \*\*Rena continues her career in set decoration with her most recent credit on the film "The Help." Contact her at [renadeangelo@gmail.com](mailto:renadeangelo@gmail.com)

## RADIO SYSTEMS GOES TO THE MOVIES



*Millenium Broadcast Consoles read beautifully on film, so they will also look great set in your broadcast studio. Install them with StudioHub+ and have time left over to go to the movies!*

Shown above on the set of "The Brave One."

Jodi Foster and Uma Thurman probably didn't even know that they've used StudioHub+. But their set decorators do.

Set design is a big and important part of making a successful movie. So when Lydia Marks\* with credits on her resume like "Sex and the City" and "The Devil Wears Prada" gave us a call to help her outfit the multiple broadcast studios for the Warner Brothers' film "The Brave One" starring Jodi Foster - we knew we had one cool gig.

Of course, the studios had to look realistic and work perfectly. But mainly, integration of the studios had to fit a grueling production timetable. That's where StudioHub+ came in. The plug-and-play efficiency of StudioHub+ allowed set crews to quickly construct, break and reconstruct scenes on a schedule that would make even a broadcast on-air deadline seem tame.

Broadcast engineers talk to each other and so do set designers. That's why when Rena DeAngelo\*\* asked her friend and associate Lydia who she might tap to build another radio studio, we were off to the movies again; this time for "The Accidental Husband," a production starring Uma Thurman.

Since then, we've also helped re-create the radio studios of the TV show Frasier for a Dr. Pepper commercial shoot and outfit "Atlas Satellite Radio" for the NBC pilot "Next Caller."

StudioHub+ hasn't made us all famous yet. But we have been proud to crew for these prestigious designers and production companies with the "wiring solution of the stars."

## JOIN TEAM RADIO SYSTEMS



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modular design + ease-of-use + value



## Audioarts IP-12 = enlightenment

The IP-12's modern, modular design moves all audio, logic and control outside the control surface and into a single rackspace audio interface/mix engine (called a BLADE). This gives you much greater mixing/processing capabilities as well as the ability to cost-effectively add on incredible functionality (more audio sources, automation feeds, STL capabilities, multi-channel processing, more consoles, etc). And, if you've already got the **WheatNet-IP Intelligent Network**, it fits right in,(or, if not, what better place to start?).

Speaking of modular design, the IP-12's construction is exactly that. Need to replace a channel? Two screws and a connector is all it takes. Got automation? IP-12 is hardware-ready. We offer a software driver that works seamlessly with the most popular automation platforms to give you control right from the console! And here's how easy it is to set up the new IP-12 console: Unbox it. Plug it in. You're ready to go. But don't let its simple setup fool you. It's one very powerful little console...

Ready for enlightenment? Contact your Audioarts dealer, give us a call or visit us on the web today to learn more about the power, flexibility and affordability of the IP-12.



MODULAR WHEATNET-IP NETWORKABLE CONSOLE

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