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Digital in Public

NPR Labs is studying IBOC receiver sensitivity and interference as part of a study funded by CPB.

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Your Logo Here

Jim deYong turns old Top 40 artwork into a labor of love.

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Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

July 18, 2007

INSIDE

NEWS & ENGINEERING

▼ Advocates say Digital Radio Mondiale is now poised to make inroads into the most widely used AM and VHF broadcasting bands around the globe.

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OPINION

▼ A welcome opportunity to overhaul EAS.

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Looking for HD Radio receiver reviews? Visit radioworld.com and click on Product Evaluations

LeSEA Broadcasts To the World

Recent WSHB Acquisition Is Only Part of a Story That Dates to 1957

by Randy J. Stine

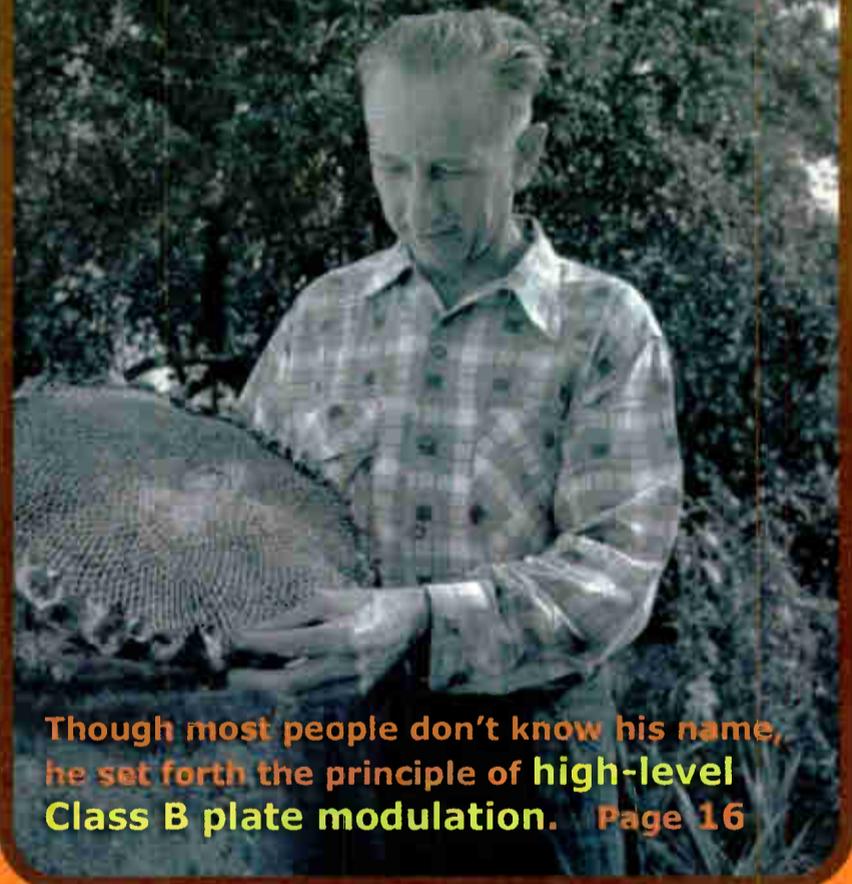
SOUTH BEND, Ind. Three years after expanding its shortwave holdings with the \$2 million purchase of a shortwave radio station in Cypress Hill, S.C., one of the largest shortwave broadcasters in this country continues to evaluate digital shortwave and search for ways to expand its reach.

LeSEA Broadcasting Corp. operates from master studios in South Bend, Ind., and uses a complex series of satellite uplinks with high-power transmitters and directional antennas to broadcast shortwave programming worldwide.

The non-profit Christian broadcast organization also operates three terrestrial FM radio stations in South Bend. Its managers believe it has the potential to reach more than 90 percent of the world's population with non-denomina-

See LESEA, page 8 ▶

LOY BARTON, FORGOTTEN RADIO PIONEER



Though most people don't know his name, he set forth the principle of high-level Class B plate modulation. Page 16

Loy E. Barton and one of his giant antennas. Courtesy: Sarah J. Libron

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NEWSWATCH

New Group Seeks Music Money From Radio

WASHINGTON A partnership of singers and music industry organizations has formed to represent recording artists in an effort by the record industry to get music royalties compensation from radio.

The group — musicFIRST, for “Fairness in Radio Starting Today” — is asking that performers be compensated when their music is broadcast over the air. Some 100 recording artists signed on

as founding members.

Radio pays royalties to ASCAP, BMI and SESAC, which distribute compensation to singer/songwriters and music publishers; but music labels have been fighting for higher rates from radio and compensation for singers as well.

The RIAA and SoundExchange are among 11 music industry organizations that belong to the coalition. Radio argues that airplay is a form of compensation to artists.

The new group is lobbying Congress to support legislation to levy digital performance rights royalties on radio. NAB calls it a performance tax.

NAB, CEA, other interested parties

and the RIAA have been in talks to try to develop a non-legislated solution. In hearings on the digital performance rights issue, lawmakers have said they prefer that industry solve the issue without government intervention.

But NAB, reacting to the group’s formation, said it will continue to aggressively fight the RIAA’s proposed performance “tax” on local radio stations.

“Congress has long recognized that radio airplay of music generates millions of dollars in revenue for record labels and artists,” said NAB Executive Vice President Dennis Wharton in a statement. “Were it not for radio’s free promotional airplay of music on stations all over

America, most successful recording artists would still be playing in a garage.”

News Roundup

BROADCAST AT AES: The Audio Engineering Society will hold a dedicated, four-day Broadcast Audio Conference at the fall show in New York this year. It said it is ramping up broadcast-related events “in response to growing demand by television and radio broadcasters for audio technology updates relevant to their HD/digital transitions.” Convention Committee Chair Jim Anderson and Conference Chair David K. Bialik are organizing the program.

‘NO’ TO MERGER: Approximately 70 members of Congress urged federal antitrust authorities to block the satellite merger. They wrote the attorney general, FCC and FTC asking that they reject it because the marriage “would create a monopoly which would be devastating to consumers.” The chief authors of the letter are Reps. Gene Green, D-Texas and Jim Sensenbrenner, R-Wis.

BANNER CAMPAIGN: NAB hung a banner from its Washington headquarters to protest the proposed merger. The banner, “Do the Math: XM + Sirius = Monopoly,” directs the public Web site where they can read testimony from broadcasters representing NAB during congressional hearings and file comments to the FCC.

‘YES’ TO MERGER: Both XM and Sirius launched pro-merger Web sites, promising “more choice, better pricing

See NEWSWATCH, page 6 ▶

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DIGITAL NEWS

DRM: Ready for Global Deployment

by Daniel Mansergh

In the world of digital radio, it's a long road from working system to market penetration, as developers of digital radio technologies have discovered to their frustration over the past two decades.

Now, with three major systems in play in the global broadcasting marketplace, the differences in their design philosophies and development histories are leading them down distinctly different deployment paths.

HD Radio can be seen as a technological response to the American broadcasting business model constrained by limited spectrum. Eureka-147 grew from the soil of European national broadcasters in the luxury of new band allocations.

Digital Radio Mondiale's global approach and multi-band support have forced it down a more pragmatic path, seeking wide regulatory authority and regional adoption.

The consortium of broadcasters and technology companies known as DRM is, as indicated by its hybrid Anglophone/Francophone name, a study in compromise and flexibility. It has continued to change based on the needs of partners, users and market realities.

At the NAB convention in April, Don

To address this issue and investigate the suitability of DRM in constrained signal environments, DRM conducted a round of field testing in Mexico City in 2006 to assess the performance and compatibility of DRM analog/digital simulcast operation in the AM band.

For the trials, DRM used the transmitter site of Radio Educación, a public station run by the Mexican Education Department located about nine miles outside the urban center of Mexico City.

Support for analog/digital simulcast with the DRM system is achieved through in-band, adjacent-channel operation; in this case, the regular programming of Radio Educación was transmitted on its analog frequency on 1060 kHz at 50 kW, while a digital signal was broadcast on 1070 kHz at 1.25 kW, resulting in a total occupied bandwidth of 20 kHz.

These power levels represent the preferred design ratio of 16 dB for simulcast operation with the DRM system, according to Messer.

Because the performance and coverage of standalone DRM transmission on medium-wave frequencies have already been well-characterized, Messer said, the focus of the Mexico City tests was on simulcast reception and interference potential to in-band analog stations.

or to the adjacent-channel station.

Standard transmitter/antenna designs

Based on analysis of the collected measurement data and consistent with the results of previous field tests, Messer found that "DRM 'FM-like' reception works perfectly if the signal-to-noise ratio is at least 17 dB," and that "DRM coverage is roughly equivalent to analog."

DRM also caused no interference to the analog host during simulcast operation as long as the digital power was maintained at a level at least 13 dB below the analog signal, according to Messer.

From an implementation standpoint, Messer pointed out that although the expanded 20 kHz bandwidth requirement of DRM simulcast may not be achievable with more complicated existing directional AM transmission systems, it "can easily be accommodated with standard transmitter and antenna designs."

Messer also discussed the status of the effort to seek regulatory authorization for use of the DRM system on FM frequencies. He explained that the current draft specification proposes to add a new VHF Mode E to the existing sub-30 MHz DRM Modes A through D, with a basic 100 kHz bandwidth for the digital signal.

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Messer, chairman of the DRM Technical Committee, presented an update on the consortium's activities.

After early deployment of technology on a number of shortwave stations operated by consortium members, Messer presented DRM as a system now poised to make inroads into the most widely-used AM and VHF broadcasting bands in countries around the globe.

According to Messer, this represents the natural evolution of DRM, which was designed to be flexible in accommodating a range of frequencies, allotment schemes, transmission systems and programming types. "The DRM market is worldwide, by design, so it must be a versatile system," he said.

Other countries deploy DRM

After initial rounds of proof-of-concept and large-scale coverage testing, the DRM consortium has more recently been characterizing and demonstrating the capabilities of the system to broadcasters considering deploying DRM in their countries.

Of great concern to many broadcasters is identifying a migration path from analog to digital broadcasting in heavily-populated existing bands, since new channel allocations or unused blocks of spectrum may not be available.

Tests were conducted on seven mobile routes and 36 fixed locations throughout Mexico City, representing reception environments typical of urban, industrial and residential areas of the city.

Comprehensive signal strength, signal-to-noise ratio and audio quality measurements were captured for a "typical" DRM simulcast operation throughout the three-week test period, Messer said, while additional scenarios were tested separately.

These included comparison of a variety of more- and less-robust transmission coding parameters, four-channel multi-cast on the digital signal and 9 kHz operation of the digital channel. Additional tests studied performance of DRM reception quality as compared to AM quality in high-noise environments

For analog compatibility testing, four generally available consumer receivers were used by "expert listeners" to evaluate the analog service of Radio Educación subjectively at all of the measurement locations and in several indoor locations. In addition, spot measurements were conducted to assess potential interference to an adjacent-channel station on 1080 kHz, located north of Mexico City.

Messer reported that there was "no detected interference between analog and digital" either to the host analog station

Standalone DRM operation or an adjacent-channel simulcast (dubbed DRM Plus) would be allowable, with higher power levels available in DRM-only applications due to the reduced interference potential. To combat multipath and other propagation challenges in the VHF band, lower coding rates would be needed to introduce more robust error correction, Messer said, although even with this accommodation, he indicated that VHF DRM could deliver a bit rate of around 100 kbps with a typical set of transmission parameters.

In concluding, Messer characterized DRM as "a high-quality, high-reliability system on the AM and VHF bands, with no new spectrum required, and a large capacity for additional programs." He also touted the system's flexibility, noting that the specific use depends on the requirements of broadcasters in each country.

Ultimately, though, Messer wanted broadcasters to know that DRM is ready for prime time, given the system's use by several shortwave broadcasters and the ability to implement the system in several frequency bands.

"DRM is not an emerging technology," he declared. "It's already deployed."

See related story, page 5.

Stay Cool With '9XM Talking'

My shelf is groaning with recent titles so let's get right to it — the latest books of interest to RW readers to keep you inside, staying cool on hot July days.

"9XM Talking" — Randall Davidson, a news producer and anchor for Wisconsin Public Radio, writes about "WHA Radio and the Wisconsin Idea."

The book is a history of the University of Wisconsin station and also discusses WLBL and stations that constitute what is now WPR. It also explores the claim WHA has to the title "oldest station in the nation."

This 406-page hardback includes great black and white photos, including the super image of a child listening to a radio on the cover.

As the author notes, only a handful of more than 200 AM stations licensed to educational institutions since 1922 are still on the air as noncoms, and WHA is one. Readers interested in history will like this; those interested in the history of educational radio and the *original* "distance learning" will particularly enjoy it.

Retail price: \$34.95. University of Wisconsin Press.



and his secrets to overcoming them. This book was recommended to me by my friend Craig Baker, an owner of small stations in Georgia who is as passionate about selling radio well as anyone you'll meet.

Michelet, who also offers workshops on this topic, believes that if you sell a client with the lowest price and sales "tricks," you have to resell yourself every time. "If you make an advertiser more successful by helping them do effective advertising, you become part of their marketing program."

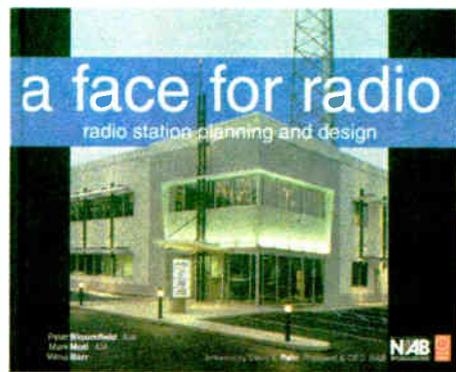
This is a quick, practical read for a GM or sales manager.

Price: \$14.95. Olympian Publishing.

"A Face for Radio: Radio Station Planning and Design" — If your idea of how to build a studio is to slap one up in the cheapest way possible, this is not a book for you.

However, if you love looking at high-end studio photos, if you appreciate architectural planning details, if you have a taste or a budget for things that are done well, check this one out.

It's a collaboration of Peter Bloomfield, president of Bloomfield & Associates Architects; Mark Motl, a sen-



ior associate at that firm; and writer Vilma Barr. They snagged NAB's David Rehr to write the forward.

They describe the hardback book as an illustrated guide to the process of creating an optimum facility that enhances a station's image. So there's plenty of

emphasis on the station's "face"; as you'd expect from an architect the book contains lots of examples to make a station look nice. But the authors also delve into ample questions of budget, site selection, schedule, procurement and other aspects.

This book is less technical than typical engineering references, yet more in-depth than most management planners. There are useful discussions of various aspects of the facility planning process.

See BOOKS, page 12 ▶

From the Editor



Paul J. McLane

Topspin Polarized Antenna Takes Some Readers for a Spin

Did you cock an eye at the article about the Topspin Antenna in the March 26 edition of Radio World?

Those who read it closely had a good laugh, and we intended to leave enough clues to allow readers to pick up on the April Fool's gag.

There were a number of clues.

The names of the "inventors" were anagrams: Milton Silam can be rearranged to spell Tom Silliman, Dirac Newel as Eric Wandel. Those two ERI stalwarts came up with the idea over a year ago and waited patiently for an April Fool's opportunity.

Other clues: The antenna was scheduled to demo on April 1; the physics behind "top spin polarized" propagation is outrageous. Toward the end, Tom and Eric tell me they started to worry that someone might steal the idea and try to market it from a location in Egypt!

Also there was a discussion of "bluff tests," a mild reference to this being a bluff. The reference to "backspin" polarization was a means of inserting "BS" into the discussion. The plot of the propagation trajectory was a modification to the classic ballistic equation, where gravity was replaced by the

"Topspin Fractal Coefficient."

The location Laerton Lane is "not real" spelled backwards. The photo in the article showed two cardboard "prototypes" quickly put together for the occasion at Electronics Research Inc. Silliman was shown in the pic taken by Wandel just outside Silliman's office



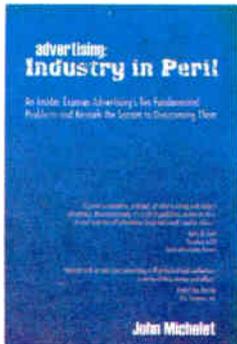
Topspin Antenna 'inventors' Tom Silliman, a.k.a. 'Milton Silam,' and Eric Wandel, 'Dirac Newel'

window at ERI in Chandler, Ind.

If you visited the Web site, www.topspinantenna.com, you know that the site does exist; the e-mails to Milton and Dirac are functional. Milton and Dirac must have too much time on their hands!

You can see the article by grabbing your back copy of the March 28 issue; or visit radioworld.com/topspin.

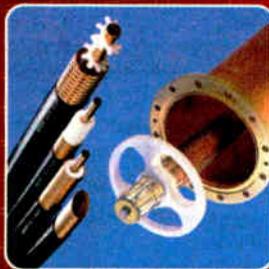
"Advertising: Industry in Peril" —



John Michelet believes that most of the advertising done in the United States is crap — that's my word, but pretty much his attitude. He says advertising is ineffective and worthless, wasting billions of dollars a year.

His slim paperback talks about "10 fundamental problems" of advertising

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FIRST PERSON

Shortwave Awaits DRM in United States

DRM Proponents Eye 2008 Olympics, 26 MHz Band

by Jeff White

The author is vice chairman of the U.S. DRM Group and president of the National Association of Shortwave Broadcasters.

ELKHART, Ind. U.S. shortwave broadcasters anticipate the availability of the first low-cost Digital Radio Mondiale receiver by the end of the year, though no DRM transmissions are originating yet in the United States, despite FCC approval.

China may begin DRM transmissions in time for the 2008 Olympics, spurring a global receiver launch and shortwave broadcasters from the U.S., and other countries would like to use DRM on the 26 MHz band for low-powered local FM-quality broadcasting.

These were the highlights of the U.S. DRM Group meeting, which was held in May in conjunction with the annual meeting of the National Association of Shortwave Broadcasters.

Broadcasters, manufacturers and others interested in the progress of DRM in North America gathered for their fourth annual meeting, held at the HCJB Global Technology Center in Elkhart, Ind.

About 60 persons attended the meeting, which included program producers, station managers, network operators,

mitters are easy to convert to DRM modulation and which ones are more difficult.

Don Spragg, formerly of HCJB and now working for Continental Electronics — which, along with other U.S. manufacturers Nautel, BE and Harris, sells DRM transmitters — explained that shortwave broadcasters were really

Deutsche Telekom's T-Systems, which attended the meeting in Elkhart. In the Americas, there are DRM transmissions from CBC Radio-Canada in Sackville, New Brunswick; Telediffusion de France in French Guiana, HCJB in Quito, Ecuador; Radio Netherlands in Bonaire, and Christian Vision from Chile.

All of these facilities except Bonaire conducted special DRM transmissions during the U.S. DRM meeting, and the

monitoring station in Elkhart was able to pick them all up with excellent reception. The audio was FM mono quality.

There was also a special trans-Atlantic DRM test during the meeting from Vatican Radio. The Vatican organ music and special conference ID's were heard with excellent quality and a 21–27 dB signal-to-noise ratio. Transmission power levels ranged from four kilowatts from Quito up to 250 kW from Vatican Radio.

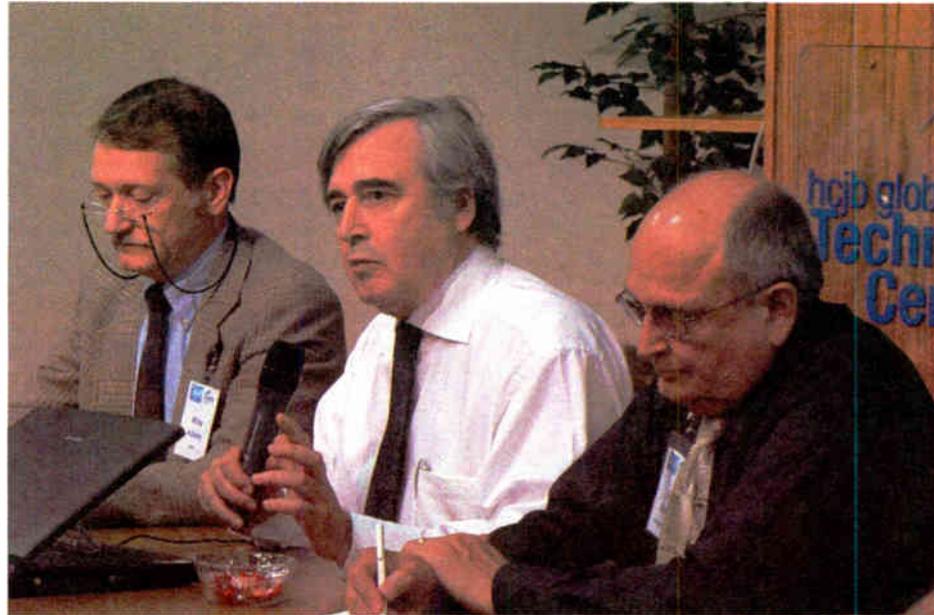
Receiver timeline fluid

"DRM has much to offer," concluded Spragg. "It's an exciting time. DRM has an important place, especially if we're going to see a revival of the shortwave broadcasting spectrum."

The current problem with DRM is that consumer-friendly receivers are not yet available in North America. A few early receivers are now on the market in Europe for as little as 200 euros, or about \$270; but improved versions are still being developed and have yet to hit the store shelves.

For some time now, it has been possible to use certain shortwave receivers connected to a personal computer with special DRM software to listen to DRM transmissions. However, the goal is to have stand-alone receivers that can pick up DRM signals without the need to connect them to PCs. Recently, a few of these types of radios have been released on the market in a small scale in Europe, even as modifications and improvements continue to be made.

See DRM, page 6 ▶



FEBC's Mike Adams, TDF's Michel Penneroux and Continental's Don Spragg lead a discussion about DRM's future in North America.



Don Spragg talks about the status of Digital Radio Mondiale.

marketing people, shortwave listeners and consultants.

DRM sends text, graphics

"This is our big opportunity," said Mike Adams, chairman of U.S. DRM's International Broadcasters Committee, "to get together each year and find out what's going on with DRM in North America." Adams is an engineer who monitors new technologies for Far East Broadcasting Company, a worldwide religious broadcasting network.

Herb Jacobson of HCJB began the meeting with a detailed explanation of the basics of DRM — its advantages to broadcasters and how it works. He explained which popular shortwave trans-

missions are in Europe, including those from behind the origins of DRM because they wanted a system to enable them to go digital.

DRM officially was launched in 2003 and it has expanded to AM, longwave and now FM use as well.

Spragg said that DRM technology enables broadcasters to transmit in various grades of audio and can carry up to four programs simultaneously in one channel. DRM can be used to transmit voice, music, text, graphics, slide shows and multiple languages. There are currently 766 hours per day of DRM transmissions, according to the DRM Consortium.

Most, but not all, of these transmissions are in Europe, including those from

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NewsWatch

► Continued from page 2

and same radios" if the companies combine. Like NAB's anti-merger site, the pro merger sites contain quotes from people about the issue and a link to file comments with the commission.

LPFM (AGAIN): LPFM proponents in Congress are pushing to require the FCC to drop third-adjacent channel restrictions protecting full-power stations to allow more LPFMs in larger markets. Supporters believe "hundreds" more LPFMs could be allowed. Principal sponsors of the legislation are Reps. Mike Doyle, D-Pa., and Lee Terry, R-Neb., and Sens. Maria Cantwell, D-Wash., and John McCain, R-Ariz. Backers are citing the FCC-funded 2003 Mitre study as proof more LPFMs on the dial would not interfere with existing stations. NAB and RW engineering consultants said the study was flawed and under-funded.

MOUSE SPINS ABC TO CITADEL:

Disney completed the spin-off of ABC Radio to Citadel Broadcasting and a Citadel subsidiary closed on its acquisition of 22 stations and the ABC Radio Network. Not part of the deal were ESPN Radio or the Radio Disney network and station businesses. Citadel, headed by Farid Suleman as chairman/CEO, now has 179 FM and 66 AM stations as well as the ABC Radio Network business.

THE WHITE HOUSE said it would renominate Deborah Tate as an FCC commissioner. If confirmed by the Senate, Tate's five-year term would expire June 30, 2012. The Republican previously served as chairman of the Tennessee Regulatory Authority.

WITHERS GETS FIELD'S BATON:

W. Russell Withers, owner of Withers Broadcasting, is the new NAB Radio Board chair. He replaces David Field, president/CEO of Entercom Communications. Steven Newberry, president of Commonwealth Broadcasting, was tapped as vice chair; Charles Warfield, president of ICBC Broadcast Holdings, was elected second vice chairman.

ONLINE BROADCASTERS went silent for a day of protest in late June to draw attention to music licensing fees, which were slated to go up July 16.

Streamers encouraged listeners to lobby representatives to support legislation to stay the increase.

SHORTWAVE GROUP: Stephen Lockwood of Hatfield & Dawson Consulting Engineers has set up e-mail list servers on the SBE Chapter 16 server to help shortwave transmitter users. According to the National Association of Shortwave Broadcasters, the servers are a forum for suggestions for maintenance and operation of Continental 418 and Harris SW 100 transmitters. For questions e-mail lockwood@hatdaw.com.

KELLY TOBER joined Ibiqity Digital as broadcast marketing manager. Tober, to be based in Columbia, Md., will work with HD Radio broadcasters supporting local market programs, on-air presence, Web promotions and trade shows. Tober was promotions director at Clear Channel's WBIG(FM) in Washington. She replaces Rene Jamerson, who moved to NAB.

DRM

► Continued from page 5

Michel Penneroux, chairman of the DRM Consortium's Commercial Committee, said, "The problem is in this kind of situation, the timelines of the various players are different from one to the other. The broadcasters have one timeline. The transmitter industry has another. The receiver industry has [yet another]. So you wait until the retailers say 'We want this because the customers are interested in this.'"

So far retailers like RadioShack have not yet shown much interest in selling DRM receivers. "The numbers [they need] are very big," said Penneroux, "with 2.5 billion receivers to renew worldwide. Manufacturers are very secretive about what they want to do, what are their plans, when they're going to launch. This is the reality."

Some participants at the meeting said that there may also be a role for DRM in AM broadcasting in the United States, given the controversy over problems with IBOC at night. They speculated that combined DRM/HD Radio receivers might be on the horizon.

"We are building a digital radio world for the next 20 years," said Penneroux. "We are expecting by around the end of

BGG: James Glassman was sworn in as fourth chairman of the Broadcasting Board of Governors, replacing the controversial Kenneth Tomlinson.

FEDERAL SHIELD: RTNDA is among those urging House lawmakers to support federal shield legislation. Also supporting the "Free Flow of Information Act" are NAB and the Newspaper Association of America as well as several dozen other media and journalism organizations. RTNDA said the legislation provides journalists with a qualified privilege, requiring them to testify to prevent "imminent and actual harm" to national security or "imminent death or significant bodily harm" to individuals. Thirty-two states and the District of Columbia have shield laws, while 17 other states have recognized reporters' privilege as a result of judicial decisions.

NEURAL AUDIO named recipients of its "Broadcast Brain" Award. It called the three "pioneers of the surround sound industry." Recipients were Fred Aldous,

this year the first low-cost DRM receiver with an ST chipset. The receiver will be made in China, will cost less than 50 U.S. dollars, and will have a high-quality front-end."

2008 Olympics

In fact, China may be where the big global DRM boom begins.

The Chinese appear to be moving toward domestic DRM transmissions in time for the 2008 Olympics, which would

Sr., Fox Sports audio mixer; James Paluzzi, Colorado Public Radio vice president for new media and technology; and THX Ltd.'s Rick Dean, vice president of technology development. Neural said it recognized the three for "leadership and professionalism in delivering the best surround sound to the consumer in their respective fields."

JERRY LEE, owner of WBEB(FM) in Philadelphia, will receive the NAB National Radio Award during the Radio Luncheon at the NAB Radio Show in Charlotte, N.C. Lee was head of the Research Committee for the Radio Advertising Effectiveness Lab. He also is the founder of the Broadcast Industry Council to Improve American Productivity and received two Private Sector Initiative Awards from President Reagan and the first President Bush.

"Jerry is proof-positive that stand-alone operators can still succeed in radio, even in the largest markets," said NAB President/CEO David Rehr.

ulatory hurdles, since the 26 MHz band is allocated to long-distance international broadcasting. But the High Frequency Coordinating Conference, where most shortwave frequency planning is done worldwide, recently proposed a division of the band, with one portion to be used for international broadcasting and the other part for local DRM broadcasts.

So far no shortwave stations have begun DRM broadcasts from U.S. soil, however the FCC has approved it and

DRM has an important place, especially if we're going to see a revival of shortwave broadcasting.

— Don Spragg

mean big production of DRM receivers that would be available to the internal and worldwide markets at low cost.

Several U.S.-based and European shortwave broadcasters plan to begin DRM transmissions to China in time for the Olympics.

There is also a great deal of interest in the United States and other countries in using DRM on the 26 MHz band for low-powered local FM-quality broadcasting.

Participants in the meeting in Elkhart acknowledged that this would involve reg-

many stations are watching the development of DRM and the receiver market.

No one wants to lose their current analog audience, but the concept of transmitting on shortwave with an FM-quality signal and reducing their electrical bills to a fraction of their current levels has most U.S. international broadcasters keeping a close eye on DRM.

Jeff White is general manager of WRMI - Radio Miami International in addition to his roles with the U.S. DRM Group and NASB.

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- Alpena/Tawas City, MI: Are You Tired of STL-Over-the-Public-Internet Stories Yet?
- Dallas: The Ticket
- Amarillo, TX: You Gotta Do What You Gotta Do
- Asia: Radio Free Asia—Live From the Himalayas
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LeSEA

► Continued from page 1
 tional Christian programming. LeSEA also is the parent of several relief organizations, including Feed the Hungry; and it owns and operates seven non-commercial broadcast television stations in the United States.

World Harvest Radio International broadcasts WHRI, KWHR and WHRA to the world via shortwave from three transmitter sites in the United States. LeSEA's shortwave programming is uplinked from South Bend, Ind., via Galaxy 16, Transponder 15 and then downlinked to transmission facilities in Greenbush, Maine; Cypress Creek, S.C.; and Naalehu, Hawaii.

In the Studio

Notable equipment used in the LeSEA Broadcasting Studio:

- Broadcast Electronics AudioVault Automation System
- Mackie 24-8 Mixer
- Electro-Voice RE20 Microphones
- Symetrix 528E Mic Processor
- CRL BAP2000 Audio Processor
- Adobe Audition Recording Software
- Marantz PMD340 CD Players
- EV Sentry 100A Monitors
- Tascam 112 MII Cassette Players
- DH20 Gentner system
- Crown D45 Amplifiers
- Bont Building of Michigan Custom Cabinets



A control room in South Bend, Ind.

Increased reach

LeSEA has five so-called "Sky Angel" shortwave broadcast stations. The signal on Angel 1, which signed on in 1985, is targeted to Central and South America and the Caribbean. Angel 2 signed on in 1987 and broadcasts to Europe; Angel 3 covers China and Eastern Asia. In 1997, LeSEA added Angels 4 and 5, broadcasting to the South Pacific and Africa, respectively.

The organization purchased the former WSHB from Christian Science Publishing Society for \$2 million in 2004

to expand its global shortwave coverage. The deal included two 250,000-watt transmitters and a 380-acre tract of land Cypress Creek, S.C. The facility was considered by some observers to be one of the most technically sophisticated, privately owned shortwave stations in the country at the time.

Christian Science Publishing Society officials have said the station cost approximately \$19 million to build and sign on in 1989.

"Christian Science was aggressively
 See LESEA, page 10 ►

World Harvest Radio Frequencies			
	UTC	Eastern	Frequency
WHRI - Angel 1	0300 - 0600 Mo-Fr	11 p.m. - 2 a.m.	5.835 MHz
	0300 - 0600 Sa, Su	11 p.m. - 2 a.m.	7.315 MHz
	0600 - 1100	2 a.m. - 7 a.m.	7.335 MHz
	1100 - 1200	7 a.m. - 8 a.m.	6.095 MHz
	1200 - 1400	8 a.m. - 10 a.m.	9.495 MHz
	1300 - 1400 Sa, Su	9 a.m. - 10 a.m.	11.785 MHz
	1400 - 1600	10 a.m. - 12 p.m.	11.785 MHz
	1600 - 1900	12 p.m. - 3 p.m.	11.960 MHz
	1900 - 2100	3 p.m. - 5 p.m.	17.650 MHz
	2100 - 2300	5 p.m. - 7 p.m.	13.640 MHz
2300 - 0300	7 p.m. - 11 p.m.	7.315 MHz	
WHRI - Angel 2	0100 - 0400	9 p.m. - 12 a.m.	7.490 MHz
	0400 - 0600	12 a.m. - 2 a.m.	7.355 MHz
	0600 - 0800	2 a.m. - 4 a.m.	7.365 MHz
	0800 - 1100	4 a.m. - 7 a.m.	7.315 MHz
	1100 - 1300	7 a.m. - 9 a.m.	9.660 MHz
	1300 - 2000	9 a.m. - 4 p.m.	9.840 MHz
	2000 - 2200 Mo-Fr	4 p.m. - 6 p.m.	13.670 MHz
	2000 - 2200 Sa, Su	4 p.m. - 6 p.m.	9.840 MHz
	2200 - 0100 Mo-Sa	6 p.m. - 9 p.m.	9.515 MHz
	2200 - 0100 Su	6 p.m. - 9 p.m.	7.490 MHz
WHRI - Angel 3	0100 - 0500	9 p.m. - 1 a.m.	17.655 MHz
	0500 - 0800	1 a.m. - 4 a.m.	13.650 MHz
	0800 - 1200	4 a.m. - 8 a.m.	9.930 MHz
	1200 - 1400	8 a.m. - 10 a.m.	12.130 MHz
	1400 - 1800	10 a.m. - 2 p.m.	9.930 MHz
WHRI - Angel 4	0500 - 1100	1 a.m. - 7 a.m.	11.565 MHz
WHRI - Angel 5	0100 - 0500	9 p.m. - 1 a.m.	5.850 MHz
	0500 - 0600	1 a.m. - 2 a.m.	6.145 MHz
	0600 - 0700	2 a.m. - 3 a.m.	7.490 MHz
	1200 - 1600	8 a.m. - 12 p.m.	17.650 MHz
	1500 - 1600 Su	11 a.m. - 12 p.m.	15.355 MHz
	1600 - 1700	12 p.m. - 1 p.m.	17.640 MHz
	1700 - 1900	1 p.m. - 3 p.m.	15.705 MHz
	1900 - 2000	3 p.m. - 4 p.m.	13.710 MHz
	2000 - 2200 Mo-Fr	4 p.m. - 6 p.m.	7.400 MHz
	2000 - 2200 Sa,Su	4 p.m. - 6 p.m.	11.885 MHz
2200 - 2300	6 p.m. - 7 p.m.	11.885 MHz	
2300 - 0100	7 p.m. - 9 p.m.	7.520 MHz	

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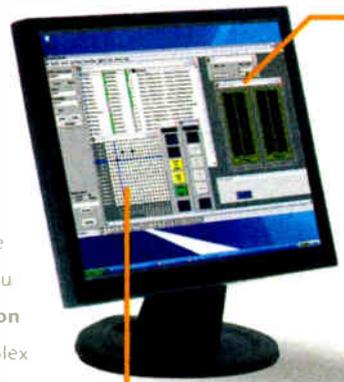
You're looking at a complete audio-over-IP routing system.

(Just add Cisco!)

Administer this • The beauty of the Web is that you can get information anywhere. Same thing with Axia: you can set up and administer an entire building full of Axia equipment — audio nodes, consoles, virtual routers, whatever — from your own comfy office chair. All you need is a standard Web browser (PC or Mac, we like 'em both). Put an Internet gateway in your Axia network and you can even tweak stuff remotely from home or anywhere there's a Net connection. Hey, isn't it time for a Mochachino?

It's not rude to point

Little kids tell mommy what they want by pointing — a pretty intuitive way of doing things. PathfinderPC software gives talent the same convenience. You can build custom "button panels" to execute complex operations with just one click. You can map these panels to controller modules on Element consoles or to turret-mounted controls, place mini applications on studio computer screens, even run them on touchscreen monitors.



Automation station • Wouldn't it be cool to have a self-monitoring air chain with silence-sense that can fix problems, then e-mail a status report? To be able to switch your program feed from Studio A to Studio B with one button? Or build custom switching apps and scheduled scene changes based on Boolean logic and stacking events? PathfinderPC software does all these things and more. But unlike HAL 9000, it doesn't talk back to you.

Nothin' but Net • Did you know you can plug a PC directly into an IP Audio network to exchange audio? Can't do that with a mainframe router. Well, you could add more input cards to the mainframe, buy high-end audio cards and run more wiring... but with Axia, you just install the IP-Audio Driver on any Windows PC to send and receive pure digital audio right through the PC's Ethernet port — no sound card required or additional router inputs needed. The single-stream version is great for audio workstations; the multi-stream version lets you send and record 16 stereo channels simultaneously — perfect for digital automation systems.

Jammin' on the mic • Radio studios and microphones go together like Homer Simpson and donuts. Unfortunately, so do preamps, mic compressors, EQ boxes, de-essers — let's face it: most studios house more flying saucers than Area 51. Axia helps clean up the clutter by including mic preamps with our Microphone Nodes; not bargain basement units either, but studio grade preamps with headroom enough to handle Chaka Kahn. Phantom power, too. And if you choose to use Axia Element consoles in your studios, you'll find world-class mic processing built right in: vocal dynamics (compression and de-essing) from the audio processing gurus at Omnia, plus three-band parametric EQ with SmartQ, available on every mic input. Rap on, Grandmaster.

Push to play • Axia Router Selector Nodes are really advanced selector and monitor panels that you can put anywhere you need access to audio streams. Like newsrooms, dubbing stations, or even the station's TOC, so you can monitor any of the thousands of audio streams on your network at a moment's notice. The LCD screen scrolls through a list of available streams; the eight Fast Access keys let you store and recall the streams you use most. There's even an input for convenient connection of an analog or AES device. Sweet.

Very logical, Captain • Routing logic with audio used to be as hard as performing the Vulcan Mind Meld. But Axia makes it simple, converting machine logic to data and pairing it with audio streams. So logic follows audio throughout the facility on Axia's switched Ethernet backbone. Eight assignable GPI/GPO logic ports, each with five opto-isolated inputs/outputs are built into every Element power supply, so you can control on-air lights, monitor mutes, CD players, DAT decks, profanity delays, etc. Got more than eight audio devices? Add a GPIO node like this one wherever you've got gear.

AES yes • You like your audio to stay digital as much as possible, right? We get that; our AES/EBU Audio Nodes let you plug AES3 sources right into the network. Studio grade sample-rate converters are inside; anything from 32 kHz to 96 kHz will work. Oh, and there are 8 AES ins + 8 AES outs in each node. Digital distribution amp, anyone?

Brains in the box • The typical radio jock cares for studio equipment about the same as a five-year-old cares for a puppy: haphazardly, if at all. That's why we took the CPU out of our Element modular console and put it in here, with the power supply and GPIO ports.

That means a greatly reduced chance of being taken off the air by a Coke spilled into the board. Because we know that you have better things to do on a Sunday night than trying to dehumidify circuit boards with a hair dryer.

Put that in your pipe • How many discrete wires can a CAT-6 cable replace? Well, a T-3 data link has 44.7 Mbps of throughput. But Axia networks' Gigabit Ethernet links give 1000 Mbps of throughput between studios — more than 22 times the capacity of a T-3; enough for 250 stereo channels per link — the equivalent of a 500-pair bundle on one skinny piece of CAT-6. Use media converters and optical fiber for even higher signal density. Think that might save a little coin in a multi-studio build-out?

Level headed • These green, bouncing dots built into every Axia Audio Node are confidence meters. One glance and you know whether an audio source is really active — or just playing possum.



Heavyweight champion • This Axia StudioEngine works with our Element Modular Consoles (the fastest-growing console brand in the world by the way) to direct multiple simultaneous inputs and outputs, mix audio, apply EQ, process voice dynamics, and generate multiple mix minuses and monitor feeds on the fly. To make sure it delivers the reliability and ultra-low latency broadcast audio demands, we powered the StudioEngine with a fast, robust version of Linux — so fast that total input to output latency is just a few hundred microseconds. How can one little box do so much? There's a blazingly fast Intel processor inside, with enough CPU muscle to lift a small building. Strong and fast. Ali would approve.

You got to have friends • Delivery systems providers like ENCO, Prophet, BSI, BF, iMediaTouch, DAVID Systems and more all have products that work directly with Axia networks. So do hardware makers like AudioScience, International Datacasting, 25/Seven, Telos, and Omnia. Check out the whole list at AxiaAudio.com partners.

Quick Connect • Axia I/O is presented on RJ-45 and adheres to the StudioHub+ standard. A couple of clicks and you're done.



AxiaAudio.com

LeSEA

► Continued from page 8

looking to get rid of it, and we aggressively wanted it. It was just good timing for us," said Angela Sumrall, public relations coordinator for LeSEA. "Shortwave programming remains in demand overseas."

However, she acknowledges that shortwave's popularity has waned in this country and that many Americans, even its broadcasters, are unfamiliar with developments in the shortwave band.

"It's just a form of technology that most Americans do not use. They do not realize just how important shortwave is worldwide. In some remote areas it's the only source of information," Sumrall said.

While the company is focused on shortwave, it seeks to improve its reach with better technical quality.

Sumrall said LeSEA is exploring its digital options and discussing the possibility of a conversion to Digital Radio Mondiale, a technology for the broadcasting bands below 30 MHz.

"As the technology develops we will look at it. From what we understand, the move to digital for shortwave will actually be an easier transition than TV. So as more advances are made with us, we will explore upgrading the shortwave signals to Digital Radio Mondiale," Sumrall said.

DRM is the hot topic in shortwave right now, said Jeff White, president of the National Association of Shortwave Broadcasters, of which LeSEA is a member.

"The development of the DRM technology has the potential to revitalize not only shortwave, but AM transmissions as well, by providing digital quality broadcasts," White said.

Purchased airtime

WHRI, KWHR and WHRA broadcast at various shortwave frequencies at specific times of the day to take advantage of ionospheric propagation shifts.

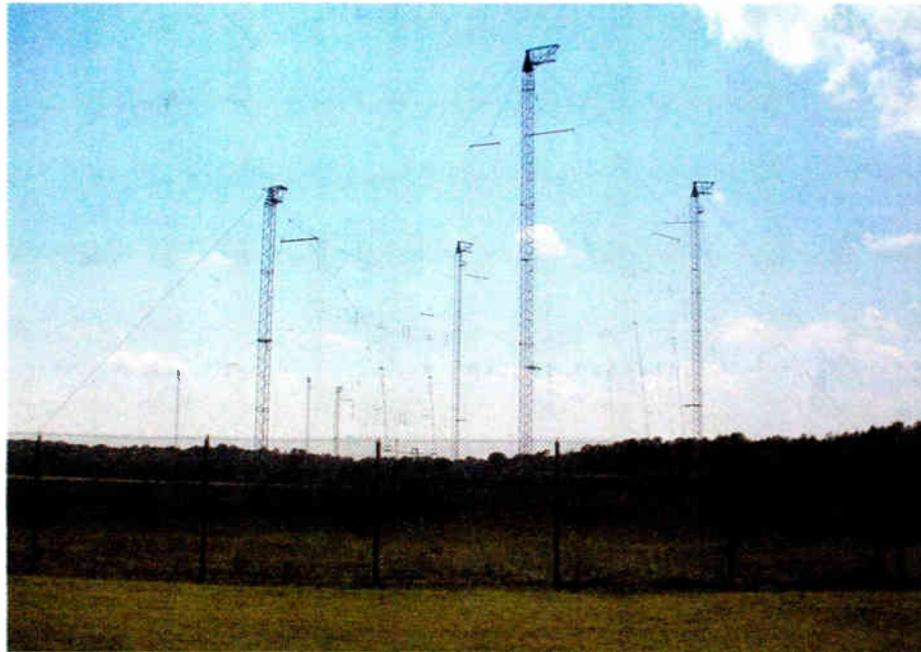
The shortwave stations carry a variety of religious programming, such as the "Prophetic Watch" on Angel 1 and "Walking in Power with Pastor Bern Zumpano" on Angel 3. Religious ministries typically purchase airtime from LeSEA. Programming is presented in English and various foreign languages, depending on the targeted region.

"LeSEA" refers to the Lester Sumrall Evangelistic Association, established by Dr. Lester Sumrall in 1957. LeSEA Broadcasting's flagship station, WHME (FM) Harvest 103.1, began broadcasting in 1968. He later added terrestrial stations WHPZ(FM) and WDOV(FM) in South Bend, which now simulcast Christian music. LeSEA also operates World Harvest Television.

"My grandfather thought the easiest way to reach a lot of people would be via radio and specifically shortwave, internationally," said Sumrall.

Dr. Sumrall, an evangelist by trade, aggressively grew his radio and TV holdings until his death in 1996. Today the organization is run by his son Pastor Pete Sumrall and funded by donations and programming fees. LeSEA's annual operating budget is more than \$3 million.

Three FM terrestrial stations serve the South Bend area with a variety of Christian music and teachings; Lester Sumrall's teachings are still featured on WHME. A total of 15 employees work in shortwave and FM radio operations in



These towers in South Carolina are part of LeSEA's shortwave infrastructure.

South Bend.

The shortwave stations feature non-denominational Christian programming, including Church of God, Pentecostal, Baptist, Catholic and Methodist religions. Much of the programming is pre-recorded, though some does originate from studios in South Bend.

LeSEA's remote shortwave transmission facilities feature high-power transmitters and antennas. Facilities are manned 24/7, Sumrall said.

"It's a challenge to find the unique staff that is needed to live in remote locations, sometimes alone for days, living around 800 million watts of power," Sumrall said. "Our engineers and technicians typically live at the transmitter sites for three or four day shifts."

LeSEA employs eight full-time technicians in Cypress Hill, four full-time techs in Naalehu, Hawaii and a staff of four full-

time engineers in Maine. Larry Vehorn is the corporate director of engineering.

WHRI is based in Cypress Creek, S.C., and features a Brown Boveri SK55 transmitter, which broadcasts at 250,000 watts. WHRA is in Greenbush, Maine and transmits at 250,000 watts using a Brown Boveri SK55. The transmission site for KHRI is in Naalehu, Hawaii, and broadcasts at 100,000 watts via a Continental 419F and a Continental SW100B, respectively.

Shortwave program audio from master control in South Bend is first sent to a BAP-2000 analog audio processor for gain and noise reduction. Sumrall said the audio then goes to a Tanberg E5720 encoder where it is encoded into a digital stream with several other audio and video streams.

Sumrall explained the digital stream is converted to an RF frequency via a MCL

MT320C HPA and uplinked to Galaxy 16, Transponder 15 via a nine meter Vertex Dish.

A Tanberg TT1222 Satellite Receiver at the remote transmission facilities converts the audio back to a digital stream and decodes it back into an analog signal. From the receiver, the audio is sent to the shortwave exciter/transmitters for rebroadcast, Sumrall said.

U.S. reception

The South Carolina transmission site uses a T.C.I.-611 Dipole Curtain antenna and Thomcast Dipole Curtain antenna with 30 million watts estimated radiated power. Angel 3 in Naalehu, Hawaii, uses a T.C.I.-611 Dipole Curtain antenna with 12 million watts ERP. And Angel 5 in Maine uses a T.C.I.-611 Dipole Curtain antenna with 30 million watts ERP at 250 kW.

Sumrall said several of the shortwave signals of the Sky Angels, while directional, can be received in the United States. LeSEA also streams its programming via the Internet; visit www.whri.com.

FCC regulations say shortwave broadcasts cannot be targeted at an audience that is exclusively located in the continental United States. So in practice they must target a foreign audience using directional antennas, White of NASB said.

"However, almost all can be heard in this country. The intent of the regulations is that shortwave radio should not be used for domestic broadcasting in the U.S.," White said.

The shortwave band runs from roughly 1.7 MHz to 30 MHz. Amateur radio operators, marine communications and other services also use the shortwave spectrum.

According to the NASB, there are 25 privately owned shortwave stations throughout the United States. Most are owned by religious broadcasting organizations. 🌐

Pubcasters Work on Digital Changes

by Leslie Stimson

Public radio seeks to optimize the digital coverage area of its stations and is working on ways to do that.

There's also progress on public radio's move from a real-time satellite-delivered program distribution system to a subscription-based system.

These are among current topics of attention among public engineers and were discussed at this spring's Public Radio Engineering Conference, which is now jointly presented by NPR Labs and the Association of Public Radio Engineers.

HD-R RECEIVER REVIEWS REFRESHED

NPR Labs has refreshed its HD-R receiver recommendations, expanding its list of reviews from four to eight.

New are reviews of the RadioShack Accurian tabletop, Radiosophy HD100 tabletop, Directed HD Car Connect adapter and Sangean HDT-I tuner.

The lab found the Accurian to have "good" FM sensitivity, especially when used with the supplied external "T" antenna, while use of the "single-wire" FM antenna should generally be avoided. The unit has good AM sensitivity when used with the supplied external AM antenna.

Of the Radiosophy unit, NPR Labs



APRE members chose this logo design for their year-old organization from among six submitted choices.

found it has "clear, slightly bright" sound quality, though the backlight display can be difficult to read.

The HD Car Connect adapter from Directed Electronics has "excellent FM sensitivity when installed" and "good" AM sensitivity, according to the lab, which said the unit must be carefully grounded to avoid hearing distorted audio.

The Sangean HDT-I tuner provides "excellent audio quality delivered through line-level stereo outputs." The lab notes, "Early production units deliver a relatively high audio output level that

may overload some amplifiers."

NPR Labs previously reviewed the Boston Acoustics Receptor Radio HD; Polk I-Sonic HD tabletop; Kenwood KTC-HR100TR and JVC KD-HDR1.

The list was updated in late May; the content is at www.nprlabs.org.

UPDATED COVERAGE MAPS PLANNED

NPR Labs still has a lot of data to gather as it tests consumer HD Radio receivers to determine how each station can eke out the largest digital coverage area.

It plans to take up to 478 measurement points on a single receiver, said John Kean, senior technologist of NPR Labs during the PREC. Taking such a high number of coverage measurements for each unit manually isn't practical, so the lab is writing a software program to determine core information about each receiver, he said.

Some NPR member stations will serve as receiver test beds to verify testing information gleaned by the lab, which also is developing a mobile measurement antenna for the tests.

The point of the testing is to determine each station's analog and digital coverage areas and look for ways stations can enhance digital coverage, said Kean.

See PUBLIC, page 12 ►

Wireless Broadband Internet Remotes



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**- Christian Vang
Chief Engineer
Clear Channel St. Louis**



"The codecs sounded great. My management was very, very impressed with the demos"

**- Grady Jeffreys,
Technical Manager,
Mackay Communications**



"The remote was a spectacular success, in no small part thanks to the flawless sound which the Tieline G3 provided over the public Internet"

**- Mike Rabey
Chief Engineer
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Public

► Continued from page 10

IBOC receiver sensitivity and co-, first-, second- or third-adjacent digital channel interference will be studied. The lab hopes to generate digital coverage maps in August for CPB, which is funding the yearlong Digital Radio Coverage and Interference Assessment study with a grant of about \$535,000.

The project involves IBOC receiver performance evaluation, interference analysis, development of a coverage prediction model and coverage mapping for all public radio stations. A report is due to CPB by the end of the year.

The NTIA PTFP mapping project is related to the receiver study; it marks the regular update of public radio coverage. The project involves mapping of current analog coverage of approximately 860 FMs and 650 FM translators.

Public radio would have access to the Web-based, interactive maps. Stations could print maps of their own station coverage area.

This project is also due to be completed by year-end; the Nationwide Service Availability and Vulnerability Study is funded by PTFP at \$139,000 and matched by NPR.

'DON'T WAIT FOR HELP' DURING DISASTERS

The bigger the emergency, the greater the certainty that cell phones won't work when needed — at least according to common wisdom among engineers.

While this adage may be true for voice, it doesn't necessarily apply to text messaging. So said Karl Fontenot, chief engineer of KRVS(FM), Lafayette, La., licensed by The University of Louisiana at Lafayette in a PREC panel about disaster preparedness.

Fontenot said cell phone text messaging got through during Katrina while voice channels were jammed. He advises stations to enable text features on employees' cell phones and instruct them on how to use those features.

He said that while his general manager

was out in a boat rescuing people, Entercom officials called Fontenot and asked if the GM could rescue their studio employees. But the GM's cell phone did not have text capability. "If it had, we would have been able to reach him," Fontenot said.

Before a disaster, "Ask yourself where you will go and broadcast from, when the studio and tower are no longer functioning."

Fontenot also advised organizing the station staff into teams so that not everyone is at the set-up site at the same time; as people tire, relief teams will be required.

In a disaster, general services will not be available. "Don't wait for help. Try to secure your facilities and people."

UPDATED CONDEP SOFTWARE TESTED

NPR Distribution is testing a new software release intended to fix defects and improve portal performance of the ContentDepot program distribution system.

In May, the network's Public Radio Satellite System disseminated instructions to member stations on how to locally tune ContentDepot decoders for emergency operations. It also said it was trying to finalize a timetable to complete the remaining fixes required before it can turn off the legacy PRSS distribution system.

While no cutoff date has been identified, PRSS hopes dual operations of the legacy and ContentDepot systems can be ended within six months. Numerous target dates have come and gone as system snafus appeared.

ContentDepot "task forces" of producers and station representatives have been formed to fix some ongoing program production issues including program audio levels; segment and episode lengths and air windows; and live program cueing.

Discussing a station survey about ContentDepot during the PREC, Scott Hanley of WDUQ(FM), Pittsburgh, who also chairs NPR's Distribution Committee, said, "We learned a lot about what we

need to do, what the system is capable of doing and what we should set aside and not try to do now."

Of the switch to "ConDep," Hanley said, "We didn't think it was going to be this hard. It is."

The next steps, he said, were to publicize recommendations to the station system, solicit feedback and develop a



John Kean of NPR Labs

timetable and resources for priority items.

ContentDepot launched last November after a delay of more than two years. The purpose of the system is to streamline how PRSS user stations and producers select, send and automate programming — moving PRSS from a real-time to a subscription-based satellite distribution system.

PREC HONORS CREIGHTON, CASSIDY, HETRICH

The 2007 PREC Engineering Award winner was Donald Creighton, chosen by his peers in public radio.

The senior vice president of technology for Minnesota Public Radio and American Public Media oversaw the recent upgrade of MPR's broadcast and production center. He supervised the technical design, vetted the major equipment systems and implemented construction of the new 120,000-square-foot, \$43.5 million broadcast center in Saint Paul that includes more than

30 radio spaces.

Creighton, who accepted his award at the PREC Engineering dinner, said he finds new projects a lot of fun. Creighton has implemented HD Radio throughout Minnesota for MPR and at California's KPCC(FM), Pasadena.

WAMU's Richard Cassidy received the APRE 2007 award for Meritorious Achievement. Cassidy started broadcasting as a teenager in Los Angeles. At Loyola Marymount University in that same city, he became manager, chief engineer and program director of KXLU, then joined Metromedia in 1966 as chief for stations in San Francisco and Washington.

In 1971, Cassidy joined the newly-formed NPR as chief engineer and later became vice president for engineering. He ran his own broadcast engineering consulting firm for a decade, then joined WAMU in 1997 as director of IT and new media.

Another of NPR's early employees was honored: the late Wayne Hetrich. Known at NPR as "Mr. Wizard," Hetrich died at 79 in March. He was one of the original 30 employees of NPR Inc. in 1971.

Hetrich used to walk around NPR performing magic tricks, earning him the nickname. He also received several patents, including one for the Netcue system that allows local stations to record network programming.

Hetrich helped create the Public Radio Satellite System. In the early 1980s when NPR almost went out of business during a financial crisis, the leases garnered by the PRSS allowed NPR to secure the loan that kept it on the air, according to the broadcaster.

The APRE is creating the "Wayne Hetrich Public Radio Engineering Oral History Project." Organizer Roger Karwoski, assistant general manager and chief engineer of KBIA(FM), Columbia, Mo., said the archive is to be a collection of audio stories about the history of public radio engineering and the people who have contributed to it.

He urges engineers to record their stories about Wayne Hetrich and write to him for delivery instructions at: karwoski@missouri.edu.

Books

► Continued from page 4

Still, for my money the best parts are the photos, some of the loveliest of radio facilities you'll come across, from stations owned by Entercom, CBS, Clear Channel, Cox and other radio licensees. Need ideas for a really cool lobby design? Want to see how "the pros" do it? Start here.

Price: \$49.95.
Focal Press.

"Investing in Radio Pocket Guide" — BIA Financial Network recently expanded its "Investing In" series to include a guide for people who need portable references to the top 100 markets and, separately, the 101+ markets.

This booklet is nothing but data, lots of it, presented

in charts for each market. It lets you examine total market, revenue and individual station revenue share; research individual markets and see snapshots of stations in each market; and review capsules of radio stations, their format, owner and revenue figures.

The pocket guides are intended as complements to BIAfn's "Investing in Radio Market Reports." They will be useful for those who work in radio finance, acquisitions, business analysis and so forth — the type of person who might need to know the rank, format and station revenue of a station in Phoenix while on travel or offsite work.

Price: "Top 100 Markets" and "101+ Markets" \$225 each or \$375 for both. Order from BIA Financial Network.

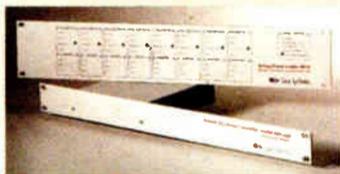
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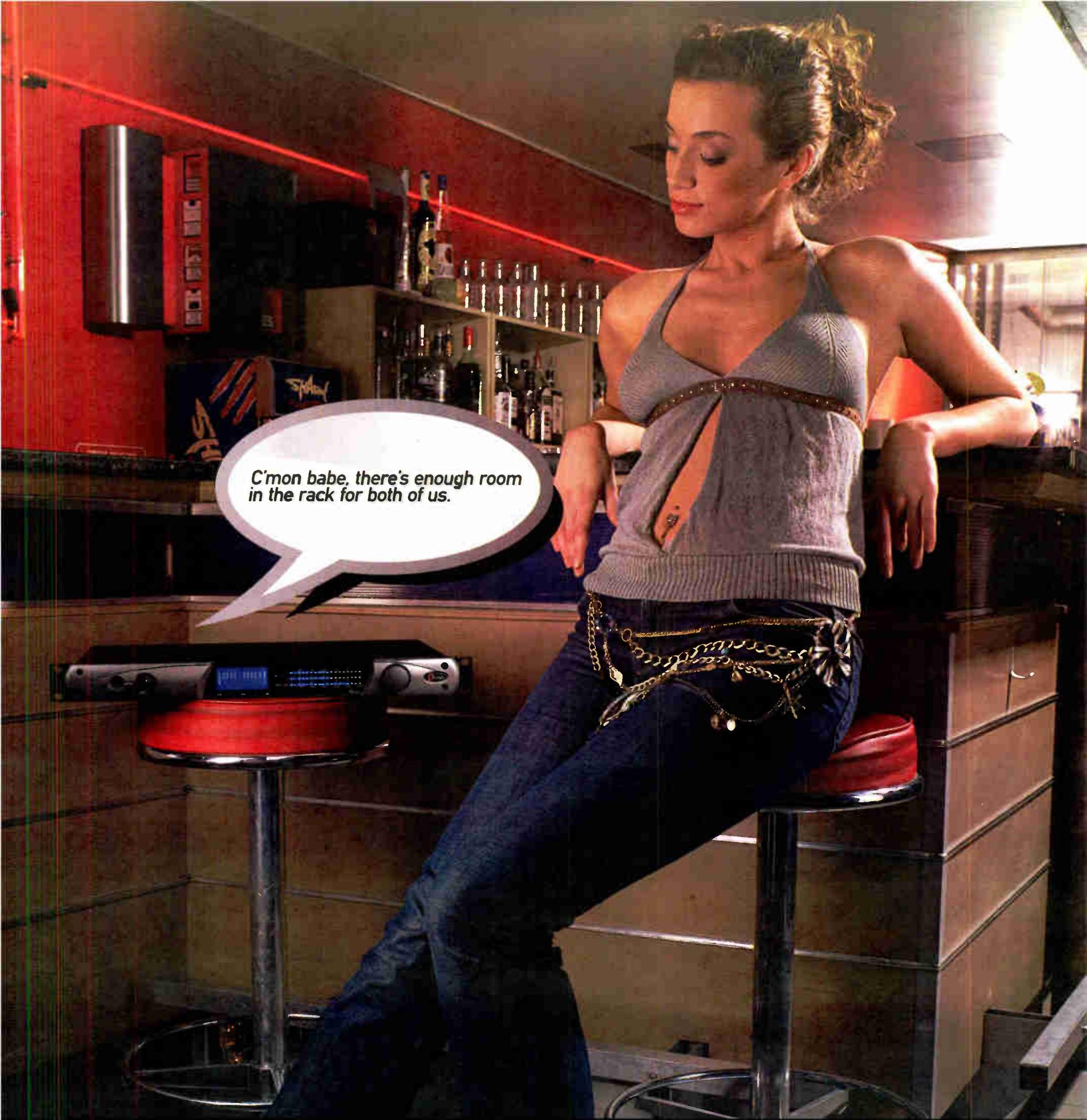
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World Radio History

Workbench

Radio World, July 18, 2007

Past columns are archived at radioworld.com

Simple Ways to Keep Pests Out

by John Bisset

Station acquisitions can tax the most seasoned engineer.

Either you're given a building and told to work with it, or your predecessor(s) did it differently. In either case, you may need to think creatively for solutions.

Faced with the need to build new studios in a building where box-like studio rooms existed but were not well isolated, Dirk Nadon and his engineering team at the Nassau, N.H., cluster came up with some innovations.

Inspection of the row of box-like rooms disclosed little in the way of isolation. They discussed adding insulating wall foam sheets and flooring; but the biggest concern was that of bass coupling between the studios once speakers were cranked up.

With that problem in mind, Dirk and the team canvassed various hardware stores. Their goal was to find a set of springs that would support the studio speakers and serve to isolate their vibration from the deck above each studio.

The springs had to be heavy enough to handle the weight of the speaker and not lose all tension when the speaker was hung from it. Fig. 1 shows the spring assembly up close. An eyebolt is screwed into the deck. A reusable locking chain link connects the spring to the eyebolt.

A small link chain runs down through a hole in the ceiling tile, and mounts to the speaker with another reusable locking chain link and eyebolt.

Dirk showed me another helpful tip: labeling the rear of your equipment racks. No big deal, you say? In a facility with multiple stations and a multitude of equipment racks all in a row, having the



Fig. 1: You can isolate a studio speaker using springs.



Fig. 2: Identify racks with the frequency, which, unlike call letters, is less likely to change.

rear of the rack labeled helps when troubleshooting an emergency.

To simplify the group's operation, Dirk has a separate rack for each station. Most of these racks house the identical equipment. Without the labels, it would be easy to find yourself looking at the same equipment, but in the wrong rack. The labels make it quick and easy to identify — and the identifying labels are based on frequency, not the ever changing call sign, as seen in Fig. 2.

By the way, the rack shown is a 32-inch-deep model made by Middle Atlantic, part WRK-44-32.

With the increased requirement for additional depth for some equipment, planning for a deeper rack will avoid headaches later.

Reach Dirk Nadon at dnadon@nassaubroadcasting.com.

George Levites wrote to object to the use of steel wool to seal cable entry points in a transmitter.

His worry is that small strands or pieces of this stuff can be blown around the transmitter enclosure via the rig's cooling fans or blowers.

George added a case in point: At a transmitter site where he worked years ago, it was the company's practice to have a commercial cleaning crew come in one night a month, after sign-off, to clean and wax the composition tile floors.

For a few days after each cleaning, the staff noticed frequent HV trips. They examined the transmitter and found numerous mini dust bunnies that were largely composed of steel wool strands. This debris came from the steel wool pads the cleaners used on their floor pol-

See TAPE IT UP, page 15 ▶

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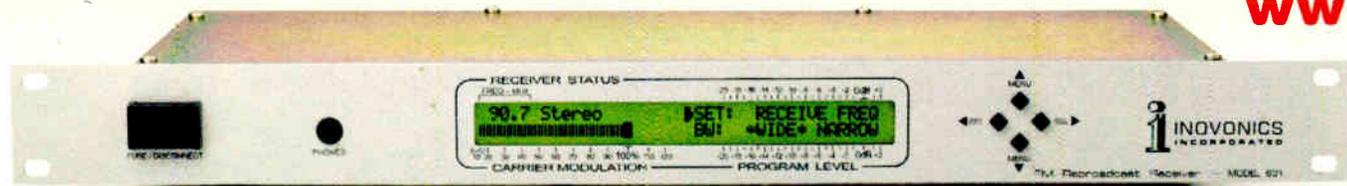
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Country Stations Broadcast From Westwood Remote

Westwood One staff managed a multi-station remote broadcast from the MGM Grand Casino in Las Vegas in May.

Twenty-seven stations participated in the event, held just before the Academy of Country Music Awards. Shown, Kimberly Roads and Phillip Sweet of Little Big Town talk with Clear Channel station WUSY(FM) in Chattanooga. The band was named Top New Vocal Group.

According to Westwood One Senior Vice President of Engineering and Technology Conrad Trautmann, technical management was handled by Mitch Glider, director of engineering in New York, who laid out the space in advance

using CAD software and handled equipment and shipping.

On-site staff included an IT person and three broadcast engineers working with Vice President of Production Gary Williams. "Gary is point for the stations and does all of the station advancing, arranging numbers for ISDNs and acts as tech liaison," Trautmann said. Telecom was handled from the main office by VP of Telecom Richard Owen.

The network sponsors similar events around the Grammy Awards, NCAA Final Four, BET Awards and MTV Video



Music Awards.

"We bring our own kits, which are Shure M367 mixers, Behringer mics, a Symetrix headphone amp and Sony headphones," Trautmann told RW. "Cables are

color-coded so everyone knows who's using which mic. We also provide the adapter cables for PCs, Short/cuts or Instant Replays if stations want to use them. And WiFi to a DSL — hence the IT guy — is a must at these events."

Westwood rents additional Telos Zephyr Xstreams or Zephyrs from Steve Kirsch of Silver Lake Audio.

"Problems are almost always telecom-related — ISDNs not working, etc.," Trautmann said. "This time the DSL went out and we needed to rent one from the hotel. Our guys have this down to a science as far as our end of the event goes. The hotel provides the tables and power and usually runs the telco out for us as well."

Tell RW about your engineering department's technical project. Send photos and details to radioworld@imaspub.com.

Tape It Up

► Continued from page 14

ishing machines. The large exhaust fan that was used to cool the transmitter literally was drawing this material into the transmitter.

George suggests you use expanding foam-in-a-can and RTV sealants instead. Also, household scrubbing pads woven out of stainless steel would work well; they are coarser than regular steel wool and are not brittle. Good points!

George Levites can be reached at Levites1@verizon.net.

★ ★ ★

Gary Sharpe worked as an engineer in broadcasting for some 33 years, most of the time as chief engineer of one or more radio stations. Gary reads *Workbench* regularly and writes, "Frankly, it is the first thing I turn to after reading Paul McLane's editorial. If you were closer to the front of the magazine than he is, I'd be reading your column first."

Gary appreciated the May 23 item about finding odd critters inside one's transmitter and about sealing up all the openings in the rig.

He suggests taking this a step further: Seal up all the holes, the spaces between front-panel plates, the edges around the doors and such. You will gain further benefit.

For example, you can seal the door edges with duct tape. Just pull it off when you need to open up the door and replace the tape when the door is closed for the last time that maintenance session.

Not only will you prevent insects and other tiny critters from getting into your transmitter, but all of the air passing through the transmitter now must go through the air filter and not bypass it. Sealing rigs this way makes for a much cleaner transmitter interior for a much longer time.

Reach Gary Sharpe at gdsarpe@att.net.

John Bisset has worked as a chief engineer and contract engineer for 38 years. He is northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386 or jbis-set@bdcast.com. Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged, and qualify for SBE recertification credit.

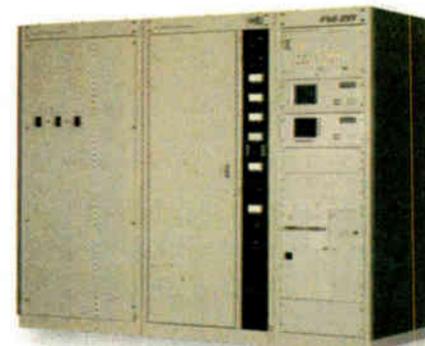
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ROOTS OF RADIO

Loy Barton, a Forgotten Radio Pioneer

by James E. O'Neal

For several years now, I've done a straw poll in the radio hall at the NAB convention, stopping passersby and asking them if they had ever heard of Loy Edgar Barton. I've made it a point to ask the silvery- or white-haired crowd, not kids who appeared to be fresh out of school.

To date, no one has been able to offer a clue to Barton's identity and his place in the history of radio.

To save a little time, I'm going to go ahead and give away his secret. He was the individual who set forth the principle of high-level Class B plate modulation.

This was in the early 1930s. From then on, virtually all of the medium- to low-power AM transmitters (and even some of the high-powered rigs) used anywhere in the world were Class B plate-modulated.

Barton's modulation scheme set the standard for nearly five decades of AM radio, until solid-state transmitters and some radically new modulation techniques began to dethrone it in the late 1970s.

Most all of us associate Armstrong with FM; Colpitts and Hartley with oscillators; de Forest with the vacuum tube; Yagi and Beverage with their antennas; and, if you're really into this sort of thing, perhaps Black with negative feedback.

Barton's name draws no such recognition and he's mentioned in few radio engineering books.

F.E. Terman's 1937 "Radio Engineering" does cite Barton in a section on Class B amplification, but he's nowhere to be found in the chapter on modulation. Even Andrew Inglis in his otherwise excellent 1990 broadcasting history book, "Behind the Tube," slights Barton and his accomplishment. Inglis presents Barton's modulator circuit while describing the work of another inventor. In fact, Barton really doesn't appear to be associated with the science of radio at all.

How is it that Barton and an accomplishment as important as Class B plate modulation could be completely overlooked and forgotten?

Barton's story properly begins in what is recognized today as the very infancy of broadcasting, that period in the early 1920s when the public at large was introduced to radio.

Fessenden

More than 15 years earlier, Reginald A. Fessenden developed the world's first AM transmitter. He did it very simply and with the materials available to him, by connecting a carbon microphone in series with the transmitter's antenna circuit.

Sound waves caused the resistance of the microphone element to vary and the varying resistance produced a change in antenna current: AM!

However, there were some real drawbacks to this technique. First, as there



Loy E. Barton and one of his giant sunflowers. Courtesy Sarnoff Library

was no amplification, it was not very efficient; i.e., there was not that much change in antenna current with reasonable audio levels. About the best depth of modulation that could be achieved was perhaps 5 to 10 percent.

Second, as the microphone was passing all of the antenna current, it got quite hot. Fessenden solved this problem to some degree by using platinum-iridium electrodes and water cooling.

Raymond Heising

It took several more years and a Bell scientist named Raymond Heising to develop a much improved modulation scheme.

Heising, or constant-current modulation as it is sometimes known, can best be explained by referring to Fig. 1, which is adapted directly from Barton's master's thesis document.

The plate of the modulator tube is tied

mal with the modulator plate current requirements dropping off. Again the change in current is resisted by the inductor and this turn lets the RF amplifier plate potential rise, increasing antenna current.

Heising's circuit became the basis for most all early broadcast transmitters, with Western Electric either manufacturing them or licensing the technology to other vendors.

Enter Loy Barton.

Cinderella

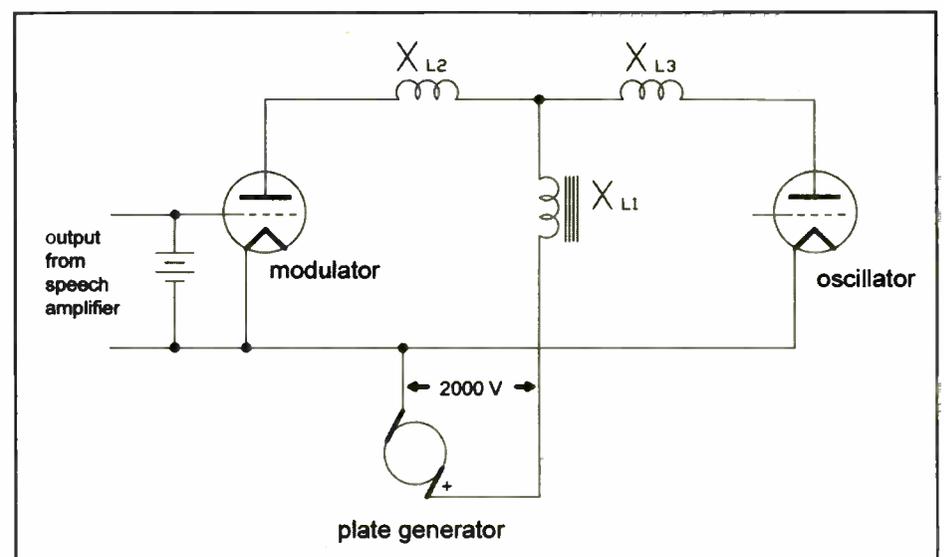
Barton was an Arkansas native who entered engineering school in 1917 in a Land-Grant school located in his home town. This was the University of Arkansas in Fayetteville. After receiving his bachelor's degree, Barton worked for a while as an instructor in mechanical engineering at the school.

He was keenly interested in electricity and radio and went on to pursue advanced studies in this field. By 1924, he was ready to take on a "hands-on" practical engineering project that was part of the college's graduation requirement.

A "Cinderella" project was offered by the faculty and Barton was quick to accept.

A few years earlier, the school had contracted with a commercial firm to

**How is it that
Barton and an
accomplishment as
important as Class B
plate modulation
could be completely
overlooked and
forgotten?**



Heising modulation (adapted from Barton's 1925 thesis drawing).

to the plate of the RF amplifier (actually a power oscillator, as was state of the art at the time) with a common iron core choke supplying DC potential to both. As audio input level to the modulator tube rises, the tube tries to draw more plate current, but the inductor tends to resist this change and the plate voltage drops. (The inductor is trying to maintain a constant current flow.)

As the common plate voltage drops, the RF amplifier gets less of its share and antenna current is reduced. As the audio level drops, things start to get back to nor-

mal with the modulator plate current requirements dropping off. Again the change in current is resisted by the inductor and this turn lets the RF amplifier plate potential rise, increasing antenna current. build a campus radio station. What was delivered was a rather crude 100 watt transmitter that proved far from satisfactory. The engineering faculty felt that the best solution was a new 500 watt transmitter constructed "in house" and under their auspices. Barton and another student were given a budget and the task of designing and building everything from the microphone pre-amplifier to the antenna.

A copy of Barton's thesis details the See BARTON, page 17 ▶



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Barton

► Continued from page 16

areas of power supplies, antenna and counterpoise, audio amplifiers, oscillator, and of course, the modulator. Barton was more intrigued with the modulator circuitry than with anything else and begins his thesis with a thorough analysis of the state-of-the-art Heising modulator.

He concludes several things. First, as the iron core inductor sourcing plate voltage to both the modulator tube and RF amplifier (power oscillator) will never allow the RF amplifier plate voltage to drop to zero, or on the other swing, double plate voltage, 100 percent modulation of the carrier is impossible.



The 11-foot modulation transformers used in the WFLW 500,000 W plate-modulated transmitter. Image courtesy Charles Stinger, AWA.

Second, the circuit is grossly inefficient, as the audio amplifier is single-ended and has to be operated in Class A mode. To compound the problem, this Class A audio amplifier has to develop as much power as the RF amplifier that it modulates! (This was carried to the extreme with Western Electric's early Heising-modulated 50 kW transmitters — AC input power was in the neighborhood of 250 kW!)

Genius

Barton has a stroke of genius as he analyzes the Heising circuit and states in his thesis:

"Therefore, it is impossible to get 100 percent modulation, or apparently approximately (sic) to it, unless there is considerable power in the modulators. The above discussion has suggested to the writer the use of a transformer instead of the choke X_{L1} with the modulator plate circuit through the primary and the oscillator plate through the secondary."

That is, if the choke were to be replaced by a suitable transformer with the input side forming the audio amplifier plate load and the secondary providing plate voltage to the RF amplifier, transmitter modulation might be considerably bettered.

However, Barton continues, "The writer will not have the time to test or try the idea for this paper."

The new school station (KUOA) ultimately was a success, with reception reports coming from all over the United States and the Caribbean. Barton received his degree and departed for Schenectady and a job at General Electric.

After a couple of years battling the upstate New York climate and the corporate structure of GE, Barton decided that the job was not his true calling and

returned to Arkansas, where he hired on back at his alma mater as an assistant electrical engineering professor.

The modulation improvement idea developed during his thesis work kept haunting him and before long he was able to get funding for construction of a special transformer needed to test his idea (the world's first plate-modulation transformer). The 600-pound transformer arrived and KUOA's transmitter was reworked with it. As predicted the (now) 1 kW rig's depth of modulation and operating efficiency were greatly enhanced.

Barton, by then an associate professor of electrical engineering, published his findings in an obscure little journal, the University of Arkansas Bulletin, a tome more at home with papers on such topics as "Origin and Performance of Principal Cotton Varieties in Arkansas" or

"Problems Relating to the Fabrication of Building Boards."

Barton's modulation paper appeared in the edition dated May, 1930 — Bulletin No. 8, under the unassuming title "A Plate Modulation Transformer for Radio Stations."

One has to question why Barton and the university would allow something this revolutionary to go virtually unnoticed. Perhaps it was that the Great Depression had arrived in full form and there wasn't money available for attorneys and a patent filing. Perhaps no one in the school really understood the significance of what Barton had done and that there was some real money to be made with the invention. Perhaps Barton was modest and didn't think that what he'd done was really that big a deal.

Nearly 80 years have passed since that

first transmitter went on the air with Class B plate modulation and none are left who might have been able to shed some light.

Off to Camden

Somehow the troops in Camden got word of Barton's modulator. Shortly thereafter he left Fayetteville and academia for South Jersey and the Radio Corporation of America.

Barton's modulator circuit and modulation methodology were offered up to the patent office in January 1932 and he eventually received U.S. patent number 2,063,290 under the rather deceptive name "Radio Signaling System."

It's a given that the patent was assigned to RCA.

It was typical in those days for compa-
See BARTON, page 18 ►



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"Our Logitek installation included a Mosaic digital console in the WFLS studio. It was amazingly simple to install and all of our jocks loved it right away."

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Logitek
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Barton

► Continued from page 17

nies such as RCA and Western Electric to reward employees for patent assignments with tokens such as \$50 savings bonds.

Of course, working for such a company as RCA offered perks that were not monetary. A very big project was brewing there in the early 1930s.

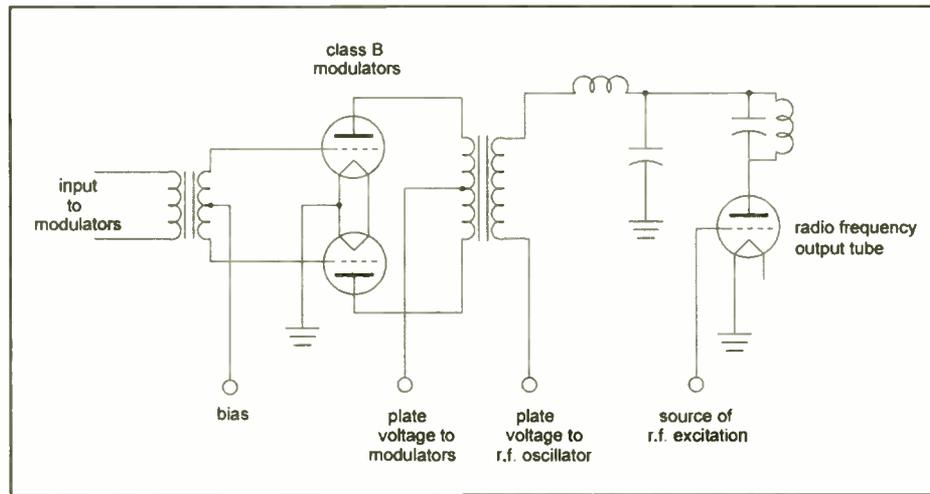
Not content with a mere 50,000 watts at Cincinnati's WLW, owner Powell Crosley Jr. placed an order with RCA for a one-half megawatt machine. Class B high-level plate modulation would be used in its construction and ownership of Barton's patent would come in quite handy. One must speculate that it must have been very satisfying for Barton to witness such a scaling up of the modulator he built for the 1 kW rig back in Fayetteville. This time it was a 400,000 W push-pull Class B audio amplifier, built around eight of the awesome UV-862 100 kW water-cooled tubes and two 11-foot tall, 50-ton modulation transformers.

Barton published several articles in the RCA house publication, Broadcast News. In his first article on modulation in June, 1935, the editor added a note to Barton's article with the information, "It is significant that Loy E. Barton is the originator of Class B Modulation, having started his development of this system while he was instructor in the University of Arkansas. He has contributed greatly to the present Class B Modulation system employed by RCA, and is considered the outstanding authority on the subject of Class B and other types of Modulation. — Ed."

Radio-powered car

Once the giant WLW transmitter was up and running and had settled into some degree of reliability, there was time for a little idle thought and daydreaming.

For Barton, this was in the form of a memo dated March 1, 1934 and addressed to his supervisor, I.R. Baker. In what even 70 years later reads like science fiction, Barton lays out plans for a



High-level Class B plate-modulation circuit (adapted from Barton's article in the 1930 University of Arkansas Bulletin).

radio-powered car.

"Some time ago I suggested to you and Mr. L. F. Jones the possibility of picking up enough energy from the WLW antenna to operate a car along the highway near the new WLW transmitter. I have checked with Dr. (George) Brown, of the Research Division, as to the probably (sic) energy pickup at distances of up to about one-fourth mile from the antenna ... The results of the preliminary consideration of the problem indicate that about 200 watts may be picked up on a loop at distances up to one-fourth mile and that circuit arrangements can be devised to supply power to a 1/8 horsepower motor."

Barton went on to speculate that it might be possible to construct a vehicle from a stripped Austin chassis capable of carrying one person at three to five mph on level pavement. He admitted that such a vehicle would serve no useful purpose other than for publicity, concluding, "The cost of construction and demonstration of such a car will, I believe, be quite small as compared to the publicity derived ..."

As there's no record of such a car having been built, Barton's argument probably didn't win over any of the top brass at RCA. There would also be the matter of a suitable rectifier, as silicon diodes were several decades in the future.

Barton's career did stretch into that solid-state future, and by the 1950s he was designing transistor radios and other semiconductor circuitry with the best of them.

Barton continued his career track at RCA and along the way produced a few more patents; his name appears on a total of 83.

His interest in modulation and Class B operation never waned and he published articles on these subjects in RCA's Broadcast News, Proceedings of the IRE and the amateur radio publication QST, among others.

Color burst

In the early 1950s, Barton was a member of the group that worked round the clock to develop compatible color television. He was part of the group assigned the task of keeping a receiver's local sub-carrier oscillator locked to the color transmission source. Ultimately, Barton shared the patent for the principle of the color synchronizing burst with Peter Werenfels.

Barton still had roots in Arkansas and occasionally returned to his home town to visit relatives. He also felt strong ties to his school and never missed an opportunity to stop in and visit former associates and to guest-lecture engineering classes.

Jim Haynes, an engineering student at

the University of Arkansas in the 1950s, recalls Barton appearing on campus several times.

"He popped in one day and lectured to us about this new solid-state device he referred to as the 'thyristor,'" Haynes said. "It was so new that few of us had heard about it. I had read something about a silicon-controlled rectifier though, and I finally put the two together."

Haynes recalls locating and moving the special modulation transformer that Barton had designed in 1928.

"Around 1957, one of the professors recognized it in a storage closet and we all thought it could be put to good use in the school's ham station, K5YM," said Haynes. "It was extremely heavy and I don't think that we could have gotten it up to the third-floor shack without the freight elevator."

The planned modulator was never constructed and the ham shack and transformer continued to move around the campus until the latter finally disappeared, possibly falling victim to a scrap yard or local landfill.

Barton retired from RCA in the mid-1960s after some 35 years with the company. (Patent records indicate that in the late 1930s he defected for a couple of years, going across the Delaware River to work for rival Philco.) His career spanned the startup of the earliest broadcast stations all the way to the invention of the chip.

RCA continued to sell Class B plate-modulated transmitters into the last decade of that company's existence.

See BARTON, page 20 ►

More Info

The author used the following sources for this article, which may be of interest to those who wish to learn more about the topic.

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WIRED FOR SOUND

Heyyyy, More Power to Ya!

by Steve Lampen

I've been writing this column for years and years, but there's one kind of cable I have never talked about, one kind you use every day. I'd bet you touch these cables as much, or even more, than audio cables. What kind of cable is that? Power cords!

I am not going to talk about those super-high-end power cords, the ones with timed-delivery, multilayered, silver-plated oxygen-free conductors, jacketed with Unobtanium, made by virgins during a full moon. We're told that those power cords make such a dramatic difference with your audio quality.

Of course, I won't mention that 99.99 percent of the cable *before* that power cord, the stuff between your wall and the power plant, is simple solid copper wire. No, no, that last three feet makes such a difference!

I also won't mention that the foil or braid shield in a power cord has virtually no effect at 60 Hz, or any harmonic up to 1,000 Hz. I also won't mention that the alternating current delivered to the device is usually converted to DC by a power supply, so whatever difference there was is converted away. On the other hand, if you paid \$800 for a power cord, it'd bet-

Gauge	Add Ambient Temperature to	
	10°C	35°C
18	5 amps	8 amps
16	6.5 amps	10.2 amps
14	8 amps	17 amps
12	10.2 amps	22 amps
10	17 amps	29 amps

ter sound different.

I would think that different power *supplies* would have more of an effect than different power *cords*.

So are there good and bad power cords? Sure there are. And there are lots of real reasons to choose between cords.

IEC-320

Your first choice is to buy a pre-made power cord or make your own.

In Europe, it is now illegal to make your own power cord. I guess too many people electrocuted themselves with the 240 volts over there. In Europe you can now only buy pre-made cables. And pre-made molded-end power cords are the

most common on this side of the world as well, not the least because they come "free" with the gear you buy.

On most equipment made now, the power input is one worldwide standard connector called an IEC-320. It's got three flat pins in a "rectangular" jack.

The limit on a power cord is the melting point of the plastic around the conductors.

Unfortunately, for the do-it-yourselfer, this is a hard connector to install. The other end, the standard three-pin power plug, is much easier to install.

Of course, you know that larger gauge will handle higher current. So how big do you need? 18 AWG? 16 AWG? 14? 12? 10? Bigger? The accompanying table shows you the current these different gauge size can carry.

So what is the limit on current? It's not the conductor. Copper won't melt until 1,085 degrees C. As Ohm's Law and Watt's Law say, $P = I^2R$. If you have a given amount of current (I), then more resistance (R) means more of this electrical energy will be converted to heat (P). Smaller wires have more resistance than bigger wires. So the limit on a power cord is the *melting point of the plastic*

around the conductors. Note that the chart lists the wire's gauge and current by temperature.

First, you have to know the ambient temperature where your cord is being used. A power cord in Antarctica can handle more current than one in the Sahara Desert because the colder one can absorb more heat generated before it affects the jacket.

So the second thing you need to know is the melting point of the jacket material. Sometimes this is actually printed on the jacket. Common temperatures are 60, 75, 90 or 105 degrees C. If it's not printed on the cord, you can look it up in the manufacturer's catalog or Web site. So now you can see one of the reasons why they have higher temperature plastics.

I am worried that some high-end consumer company will read this and realize that a Teflon-insulated and -jacketed power cord would handle higher current. Teflon melts at higher temperatures than most other plastics, some Teflon formulations as high as 260 degrees C. That would make one stiff and expensive pow-

er cord. Of course, just putting in a bigger wire would also handle more current.

One word of caution to the do-it-yourselfer. There's an obvious liability with power cords that is way more lethal than regular audio and video wiring. Many "companies" (guys in their garages) who make those Unobtainium made-by-hand cords may have overlooked this. There are safety standards for power cords. And there are independent test labs such as UL (Underwriter's Labs) that do third-party testing to verify safety.

Many of those "custom" guys ignore all this. You be the judge on the wisdom of this approach.

Steve Lampen's book "The Audio-Video Cable Installer's Pocket Guide" is published by McGraw-Hill. Reach him at shlampen@aol.com.

Barton

► Continued from page 18

There is no record of the amount of money that Barton's patent produced for RCA through transmitter sales and licensing agreements, though it had to have been substantial.

Barton continued working and inventing practically to the end. His last patent was issued after his retirement from RCA and dealt with textile mill machinery.

Not a great deal is known about Barton's personal life. However, a 1960 article in the University of Arkansas's Arkansas Alumnus magazine provides a bit of information in an article titled, "What College Did For Me."

The 62-year-old Barton wrote: "In fact some make up for the things they could not do as students back in the days when money was scarce ... To compensate for the lack of social activity, I now have the time and money to do some of the things I wish I could have done in college. For example, I am learning to dance. I will be retiring in three years and I am making an effort to be ready for the new venture.

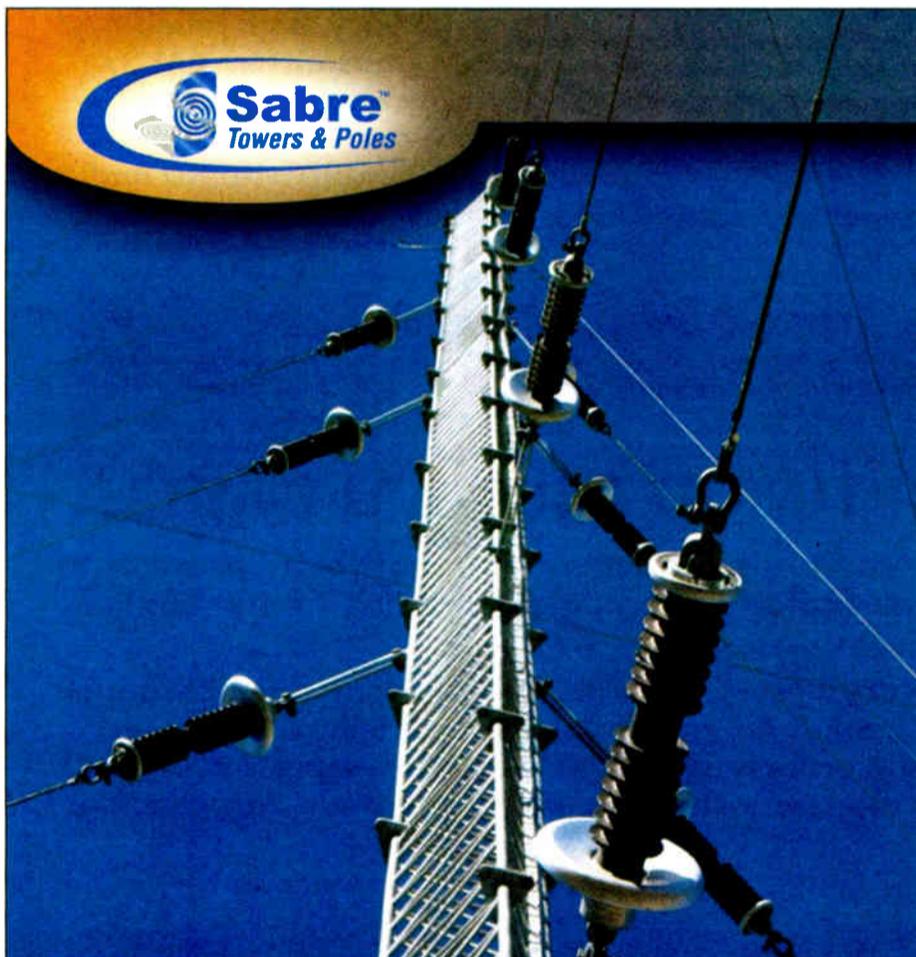
"When I started college the one thing that helped me the most was that I was not afraid of work and had plenty of courage. In fact, the principal reason for taking electrical engineering was that it was reputed to be the most difficult course in college."

In the article, Barton recalled that the "best boost anyone could ask for" was his development of the Class B amplifier and its use in high-level modulation. He estimated then that more than 90 percent of broadcasting stations were using his modulation technique.

Loy Edgar Barton died in 1986 at the age of 89.

So, from now on, when you think about Class B amplifier operation and especially the utilization of Class B for plate-modulating AM rigs, think about Loy Barton. Even though high-level Class B plate is nearing its 80th birthday and has been largely replaced by other methodologies, I propose that from here on it be referred to as "Barton modulation."

Special acknowledgement is given to Jim Haynes for his assistance in preparing this article. Haynes published an article about Barton in the June, 2003 issue of *Electric Radio* magazine.



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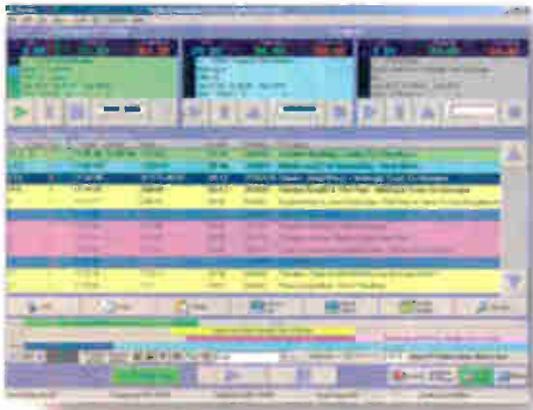
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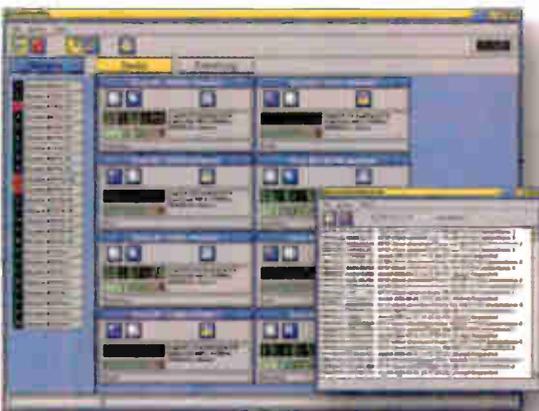
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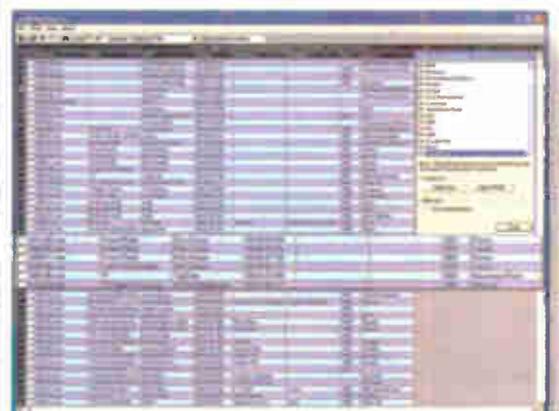
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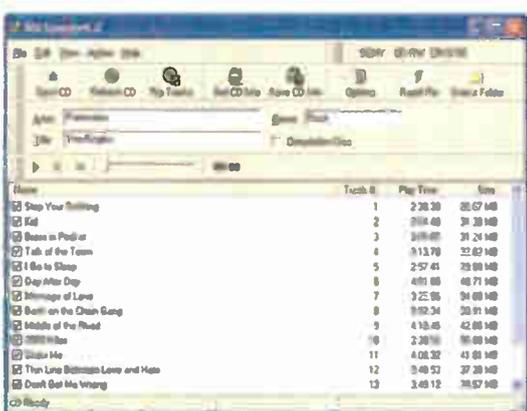
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MILE STONES

The Transistor Portable Radio

by Charles S. Fitch

Growing up is daunting. All those "rites of passage" through which we must travel. The first day of school, exams, dating, awkward holidays with distant relatives.

Speaking to young people I find that, even though some of that remains, important elements of childhood appear to be missing. The obvious is hobbies. What is a hobby but an interest with a passion? I've come across few kids lately who have a passion for anything.

Another missing component is a sense of wonder.

My mother was born in 1901. Once, in a single lengthy conversation, she told me about the wonder of her first plane ride, taken as a daring young woman with a barnstormer at a state fair for the princely sum of \$3 ... the first time an earphone was held up to her head and she heard KDKA coming through the ether ... the first picture on a hand-built TV set that my father assembled in the late 1930s ... the wonder of power and the telephone finally coming to her village in upstate New York.

I don't encounter kids who wonder at the iPod, who are more than blasé when they travel the Internet.

We who are over a certain age can recall our share of youthful events and circumstances that precipitated a wonderful excitement. One of the more vivid was the appearance of the transistor radio.

Nobel trio

How did the transistor semiconductor get to the portable radio?

Whether you believe that the transistor was created out of reverse Roswell engineering or painstaking research at Bell Labs, its introduction in the early 1950s constituted an electronic revolution. Bell Labs' focus had been on innovations related to communications, and the transistor was no exception. Its goals, among many, were to identify a new device that would reduce power consumption and hence heat — the destroyer of electronic gear — to lower the noise and hence the distance and stages through which a telecommunications signal could pass, and to increase reliability.

Tubes were the gain device of the day and were even used deep in the ocean on transoceanic cables to make up the loss of hundreds of miles of wire. But as mar-



Long before 'Quality as a Strategy' became the mantra at Sony, Zenith was vending high-performance, almost 'investment-quality' radios. This classic example from my collection is a Royal 500 (circa 1965), a gift from my brother Fred.

velous as the tube was, something new was needed.

Each little research step came together when research scientists John Bardeen, Walter H. Brattain and William Shockley successfully regulated a larger current flow by introducing a smaller current flow into a "semiconductor" junction, essentially creating a current amplifier.

This basic action is the essential fundamental property of all transistors, and everything after was refinement. The three received the 1956 Nobel Prize in Physics for inventing the transistor.

But the basic maxim "It's not what you got but what you do with it that's most important" applied. It's interesting that one of the first applications envisioned for the transistor was a compact portable radio.

Bell licensed transistor technology to other companies; one of these was Texas Instruments, which made the transition from prototype to product, offering workable transistors to the electronic industry. TI wanted to sell these "solid-state" devices but needed not only to create circuits and consumable products that used them, but also to capture the imagination of engineers to get it done.

or older siblings.

Listening could now move away from parental control to far-flung places like under the covers late at night, out riding our bikes and during recess at school. A universal accessory to most transistors was a simple earphone that went directly into the ear and needed little level to be audible, making it the most intimate of experiences.

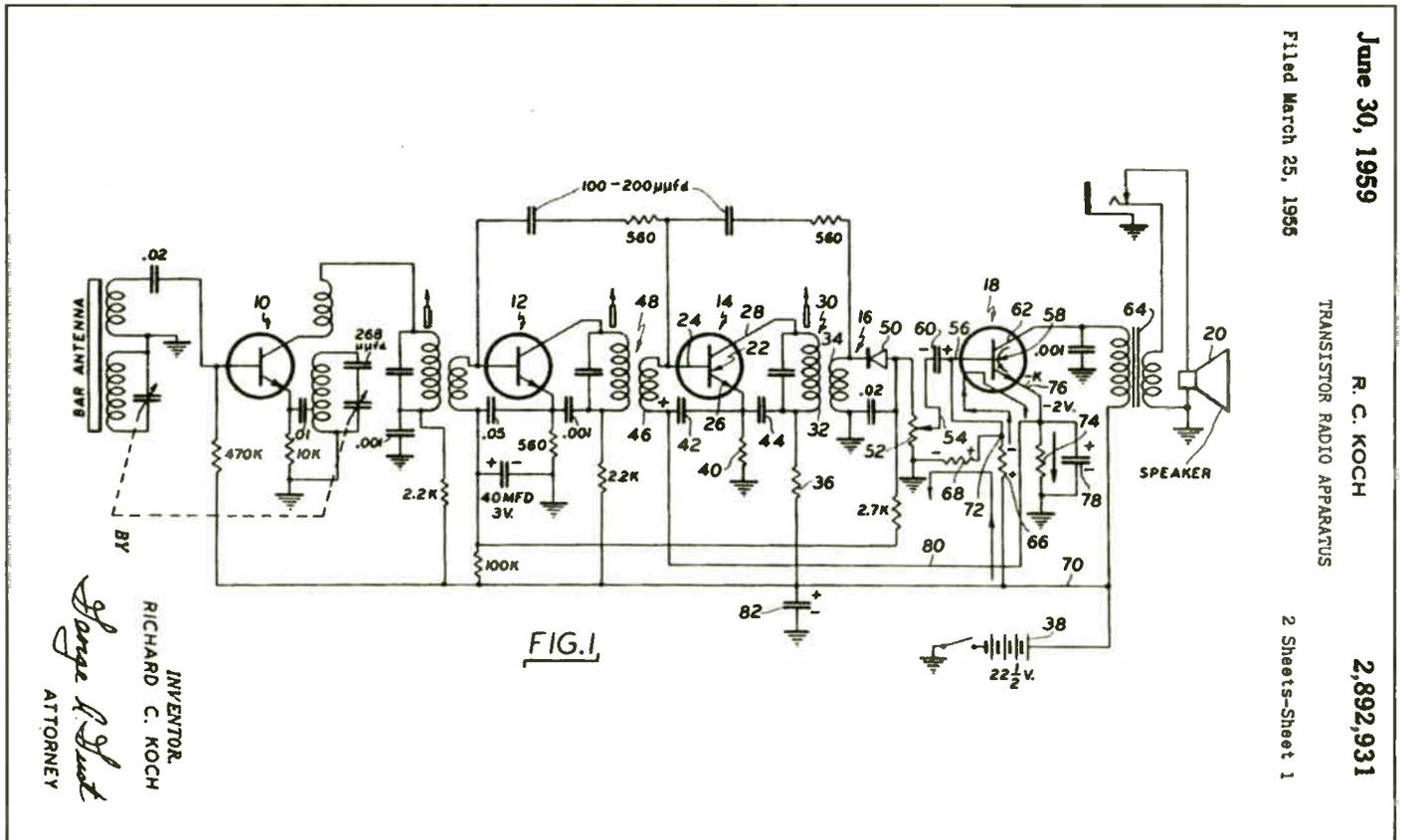
Radio was talking directly to you.

In retrospect we wonder whether transistor radios gave rise to rock and roll, or the reverse. The phenomena appeared pretty much contemporaneously. But times were changing and new, exciting, challenging music played through these receivers.

As a business, radio responded not only to the new youthful audience with the music they wanted to hear but to the new consumers and their distinctive advertising needs, a unique conduit that TV had difficulty duplicating.

On the technical side, the transistor radio gave the ultimate personal mobility to radio. In my own travels as a camping Boy Scout far beyond power and "civilization," I listened to KOMA late at night at Philmont Scout Ranch in the Sangre de Cristo Mountains of the Rockies, or WWVA under the stars while canoe camping on the wild rivers of West Virginia.

Adults made use of transistor radios,



Patent application schematic for the transistor radio on which the Regency TR-1 is based.

STATION SERVICES

WRN to Syndicate Deep Country 'Bar' Format

Waitt Radio Networks, Folger Entertainment Co. and Dean James and Associates signed an arrangement to syndicate "The Bar," described as a deep country format featuring a blend of current hits and crossover rock. Terms of the deal were not disclosed.

Waitt Radio Networks, a division of NRG Media, provides localized 24-hour music formats and will offer The Bar with localized content for affiliates. Radio consultants Joel Folger and Dean James debuted The Bar format on March 2006 in Billings, Mont., where it has been running on KPBR(FM). WRN also carries Folger's BOB FM format.

"This is a well-researched format that can help stations and clusters improve their 25-54 and 18-49 numbers," said Folger. "It's a natural for operators who need to bolster a weak performer or strengthen their country position."

For more information, contact Waitt Radio Networks in Nebraska at (402) 952-7603.

The outshoot was a prototype portable radio. A thrilling breakthrough idea, but only one small manufacturer took up the product coming to mass market. It was Regency, with its model TR-1, introduced on Oct. 18, 1954, at a price of \$49.95, roughly equivalent to \$400 today.

This opened the flow gates of demand. The descendants of this little gem are still for sale everywhere.

Personal

These little units were more exciting than most innovations. They converted a communal experience to a personal one.

Prior, radios had been found where many people could listen: living rooms, family cars and the like. The decision about what was on and when to listen was determined not by kids but by elders

of course. I can tell you from experience that you couldn't get anyone's attention in Baltimore during the 1966 World Series, thanks to all the transistor earphones in use.

Just as the All-American Five radio we discussed in an earlier issue garnered more ears for radio by increasing the locations and counts of sets, the portable transistor took radio more directly to the ears and set the ears free to roam.

What a wonder!

Charles S. Fitch, W2IPI, is a registered professional consultant engineer, member of the AFCCE, senior member of the SBE, lifetime CPBE with AMD, licensed electrical contractor, former station owner and former director of engineering of WTIC(TV) in Hartford, Conn., and WSHS(TV) in Marlborough, Mass.

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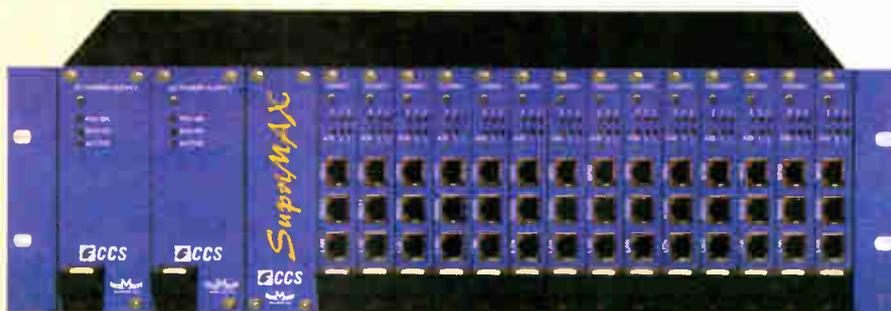


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World Radio History

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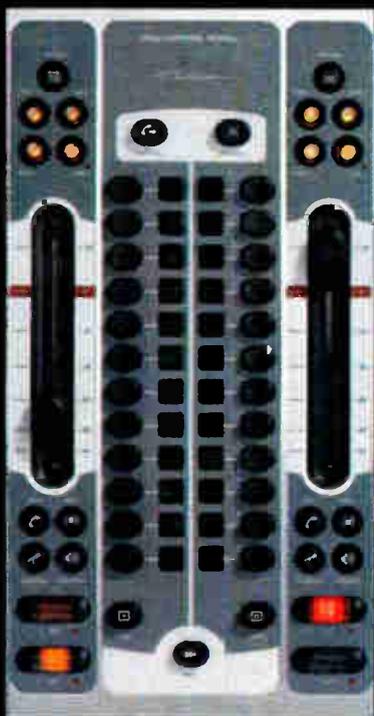


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AUDIO | NETWORKS

New Entrants Target Radio's Success

Emerging Services Continue to Poke at Radio's Model. Will They Eventually Find a Soft Spot?

Nearly from its origin, radio has coexisted with other media that competed with its service to audiences.

As each emergent service made its debut, pundits claimed the new offering would eclipse radio's value to its listeners, and that radio therefore was doomed.

Yet the medium has survived and flourished. From its origins in the administration of Grover Cleveland (the first one, no less) until the present day, the medium has maintained its viability against what may have seemed insurmountable odds.

The onslaught of LPs, television, CDs,

the Internet and satellite radio, to name but a few, has yet to overtake radio's dominance as a preferred delivery system for audio content.

Radio's seeming insuperability has been the stuff of legend in a world where new media offerings rise and fall almost weekly. Much analysis rightfully has been directed towards the makeup of the medium's thick skin, and it has provided some interesting results.

Above all, radio is (or at least, in today's environment, has become) cheap.

There is no less expensive way to pro-

vide a mass audience for the delivery of real-time, high-quality audio content. It also bears the valuable attributes of *push* and *scarcity*, which it never knew it had until compared with new media's *pull* and nearly *infinite availability*.

Moreover, its astronomical receiver penetration levels are enviable by any measure.

So is radio truly immortal, or is it a cat that is running out of its finite number of lives?

The ultimate challenge

Among radio's primary values is its ability to present to listeners at least some of what they want, when they want it, essentially for free. This is a hard deal to beat.

The Big Picture



by Skip Pizzi

This content-presentation scheme is not extremely precise, of course. The targeting of a format's specific elements does not work for everyone all the time, but the science of today's formatics has brought the concept close enough to provide a viable business model when applied to radio's existing mass distribution infrastructure.

Recently, however, the very idea of mass appeal has been challenged. New media's ability to personalize and customize content for narrower — or even individual — tastes has the potential to devalue the formatics model.

Terrestrial radio's intrinsic scarcity has largely immunized it from such a threat for the most part, and this attribute used to seem insurmountable. Yes, there have been a number of Internet-based radio services that attempt to provide content congruent to listeners' tastes, but they take some effort on the listener's part to initially select genres and then fine-tune with feedback. They are also only available on listeners' PCs (although one such service, Slacker, promises mobile and portable solutions soon, but without much detail).

To date, these constraints have kept such services from truly threatening traditional radio broadcasting. Recently, though, a few additional features have brought the lure of "the ultimate radio station" a bit closer to reality.

A number of entities have launched services that attempt to capture the appeal of a favorite radio station and optimize it on a per-listener basis, without any real effort from the listener, and with at least some degree of portability.

For example, a Seattle-based company called Melodeo has created a service called NuTsie, which looks at the songs stored in a user's computer and streams them to the user's cell phone. The user uploads an iTunes song list (using the Export Library function in the iTunes File menu) to the NuTsie service. Then the user downloads the NuTsie player to his or her mobile phone(s), and launches the player to listen.

Importantly, the songs are not copied by NuTsie from the user's computer — just the playlist. NuTsie plays out its own legally obtained copies of the songs, and pays royalties like any Internet radio service.

Naturally, this implies that certain songs on the user's library may not be available from NuTsie, since its library currently includes only about 10 percent of the entire iTunes inventory, but (again, like regular radio) focusing on the most popular genres and songs.

Although it has not done so yet (the service currently offers a free public beta), NuTsie will likely add interstitial advertising and/or charge a subscription for ad-free service, in order to cover its considerable costs in royalty and data-streaming payments.



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Ventures

► Continued from page 26

Under Internet radio rules, the NuTsie service must play the files in randomized order, and the player cannot rewind, although it can pause or skip to the next song. (It's currently unknown if any ads will be rendered unskippable in the player.)

The obvious advantage of the service is portable access to (at least some of) a listener's preferred music without taking up storage space on the portable device. But there are considerable downsides.

In order to maintain a modicum of fidelity, a large buffer must be preloaded for each song, meaning that in some cases there may be annoyingly long pauses between songs. Phones with higher bandwidth connectivity (or WiFi access) can reduce or eliminate this problem, however.

Also, the service does not automatically sync with the user's current computer music library, so whenever the user adds new music to the computer, a new library file must be uploaded to Melodeo if the user wants the new songs to be included in the NuTsie service.

Finally, because wireless phone networks maintain strict control of their handsets and the features they support, only a few phones currently offer the NuTsie player. But because the NuTsie service can increase use of the phone, more network operators may add the service (or a similar one) as an option over time.

Variations on a theme

A similar service called Lala scans a user's PC for music files (via a browser plug-in), and, like NuTsie, if any of the songs it finds are already on Lala's servers, the listener can access those files from any other PC or device with Internet connectivity.

Unlike NuTsie, Lala does not specifically target mobile phones at this point, but users can sync content to an iPod directly from the Web through such a connection, providing offline mobile access.

Also unlike NuTsie, however, Lala also will background-upload files that it does *not* already have in its collection from the listener's PCs, allowing eventual access to them online, as well. Some labels also have provided Lala with access to some of their music, which all listeners can access through the service via free streaming or 99 cent downloads.

Lala's real strength comes from its legal, communal aspect, in which it allows all its users to stream (but not download) *all* the music in its collection, whether the songs were in that user's PC library or came from someone else's — or directly from a participating label.

Lala began life as a CD-swapping service, and this attitude continues to drive its philosophy. It plans to also sell new CDs and DRM-free downloads in the future. But its free streaming-your-own (and others') music feature has become a popular attractor, even though that service is a collateral element and not a revenue source for the company.

The firm apparently has some decent funding behind it and claims 300,000 members in its CD-swapping network to date. Its free streaming offering could give subscription services (like Real Networks Rhapsody, which charges \$12/month) some significant competition. The company's slogan of "Play albums on demand, buy the ones you love," may have some appeal to listeners and labels alike.



A number of entities have launched services that attempt to capture the appeal of a favorite radio station and optimize it on a per listener basis, such as Melodeo's NuTsie.

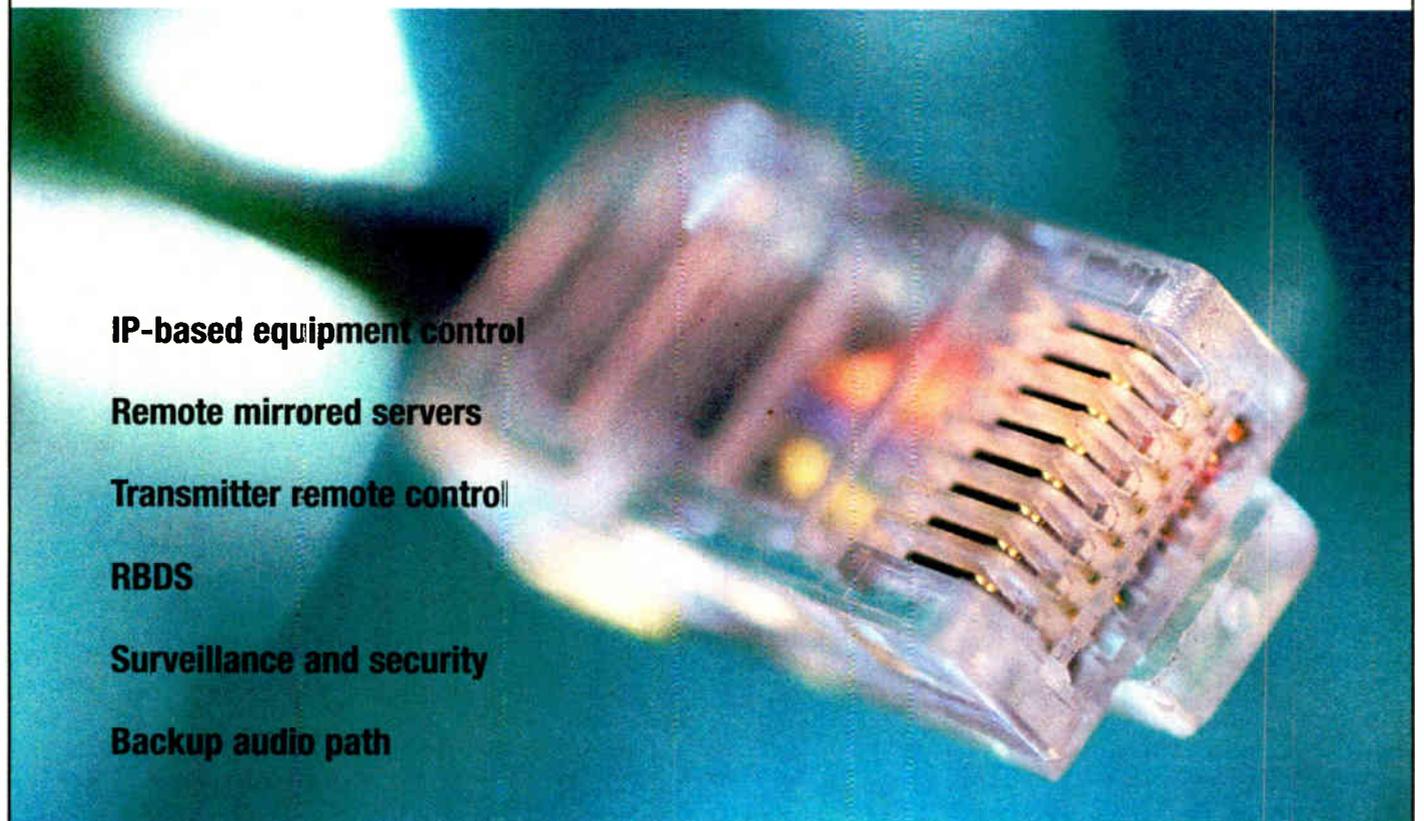
These new ventures are intentionally reptilian in their propagation: From thousands of eggs, a handful of adults may survive. But all it takes is one Godzilla to emerge with a successful model for the legacy industry to be threatened.

Radio's defense comes in two forms — first, by continuing to improve and update its on-air and online services; second, by developing or partnering with others to create its own new speculative services. Building upon radio's strong existing brand, these processes may eventually bear some fruit of new revenue for the old medium.

Even if they don't, however, they will at least indicate that radio is not a sitting duck, but an agile, moving target, which remains relevant to audiences today and tomorrow.

Skip Pizzi is contributing editor of Radio World.

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PEOPLE NEWS

Group Completes Harris HD Radio Training

Harris Broadcast welcomed its latest class of engineers through its HD Radio Training Program.

The group included Jerald White, WUMR(FM); Steve Rieker, WJIS(FM); Terrence Dupuis, KWMU(FM); Mark Constable, WSIU(FM); Michael Bove, Clear Channel; Mike McBride and Ray Klotz, Journal Broadcast; Dave Maley, KCKK(FM); Jim Solum, Lorne Campbell and Mark Heiser, Prairie Public Radio; Randy Pugsley, Churchill Media; Dave Caires, KPPT(FM); Mark



Simpson, WSIE(FM); Philip Galasso and Rich Housley, Citadel; Ron Zastro, Alaska Public Broadcasting; David Gates, Cesium Communications; and Jeff Glass, WNIU(FM)/WNIU(FM).

Also participating and shown with the group: Paul Dadian of Ibiqity and Hal Kneller, Keith Mullin, Onalda Martinez and Bob Band of Harris.

Customer training at Harris started in the 1970s with construction of a dedicated classroom and lab facility in Quincy, Ill., according to Hal Kneller, senior manager of marketing communications and public radio initiatives. He said thousands of people have attended since to train on products as well as topics such as RF101.

"The present facility has separate areas for radio and television, two large classrooms and several labs including a separate AM and FM lab, with analog and HD Radio transmitters, exciters and test gear all set up and operating. Each type of combining on FM can be demonstrated, and students can play with configurations and leave fully understanding how to analyze a station and determine the best approach for HD Radio conversion."

Vendors such as Audemat-Aztec, Bird, ERI and Dielectric have participated in HD Radio training instruction. The most recent class enjoyed a Mississippi River dinner cruise as well.

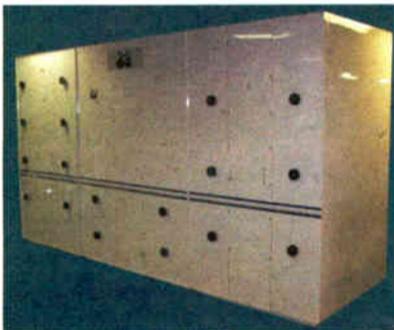
Harris classes are listed at www.broadcast.harris.com/support under Product Training.

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Nautel: Headed For Space?

Nautel said it will research and develop a high-power RF amplifier for use in space travel.

The amplifier is to be used for plasma generation and subsequent acceleration in an electric spacecraft propulsion system, the company stated.

Nautel is collaborating with Ad Astra Rocket Company of Texas in the project. Officials there called Nautel's high-power RF technology "critical to a successful space application" in the announcement.

"In addition, the low-voltage requirements of these RF transmitters make them compatible with the voltage output of space-borne solar power arrays."

The plasma-based propulsion system achieves a high exhaust velocity and fuel efficiency. Nautel said plasmas are electrically charged fluids that can be heated to extreme temperatures by radio waves and are controlled and guided by strong magnetic fields.

"The magnetic field also insulates the hot gas from any nearby structure, permitting the gas to exceed the melting point of surrounding materials without affecting them.

"In rocket propulsion, the higher the temperature of the exhaust gases, the higher their velocity and hence the higher their fuel efficiency," Nautel continued. "Plasma rockets feature exhaust velocities far above those achievable by their chemical cousins, so their fuel consumption is extremely low."

Nautel makes medium-wave AM and FM radio broadcast transmitters and other specialized equipment.

Gay Radio Gets a Coming Out

by Ken R. Deutsch

When WINS(AM) switched from top-40 to all-news in 1965, some programmers questioned whether it would ever amount to more than a novelty.

It did, to put it mildly. Now that format often dominates adult demographics in the largest markets.

More recently we have seen the unveiling of radio designed for women, such as the format offered by Greenstone Media. There are stations geared to the under-12 set; examples are Radio Disney and satellite channels Kid Stuff on Sirius and XM Kids. Hispanic radio, not long ago a very specialized niche, has become a huge moneymaker.

Many ethnic or interest groups now can find a place on the dial that plays their tunes. For some programmers the next logical population segment to merit a targeted format is the gay, lesbian, bi-sexual and transgender community.

A numbers game

According to the Family Research Institute, gays constitute anywhere from 4 to 10 percent of the population. Add those people who identify themselves as bi-sexual or transgender and that number increases.

Harris Interactive estimated in 2005 that the buying power of the gay/lesbian market segment would rise from \$610 billion in 2005 to \$641 billion in 2006. It also report-

HD2 Pride

When KBIG(FM) put Pride Radio on its HD2 channel in June, it brought to 12 the number of Clear Channel stations airing the program via multicast:

- WLDI(FM) West Palm Beach, Fla.
- WMGE(FM) Miami
- WKSS(FM) Hartford, Conn.
- WKSC(FM) Chicago
- KHKS(FM) Dallas
- WYYY(FM) Syracuse, N.Y.
- KPEK(FM) Albuquerque, N.M.
- KPTT(FM) Denver
- KXXM(FM) San Antonio
- WXXM(FM) Madison, Wis.
- KIOI(FM) San Francisco
- KBIG(FM) Los Angeles

Several of these also carry the format feed on their Web sites, as do another 12 to 15 Clear Channel stations including WHTZ(FM) and WKTU(FM) New York, WHYI(FM) Miami, KHMx(FM) Houston and KIKI(FM) Honolulu.

The program "Pride Radio with Ryan and Caroline" also is heard on KQOL(FM) in Las Vegas; KRQ(FM) in Tucson, Ariz.; and KQKE(AM) San Francisco as part of its program "Shake."



Jackie Clarke is a host on 'Radio With a Twist.'



KNGY bills Fernando Ventura, right, and Greg Sherrell as 'the first commercially broadcast gay morning radio show in the United States.'

ed that four out of 10 gay consumers — as long as quality and value are equal — prefer to purchase products from companies that advertise in gay and lesbian media.

Meanwhile, USA Today last fall cited statistics indicating that approximately 175 Fortune 500 companies had actively courted the "gay dollar" the previous year, up from only 19 in 1994.

The widest-spread format addressing this market is "Pride Radio," a creation of Clear Channel's experimental Format Lab. This is broadcast full-time via HD2 channels in a dozen markets such as Chicago, Dallas, Hartford, Miami and West Palm Beach.

For the large part of the citizenry that doesn't yet own an HD radio, Clear Channel's Pride is available as a live stream on the Web sites of more than a dozen other stations. Visit www.prideradiodfw.com to hear the Dallas/Ft. Worth version, which includes local content in addition to the network programming.

But one syndicated format does not a trend make. A handful of other gay-oriented Internet and terrestrial stations are available or have signed on. On the Web you'll find AEU Media Group's Pride Nation Network (www.pridenation.com); Gay Radio (www.gayradio.com) and Man Candy (www.mancandy.com). From the United Kingdom you can hear Gaydarradio (www.gaydarradio.com).

On the FM dial there is Melbourne, Australia's Joy 94.9 (www.joy.org.au), which has been on the air since 1993, and San Francisco's KNGY, on since 2004, which also streams at www.energy927fm.com. KNGY's morning team of Fernando Ventura and Greg Sherrell is billed as the first openly gay commercial radio morning show in the country.

Satellite radio has its own gay-themed programming in Sirius Channel 109, a news, talk and entertainment channel called "OutQ." It launched in 2003, putting it ahead of many other recent developments in gay radio: Sirius called it "the first live, nationwide and interactive medium" for the GLBT community and "the nation's first 24-hour radio service providing GLBT news, talk and entertainment."

People who need people

Not long ago, the launch of a gay radio format would have generated considerable controversy.

"We've had very little negative response to the Pride format," said Pat McMahon, operations manager of the Clear Channel cluster in Dallas.

"A few listeners who heard Pride Radio cross-promoted on our other stations have expressed objections; however the feedback from the gay community has been overwhelmingly positive. We think we did things right by going to the influential gay and lesbian opinion leaders and asking for their support. The local gay paper, the Dallas Voice, and the Dallas Morning news have both been supportive."

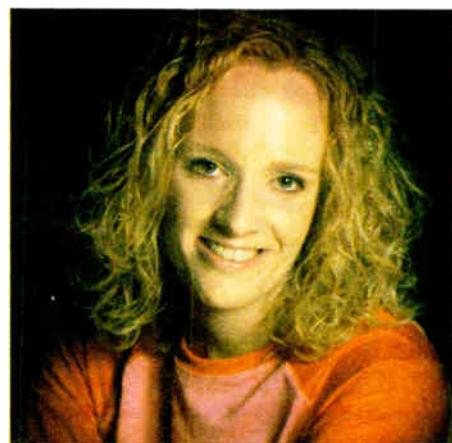
Is the lack of negative response a function of the small base of listeners on HD2? McMahon replies that he can't really say.

"It is a small but growing audience. We probably wouldn't draw negative response from those who have sought out Pride Radio. Some of the criticism we have received was in regards to the cross-promotion of Pride Radio on our main signals.

"Even though there is nothing I would consider affrontive in the copy, a segment of the general market listeners may find it upsetting that their favorite station is promoting a product clearly aimed at the G&L community."

McMahon localizes the basic format with music and talk elements aimed at the Metroplex.

"It's tough to allocate resources for
See GAY RADIO, page 31 ►



Jen Austin does an air shift on KDMX(FM) and recently authored a book about her Christianity from a gay perspective.

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Vaughan: Keepin' It Local for 55 Years

by Ken R. Deutsch

The going rate was \$3 per show in 1952 when Dick Vaughan took to the airwaves.

Fifty-five years later he is still in radio and loving every minute. That original station was WHIL(AM), Malden, Massachusetts; Vaughan was a staff announcer. Today he is chief operating officer of WESO(AM) in Southbridge, about 70 miles away.

"Give me a human being, a microphone and a board and I will beat the heck out of a computer every day," he says.

That advice isn't taken to heart by some broadcasters these days, but Vaughan is not other broadcasters. "The greatest change I've seen is the drift away from local radio," he told RW.

"We cared about the communities we served, we had 'live and local' news and we broadcast the high school games. We ran PSAs to help local organizations and we were involved in Rotary and Lions Club.

"The real tragedy is that deregulation sent us in a whole new direction and we lost what made us so good."

Think fast!

Over the last half-century or so, Vaughan worked at, managed or owned 15 radio stations in Massachusetts, Virginia, New Hampshire and Vermont. He has come full circle to WESO, a stand-alone AM owned by Money Matters Radio based in Needham. While his job title is COO, he also gets into the studio and



Dick Vaughan in the studio with Carl Kalizewski, past district governor of the local Rotary Club.

cracks open the mic occasionally.

"We had Altec 633 'saltshaker' mics, Western Electric cardioids and RCA 44s and later 77s," he recalls of the early days. "They were big and heavy. The turntables played 33-1/3 and 78 rpm records."

This may come as a surprise to young'uns, but until recently, news did not arrive at radio stations via computer.

"The AP and UPI machines clacked away and it took three days and a lot of Lava soap to wash the purple ink off your hands after you changed those ribbons," he said. "You didn't want to get that ink

on your clothes!"

Those machines could be problematic. Less than a month into his first job, he arrived at 5:30 one morning to prepare news and sports, but found a surprise.

"The AP machine had jammed at 10 the night before, so we had no news," he said. "Being creative, I grabbed the Boston newspaper and started reading it on the air.

"The morning guy realized my plight and 'helped' by lighting the paper on fire while I was reading. I threw it on the floor in a blaze and proceeded to ad lib the news from memory."

J.P. Ellery from the Worcester Telegram & Gazette, sports with Carl Beane, traffic with Frankie Fox and a bit of country music thrown in there somewhere.

From noon to 1 p.m., another local show called "Sound Off!" features call-ins and guests from the community. The day is peppered with local newscasts. The station Web site, www.thespirit970.com, provides at least five ways to contact the station with requests or to talk to the management or personalities.

If you can't figure out how to reach WESO, it is not the fault of the station.

The pinnacle of success

Every career has benchmarks, those special moments when you realize you're now at the next level.

"Late one afternoon at WHIL when I was just a kid, I was getting ready to leave for the day and the owner, Mr. Tarlow, was walking around picking up papers and turning out the lights," said Vaughan.

Give me a human being, a microphone and a board and I will beat the heck out of a computer every day.

— Dick Vaughan

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It's March 16, 1956, and snowing. Vaughan is covering a fire at Lincoln Junior High School in Malden, Mass., for WHIL, where he was news director.

It was that kind of quick thinking that allowed Vaughan to work his way up to \$40 per week. "I thought I was rich," he said. "And the experience was priceless."

Talking the talk

One look at the lineup on WESO "The Spirit 970" shows Vaughan putting his "live and local" philosophy to work every day.

The broadcast day starts with local show "Shaina in the Morning" with Shaina Besnoff, featuring local news with

"I asked him why the boss had to do all that and he put his hand on my shoulder and explained it this way. He said that he wasn't the boss; he was the janitor and had to do all the things no one else wanted to do. And then he told me that someday if I stayed in the business long enough I would understand. He said when you realize you're the janitor, you'll know you have reached the top."

Ken R. is a former broadcaster who remembers putting a quarter on the tone-arm to keep it from skipping. 🎧

Gay Radio

► Continued from page 29

local research and a dedicated music director at this time, so we lean heavily on the national Pride Radio playlist," he said. "It's an energetic, rhythmic, techno-dance sound. We're fine-tuning as we go."

Pride Radio is a format, but it is also a representation of a lifestyle.

"Everyone involved shares duties with our other stations, but we have a core group of people who are hands-on," said McMahon.

"Jen Austin does a regular shift on KDMX(FM) and she recently authored

and published a book about her Christianity from a gay perspective. Jen helps prepare daily music logs and edit content. Jaga Meyers is our director of online sales for the group and she is also gay and passionate about the project. Steve Lee, our director of online content and marketing, has been very involved in the rollout and early promotion."

Austin told Washington Post columnist Marc Fisher recently, "The gay community has received us well, though they've warned us about stereotypes in our music choices. And they're right: We don't want to be just the stereotype, playing Madonna and Donna Summer." Fisher reported those comments in his blog.

Gay themes are "not much of a hot-button issue anymore," Austin continued. "It's more of a valid lifestyle, and it's

ready to be talked about, so I think we'll hear Pride Radio on terrestrial radio soon." One Clear Channel program researcher told the Post this format "has the potential to be as big as Latino or urban radio."

Pride Radio is not the only gay content available from Clear Channel. The Dallas cluster's AC station KDMX, for instance, airs the two-hour syndicated program "Radio With a Twist" on its main channel on weekends. Some of that content is also heard on Pride Radio DFW.

Launched in 2006, "Twist" is offered through Premiere Radio Networks, also owned by Clear Channel. It is described by promoters as the first nationally syndicated commercial radio brand aimed at the GLBT audience. Created and produced by Wilderness Media & Enter-

tainment, it generally airs late on week-end evenings.

Last fall, its producers said "Twist" enjoyed the largest reach of any gay media via FM radio stations. It now has a dozen affiliates including WPLJ(FM) in New York, KBIG(FM) in Los Angeles, KLLC(FM) in San Francisco and KOB(FM) in Albuquerque.

The program includes features such as "The Big Gay 5," the week's top hits in "Gayville USA"; "Something You Didn't Know," with headlines of interest to the gay community; and "Famous Friend," interviews with gay or "gay-adjacent" celebrities.

When Premiere picked up distribution and ad sales of the show, its President/COO Kraig Kitchin said in a statement that the show was "different

See GAY RADIO, page 33 ►

GLBT in S.F.

Joe Bayliss is sole owner of "Energy 92.7.fm," KNGY in San Francisco, station tagline: "Pure Dance." It went on the air with the format in 2004 and describes itself as an "independent dance music radio station that has a huge gay following." RW asked Bayliss why that is.

Bayliss, a former CBS Radio sales executive who is not gay, said the station has spent a great deal on music research. "If the music doesn't pass the test within that community, it doesn't get onto the station."

Having tested eight formats when launching, "The dance format for us came up with some of the highest 'passion' scores. When we looked under the hood, we found out that this (GLBT) market was passionate about it."

A diverse lineup of personalities offers "significant representation" in the community; about half of the on-air personalities are from GLBT circles, including a high-profile gay morning show with a gay host and co-host. "We always believed you have to walk the walk and talk the talk," he said.

"We weren't going to just show up once a year in the Pride Parade. We were going to be in the community 52 weeks a year with concerts, appearances, promotions, fund-raisers, grassroots stuff."

Will "gay" be the next big format?

"Being gay is a sexual orientation, not necessarily a music choice," he replied. "This was my first response when we first looked at the format. When you combine all the elements of music that appeals to this life group with on-air personalities, with a lot of talk in the morning, plus visibility ... You do things for that community. It's proven that the gay community has adopted us as its choice."

But, he suspects, "It won't work well in Boise."

"In San Francisco, this station, this format, makes a ton of sense because statistics show that the GLBT population here is 15 to 20 percent of the population. The GLBT market lives in pockets across the country. This happens to be the largest pocket in the world." (USA Today, however, recently cited U.S. Census data showing that gays and lesbians live in virtually every county in the United States and aren't segregated in big cities and what it called "gay ghettos.")

The cash-machine formerly known as RevenueSuite returns to the airwaves as Google AdSense for Audio.

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How to Build Great Radio Web Sites

by James Careless

Ask a group of promotion directors if radio stations need great Web sites and chances are that they'll shout "Yes!" in unison. Then ask them what constitutes a great site and chances are their reply won't be so sudden. Some, in fact, won't know what to say at all.

What combination of elements actually results in a great radio Web site? We asked officials at NPR, winner in both 2006 and 2007 of the prestigious Webby Award for Best Radio Web site (www.npr.org), as well as at 2007 Webby nominee CBC Radio 3 (radio3.cbc.ca); and we checked in with the Webby's executive director.

It may seem obvious, but when it comes to creating great Web sites, content is paramount.

In particular, if radio station KQQX bills itself as having the Best in '80s Rock!, its site better have lots of '80s rock content.

This starts with audio, of course, typically live streaming of KQQX's on-air feed. But it also extends to '80s music videos on demand if possible, articles and photos of the era's greatest rock bands, '80s-related contests, screen-savers, concert news, merchandise and absolutely anything else that the '80s rock fan could possibly want all on one Web site.

"It's all about the content as far as

your visitors are concerned," says Steve Pratt, director of CBC Radio 3, the youth-oriented network that Canada's cash-strapped public broadcaster launched exclusively on the Web. (With the advent of Sirius Satellite Radio coming to Canada, CBC Radio 3 was added to its satellite lineup, but it is still not available on AM or FM.)

"In the case of CBC Radio 3, we offer 100 percent Canadian music all the time," Pratt said. "That's what brings people to us."

Be a Web site first

"NPR.org is a news, music discovery and NPR Web site first; since NPR itself is not a radio station we don't think of



NPR's Maria Thomas

the site as a radio Web site," says Maria Thomas, vice president and general manager of NPR's digital media division.

"Since much of NPR.org's content is generated by NPR, audio is an important asset for us. But we don't limit ourselves to audio: We use whatever makes sense in the Web environment."

For example, "When someone Googles recently-deceased Russian cellist and human rights activist Mstislav Rostropovich, they may end up at NPR.org because we offer compelling content about him and his life's achievements; not because we're a radio Web site," Thomas says. "If you go the page, you will see text, audio, photos and video."

Offer variety

Streaming your on-air content is a good first step to creating a successful radio Web site. But it is only the first step; providing access to specific programs on demand, plus archival content stretching back months and more is a real draw for online listeners.

At CBC Radio 3, for instance, "we offer streaming access to some 50,000 Canadian songs," says Pratt.

At NPR.org, listeners can download audio selected by shows or specific topic, going back as far as 1996. "We were one of the very first broadcasters to prepare content for the Web, back when Real was the only streaming format," says Thomas. "All of this content is still useful and accessible today, online."

Max out your platforms

Does your radio Web site stream your on-air content? Now what streaming format are you using: Flash, QuickTime, Real or Windows Media?

If your answer doesn't include Flash, you are missing out on potential listeners. The numbers explain why: According to a Millward Brown survey conducted in June 2006, 97.3 percent of all Internet-enabled desktop PCs are loaded with the Flash Player. In contrast, 84.3 percent are loaded with the Windows Media Player, 66.1 percent have the Apple QuickTime Player and 56.1 percent the RealOne Player.

This is one reason NPR.org plans to add an embedded Flash player to its Web site. The Flash player will be designed to stream on demand both audio and video.

Beyond on-demand streaming, offering downloadable podcasts is a great

See SITES, page 33

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Sites

► Continued from page 32
way to attract listeners, especially if they can automatically download their favorite shows to their iPods at night, and then take them on the subway in the morning.

"Since 2005, over 5.5 million podcasts have been downloaded from CBC Radio 3," says Pratt. "That's programming being listened to by people at their leisure, usually away from their Web-connected computers."

Friendly and interactive

"No matter what their content, Web sites should be easy to use, easy to navigate, and easy on the eyes," says David-Michel Davies, executive director for the Webbys, which gives the awards.

"They should also encourage interac-



NPR's home page.

tion with their audience through blogs, contests and anything else that will get users engaged."

At CBC Radio 3, the site's massive music library makes it possible for listeners to create their own playlists over time. Then when they return to the site, they can activate those playlists and hear their favorite CBC Radio 3-sourced music through their speakers/headsets.

"Some people like to hear whatever it is we are playing now, while others prefer to listen to nothing but their own playlists," Pratt says. "Either way, they are coming to our site to do so."

The moral

Make your Web site a standalone property in its own right: That's the thread that ties all the points above together, and provides the moral for this story.

"When we program NPR.org, we ask ourselves: 'What does NPR mean to people?', then we try to create and present content on the Web that fulfills that need in our audience members' lives, whether that's news and information, music discovery or other forms of cultural content," said Thomas.

"That's what results in a great Web site."

Share your experiences with good or bad radio Web sites. Write to radioworld@imaspub.com.

Gay Radio

► Continued from page 31
than anything heard before on radio. It captures the imagination and listening of an audience in a way that produces ratings and results for advertisers."

Money matters

These developments suggest that, for now, traditional radio is aware of gay radio in a way it was not five years ago and is exploring it further — if not embracing it in the big way it has some other, formerly tiny formats. Homosexuality continues to be a flash point for some consumers, a point KNGY air talent Fernando Ventura referred to in the announcement of his

morning show.

"When ministers and generals are on TV saying that we are immoral and that being gay is wrong," he was quoted as saying, "I'm proud we're able to counter those beliefs by simply living our lives as proud and out gay men and sharing our story with our listeners."

But McMahon in Dallas sees no reason a gay format wouldn't work full-time as a main channel format in the right circumstances. "Sure, (in) a progressive city with enough critical mass of G&L population that ownership could project large-enough market share and advertiser support to make such an undertaking successful. Regardless of format, a broadcaster still has a business to tend to."

Consultant Walter Sabo is CEO of

New York-based Sabo Media, a radio consultancy firm. He sounds a similar conclusion.

"Sure, if it's entertaining, well-produced and not self-indulgent," he said. "There are many gay-targeted businesses that make a fortune, so the ad money is there, no problem."

Sabo also said there is no single gay format, but feels gays represent a market not being served by what he called "old-fashioned radio."

"I think (the trend) will grow, but there are multiple ways to reach a gay audience, from music to just talk or all-news for the community," said Sabo.

Ken R. Deutsch has written for Radio World for 22 years and has returned to college after a 35-year hiatus.

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World Radio History

Radio Past Lives on Through Logos

Jim deYong Turns Old Station Artwork Into a Business As Well as a Labor of Love

by Ken R. Deutsch

What is your favorite AM station of the past? WCFL circa 1966? "Boss Radio" 93KHJ in 1965? Perhaps your taste ran to the more international sounds beamed from Radio Luxembourg or Wolfman Jack's XERB?

They are back again, or at least their distinctive graphic logos are back again, now gracing T-shirts, coffee mugs, baseball caps and tote bags. A treasure trove of nostalgia is available from a radio buff's dream site, www.radiologoland.com.

"I have heard that there are no new ideas, just combinations of old ideas," said owner Jim deYong. "This site combines ideas from two friends."

"One turned me on to a company called CafePress.com. My friend owned a quirky political Web site and was selling a ton of politically oriented T-shirts through that site. The other friend is 'Commander' Chuck Street, who has been the helicopter pilot/traffic reporter for KIIS(FM), Los Angeles for the last 20 years."



KMEN logo from 1962

A couple of years ago Street put together a reunion for KMEN(AM), the top-40 station he and deYong both grew up listening to in San Bernardino.

"One day he mentioned that he owns the station's original trademark/logo, which had been abandoned. He referred me to his trademark attorney, with whom I spent several hours discussing the concept for my company."

Now through his virtual store, deYong offers radio merchandise using original station logos from the glory days before disco.

"My trademark attorney grew up listening to KHJ, Los Angeles and he knew I was never going to get rich off this project," said deYong. "So his fee for consulting was two KHJ T-shirts."

Shopping an online mega-store

The RadioLogoLand store is just a small part of a gigantic online operation known as CafePress (www.cafepress.com), a wide-ranging emporium offering about 70 million individual products through hundreds of branded stores.

"Our 'shopkeepers' set up their own stores within our



Jim deYong and a logo from the mid-to-late 1960s. 'My trademark attorney grew up listening to KHJ, Los Angeles and he knew I was never going to get rich off this project. So his fee for consulting was two KHJ T-shirts.'



XEAK was 'The Mighty 690.' DeYong says 'I can remember how exciting and illicit it all seemed to listen to rock and roll from a Mexican radio station.' It later became XETRA, airing news, beautiful music and other formats.

site," said Marc Cowlin, public relations manager for CafePress. "They arrange for permission to use whatever artwork they need; they can use our template for the store or they can have their own design."

CafePress does the heavy lifting. It charges its sellers a



KHJ logo circa 1970



A 1970s logo used by Radio Luxembourg

base price for each item and the "shopkeeper" gets to keep the difference between that and whatever retail price tag he/she sets.

"Our base price covers the hosting of the shop, the garment, the printing, order processing, order fulfillment and customer service," said Cowlin. "People have carved out a lot of niches for their stores, everything from humor to politics. We are a print-on-demand company. Because nothing is printed until we have an order, we offer people a risk-free way to start selling their own line of merchandise."

On a shirt that retails for \$19.95, the shopkeeper might make about \$6. It works out well for all parties because the shopkeeper is spared the expense of hiring a staff and maintaining inventory. There is no monthly cost to have a CafePress store, unless the shopkeeper wishes to use his own design for the front end. In that case it's \$6.95 per month.

The only catch is that margins are thin.

"If RadioLogoLand.com were my full-time gig, I would starve to death and my wife would leave me," said deYong. "I don't make much money but I have more fun doing it than you can imagine. I'm a retired advertising guy from southern California now living in beautiful San Luis Obispo. I still write and produce an occasional TV commercial and consult with a small ad agency."

(Radio stations can host their own virtual stores on CafePress.com. Check out www.cafepress.com/kfog for one example.)

What about those logos?

One would think it would be expensive to purchase the rights to those old radio logos.

One would be wrong.

"Translated into layman's terms, my attorney said that any trademark that has gone unused and which the owner has taken no steps to preserve is considered abandoned," said deYong. "It passes into public domain. Since most of these stations disappeared 20 or 30 years ago, I didn't need permission."

There is an appropriate disclaimer on the Web site. With a few exceptions — such as CBS/Infinity, which refused permission to use its logos — deYong was able to use everything he wanted. He spent hundreds of hours combing the Internet to find the original versions of the logos.

"However the technical quality was not good enough, so I had every logo faithfully recreated by an artist," he said. "We've only received two e-mails complaining about historical accuracy and in both cases we researched the complaint and made changes in the artwork."

In recent months deYong has begun the process of recreating his next batch, approximately 60 more logos.

"We base our choice of 'new' logos on two things," he said. "One, requests, and two, which logos I think are the coolest-looking."

Additions will include KEZY in Anaheim, 1975; CKLW Windsor/Detroit, 1972; WFIL Philadelphia, 1978; and KONO San Antonio, 1957.

See more logos, page 36.

STATION SERVICES

Envision Airs History of Rock According to Shaffer

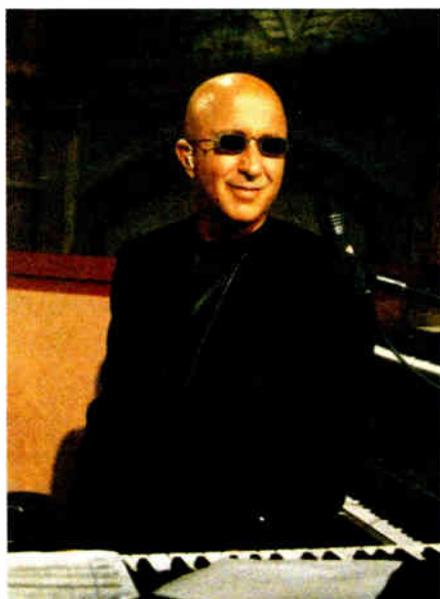
Envision Radio Networks and Paul Shaffer Enterprises launched Paul Shaffer's "Day in Rock," a 60-second vignette, available on a barter basis, that illustrates the daily history of rock according to the musical director and sidekick for David Letterman.

The vignette draws on Shaffer's musical knowledge and ability to comment on the history of rock and roll. It can be programmed throughout the day, and offers sponsorship opportunities for radio stations looking to add informative programming to their lineup.

Shaffer has been Letterman's musical director and sidekick for 25 years. He also spent five years with the original Saturday Night Live, during which he played keyboards, composed material, co-founded The Blues Brothers and was a featured performer.

The Grammy-winner also has served as musical producer for the Rock and Roll Hall of Fame induction ceremony since its inception in 1986, and led the band for the "We are the World" finale of Live Aid.

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Logos With GoGo

Some of Jim deYong's favorite logos (see page 34) and why:



CFUN Vancouver, 1966. "Maybe not a great logo, but it immediately takes you back to a simpler time. The Disney lawyers must have had conniption fits over the Jiminy Cricket rip-off."

KBAT San Antonio, '66. "It may seem like an obvious graphic solution, but I love how simple and direct it is. Makes you wonder why they would ever have done any other logo."



KCBQ San Diego, '72. "How do you re-brand a set of call letters that have been around forever? This is how."

KISN Portland, '75. "Long before there was a KISS-formatted station in every market, Portland, Ore., had KISN. What a perfect logo. After you've seen this logo a few times, you'd know what the call letters are even if they were omitted."



KTNQ Los Angeles, '76. "A short-lived L.A. station but the logo is timeless."

KXOL Fort Worth, '69. "Great hand-lettering. This logo treatment would probably work today."



Radio 270 England, '65. "Almost hypnotic. Oddly enough, it predated the psychedelic era, when it would have seemed far more at home."

RADIO MERCUR



Radio Mercur Denmark/Sweden, '58. "It looks like the CBS eye on acid. It doesn't really tell me anything about the station, but it's a very odd, very cool graphic."



Radio Nordzee International, '71. "Very graphic, very cool. Makes me wish I could have picked this station up in Southern California."

WCFL Chicago, '71. "Very simple, very colorful. Proof that four ordinary letters can be made to stand out."



WIBBAGE

WIBG Philadelphia, '67. "One might think those aren't particularly interesting call letters, but they made the most of what they had by turning them into a very promotable word."



WKBW Buffalo, late '50s. "Another great piece of retro art. It just screams 1950s."

WKIX Raleigh '67. "A great set of call letters with a logo that says excitement."



WKTQ (13Q) Pittsburgh, '77. "Big, bold, simple. Perfect for a T-shirt."

WOLF Syracuse, '62. "Great call letters and another great piece of retro art. They went from a not particularly interesting drawing of a wolf in their 1961 logo to this cool Disneyesque wolf in 1962. If they were trying to communicate fun, they accomplished their mission."



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There's no question that broadcast outlets can drive Web site visitors. Give people a few good reasons to visit your Web site, promote the Web site a lot on-air and you will drive Web site traffic. Advertising works!

What doesn't work very well is the content that radio stations continue to offer Web site visitors.

This is not mere humble opinion; this is fact. While stations can boost "unique visitor" numbers simply by increasing on-air promotion of the Web site, they have a difficult time increasing the number of page views per visit.

Why? Because once there, users are often overwhelmed by marketing messages — and underwhelmed by content.

How can your local Webmaster increase page views locally without the assistance of national content?

Local Photo Galleries: I have seen first-hand that when properly built, local photo galleries can drive big page views.

Most are not succeeding because of the way the photos are taken and the means by which they are posted. The typical process begins with a promotion director handing out cameras to interns or part-timers without specific instructions. At the conclusion of an event, the pictures are downloaded into photo gal-

leries, most often without review.

Look now at most station local photo galleries and you'll see DJs standing in front of tables ... sales people hanging out in bars ... people eating. Many shots will be out of focus and poorly framed.



Listeners who are in pictures — or who have taken pictures — will tell friends. Don't forget to include their names. This image is from WFRE(FM), Frederick, Md.

What should you see? Fewer pictures, and better ones!

Give your photographers specific

directions of what to shoot and get them some instruction.

Next, post only pictures that have redeeming value. Look for pictures of listeners, captioned with their names if possible — interacting with your DJs, hopefully — some, perhaps, meeting stars at concerts.

You should also post exceptionally good photographs taken by listeners. Encourage your Web site visitors to send you pictures online and congratulate them when they make the cut. Listeners who are in pictures — or who have taken pictures — will tell friends, creating more uniques and page views for you.

Consider hiring a professional photographer for your larger events. Many will do on-air or Web site trade. Some will do it just for a press pass to shoot big stars on-stage.

Local Video Galleries: Purchase or trade a video camera and FireWire card for your Webmaster's computer. Whenever a star visits your station, capture the action. Whenever your morning show

does a stunt, you must record it.

Again, the person shooting the scenes needs instruction and direction. Make sure posted clips are short.

Podcasting: Surely you've got at least one or two audio features you can put up every day. If you don't, forget it and take down your podcasting page. There's nothing worse than driving traffic to a page that doesn't do anything. Pretty embarrassing — that we work in an audio medium but can't seem to update podcasting pages regularly.

Linking Properly: Do not put full content pieces or articles on your home page. It wastes space and cuts down on page views.

Many PDs seem to find it hard to believe, but Web users do know how to click links! Not everything has to be on the home page to be considered valuable.

Local Information: This takes many forms and you should have a discussion among your managers about what information you already collect that you're not

Promo Power



by Mark Lapidus

using on the Web.

For example, snow-closing information is vital for parents and kids. Odds are you collect this information for broadcast. Believe or not, parents are increasingly turning to Web sites instead of radio stations to obtain this info when they need it — not when you want to give it to them.

Local sports is another area where stations could soar, but most often carry nothing. Even sports-formatted stations use the excuse that nobody's around to do it. They should train their anchors in posting stories.

If radio stations don't increase local information on their Web sites, the newspapers will beat them time and again.

Auctions: Sure, you can still use the tool on eBay to auction items off for charity, but the initial pictures and descriptions must live on your Web site. Drive the traffic there, let them click several pages, then steer them to the auction tool on eBay.

As I've preached before, if radio as an industry is going to talk the talk about how cool and compelling our Web sites have become, we gotta walk the walk to get it done.

This requires an investment in significant corporate infrastructure and, as important, investment in locally skilled Webmasters.

The day has long since passed when the overnight guy, or even the PD, should be the part-time Webmaster. Make the commitment. If you want a great Web site, invest in great content.

Mark Lapidus is president of Lapidus Media. Contact: mlapidus@cox.net.

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WE GIVE YOU O'NEAL

Name: James E. O'Neal

Experience: TV Technology's technology editor and RW contributor. Retired in 2005 after a 36-year career in broadcast engineering; began in commercial broadcasting in my teens; spent 30+ years with USIA, WorldNet/VOA TV. Recipient of USIA Director's Award and International Bureau of Broadcasting Silver Medal Award.

Favorite piece of radio gear: This is difficult. I have a large collection. Possibly my 1920s WE spring-suspended double-button carbon mic.

Mentor: Paul Klipsch (I grew up in Hope, Ark.)

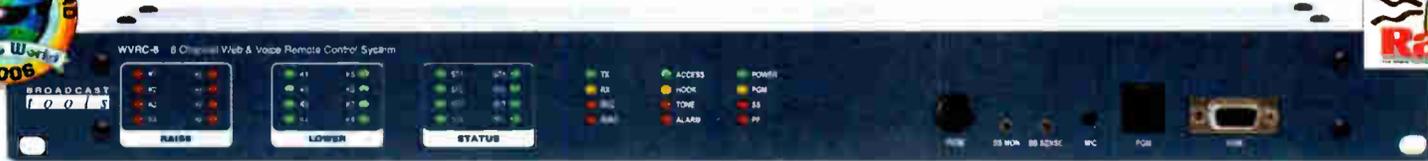
Favorite stations growing up: KWKH and KOSY in daytime. No nighttime local radio. Skywave favorites included KMOX, WOAI, WNOE, WHB, WLS and WGN.

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ProMix 12

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The **WVRC-8** provides a cost-effective, eight channel solution for web based and/or recordable voice response dial-up transmitter site control. The WVRC-8 was designed from a users point of view, so all of the basic functionality you need is included to control your site equipment, while including the accessories other manufacturers consider optional. Each analog, status, silence sensor, temperature sensor and power failure input can be configured to email up to four individual email addresses, allowing different input alarms to be routed to different email recipients.

WVRC-4

The **WVRC-4** provides a cost-effective, four channel solution for web based and/or recordable voice response dial-up transmitter site control. The WVRC-4 was designed from a users point of view, so all of the basic functionality you need is included to control your site equipment, while including the accessories other manufacturers consider optional. Each analog, status, silence sensor, temperature sensor and power failure input can be configured to email up to four individual email addresses, allowing different input alarms to be routed to different email recipients.

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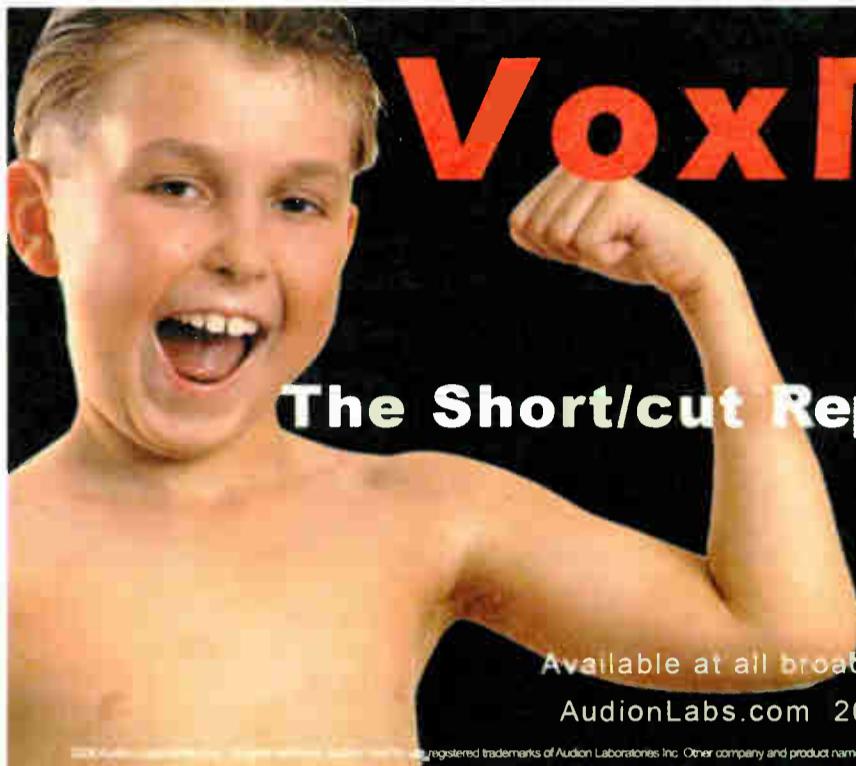
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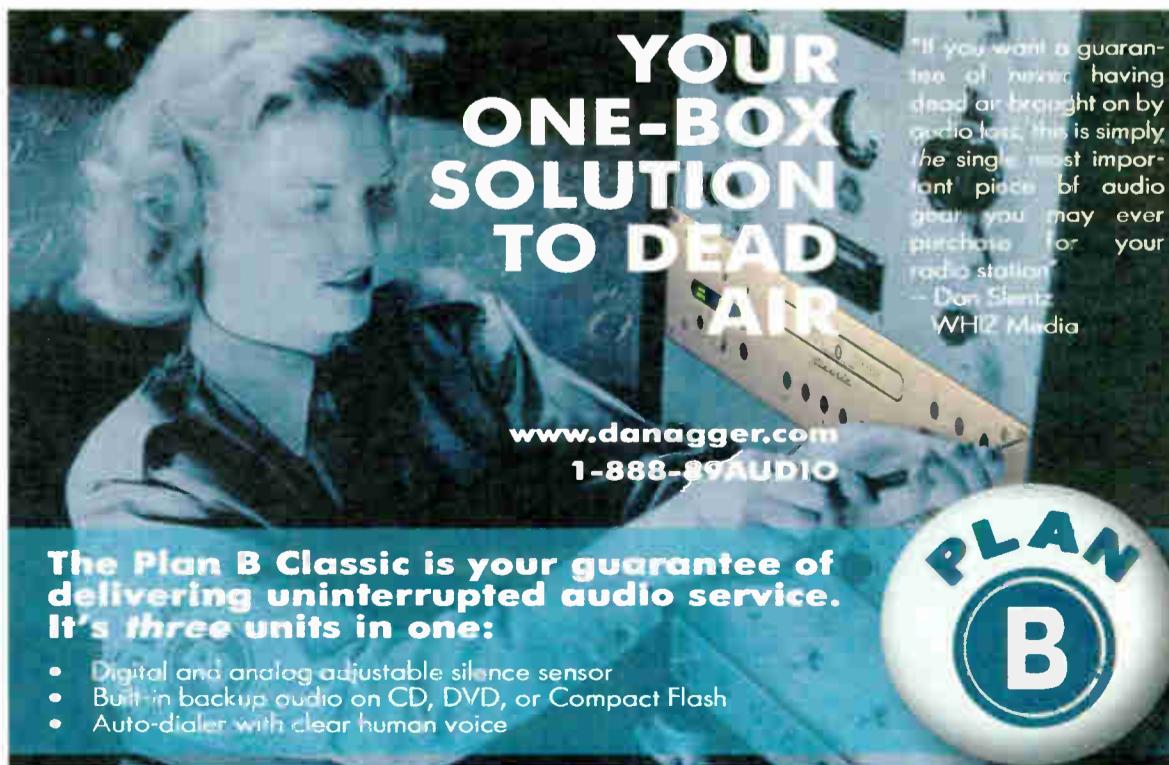
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PLAN B

Control Your Property

by Mark E. Battersby

Despite all of the attention recently focused on income taxes, it is the property tax that is among the biggest expenses in most radio stations or broadcasting businesses — and the most difficult to manage.

According to the Council on State Taxation, a Washington, D.C., think-tank, American businesses shell out more on property taxes than for any other type of state or local taxes.

It is not only those businesses that own their business property that have been affected by skyrocketing property taxes; tenants, too, have felt the bite of those levies. Regardless of whether property taxes are paid directly by a tenant or included in a lease, those taxes represent a significant amount.

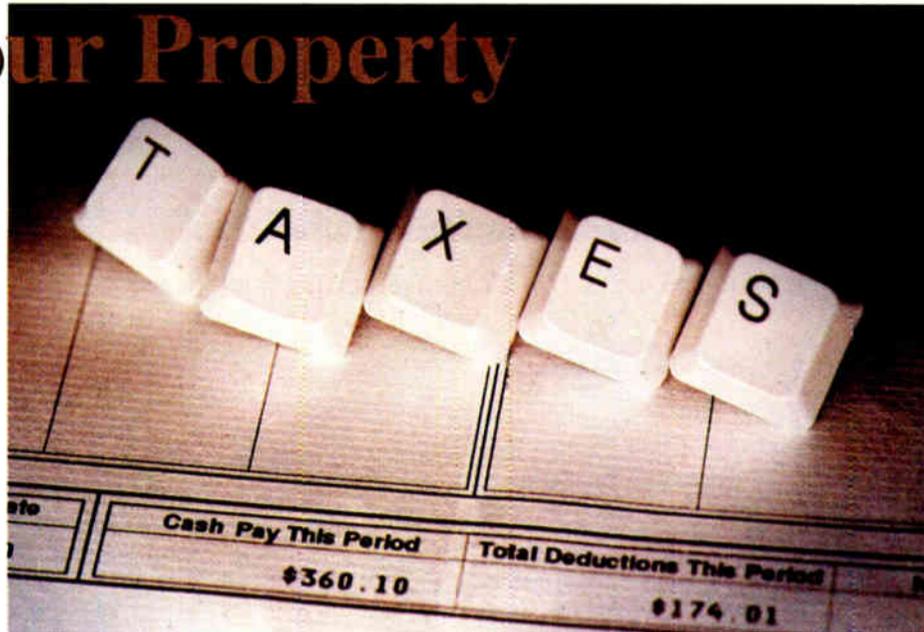
Property taxes all too often are treated as “fixed” costs by radio station owners or managers. As such, they can be overlooked as a source of savings. However, the potential for major savings exists in this area because those property taxes are levied in thousands of jurisdictions, with many broadcasters told only what to pay, not how the tax bill was computed. Plus, once reduced, the savings generally remain effective year after year.

The system

Too often, property taxes are viewed as a system in which all property is valued uniformly and taxed at a uniform rate in each taxing jurisdiction.

Local governments in all 50 states and the District of Columbia rely on rules established by their state constitutions and laws. Although most state constitutions require uniformity, in practice no two states have identical property tax systems. In fact, in some states, rules are left to the discretion of local governments so that the system is not even uniform across the state.

With over 14,000 property tax systems, it is little wonder that so little is known or understood about this tax. Factor in the large numbers of inexperienced



officials within many of those systems charged with the task of placing a value on the properties within their jurisdictions and the result is chaotic, little-understood tax.

Unlike most taxes, property taxes are computed by the local government and the taxpayer usually is told only what or how much to pay. While the Internal Revenue Service checks all figures used by the taxpayer, few taxpayers even

**A broadcaster
will never know
whether errors have
increased its
property's valuation
unless it checks.**

understand the figures on their property tax bills. Nor are they aware that of how easy it is to check the computation of that property tax bill — as well as that of the underlying valuation.

Armed with a few facts about their radio station's property, it is relatively easy for any broadcaster to review the property's record in the tax assessor's office. Such records are public records and, as such, are available to everyone. Most tax assessors, elected or not, are eager to cooperate and usually willing to correct any errors detected and brought to their attention.

Renters pay tax too

Many broadcasting businesses own little or no property. However, just because the business rents its studio, office or tower does not mean that property taxes can be ignored.

In the Northeast, for example, studies show that property taxes range from 15 to 25 percent of the total rent for most businesses.

Renovations, by either by the building's owner or a tenant, can also lead to an increase in property taxes. The cost of major renovations or alterations made at the request of a tenant often is amortized through the rent — especially if the property's owner borrowed to finance the work.

In many cases, the taxing authorities assess buildings based on income stream, without consideration of a property owner's debt. Far better for many broadcast-

ers/tenants is to negotiate rent for the business property “as is” and work out some form of third-party financing for renovations. Although few tenants want to use their capital, this strategy should be weighed against the fact that higher rent could have an impact on the taxes.

Unfortunately, few broadcasters have the clout to insist that their lease require the landlord to initiate a property tax protest at the tenant's request; such a clause is strongly recommended by many real estate experts. Ownership of the property and a direct relationship with the taxing authority often makes it better from a logistical and legal standpoint for the property owner to lead the battle for lower or more equitable property taxes.

Reduce the bite

In most states, the basic starting point for determining the property tax “base” is all real and personal property, both tangible and intangible. Real property usually refers to land and anything permanently attached to it. Personal property includes anything that is the subject of ownership not permanently affixed to or a part of real property.

Fortunately, in no state does the tax base encompass all real and personal property. As mentioned, in no two states is it the same.

Illinois and Iowa, for example, include only real property in their tax bases and most states exclude intangible property. Florida, Kentucky and Missouri are among the exceptions that tax intangibles such as patents, trademarks, copyrights, brand names, franchise agreements and licenses.

Among the states that could constitutionally tax all real and personal property, none does. Instead, various means are used to remove property from the tax base. Certain types of property are granted full or partial exemption based on characteristics of the property and/or its owner. In some states different types of property are assessed differently or taxes at different rates.

Thus, the first question every owner and manager should be asking is whether their radio station's business property should be taxed and, if so, is it taxed at the proper tax rate?

Fighting the assessment

All property taxes are considered “Ad Valorem” taxes — that is, taxes that are based on the value of the property. Since so many variables enter into the equation, it is rare that the assessor and the property's owner will agree on a value.

Armed with a few facts about the

property, it is relatively easy to review the tax assessor's record. Such records are, after all, public records and, as such, are available to everyone. Tax assessors, whether elected or appointed to their position, usually are eager to cooperate in correcting blatant errors.

And, boy do those errors exist. Two-story buildings where only a one-story building stands, a 200-foot-deep building on a lot only 75 feet deep, basements where none exist, parking lots that are really on a neighboring property. The list of errors is virtually endless. However, a broadcaster will never know whether errors have increased its property's valuation unless it checks.

Math errors and mistakes in the property's measurements, construction materials, roof type and conditions are common and quickly corrected by the property tax assessor on the spot — if brought to that assessor's attention.

If the assessor cannot or will not correct errors discovered on the assessment record or if the radio station's owner or manager challenges an assessment on the grounds that it is not comparable to other, similar properties, the matter usually is presented to a local appeal review board.

In some jurisdictions, it may in fact, be necessary to complete and submit a formal complaint and appeal form in order to go before the local review board.

Should the assessor turn a deaf ear to the station's request to correct any errors and if the local property tax review board denies a request for a lower valuation, the next step is to present the case to the state board of appeal. Finally, in those rare instances where these steps have failed, the entire matter may be taken to court.

Obviously, no broadcaster should challenge a property tax assessment without a clear-cut case. No one wants to open up a Pandora's Box. Fortunately, there are a number of good consultants to help reduce local property taxes. Many of them will work entirely or largely on a contingency basis. There are also attorneys — known as “certiorari” or tax protest attorneys — who provide such services.

Finally ...

Few radio station owners or managers think about property taxes. Some may check calculations prepared by the assessor to ensure the property tax bill is error-free. But is that assessment in line with similar properties, has the property been properly identified or, indeed, is that assessment upon which the annual property tax bill is based, actually based on the broadcasting operation's property?

Compounding the problem, generally accepted accounting principles require businesses to value property at an amortized historic cost. Property taxes of course are based on fair-market value, which as every station owner and manager knows can vary depending on who is doing the calculation.

Several years ago, a major study revealed that few major Fortune 500 companies bothered to challenge the assessment on their properties. However, according to that study, almost nine of 10 companies that did challenge their property tax assessments were successful.

Is the property tax assessment on your radio station's property correct?

Mark Battersby is a tax and financial writer based in the suburban Philadelphia community of Ardmore, Pa. He wrote in March about trade shows and tax write-offs. ●

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◆ READER'S FORUM ◆

FCC's IBOC Report And Order

Implementation of these IBOC rules, particularly for AM and more particularly for AM nighttime operation, continues the FCC's apparent plan to destroy AM radio, and more particularly local small-town radio ("AM Digital at Night, Multicasting, Other Changes Spelled Out," RW Online, June 1).

If any particle of fairness is left in this

have no trouble in hearing these signals does not. Reminds me of the first FM stereo signals. That is my feeling.

We can deal with FM, but AM will fail unless companies release some great receivers.

*Paul Drake
Chicago*

The best feature of the FCC's IBOC Report and Order is that there is no mandatory conversion to digital broadcasting.

IBOC does not conform to the existing AM protection rules. Why should analog stations have to now abide by the same old restrictive rules? Has the FCC ever heard of the 'Golden Rule?'

— Paul Dean Ford

agency, it must immediately change AM rules to allow analog broadcasters to interfere with IBOC stations way above and beyond the strict rules now in effect, in order to maintain some semblance of a service area that is and/or will be destroyed by this unbelievable debacle of digital AM.

IBOC does not conform to the existing AM protection rules. Why should analog stations have to now abide by the same old restrictive rules? Has the FCC ever heard of the Golden Rule?

*Paul Dean Ford, P.E.
Dennison, Ill.*

As a listener to AM for some 40 years now, I see big trouble with nighttime IBOC, with stations "hissing" via skip all over the nation, killing any fringe listeners from hearing their close-by local or regional signals. This will give satellite radio a boost!

As far as FM is concerned, the signals are so weak that a roof antenna is needed in the suburbs of Chicago 19 miles from the main antenna; a flat area that should

It is indeed best to leave the conversion to digital to marketplace forces. This will produce a reasonably paced conversion that will not leave a lot of listeners without service.

*Nickolaus E. Leggett
Reston, Va.*

A Good Read

I just read Aaron Read's article on the Directed HD Radio ("Latest HD-R Tabletop Is From Directed," April 11) and wanted to say it's a good read! I'm buying the Radiosphy HD100, priced at the lowest end of the market, and wish Aaron would do the same analysis.

High price doesn't always guarantee quality, at least I hope so in this case. Radiosphy is bringing HD Radio into the world of ordinary listeners — at half the market cost. Anyway, thanks Aaron.

*Bill Gillaspie
Atlanta*

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The Newspaper for Radio Managers and Engineers

Our readers have something to say

"Thanks to John Bisset for all the info over the years. I have learned a ton and also discovered where I needed to concentrate more study."

George R. Seifert
Radio Engineer
Journal Broadcast Group - Tucson

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◆ READER'S FORUM ◆

Parity Check Failure

I just read your recent "Parity Check" editorial (June 6). I can't believe RW would support such a diatribe against existing broadcasters.

The piece suggests they are "getting a free ride" for not paying performance royalties to the CRB for over-the-air music programming. Nowhere in here is it stated that existing broadcasters already pay about half a billion dollars in performance royalties to various performance rights organizations, including substantial royalties to composers via ASCAP and BMI fees. Talk about unfair and unbalanced!

Paying the CRB would essentially amount to paying twice for the same privilege. Plus, those stations who are Webcasting their over-the-air programming are also paying RIAA fees. Performers need radio as much as radio needs performers. It's a time-honored partnership with radio covering a huge chunk of a performer's de facto marketing expense they've never had to pay. Is RW now preferring to promote the interests of Internet-only radio over those of existing over-the-air and Webcasting radio broadcasters? Shame on you.

Guy Wire
Anywhere, U.S.A.

More From The Vast Wasteland

There have been a number of responses you published related to my letter on ham radio, in which I classified the hobby as a vast wasteland (*Reader's Forum*, March 28). Some of the responses addressed the issues; some were just personal attacks.

My letter addressed the fact that hams think they have a God (FCC)-given right to erect towers anywhere in residential communities even though their public service in most cases is absent.

I believe towers are beautiful; the more the merrier. My argument is based on the general public's right to live in visual peace.

William Tynan W3XO attacked, nicely, my assertion that ham conversations

are devoid of anything meaningful. He shuttered at the thought hams might discuss politics or religion. Those are exactly the few meaningful conversations I have had or have heard. The exchanges and conversations about cultures were helpful and enlightening.

When Romania was freed from dictator Nicolae Ceausescu, the ham I spoke to that morning was literally crying for joy as we discussed politics. I recorded the conversation and received local TV coverage.

Another event was with my high school students, who asked a political question of an East German ham; he also broke down about being able to see his relatives after the fall of the Berlin Wall. To these kids this person-to-person conversation brought the news home. This is what ham radio should be about.

Mr. Tynan also discussed technology advances, referring to moon bounce. I was in high school when hams did that in the '60s. What's new in the last 40 years?

There is no doubt some hams were helped in their career field by their start in ham radio. However, the license exam is so easy my daughter passed it when she was eight. And now it is even easier, as all the questions *and answers* are published, and the only actual skill required (Morse Code) has been eliminated. If you give a hunter a map of the zoo, with animals in cages, and he came back with his kill, how much of a challenge is that?

Allan Augustyn says in his letter that my views are not representative of the views of the ham community; that is absolutely true. However, may the readers of this letter find a shortwave receiver and listen anytime to the vast wasteland of spectrum hams occupy and hear for yourselves.

The next time hams have a contest, I suggest instead of exchanging false signal reports and locations, the contest require them to exchange name, two interests outside of ham radio, a noteworthy point of interest about their community, their field of work, an accomplishment of a family member (to show they actually talk to them) and a word about their local climate.

Do you know what might happen? They might forget about the "contest" and actually talk to the person.

Burt Fisher
K10IK
Cape Cod, Mass.

EAS Poised for Massive Overhaul

Few broadcasters have not complained about the shortcomings of EAS, most recently illustrated by the EAN that was inadvertently aired in Illinois and St. Louis. For more than 50 years, our government-imposed emergency alerting systems have tried and too often failed to fulfill their collective intended mission and benefit to the public.

This malaise may finally and rapidly be coming to an end. The events of 9/11 and Hurricane Katrina, along with the maturation of technologies like CAP and the Internet, have prompted the various government entities dealing with public safety, disaster preparedness and response to start working from a common playbook.

FCC Docket 04-296 was launched before Katrina in 2004. It proposed major changes in EAS rules, including required participation by digital and satellite broadcasters. Many other proposed improvements have been discussed within FEMA, DHS, FCC, NOAA, SBE, NASBA and other groups since.

The Integrated Public Alert and Warning System or IPAWS is a new initiative launched within DHS and FEMA to work with stakeholders to improve our public warning systems. We are seeing the fruit of that labor start to ripen.

This March, the General Accounting Office issued 07-411, a comprehensive report on the state of emergency preparedness. It recognized the limitations of the present structure and the pressing need to develop a new integrated emergency alerting and communications system, however challenging that will be. The authors appear to have "gotten it right" regarding the role broadcasters need to play among first responders.

On May 31, the FCC adopted a Second Report and Order and FNPRM regarding EAS that will require EAS participants to accept messages using CAP, the Common Alerting Protocol. This will be incorporated in the next generation of EAS delivery systems no later than 180 days after FEMA announces its adoption of standards.

CAP is an open, non-proprietary, XML-based standard data interchange format used by DHS, FEMA, NWS, USGS and more recently by the FCC. It can be used to collect all types of hazard warnings and reports locally, regionally and nationally for input into a range of information management and warning dissemination systems. (*See www.incident.com/cap/what-why-how.html.*)

The beauty of CAP is that it's readily used by the Internet, cellphones, PDAs, newsgathering organizations, radio, TV and cable operators, highway messaging, lottery machines and so on. The new EAS delivery structure will need to incorporate a text-based engine that will easily be harnessed by CAP. Existing EAS hardware manufacturers and perhaps new players will be introducing new codec versions that include CAP capability when rules are finalized.

Perhaps most important for existing broadcasters, the new rules will require transmitting state and locally targeted EAS alerts that are originated by governors or their designees.

This means state and local messages will need distribution systems that are not dependent on the old LP daisy-chain scheme. Broadcasters should not be "relay devices" for the benefit of other stations. Existing state government two-way radio and satellite relay networks as well as Web and Internet-based resources like MyStateUSA will play key roles here.

This next-generation EAS system is far from complete. There are proposals to expand the Primary Entry Point system to include FM stations, satellite radio and NPR, making national EAS activation more effective. Other important issues such as how best to treat non-English speaking stations and audiences need to be addressed.

The goal in forging a new EAS system is to quickly and reliably reach 99 percent of the nation using radio, TV and other media with geo-targeted voice, video, text and data emergency information. The government has fast-tracked this proceeding, and input from broadcasters is very much needed and encouraged.

Industry EAS experts like Clay Freinwald — chairman of the SBE EAS Committee, vice president of the national SBE and chairman of the Washington state SECC — are educating chapters and others about these developments; and much of the information above comes from Freinwald's recent presentations.

Radio World urges all interested parties to participate in the rulemaking process. We have a real opportunity to make EAS work the way it was intended.

— RW

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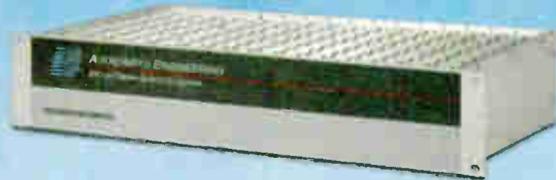
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