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$2.50 The Newspaper for Radio Managers and Engineers March 16, 2005

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Ibiquity Gets Specific With Fees

Lays Out New License Fee Schedule; Will Charge for Supplemental Channels

by Leslie Stimson

COLUMBIA, Md. If your radio station tells Ibiquity Digital Corp. that it will turn on HD Radio this year — and you say so in writing by the end of June — the station will pay an upfront fee of $5,000.

Wait another three years or so, and you're looking at $25,000, or 500 percent more.

Ibiquity has laid out its licensing fee schedule for broadcasters and clarified what and how it will charge. Designed to encourage early adoption of the HD

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Licensing Deadline	Main Channel Licensing Fee	Digital Conversion Deadline
June 30, 2005	$5,000	Dec. 31, 2005
June 30, 2006	$7,500	Dec. 31, 2006
June 30, 2007	$10,000	Dec. 31, 2007
June 30, 2008	$15,000	Dec. 31, 2008
Subsequent	$25,000	

Source: Ibiquity Digital Corp

Main Channel Audio Fees

Convergence, Reach on Sat Radio's Minds

by Leslie Stimson

Convergence is on the minds of those who run the satellite radio companies and the industry people who watch them.

As satcasters extend their reach into American cars and homes, they're exploring ways to be relevant to consumers no matter where listeners happen to be. This was evident as Sirius Satellite Radio revealed more about plans with Microsoft for a mobile video product, and as XM Satellite Radio described its chip that can be incorporated into any consumer electronics product to make it XM-compatible.

The convergence issue was touched on during the CES show this winter, when XM President/CEO Hugh Panero said, "We'd consider an MP3 partner in our future at some point. We tend not to blow a lot of smoke. ... If there's something to be done, we'll talk to all the players."

Also, the heads of both satellite radio companies said this winter that they were talking to Apple about the possibility of including satellite radio on the iPod. Yet, "They've said on these convergence issues they're happy where they are," Panero said, referring to conversations

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◆ NEWSWATCH ◆

'Smitty' to Receive Achievement Award

WASHINGTON Milford Smith, known as "Smitty" to many in the industry, will receive this year's NAB Radio Engineering Achievement Award.

Smith has been vice president of radio engineering for Greater Media for 19 years. For the preceding 11 years he held a similar position with First Media Corp.

He is senior co-chair of the National Radio Systems Committee DAB Subcommittee, a position he has held for nearly a decade, and has been chairman of the NAB Digital Radio Committee, an advisory committee to NAB's Radio Board of Directors.

Innovative engineering projects handled by Smith and cited by the NAB include the Prudential Center FM transmission system in Boston, where he led the effort to design and replace an existing transmission facility for four FM stations while all remained on the air. Years later his team added three stations without disrupting the other facilities. He also was recognized for the relocation of KLSX(FM) in Los Angeles to Mt. Wilson, where Smith came up with a strategy to relocate this station from an inferior site, and created a full-market signal.

More recently Smith and his staff have been involved in IBOC conversions, hoping to be the first radio group to get all of its stations switched to HD Radio by the end of this year.

Clear Channel: Less Really Is More

SAN ANTONIO Clear Channel said two studies indicate "broad early support for key elements of the company's 'Less is More' listenership and programming initiative," which emphasizes fewer interruptions and shorter commercial breaks.

"Our stations sound better now than at any other time-our shorter stop sets have created a more compelling environment for listeners and a better environment for advertisers," said John Hogan, CEO of Clear Channel Radio.

"We're now in discussions with a number of advertisers who have never used radio before. There's definitely an interest in the choices now offered under Less Is More. This level of interest, so early in the initiative, exceeds our expectations."

FCC Asks Congress For $300 Million

WASHINGTON The FCC estimates it needs $304 million in fiscal 2006, $11 million or 3.8 percent more than the current year. The budget request assumes a 2.3 percent salary increase for commission staff.

In its budget request to Congress, the commission projected it will work with the equivalent of about 2,000 full-time staff positions in FY 2006, which begins in October.

Included in the request is $1.3 million to improve electronic filing systems and $9.3 million to consolidate and upgrade labs in Columbia, Md., "to ensure the FCC has adequate monitoring and test capabilities to respond to industry, enforcement and homeland security issues."

Indecency Bill Passes House

WASHINGTON The U.S. House passed a bill in February to raise broadcast indecency fines to $500,000 per violation. The current maximum is $32,500.

A provision allowing individuals to be fined — affecting on-air talent, for example, rather than only the station — was included. The vote was 389-38. The measure now goes to the Senate.

The Senate measure would raise the penalty to $325,000 per violation.

Similar legislation failed to pass Congress last fall.

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LPFMs to FCC: 'We Want to Grow'

Five Years Later, Low-Power Outlets Seek Longer CPs, Easing of Rules

by Leslie Stimson

WASHINGTON LPFM supporters hoped FCC Chairman Michael Powell would give them a fifth anniversary present before leaving the commission — a notice that would form the basis of expanded and possibly relaxed rules.

LPFM supporters hope whatever is done could allow more stations on the air in heavily populated areas.

Despite assurances from Republican Powell that he was personally overseeing the agency's effort to build on and change the rules governing the five-year-old service, LPFM proponents worry that an impending change at the top of the FCC could bring a shift in priorities at the commission and erode support for the program, launched by Powell's Democratic predecessor.

As proponents vocalized their wish list for the service, efforts to bring members of Congress back to the issue began. Sen. John McCain re-introduced a bill to drop third-adjacent-channel protections, thus allowing more LPFMs on the air; NAB continues to fight that channel protection relaxation.

'Sad day'

The FCC approved the service on Jan. 20, 2000, prompting NAB to call it "a sad day for radio listeners" due to predicted interference to existing stations. The association also feared the stations would hamper the digital rollout. Several RF manufacturers eventually announced equipment availability for the lower-powered market.

By the end of that year, Congress had passed legislation, signed by President Clinton, scaling back the service by restricting allocations to those that met third-adjacent-channel protections to existing stations. It required the commission to have a third party conduct interference tests to determine if those channel protections should be retained. NAB, NPR and the International Association of Audio Information Services praised the move.

Congress also forbade the FCC from allowing former radio "pirates" to operate LPFMs, addressing one of the criticisms that had been aimed at the proposed service.

But debate renewed when the FCC, acting on an interference study by MITRE Corp. in 2003, recommended to Congress that the third-adjacent protection be lifted to allow more LPFMs.

Low-power advocates say interference concerns have not materialized and they want the rules changes to allow more such stations in more populated areas and more protections for the ones on the air now.

As of mid-February, there were 344 licensed LPFMs plus 609 CPs and 499 pending applications for the service, according to the FCC.

With its staff working to craft proposed rules to change the LPFM service, the commission held a forum in February to hear from people operating low-power stations.

"We shouldn't wait for Congress. There's more that we can do at the FCC," said Commissioner Jonathan Adelstein. "You fill a void that's left by mainstream stations."

Arguing that the agency should open another window to accept LPFM applications, Commissioner Michael Copps said, "We're here to rededicate ourselves to this issue." Copps and Adelstein are Democrats.

The Media Bureau is working on a Notice of Reconsideration and a Further Notice for LPFM, which could provide a path to change the rules. Bureau Chief Ken Ferree said the agency looks forward to receiving comments from the public on the items when they're released.

Agency staffers were not prepared to discuss what might be in the next LPFM items or when they might be ready, except to say "soon."

Photo by Leslie Stimson

Outgoing FCC Chairman Michael Powell

Whatever changes are eventually made to the service, "We need to strike a balance between LPFM operators and those of other services," according to Natalie Roisman of the Policy Division of the Media Bureau.

LPFM proponents want their service to grow and have definite ideas of how that should happen.

Several LPFM station employees told FCC staffers they want the facilities to be licensed as primary services, rather than

See LPFM, page 17 ▶

McCain Reintroduces Bill to Allow More LPFMs ...

WASHINGTON Sen. John McCain, R-Ariz., and two colleagues — Sens. Maria Cantwell, D-Wash., and Patrick Leahy, D-Vt. — have re-introduced a bill that would allow more low-power FMs onto the dial by dropping third-adjacent channel protections for full-power stations.

Sponsors say the Local Community Radio Act of 2005 would allow more LPFMs on the air, some in large markets, and "eliminate costly and redundant studies on possible interference from low-power FM radio stations to other FM stations."

"While low-power FM radio stations were authorized five years ago, implementation has been severely hampered by commercial broadcasters' flagrantly exaggerated claims of interference," McCain stated.

"The most recent obstruction, a two-year study conducted at the behest of broadcasters, cost taxpayers over $2 million and proved what the FCC and community groups have known for years: low-power FM stations will not cause significant interference to other broadcasters' signals.

"It is time for broadcasters to stop hiding behind false claims of interference when they are really afraid of the competition from truly local broadcasters."

McCain referred to the Mitre study, commissioned by the FCC, which LPFM supporters say showed no harmful interference to full-power FMs if third-adjacent restrictions were lifted. NAB argues this point.

McCain's bill did not pass in the last session of Congress.

... While NAB Says, 'OK, But Keep Channel Protections'

NAB urged lawmakers again not to eliminate third-adjacent-channel protections for full-service FMs in order to allow more low-power FMs on the air.

The trade group sent members of Congress a letter noting that LPFM supporters were visiting Capitol Hill to lobby in February, as low-power radio marked its fifth anniversary.

While the trade group says it recognizes the new services fills a niche regular broadcasters could not sustain, NAB top lobbyist John Orlando reminded lawmakers that NPR and radio reading services for the blind joined with NAB in support of legislation requiring LPFMs to obey third-adjacent-channel protections.

"Some full-power FM stations are 'short spaced' and operate on channels that are third-adjacent," states Orlando in the letter. "These stations were grandfathered before the FCC instituted its third-adjacent channel policy."

NAB included in its letter a Web address for an audio clip purporting to demonstrate third-adjacent-channel interference recorded in Maryland.

LPFM supporters say roughly 600 stations are on the air, with more applications for CPs pending, although the FCC puts the number on-air at 344. NAB urges the commission "expeditiously to roll out pending LPFM applications that are third-adjacent-channel compliant."

— Leslie Stimson

Five Stars for the World Café

There are some who think a radio station cannot serve art and business at the same time — that creativity and the drive for profit are mutually exclusive.

Not so. I offer WXPN in Philadelphia as a model of how a public radio station can work with a for-profit company to promote its brand and programming. The lessons are not limited to public radio, either.

WXPN(FM) dates back to a carrier current operation in 1945 started by engineering, drama and other students at the University of Pennsylvania. It is now among the leading public broadcasters in the country and an inspiration to those who believe in the potential of music and artist development on the radio.

As Tom Vernon reports on page 22, the station has moved into a beautiful new facility. Simultaneously, Real Entertainment Group unveiled a 350-seat live music performance venue in the same building and bearing the name of WXPN's most popular export. The venue is called World Café Live. The station and the venue, entwined in a synergistic way, are independently owned and operated — one a not-for-profit public radio station, the other a for-profit entertainment facility.

Everything about the facility speaks to the interaction of radio station, musician and listener. Large windows at the actual "World Café" performance studio let the public watch recording sessions from a lobby. The main entrances are highly visible from two streets. The WXPN logo is displayed above the Walnut Street entrance in a red neon sign that matches the building's art deco feel.

Food for the ears

The World Café Live sign is over the door. Window canopies along Walnut Street feature graphic images of musicians. On 31st Street, concertgoers and visitors enter through "Donor Alley," past a wall where the names of station contributors are visible.

Fitting a modern radio station and a concert venue into an historic manufacturing-oriented building required the work of three architectural and design organizations. Bower Lewis Thrower was hired by the developer to design the overall building renovation. Meyer Associates was brought in by WXPN to design offices and studios. DAS designed performance and dining areas.

The "gut rehab" renovation included restoration and repair of windows, doors, glass, masonry and ornamental features. The planners proudly point out an art deco facade and grand staircase and the use of rustic wood, ceramics and brightly colored woven rugs.

The station now enjoys a 1,000-square-foot, double-height radio performance studio for "World Café" with custom acoustic treatments and space for large bands and audience. The station has green rooms, a children's programming studio, temperature-controlled archives, expandable conference rooms (useful during fund drives) and a listening room for staffers to preview CDs. There is space not only for the station staff but also two dozen students and interns.

Features on the venue side include the main music hall (350 seats, but room for 700 standing); food and beverage service; an actual café; lobby/mezzanine space that can be rented out; and retail areas for selling tickets and merchandise.

Connections

Thanks to smart planning, here is a radio station whose contributions to the cultural life of Philadelphia can be more fully appreciated — a station that will benefit every time a listener comes to the venue or the café next door. WXPN thus associates itself even more firmly with live and innovative music in the minds of Philadelphians.

The developers and management of the music venue, meanwhile, capitalize on the station's listener base and exceptional name recognition. And the city itself comes out ahead, with an exciting dual-use development that is good for business and for the arts.

Managers of radio stations should take note of such projects. For me, the story reminds me of what I already knew about WXPN: that a radio format, nurtured with care over time by people who understand it, can establish a remarkable connection with an audience.

The new facility shows us that being "public" does not prevent a station from entering into creative marketing with the private sector. And it offers a model of how any station, public or private, might build on its strengths through carefully chosen business and governmental partnerships.

Here's a side note of interest to radio fans: The developer for the project, Dranoff Properties, is the same one that in 2003 completed a $65 million redevelopment of the former RCA Victor "Nipper" Building — with a stained glass Jack Russell terrier listening to "his master's voice," a sight familiar to many people in the Philadelphia area — into apartments, retail and parking. The project on the Camden, N.J., waterfront was considered of one of the largest rehab projects in the country.

Greg Walters, Hal Real and Roger LaMay survey the project during construction. Real is president of Real Entertainment, LaMay is general manager of WXPN.

Photo by Scott Fybush

WXPN and 'World Café' host David Dye is seen through a studio window.

From the Editor

Paul J. McLane

CES

▶ Continued from page 1

with Apple's Steve Jobs. "There's a dialogue going. We'll see what happens." He made his comments in a call with financial analysts.

Sirius broached an iPod deal with Apple, according to Sirius President/CEO Mel Karmazin. He told analysts Apple did not see the need to combine the functions at this point.

Speaking to Radio World at CES, a spokesman said Sirius was exploring all possibilities to expand its music service hardware options.

"We want to provide people the music they want where and when they want it," said Larry Pesce, Sirius senior vice president of product development. "There's no question there is value to the consumer in being able to record content, own the content that we play and then take it into some other medium."

Whether that will happen is unclear, he said; Sirius needs to study the business model and determine if it's the right move for the company.

The satellite companies continued to make news this winter, at the CES convention and subsequently:

MEL IS IN THE HOUSE

Count on Karmazin to work on increasing advertising sales at Sirius.

"Satellite radio is very hot, based on today's sales," said Karmazin during his first trip to CES. Karmazin feels satellite radio can grow its share of advertising, and, at some point, garner about 5 percent of what the entire radio industry makes from ad sales, according to a company spokesman. Karmazin is especially keen to ramp up ad sales before Howard Stern comes to the company in 2006, he has told analysts.

Karmazin had been quoted in the past downplaying satellite's future; but those were his Infinity days. If there was any doubt where he stands now, he said, "There was AM radio, then FM ... and I was happy to be a part of it. And now it's on to satellite radio.

"Sirius is the fastest-growing company in the satellite radio space," he said, noting that the company had more than 1.14 million subscribers by the end of 2004. It later said it hit 1.24 million as of Jan. 26.

While Sirius doesn't have the subscriber numbers of XM, it says its clients are more satisfied with the service and that its growth rate is faster. That satisfaction includes being number one in "Oh wow" programming, Karmazin said.

He credited growing awareness of the satellite radio product category for the increase, and predicted the company would double its customer base in 2005.

"We are on a fast track to be a profitable company one day. We will be bigger than the analysts think we will be."

WHEN IS HOWARD COMING TO SIRIUS?

Karmazin tried to put to rest rumors that Howard Stern would come to Sirius before January 2006 after his contract with Infinity/Viacom ends.

"Howard is a profitable, money-making talent. We are willing to wait until 2006," said Karmazin. He said there had been no discussions with either Stern or Viacom about an earlier contract release.

Sirius Chairman of the Board Joe Clayton confirmed that Stern would be included as part of the Sirius base package, and not considered premium content.

Panero said XM also had talked to Stern and noted the five-year, half-billion-dollar deal he has with Sirius is a good one for the shock jock.

"He's a talented guy and we wish him well," Panero said, but added that paying someone that amount of money "is a big decision, and time will tell" whether it was the right one.

INTEROPERABILITY

XM and Sirius have completed an interoperable antenna spec. Although not on the market now, it's available should a manufacturer choose to build it, said the satellite radio companies.

The satcasters both contribute to a lab in Florida working on interoperability, said Sirius spokesman Ron Rodrigues.

Pesce said true interoperability — designing one chip that can decode the signals of both satellite companies — faces several challenges.

"Our bitstreams look different, our error correction is different and our codecs are totally different."

When the FCC authorized satellite radio, it said it wanted the companies to develop an interoperable product eventually, but it did not set a deadline.

STUDIO BUILD PLANS

Sirius is making studio changes to accommodate Stern's arrival in 2006. Mark Kalman, vice president of the national broadcast studio, told Radio World the company is planning the configuration and possible equipment needs for the space.

The satellite control area has now been consolidated on a 70-acre parcel in New Jersey serving as the uplink site. The satellite operations moved from downtown Manhattan at the Sirius headquarters in November.

The area of the Manhattan headquarters that used to house satellite operations will serve as both studio and office space for Stern, his co-hosts and their support team, a total of 10 or more people. The space is also likely to need a high ceiling to support a television lighting grid, Kalman said.

Sirius is also looking to lease space on the first floor of the McGraw-Hill building, where Sirius is housed, to build a studio that several of its artists and visiting guests could use, in full view of passerby. The approximately 4,000-square-foot space could also house a Sirius retail outlet, so consumers could hear the satellite radio service, said a spokesman.

SIRIUS, MICROSOFT TO DEBUT MOBILE VIDEO IN '06

Sirius and Microsoft are developing video applications; the satcaster has chosen Windows Media Video 9 for use in Sirius' mobile video platform. Last year at CES, Sirius demoed a short animated feature; this year it showed an extension of that effort.

Sirius plans to offer a video service in the second half of 2006, and expects to devote two to three channels of premium video content designed primarily for children. According to Sirius, its automotive partners are eager proponents, given strong demand for rear-seat video entertainment.

How Sirius manages to deliver video with its available bandwidth was a key question. Pesce said Sirius is developing technology "that will be a quantum leap in increasing the amount of bandwidth that is available to us."

"The codecs (for video) are dramatically different from when we launched. Audio quality is a challenge because we're running at much lower bit rates that what you would expect for Internet video. We're not even at 128 (kbps)."

He said the codecs and the compression are "unique to Sirius," but declined to offer specifics. He said that compared to how the video audio sounded last year, there's "significant improvement."

Asked whether digital rights management fees apply to the video product, he said the company is looking at this question. "Our plan is to stream and cache. Cache is where rights capabilities come in. You can't take the device, plug it into something and download our music."

Panero noted that XM, also, has demoed video to the car and should the company announce a new product, it would do so closer to launch, rather than so far in advance.

NAB PETITION

The NAB petition to have the FCC declare satellite radio a national-only service — a request that was filed and then withdrawn — received some attention at CES.

Panero said the petition had been "an empty gesture" and that XM is prepared to deal with NAB's efforts to slow down its competitor.

"NAB's job is to be hostile" to new competitors, Panero told Radio World. This kind of thing "normally happens around show time for NAB. They have to show their members they're doing something." He does not believe NAB will resubmit though the trade group has said the withdrawal was "temporary."

NAB told RW it has "every intention of re-filing the petition," according to a spokesman.

SATELLITE 'POACHES' RADIO

More notable radio talent has signed up for satellite. XM lured Dr. Laura Schlessinger, Tony Kornheiser and G. Gordon Liddy to its ranks of hosts. All three have signed with XM as their satellite radio outlet and began their shows on XM in February. Dr. Laura and Liddy also remain on terrestrial radio.

Some terrestrial broadcasters sought to portray this trend as ironic. Radio One EVP/CFO Scott Royster and others said satellite radio was "poaching" terrestrial talent, which they found funny given that satellite radio often denigrates terrestrial radio programming to boost the profiles of their services.

"They are recognizing radio's star talent. ... at the end of the day what the satellite radio guys need to do is broadcast more than just music. I can listen to music anywhere. I can listen on my iPod, the Internet and on terrestrial radio," he said. "They need to somehow find a way to differentiate themselves in terms of what they're saying in between the music."

XM to Expand Home Offerings

by Leslie Stimson

Now that car audio products for XM Satellite Radio and Sirius Satellite Radio are established, the companies are increasing their attention to products in the home and portable categories. XM in particular is increasing its presence in home audio.

More than a dozen home entertainment suppliers will make XM-ready home audio devices in 2005 and '06. Products could be stereo and home theater receivers, DVD players, portable media players and tabletop radios.

The first of the new products are due to ship to retailers this month.

XM says its chip allows electronics companies to add XM capability to products affordably.

With the so-called XM "Connect-and-Play" chip and data port, a mini-serial bus connector, CE manufacturers can add the XM chip to products "for a low cost," said XM President/CEO Hugh Panero. "It makes the device XM-ready."

Eton will be the first manufacturer to include the chip, but others planning XM-ready product launches beginning this year include Pioneer, Denon, Harman Kardon, LG Electronics, Onkyo, Thomson/RCA, Polk Audio, Boston Acoustics, Orient Power, GPX and Crosley.

Eton Porsche-Design tabletop and portable radios will be the first XM Connect-and-Play products available. Eton planned to release a tabletop radio incorporating the XM Connect-and-Play platform in the first quarter and a portable radio in the second.

The consumer would need to buy an XM Connect-and-Play antenna that is similar in size to the current home antenna shipping with the XM "plug and play" and XM2go products. The antenna launches in March and will list for around $50.

The antenna will transfer XM's signal using a cable that's supplied to the XM input of a home product, a mini-USB-like connector.

XM Connect-and-Play devices will display all the XM text such as song title and artist and other data.

An XM spokesman said the products would make it easier for consumers to get XM at home. "The idea is you've got so many kinds of home entertainment devices that people are using for audio, be it radio, MP3 or DVD. We think it's a natural to make these devices as XM-ready as possible," said David Butler.

PORTABLE

The satcaster also is expanding its line of XM2go hand-held portable satellite radios. Pioneer and Giant International, through its new Tao brand, launched its first XM XM2go models. They're due to ship in the spring, joining Delphi, and list for about $350.

The products feature a rechargeable battery and can operate in two modes, live or memory. In memory mode, the unit can store up to five hours of XM programming. The battery life is also five hours, Panero said.

AUTOSOUND

Three autosound companies are making their first XM aftermarket head units this year: Panasonic, Pyle and Audiobahn.

Panasonic introduces 13 models of XM-Ready car stereo head units this year. That represents 70 percent of the manufacturer's models, according to Panero.

These are the first Panasonic models to offer XM capability and the first to interface with the XM Direct universal tuner without the need of smart cables.

Car stereo manufacturers offering XM-compatible units this year include Audiovox, Audiobahn, Jensen, Dual and Pyle via the XM Direct universal tuner. XM Direct adaptors are available now for car stereo units by Sony, Pioneer, Alpine and Kenwood.

NAVIGATION

Pioneer and Alpine this year will offer car navigation systems that display local traffic data delivered by XM for 20 markets. Navteq builds the digital map database for XM NavTraffic.

XM NavTraffic is a feature of the 2005 Acura RL and will be available on some models of the 2005 Cadillac CTS.

Steve Cook, executive vice president of sales and marketing for XM, said NavTraffic is the first of many XM data services to come out in OEM.

"Getting information to the vehicle is something they (automakers) think consumers want."

The satcaster is also looking at other data services, he said.

PANASONIC LAUNCHES HD RADIO/XM UNIT

Panasonic is expanding HD Radio offerings by introducing an HD Radio unit that receives XM Satellite signals also. This receiver has HD Radio capability integrated into the head unit (Radio World, Feb 16.).

The CQ-CB8901U mobile CD receiver includes Sound Control EQ, which allows users to compensate for the car environment and personalize the system according to their sound preference. Referred to as SQ7, this seven-band graphic equalizer provides additional adjustability and one-touch equalizer settings, such as Rock, Pop, Vocal and Flat, Panasonic says.

DELPHI INTRODUCES DELPHI XM SIGNAL REPEATER

Delphi is expanding its lineup with the Delphi XM Signal Repeater. The company says it's the first system that rebroadcasts the XM satellite signal throughout homes and smaller offices.

Delphi hopes the device will help push sales of indoor satellite radio products. The system includes transmitter and receive modules. The transmitter down-converts the XM signal through the XM home or audio system antenna and rebroadcasts it through interior walls and floors at an expected distance between 75 and 100 feet.

While in range, one or more receive modules can acquire and up-convert the signal back to the regular XM frequency — passing it through just like a typical XM antenna.

Joe Damato, director consumer electronics for Delphi said the device eliminates the need for long antenna extensions.

The Delphi XM Signal Repeater is compatible with Delphi's line of satellite radio receivers. The unit will debut at retailers this spring with a list of $169 and $69 for each additional receive module.

Sirius 'Gets Small' With Hardware

by Leslie Stimson

Sirius Satellite Radio is on its third generation receiver chipset, which the company says has more features and lower costs, allowing the satcaster to drive its money from hardware to content.

Expect smaller products with more features this year from Sirius, says Larry Pesce, senior vice president of product development.

With the addition of the Star Mate "plug and play" radio, Sirius now has three branded radios: the Sportster Replay, the Star Mate and the original Sportster, said Pesce.

Star Mate is available at retail outlets and lists for about $130. The palm-sized Star Mate is portable and features a three-line display, 30 presets and a wireless FM modulator with 100 frequencies. The Star Mate includes home and vehicle adapter kits.

The redesigned Sportster IR includes a 44-minute memory buffer for recording and storing Sirius programming. Sirius expects the unit to ship to stores in April.

XACT REGO

Also new is the Xact ReGo "plug-and-play" receiver, which includes a four-hour memory buffer and an MP3 player. The device has a USB port and a secure digital area for MP3 song storage, according to Sirius.

Digital rights management is not a factor with the new ReGo, Pesce said.

"The only time you need digital rights is if you're taking content and moving it from your primary listening device to some other device." The MP3 content is not storing the Sirius content, he said, adding the MP3 content "is resident. It can't come out of that machine."

The MP3 is connected by an interface to the display of the ReGo. "It's for people who want to do some of their

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Sirius

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own stuff, and they want to be surprised by us. Rather than taking an MP3 device and putting it in your pocket and trying to figure out how to wire it into your car stereo system, we've said, 'We'll take that away from you. We'll put it all in one (device) and the MP3 system, will, through our FM modulator, broadcast through your radio. Now there's no wires.' That's what the MP3 portion really gives you."

PIONEER NEW TO SIRIUS

Pioneer is a new receiver partner for Sirius. It announced availability of a Sirius tuner that is compatible with most Pioneer head units. The SIR-PNR1 tuner comes with installation hardware, including a Sirius antenna, and lists at $120.

Expect smaller products with more features this year from Sirius.

Also new from Pioneer and Alpine is the SiriusConnect receiver, which shipped after the recent CES show. The receiver is compatible with Sirius-Ready head units from Alpine, Audiovox, JVC, Kenwood, Eclipse and Pioneer.

SIRIUSCONNECT

SiriusConnect will also be compatible with XM-Ready head units from Alpine and Pioneer that are up to three years old. The system combines a receiver with what Sirius calls a "translation device" all in one unit. It has a pass-through feature that allows other audio components, such as iPods or CD changers, to be connected with a Sirius receiver.

The tuner is packaged with a Sirius antenna. Currently shipping to support Alpine- and Pioneer-branded head units, Sirius expects SiriusConnect to be available with additional Sirius head units from other manufacturers later this year.

KENWOOD INTRODUCES INTEGRATED SIRIUS RADIO

Kenwood introduced an integrated Sirius tuner, the EZ 700 SR. Previous Sirius product has been accomplished with separate Sirius receivers.

The EZ 700 SR became available after CES. It includes AM-FM, CD, MP3, WMA and Sirius capabilities.

STARBASE

The Starbase allows any vehicle radio to connect with Sirius Satellite Radio. With Starbase, consumers who don't have a satellite-ready radio in their vehicles can connect to Sirius when the unit is combined with Sirius new trunk-mounted satellite receiver, SiriusConnect, and a Sirius antenna.

Starbase can be mounted in single DIN slots of vehicles or attached to the dashboard. It also includes an FM modulator.

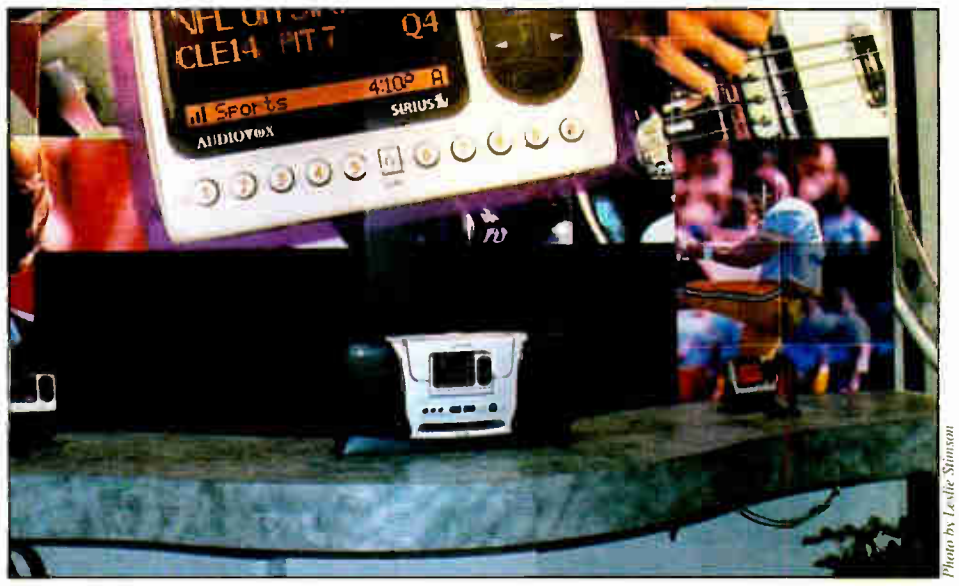


Photo by Leslie Stinson

An Audiovox Sirius SIR-PNP3 plug-and-play radio with boombox on display.

How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Send letters via e-mail to *radioworld@imaspub.com*, with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

Workbench

Radio World, March 16, 2005

Past columns are archived at *www.rwonline.com/reference-room*

A Shrubbery. Not Too Expensive.

by John Bisset

I recently had the pleasure of speaking to a group of broadcast engineers at the South Carolina Broadcasters Association annual conference. Each year, Dielectric Southeast Radio Sales Manager John George works with a panel of peers to provide timely technical presentations.

After my presentation, chock-full of pictures showing how *not* to engineer sites, Clear Channel Charleston's Willie Bennett commented how much he enjoyed my "tree" pictures.

Figs. 1 and 2 shows what Willie means. These are great to toss on the GM's desk, to give him an idea of how bad things could get — if not for you!

In that vein, Cumulus' Gary Kline forwarded a picture of a bad transmitter road, and suggested we see what other engineers have to share. Fig. 3 on page 10 shows what over 10 inches of rain will do to a normally passable mountaintop road near Santa Barbara.

Figs. 1 and 2: 'Knights of Ni, we are but simple travelers who seek the enchanter who lives beyond these woods ...' But it's no joke when shrubbery takes over your site.

Certainly Figure 1 was due to neglect; a tree grew around a guy wire. In Gary's case, Mother Nature turned the road into a nightmare.

John "JD" Strahler is chief for KRUZ, Santa Barbara. During a severe rain and windstorm, he was dispatched to the transmitter site to restore programming. Once on site, JD found a wind-damaged STL dish and cable. Strahler writes that the road, with all the mud and rockslides, would have been a great place to film a commercial for Jeep.

If tree pictures weren't enough, now let's see some of the best and worst transmitter site roads. Send yours. Make sure the picture is of high resolution so we can see the detail in living color. That means 300 dots per inch resolution for publication at 3 to 5 inches wide. Email to me at my new e-mail address *jbisset@bdcast.com*.

★ ★ ★

JD's adventure serves as a reminder to stock your transmitter site with basics: a jug of water, canned beans, Vienna sausages, tuna or other canned protein. Don't forget a can opener and a fork.

Seal a few chocolate bars in a fruitcake tin. Also prepare a change of clothes and some blankets packed in those big plastic "freezer" bags, to keep them dry.

Rolls of toilet paper and paper towels, again sealed in the plastic "freezer" bags, are also a must. You can usually find surplus military cots for a reasonable price; add one to your emergency supply. It beats sleeping in a chair. Don't forget the flashlight, spare batteries and a well-stocked first aid kit.

Are there other "must haves" at your transmitter sites? Let me know so we can include them in a future column. Stay safe.

★ ★ ★

Keith Bowman is market engineer for Adventure Radio in Bluefield, W.Va. He came across a fix for his Harris MW5 transmitter the other night. In light of the fact that Harris dropped support for these boxes, he thought this might be something to share with *Workbench* readers.

For the past few years, Keith has had trouble getting a good, solid-sounding 100-125 percent modulation out of the WHIS MW5 transmitter. The audio wasn't bad, it just seemed to be deficient in the bottom end. A couple of months ago, Keith installed an Orban 9200 to replace the 9100 that was feeding the transmitter since the late 1980s. This helped the station's overall coverage dramatically, but Keith still wasn't happy with the low-end audio, and the poor performance showed up on an audio proof.

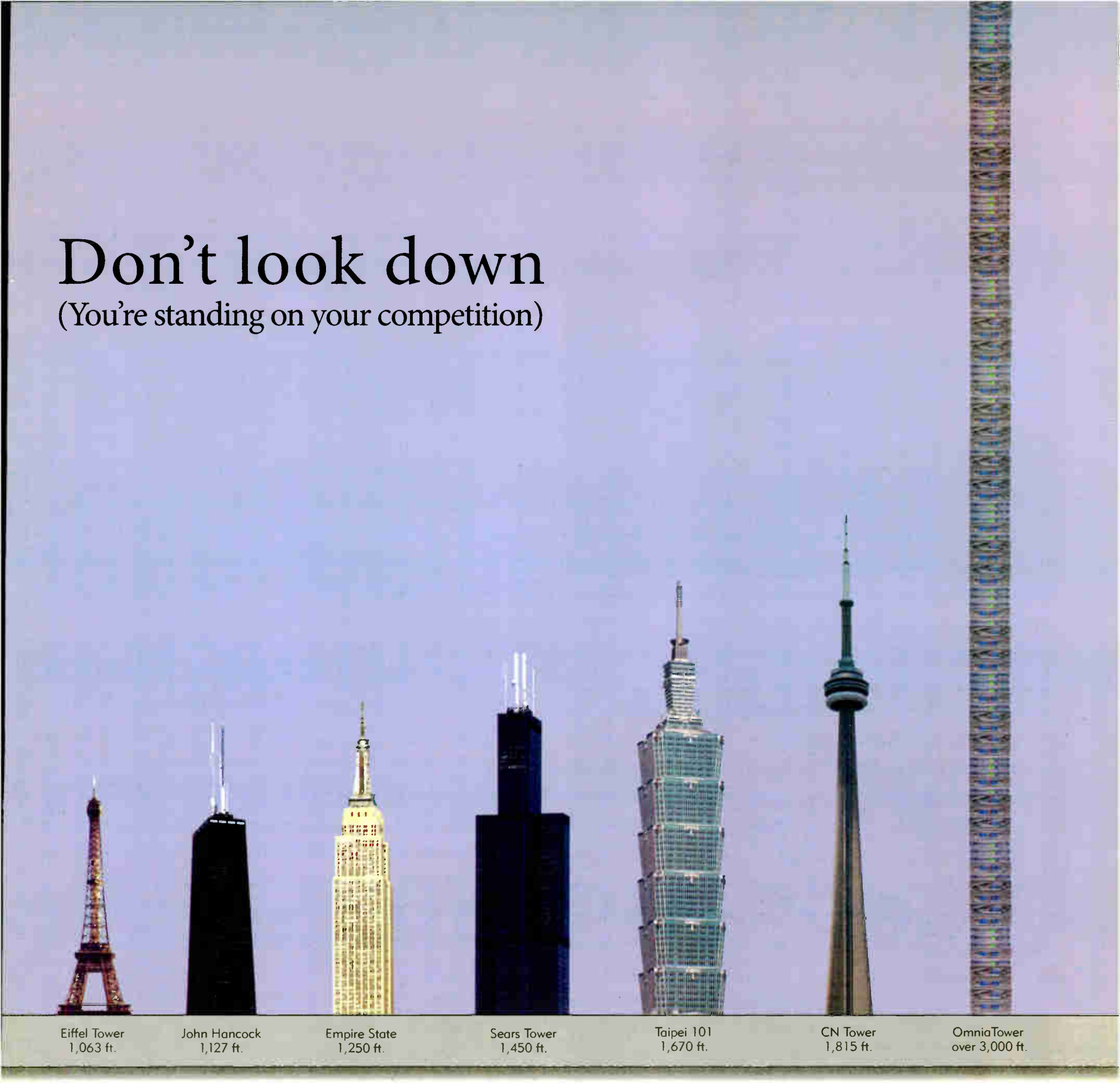
Looking at the overall audio path, Keith realized the 1A1A2 audio input circuit (on the PDM control and feedback board) had the original Sprague electrolytic capacitors in it. Remembering back to the old cart machine days, audio could be improved with a "shotgun" approach — replacing all of the caps on the audio board — on an older machine.

Keith decided to try the same approach on this circuit. Before replacing the capacitors, Keith checked them with a

See GROUND KITS, page 10 ▶

Don't look down

(You're standing on your competition)



More than 60% of the Top 100 highest-rated FM stations in the USA have already upgraded to Omnia-6EX—the six-band dual-path processor for standard FM and HD Radio signals. The reason these leaders choose Omnia? Once you've heard it, you'll know.

The Empire State building is pretty tall. Taipei 101? CN Tower? Even taller. But Omnia dwarfs them all. In fact, if you stacked up all the Omnia audio processors in use around the world, you'd have a tower well over 3,000 feet high.

In just a few short years, Omnia has emerged as the best-selling audio processor in the world. More importantly, it's the most successful stations in top markets like New York, London, Paris, Rome, Beijing, Tokyo, Amsterdam and Berlin, that have put Omnia on top. And more broadcasters are upgrading every day, using Omnia as their secret weapon to stay miles above the competition.

Speaking of heights, did you know that Omnia processing now powers stations broadcasting from every one of the famous structures pictured above?

Big or small, isn't it high time you upgraded to Omnia?

Omnia
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Ground Kits

▶ Continued from page 8

Fluke 12 on the capacitance scale. Even though everything checked fine, Keith wasn't convinced.

He replaced eight of the electrolytics on the board, and presto! The audio sounded better than he had heard it in years. The improvement was also noticed in some of their "spotty" coverage areas.

Keith writes that sometimes vast improvements can be made by looking in the simple places you might not suspect. I agree. In the days of cart machines, the rule of thumb for electrolytics was to replace them every seven years. In older plants, inspect aging audio equipment to see if it still has the original electrolytics, not only in the audio coupling stages, but also in the power supply.

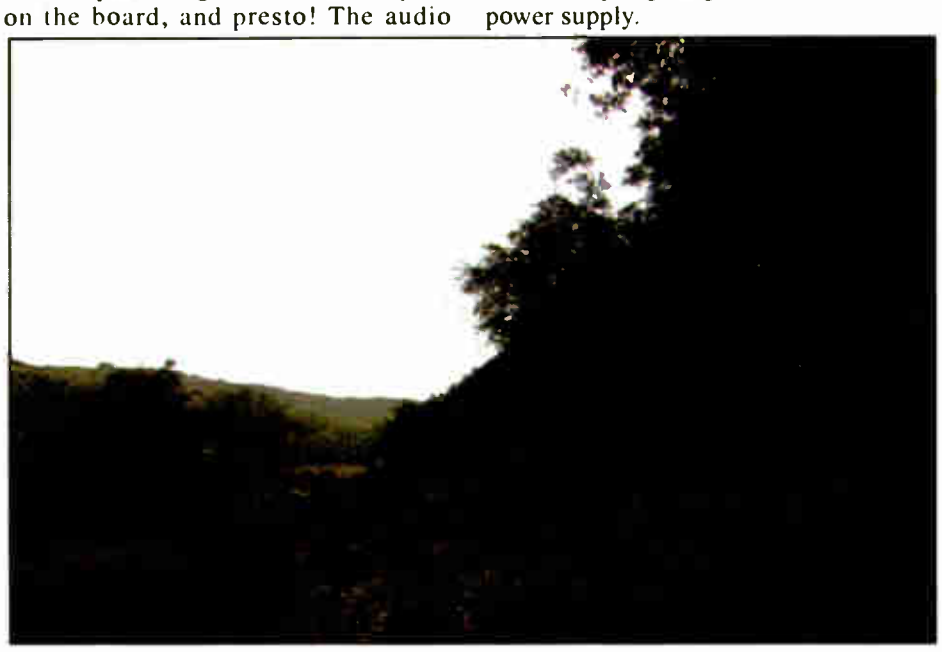

Fig. 3: Rain, mud and rockslides combine to block a mountain road in California.

Keith Bowman can be reached at *chiefengbo@hotmail.com*.

★ ★ ★

It won't be long before many of us are worrying about warm-weather lightning. For readers in some climes, the worry never goes away.

Good grounding of the transmission lines, especially where they enter the building, is imperative. But how do you attach these ground kits?

First, remember that any charge wants to go to ground. The ground lead should not be kinked or loop upward away from ground on its way to the ground block; unfortunately I've seen this practice often. It compromises the efficiency of the connection.

Remember in AM plants, the lightning loop of the feeder line from the coupling unit to the tower? That single or double loop of inductance works very hard to keep lightning out of the coupling network.

Fig. 4 shows the ground kits installed properly, all sweeping downward to the ground block. There's one errant cable on the right that loops around and works its way to the block, but the rest are installed satisfactorily.

Don't let sloppy work compromise your grounding scheme. As with any project, take the time to do it right.

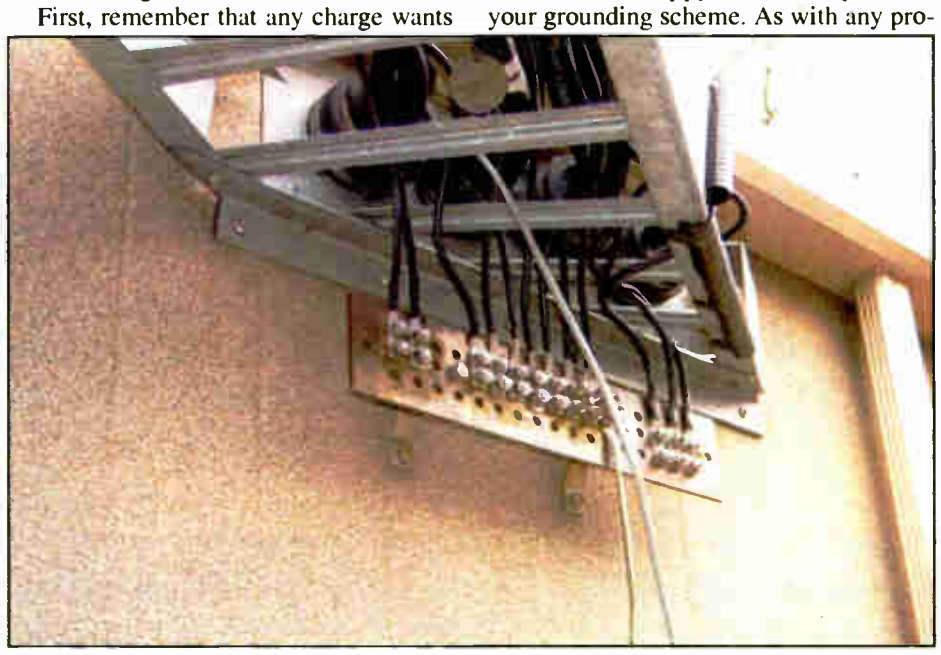

Fig. 4: Ground leads should sweep downward to ground, with no sharp bends.

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386 or jbisset@bdcast.com.

Submissions for this column are encouraged and qualify for SBE recertification credit.

◆ NEWSWATCH ◆

Navigauge Expands Monitoring Into Houston

ATLANTA Navigauge plans to expand its passive, in-car monitoring technology and media measurement system to Houston — the same market in which Arbitron is running its current Portable People Meter test.

The PPM measures radio, TV and cable exposure no matter where a test subject is. The Navigauge device measures radio listening in the car.

Both technologies monitor which frequencies people are listening to and for how long.

While test subjects wear the PPM radio measurement device and place it into a docking station at night to send the data back to Arbitron, the Navigauge device is placed on a vehicle. It monitors radio listening, and can detect when the user switches to another form of media, such as CD or MP3.

Navigauge says its product is particularly relevant to radio and outdoor advertisers, retailers and satellite broadcasters.

Navigauge has been operating its in-car research technology in Atlanta to date. It says Houston is the first of five markets in the top 10 where it will roll out this year. It notes that several group owners have stations there, including 11 with Hispanic formats.

The firm will recruit 1,100 participants; results will be available starting in the third quarter of this year.

Navigauge positions itself as the "first to offer truly passive and objective panel-based radio measurement in a top 10 radio market." The company says it has improved its monitoring system, which now uses General Packet Radio Service technology, a mobile telephony approach for sending and receiving data, in the Navigauge hardware.

Continental to Make HD Radio Exciters

DALLAS Continental Electronics has joined the IBOC party. It becomes the fourth transmission equipment company to license Ibiquity Digital technology in order to manufacture and market HD Radio exciters for AM and FM broadcast.

Other transmission equipment manufacturers of HD Radio equipment are Broadcast Electronics, Harris and Nautel.

"The time is right for HD Radio broadcasting, and we have been waiting but certainly not idle. This will be evident at this year's NAB convention," stated John Uvodich, general manager of Continental Electronics.

Approximately 250 U.S. stations are broadcasting in analog and digital; and Ibiquity predicts more than 700 by year-end.

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FEED LINE

Close-In AM Field Intensity Measurements

by W.C. Alexander

In the March 2 issue, author Buc Fitch discussed field intensity measurement methodology. Here, Cris Alexander expands on Fitch's discussion of ND surveys.

Traditionally (and as specified by the FCC), a full proof begins with a set of non-directional or ND measurements starting at five times the height of the ND element. Measurements are generally required at approximately equal sets of intervals so that 15 to 20 measurements are established within the first three kilometers. Often, these close-in measurements must be made while walking the entire distance through brush, dense woods and other inhospitable terrain.

Close-in ND measurements are used to establish the ND inverse-distance field, or IDF, of an antenna on each radial. This is sometimes expressed as the antenna's efficiency. What it comes down to is a multiplier by which the DA-to-ND ratio on each radial is multiplied to determine the directional IDF on the radial.

Such measurements are valuable because they provide a great deal of information that is not colored by ground conductivity. The more points you have, the better the analysis will be and the more confidence you will have in the ND IDF number on each radial.

Over the years, I have learned that it is useful to make a lot of measurements inside 3 km. When submitting ND IDF data to the FCC, where I have provided a large number of points inside 3 km, there has never been any question about the analysis. With a lesser number of points, the analysis may be subject to a different interpretation.

A good set of close-in measurements will start at exactly 3 km and work in toward the tower. A GPS receiver, topo map or combination of the two can be used to establish the 3 km starting point on the radial. A two-man team is needed to make each set of close-in measurements.

A 50-meter rope is used to measure distance. Use a permanent marker to mark off 10-meter increments on the rope. To start the radial, the end of the rope should be located as closely as possible to the 3 km point. A measurement is made at that point; then the rope is used to measure off 0.1 km (two rope lengths) to the next measurement point at 2.90 km.

Photo by Ed Dulaney

KLZ's Keith Peterson works on a walk-in measurement.

The two men on the team leapfrog, taking turns holding one end of the rope while the other walks the loose end toward the station. (It is important to always pull the rope and not try and push it; pushing the rope does not work well!)

If the towers are not visible, the FIM is used to direction-find (DF) the antenna, keeping the measurements on the radial.

One measurement is taken every 100 meters from 3 km in to 0.5 km. At that point, a measurement is taken every 50 meters (one rope length) from 0.5 km in to 0.2 km. At that point, one measurement is taken at each of the 10-meter marks made on the rope until the FIM reads full scale.

Corrections

Once the last point has been measured, the exact number of rope lengths and fifths to the ND element is noted. If this doesn't jibe with where you thought you were at the last point, the difference is noted. This correction factor is then applied to all the measurements out to the end of the radial.

For example, if your last measurement should have been at 0.04 km but you measured one full rope length to the tower, your last measurement point was actually at 0.05 km. The difference, 0.01 km, is then added to all the measurements to get the corrected distance.

One may ask why, in the age of GPS, we need a rope at all. The answer, simply, is accuracy.

A rope measurement will far exceed the resolution and accuracy of all but the most sophisticated handheld GPS units. This is particularly important at very close distances, where an error of just a few meters will move the points above or below the inverse distance line. Errors in this close-in data will have a significant effect on the value of the measurements.

If the ND radiator is other than 90 degrees tall, it will be necessary to correct for proximity factor once inside a radius of 3 times the tower height. At that point, the tower ceases to behave as a point source. Radiation from different points on the antenna no longer adds up in phase. A correction factor is applied which normalizes the data. Simple computer programs are available for calculating proximity correction factors.

Once all the close-in data is in hand, the data is plotted on a piece of log-log field strength graph paper and the inverse-distance line is adjusted up and down for the best fit to the data. With so many close-in measurements, you will find that the points usually line up right down the inverse distance line, leaving no doubt about the IDF of the antenna on that particular radial. If a standing wave is evident in the measurements, that is evidence of reradiation, either from an unused but improperly detuned array element or some other object.

Close-in measurements are a real pain, sometimes quite literally. Their value in evaluating the performance of an antenna or directional array is tremendous. Not only will they eliminate any question of the ND IDF on any given radial but they will also provide a point of reference for future measurements, should the condition of the ground system ever come into question.

Cris Alexander is director of engineering for Crawford Broadcasting. Write to Radio World about your experiences in the field: radioworld@imaspub.com.

Right Tool For the Job

It was December of 1995, about 15 degrees outside at the transmitter site just north of Denver International Airport.

An engineer we'll call Burt and a helper were doing the close-in, non-directional field strength measurements on a new 50 kW four-tower directional array. I was at the base of the tower used for ND test operation doing something or another when Burt and his helper came walking up at the end of their radial measurements. I noticed there was steam coming off Burt's head, and I asked him why.

Burt said he and his helper had come to the edge of the Denver-Hudson Canal about half a mile from the site. This canal is 40 feet wide and eight feet deep; it runs with 100 cubic feet per second of irrigation/drinking water, fed from a reservoir a mile or so away.

Burt said they'd anchored the rope on the far bank with a stick, tied a rock to the other end of the rope and tossed it across. The idea was that when they got to the other side and pulled the rope taut, the distance would be right. They could then pull hard on the rope and pull the anchor stick out of the ground and keep going.

Burt and helper walked along the canal for half a mile or so to the county road, where there was a bridge. There they crossed the canal and walked down the near bank to the rope.

Or where it should have been, anyway. They could still see the far end of the rope secured to the stick poked into the far bank; but the rope itself trailed into the water. The current obviously had been too strong for the rock.

Burt, mad as a wet hen, refused to walk a mile or more back over the bridge to the other side just to retrieve the rope. So he stripped down to his birthday suit then and there, dived in and retrieved the rope! He got dressed and (shivering and steaming), finished the radial.

The moral: Use a bigger rock.

— Cris Alexander

The routing switcher gets a new twist.

(About five twists per inch, actually.)

Everybody needs to share audio. Sometimes just a few signals — sometimes a few hundred. Across the hall, between floors, now and then across campus. Routing switchers are a convenient way to manage and share your audio, but will your GM really let you buy a router that costs more than his dream car? Unlikely.

If you need a routing switcher but aren't made of money, consider Axia, the Ethernet-based audio network. Yes, Ethernet. Axia is a *true network*. Place our audio adapter nodes next to your sources and destinations, then connect using standard Ethernet switches and Cat-6. Imagine the simplicity and power of Ethernet connecting any studio device to any other, any room to any other, any building to any other... you get the idea.

Routers are OK... but a network is so much more modern. With Axia, your ins and outs are next to the audio, where they belong. No frame, no cards, no sweat.

Scalable, flexible, reliable... pick any three.

An expensive proprietary router isn't practical for smaller facilities. In fact, it doesn't scale all that well for larger ones. Here's where an expandable network really shines. Connect eight Axia 8x8 Audio Nodes using Cat-6 cable and an Ethernet switch, and you've got a 64x64 routing switcher. And you can easily add more I/O whenever and wherever you need it. Build a 128x128 system... or 1024x1024... use a Gigabit fiber backbone and the sky's the limit.

Are you still using PC sound cards?

Even the best sound cards are compromised by PC noise, inconvenient output connectors, poor headroom, and other gremlins. Instead, load the Axia IP-Audio Driver for Windows® on your workstations and connect *directly* to the Axia audio network using their Ethernet ports. Not only will your PC productions sound fantastic, you'll eliminate sound cards and the hardware they usually feed (like router or console input modules). Just think of all the cash you'll save.

There's a better way to get audio out of your PC. No more consumer grade ⅛" connectors – with Axia your digital audio stays clean and pristine.

Put an Axia Microphone Node next to your mics and send preamplified audio anywhere you need it, over Ethernet — with no line loss or signal degradation.

Put your preamps where your mics are.

Most mainframe routers have no mic inputs, so you need to buy preamps. With Axia you get ultra-low-noise preamps with Phantom power. Put a node in each studio, right next to the mics, to keep mic cables nice and tight, then send multiple mic channels to the network on a single Cat-6 cable. And did we mention that each Mic Node has eight stereo line outputs for headphones? Nice bonus.

Put your snake on a diet.

Nobody loves cable snakes. Besides soldering a jillion connectors, just try finding the pair you want when there's a change to make. Axia Audio Nodes come in AES/EBU and balanced stereo analog flavors. Put a batch of Nodes on each end of a Cat-6 run, and BAM! a bi-directional multi-channel snake. Use media converters and a fiber link for extra-long runs between studios — or between buildings.

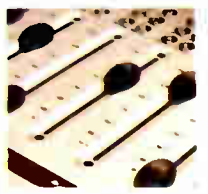
An Axia digital audio snake can carry hundreds of channels of digital audio on one skinny CAT-6 cable. We know you're not going to miss soldering all that multi-pair...

With a little help from our friends.

A networked audio system doesn't just replace a traditional router — it *improves* upon it. Already, companies in our industry are realizing the advantages of tightly integrated systems, and are making new products that reap those benefits. Working with our partners, Axia Audio is bringing new thinking and ideas to audio distribution, machine control, Program Associated Data (PAD), and even wiring convenience.

Would you like some control with that?

There are plenty of ways to control your Axia network. For instance, you'll find built-in webservers on all Axia equipment for easy configuration via browser. PathfinderPC® software for Windows gives you central control of every audio path in your plant. Router Selector nodes allow quick local source selection, and intelligent studio control surfaces let talent easily access and mix any source in your networked facility.



Control freaks of the world, rejoice: intelligent Axia mixing surfaces give talent complete control of their working environment. Reconfigure studios instantly and assign often-used sources just where they're most useful.

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BALSYS

Axia is already working with some great companies. Like Enco Systems, Prophet Systems, Scott Studios, Radio Systems, Balsys Technology Group, and of course Telos and Omnia. Check AxiaAudio.com/partners/ to find out who's next.

"This sounds expensive." Just the opposite, really. Axia saves money by eliminating distribution amps, line selectors, sound cards, patch bays, multi-pair cables, and tons of discrete wiring — not to mention the installation and maintenance time you'll recover. And those are just side benefits: our hardware is about half the cost of those big mainframe routers. That's right... *half*. Once you experience the benefits of networked audio, you will never want to go back. AxiaAudio.com for details.

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HD Radio News

HD Radio Scoreboard

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GUEST COMMENTARY

Are Neural Claims for Real?

Telos/Omnia Wants to Know More About Neural System, Tests

by Steve Church, Telos CEO and Frank Foti, Omnia President

It's great to see the spirited discussion that is emerging with regard to surround broadcasting. Only by considering the various views will we arrive at the best approach to providing this service to our listeners.

Following Mike Pappas' article "5.1 or 2.0 Channels: Why Not Both" (Radio World Jan. 5), responding to Steve Church's June 16 article that launched this discussion, we are compelled to respond in turn: (Quotes from Mike Pappas are in italic.)

The Neural 5225 makes outstanding conventional stereo, with a watermark from 5.1 surround sound. Center channel, low-frequency effects channel and rear surround are correctly handled and there are no surprises in the stereo mix.

With the Neural system, stereo is always derived (downmixed) from the 5.1 multichannels. Mike, if this is a satisfactory procedure, why don't DVD-Audio and Super Audio CD disks use the same approach?

They could save a lot of bits and trouble by providing only the surround mix and letting stereo players do a mechanical downmix. But they never do, instead providing listeners with human-optimized mixes for each mode.

The KUVO test broadcasts were with a live concert that your station produced for itself in surround, right? So, what reference is available to know that there "were no surprises in the stereo mix," since there was no stereo original for comparison?

You really need to test with DVD-Audio or SACD music as the source, so you can evaluate carefully and accurately if the stereo is OK. This is going to be critical to acceptance of a broadcast surround system since weird-sounding stereo on familiar music is certainly going to trigger protests from program directors, listeners and owners.

The watermarking is extremely robust and we haven't been able to damage it.

What was done to try and damage it? No details were provided on the signal path for your experiment. But the exceptional claim that the Neural watermark can pass through multiple codecs with no problem requires exceptional proof.

In a recent Radio World article, Neural gave 16 kbps as its watermark bit rate. A 5-10 bits-per-second rate is considered robust in the context of anti-piracy watermarking. Experts say that around 100 bits per second would be pretty much the limit in order to withstand passage through usual codecs.

So what is going on here? What is really the rate, and what tests have been performed, under what conditions? Since the system is being proposed for analog FM as well as HD, what happens to it with multipath?

The exceptional claim that the Neural watermark can pass through multiple codecs with no problem requires exceptional proof.

Neural's secrecy is a barrier to making a valid assessment of their quite outrageous claims.

The advantage of the 5225 system is that the watermarked stereo can be shipped via a conventional stereo broadcast plant using all of the conventional stereo equipment that broadcasters already have, including CD recorders, MiniDisc machines, ISDN codecs, analog STL, digital STL, air processor, transmitters and editors. It makes no difference whether the plant is analog or digital.

What would happen if two pre-coded sources (music stored on a delivery system, for e.g.) were to be cross-mixed on-air? During the overlap time, wouldn't the watermark be corrupted and the received result sound pretty bad, or collapse to stereo?

Has cross mixing been demonstrated? How would a surround or panned mic be added to the mix for voice-overs? This is something you wouldn't have tested in your live concert demonstration, but certainly cross-mixing and announcer voice-overs are routine in normal radio programming.

Upgrading a stereo plant to discrete is not a minor issue, and when we did a study at KUVO the cost ran into the tens of thousands of dollars.

This is true with traditional analog or AES 3 set-ups. But we're going to see computer networks taking over these obsolete technologies — and with an Ethernet networked studio approach, the incremental costs to move from stereo to discrete surround are near zero. The majority of studios on-air today are still analog and need to be upgraded to digital anyway, so the surround capability comes along for the ride. Surround, digital and networking are coming together fortuitously.

Many of the proposed 5.1 systems require the use of HD Radio transmitted bits. The number of bits these systems are proposing to use, 16 kbps, is sufficient bandwidth to support a voice-grade secondary audio channel. It is my feeling that giving up 16 kbps to support 5.1 is not a good use of a very limited amount of bandwidth.

That's what the bits are for! Would you prefer to save those 16 kbps for a cell-phone-grade voice something or other, rather than provide a capable and compatible surround service? We respectfully disagree.

The majority of studios on-air today are still analog and need to be upgraded to digital anyway, so the surround capability comes along for the ride.

Anyway, there will probably soon be more bits to play with. Ibiquity has a proposal before the FCC to increase HD Radio's data rate from 100 to 150 kbps and there are technologies on the horizon to deliver yet another 64 kbps within the current SCA spectral space.

Our empirically derived results indicate that the Neural 5225 system is robust, makes great audio, has rock-solid imaging and works today.

We believe in empirical results, too. The listening experience is what matters. But a live concert with material no one has heard before and with no stereo reference is no way to evaluate how a system will work for what broadcasters will use it for, day-in, day-out. We need tests with normal radio programming and production techniques.

Speaking of tests, why hasn't Neural submitted their technology to the scrutiny of the unbiased MPEG testing that has been ongoing the past months? At what point will Neural offer an honest description of their system so it can be evaluated on a reasonable basis? Thus far it's been a lot of smokey words and fogged mirrors.

Mike, we appreciate your enthusiasm. Surround is an impressive listening experience and you've heard a system that delivers it on the FM band. So naturally, you want to get on with it!

But you are proposing that broadcasters adopt a system that has had no significant on-air testing, no disclosure of technology, no comparative evaluation of performance, a single vendor source and troublesome claims.

The MPEG system we support has been carefully tested in a controlled scientific fashion with a wide variety of source audio material. Its developers include Fraunhofer Laboratory (inventors of MP3 and MPEG AAC), Agere (former Bell Labs and Lucent researchers), Coding Technologies (inventors of the "plus" enhancements to MP3 and AAC and the HD Radio codec), and Philips (co-inventor of MPEG Layer 2 and a consumer electronics firm).

Yet more testing is forthcoming as the best ideas continue to be merged from each contributor. The technology approach has been published in a number of AES and other papers so that researchers have been able to evaluate claims and build upon each other's work.

We assume that on-air tests with normal programming are a necessary part of any evaluation process, and we expect these to start within the next months. We think radio broadcasting is important enough to deserve this care.

The authors are Telos CEO and Omnia president, respectively. RW welcomes other points of view.

Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled monthly by Radio World using information supplied by iBiquity Digital Corp. and other sources. The data shown reflect best information as of Feb. 11, 2005. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

ON THE AIR "SOUTH OF 92"

FM stations on the air with HD Radio below 92 MHz

Call Sign	Freq.	Format	Market	Owner
KCRY(FM)	88.1	Educa/News	Mojave, CA	Santa Monica Community College
WVTW(FM)	88.5	NPR	Charlottesville, VA	Virginia Tech Foundation Inc.
KCSN(FM)	88.5	Classical	Los Angeles, CA	Calif. State Univ.
KPSC(FM)	88.5	Classical	Palm Springs, CA	Univ. of Southern Calif.
KPLU(FM)	88.5	Jazz	Seattle-Tacoma, WA	Pacific Lutheran Univ.
WFCR(FM)	88.5	Nws/Cls/Jaz	Springfield, MA	Univ. of Massachusetts
WAMU(FM)	88.5	Nws/Tlk/Inf	Washington, DC	American Univ.
WICR(FM)	88.7	Clscl/Jazz	Indianapolis, IN	Univ. of Indianapolis
KQSC(FM)	88.7	Classical	Santa Barbara, CA	Univ. of Southern Calif.
KHTU(FM)	88.7		Tulsa, OK	Univ. of Tulsa
WDBM(FM)	88.9	AOR	Lansing-East Lansing, MI	Michigan State Univ.
WDNA(FM)	88.9	Jazz	Miami-Ft. Laud.-Hollywood, FL	Bascomb Memorial B'casting Foundation
WEMU(FM)	89.1	Jazz	Ann Arbor, MI	Eastern Michigan Univ.
WEVO(FM)	89.1	Nws/Tlk/Inf	Manchester, NH	New Hampshire Public Radio
WVTU-FM)	89.3	NPR/Clscl	Charlottesville, VA	Virginia Tech Foundation Inc.
KUVO FM)	89.3	Jazz	Denver-Boulder, CO	Denver Educational B'casting
KPCC FM)	89.3	Nws/Tlk/Inf	Los Angeles, CA	Pasadena Area Community College
WOSU FM)	89.7	Classical	Columbus, OH	The Ohio State Univ.
KJTH FM)	89.7	Christian Music	Ponca City, OK	Love Station, Inc.
WEOS(FM)	89.7	Alternative	Rochester, NY	Colleges of the Seneca
WUSF(FM)	89.7	Educational	Tampa-St. Petersburg-Clearwater, FL	Univ. of South Florida
KCRW(FM)	89.9	Educa/News	Los Angeles, CA	Santa Monica Community College
WWNO(FM)	89.9	Clscl/NPR	New Orleans, LA	WWNO(FM) - Univ. of New Orleans
WABE(FM)	90.1	Nws/Tlk/Cls	Atlanta, GA	Atlanta Board of Education
WAMC(FM)	90.3	Nws/Tlk/Inf	Albany-Schenectady-Troy, NY	WAMC/Northeast Public Radio
WKAR(FM)	90.5	Cls/Flk/Jaz	Lansing-East Lansing, MI	Michigan State Univ.
WNRK(FM)	90.7		Kent, OH	Kent State Univ.
WWOZ(FM)	90.7	Variety	New Orleans, LA	WWOZ, Inc.
WFUV(FM)	90.7	AAA/Folk	New York, NY	Fordham Univ.
WXEL(FM)	90.7	Clscl/NPR	West Palm Beach-Boca Raton, FL	Barry Telecommunications
WMEH(FM)	90.9	News/Clscl	Bangor, ME	Maine Public B casting Corporation
WGUC(FM)	90.9	Classical	Cincinnati, OH	Cincinnati Classical Public Radio, Inc.
WETA(FM)	90.9	Clscl/News	Washington, DC	Greater Wash. Educational Telecomm Assn.
KBSU(FM)	91.1		Boise, ID	Boise State Univ.
KDSC(FM)	91.1	Classical	Los Angeles, CA	Univ. of Southern Calif.
KCSM(FM)	91.1	Jazz	San Francisco, CA	San Mateo County Community College
WLRN(FM)	91.3	Nws/Tlk/Inf	Miami-Ft. Laud.-H wood, FL	Miami/Dade County School Board
WBEZ(FM)	91.5	Nws/Tlk/Inf	Chicago, IL	Chicago Public Radio
KUNC(FM)	91.5	Public	Ft. Collins-Greeley, CO	Community Radio for Northern Colorado
KUSC(FM)	91.5	Classical	Los Angeles, CA	Univ. of Southern Calif.
WUAL(FM)	91.5	Nws/Cls/Jaz	Tuscaloosa, AL	Univ. of Alabama
WUOM(FM)	91.7	Nws/Tlk/Inf	Ann Arbor, MI	Univ. of Michigan
WOSR(FM)	91.7	Nws/Tlk/Inf	Newburgh-Middletown, NY	WAMC/Northeast Public Radio
WUMB(FM)	91.9	Folk	Boston, MA	Univ. of Massachusetts

The Bottom Line

Total Licensed	On the Air
549	233

Last Month

Total Licensed	On the Air
544	225

Market Penetration United States

13,525 AM & FM Stations

Licensed by iBiquity and on the air

HD Radio at Greater Media

19 AM & FM Stations

Licensed by iBiquity and not on the air

Fees

▶ Continued from page 1

Radio system, the schedule includes an increase in the one-time licensing fee over several years.

The pricing model is the same for all stations, whether commercial or non-commercial, said Ibiquity Digital COO Jeff Jury, who said this was consistent with its previous incentive program.

"We think it's the fairest way to do this," he said.

Ibiquity now has spelled out — for the first time — exactly what it intends to charge stations for main channel audio, as well as for supplemental channel audio. It also has defined when it will begin charging for software upgrades. These points had not been spelled out in previous agreements.

Broadcasters that already agreed to accelerate their rollout have known about the fees and new terms, the technology developer said.

One broadcast source commented that, putting aside cost, the fee structure and terms seem clearer than they had been.

The technology developer is extending its current discount window on licensing fees for broadcasters until mid-year and intends to raise the price after that. A previous licensing break in 2003 had been extended through 2004, according to Ibiquity.

It has crafted a detailed conversion schedule, showing exactly how many stations it expects a group owner to convert by a specific date, in order for that group to receive a break on its license fees.

A base licensing fee of $5,000 per licensed station will be extended until June 30 for broadcasters that commit to transition their facilities to HD Radio this calendar year. Afterwards, the price increases (see chart).

Jury said the company has been working on the more detailed fee schedule since 2004, trying to figure out the best way to implement it. The new schedule is "based on market reality and clearer for everyone to understand."

The broadcast groups that agreed in recent months to convert 80 percent of their stations within four years are covered by such agreements, he said.

The groups, which have committed to transitioning 2,500 stations so far, wanted some clarity from Ibiquity on costs and terms, he said. "It helps them decide when to go HD Radio, whether sooner or later."

As the number of stations going IBOC slowly increases, Ibiquity has more of an understanding of how stations are going to use HD Radio.

"This pricing model reflects that," Jury said.

The license fee is a one-time payment that grants a station the right to use Ibiquity Digital's HD Radio patents, software and trademarks for its main channel audio. Licenses must be in place before a station receives broadcast equipment that contains Ibiquity Digital's intellectual property from manufacturers or resellers.

Theoretically, if the 2,500 stations already committed each paid $5,000 to Ibiquity, the company would gross $12.5 million from that group of stations. But some early adopters that transitioned in 2003 had the fees waived, while most others that signed since then went on under the 2004 incentive plan. Ibiquity could not quantify how many stations fell into each category. Commercial stations would have paid $5,000 and non-commercial stations $4,875 under the 2004 incentive.

The 2,500 stations comprise some agreeing to the accelerated deal, those going on under standard terms and those stations that have gone on through 2004, according to Jury.

One-time licensing fee

As of July 1 of this year, the one-time license fee per station goes up to $7,500 for those who commit to convert within 2006.

As of July 1, 2006, the fee rises to $10,000 for those who commit to convert within 2007; after July 1, 2007, the amount rises to $15,000 for those who commit to convert within 2008.

As of July 1, 2008, the company says, incentives disappear and the fee becomes $25,000.

Stations in Group†	Cumulative No. Converted by 12/31/05	by 12/31/06	by 12/31/07
1	1	–	–
2	1	2	–
3	1	2	–
4	1	3	–
5	1	3	4
6	1	3	4
7	1	3	5
8	1	3	6
9	1	4	7
10	1	4	8
11	1	4	8
12	1	5	9
13	2	6	10
14	2	6	11
15	2	7	12
16	2	7	12
17	2	7	13
18	2	8	14
19	2	8	15
20	3	9	16
21	3	9	16
22	3	10	17
23	3	10	18
24	3	11	19
25	4	12	20

Radio groups that agree by June 30 to accelerate their station conversion are eligible for licensing discounts and other benefits, Ibiquity says. The minimum conversion schedule for groups with up to 25 stations is shown.

The conversion schedule lays out how many stations a group should have converted by a specific date in order to receive a licensing incentive.

For example, a 12-station group must convert one station by Dec. 31 of this year, five by Dec. 31, 2006 and a total of nine by the end of 2007 to conform to the "Accelerated Commitment." With this agreement, the licensing fee for main channel audio for each station would be $5,000.

"If all conversion commitments are met, the fees for any other group station that licenses HD Radio in the future will also be limited to $5,000," according to Ibiquity.

Group owners that don't meet the accelerated conversion times to which they previously agreed would see their licensing fees revert back to the base price, which goes up at scheduled times, said Jury.

According to the terms of the agreement, licenses must be pre-paid to Ibiquity before each station is converted. Groups must notify Ibiquity specifically which stations they plan to convert. Substitutions may be made, after a group notifies Ibiquity in writing.

Supplemental channel fees

New to the agreements are supplemental channel audio fees, which are to be paid annually. These fees are based on a revenue-sharing model.

Stations pay 3 percent of incremental net revenue derived from any supplemental audio services using HD Radio technology. The minimum fee is $1,000 per supplemental audio channel.

However, those groups that meet their conversion targets under the Accelerated Commitments would pay half this amount — $500 per channel.

Non-commercial stations, which are keenly interested in dividing their 96 kilobit-per-second digital FM channel into several streams, are exempt from this fee if they're using the SAP for noncommercial audio programming or a service designed to provide information to the hearing or sight impaired, Jury said.

A couple of broadcast sources said privately that broadcasters may not have realized there would be fees for further use of the digital streams.

One source said the fee was not a "significant" amount, considering the operational costs for programming whatever would be on such a channel is likely to be higher. This source likened the amount as "less than paying a streaming fee."

Exactly how stations will monetize a supplemental channel — whether as a second program stream or as a for-pay service, such as traffic/weather — still needs to be worked out, observers said.

Data fees

While fees from a portion of the revenue that stations derive from the data capabilities of HD Radio have been in the licensing agreements previously, now this portion of the agreement is more specific.

The fees for transmitting auxiliary data, like the supplemental audio channel charges, are also based on a revenue-sharing model. Stations pay 3 percent of incremental net revenue derived from auxiliary data made possible with HD Radio technology. These fees are to be made quarterly beginning in 2006.

Those digital stations that have data services now get a break; HD Radio auxiliary data may be used royalty-free through Dec. 31 of this year.

Non-commercial stations are exempt from the data fee as long as they air noncommercial material such as educational programming or radio reading services, according to Ibiquity as well as NPR Vice President of Engineering and Operations Mike Starling. That programming can include underwriting announcements. Not allowed, according to Starling, would be exclusive, premium pay services, according to the deal between the network and Ibiquity.

When the notion of revenue-based data fees first came to light a couple of years ago, much was made in news accounts of Ibiquity's right to go into a station and look at the station's books to determine if it was indeed, not making money on the data services in the event of a disagreement.

Now, that process has been refined with a dispute resolution procedure specified in the agreement.

Software upgrades

For the first time, Ibiquity has said exactly when it will begin charging for software upgrades. It will not charge additional license fees for software revisions, new releases intended to correct errors. Nor will Ibiquity charge for software upgrades, new versions that contain more features, through Dec. 31, 2006.

After this date, stations may license any upgrades that may be released periodically by paying an annual fee or the prevailing rate at the time of release.

LPFM

▶ Continued from page 3

secondary, so a low-power FM station would not be obliged to go off the air when a full-power moves or raises its power level.

LPFM proponents are especially worried about new FM translators being licensed and receiving new spectrum allocations.

Although FM translators, too, are licensed as secondary services, low-power proponents feel their stations should take precedence because LPFMs originate programming while translators only rebroadcast the content of primary stations.

Translator applications

Marianne Knorzer, station manager of KRBS(LP) in Oroville, Calif., said her station faces encroachment to the south by a co-channel FM translator.

"Being a secondary service, we're obliged to live with interference. Our station has the potential to be knocked off the air by a station trying to get a license."

In 2003, the FCC opened an application window for FM translators, the first such chance since 1997, according to Audio Division Chief Peter Doyle. As reported by Radio World, the bureau was flooded with 11,000 FM translator applications.

Jim Bradshaw, deputy division chief of engineering for the Audio Division, said 3,320 CPs for FM translators have been granted, and the bureau is still looking at "singletons," those applications for frequencies only sought by one party. The FCC has yet to weed out applications that do not meet its criteria or address applications for contested frequencies.

"We've about doubled the number of FM translators that have been authorized since the beginning of that service," said Doyle.

Because there is no current application window for LPFMs, proponents believe that if one does open, their applications will be at a disadvantage to those for translators in a competition for scarce frequencies. They want the commission to change the rules so that low-power stations that originate local content are given precedence over translators.

LPFM operators also want the commission to double the life of construction permits, from 18 months to three years. The current limit isn't sufficient for grassroots organizations to build a station in many cases, they testified.

Other suggestions were made for helping non-profits to obtain licenses and manage LPFMs.

Jon Gerbracht, treasurer of the Edinboro Early School, which holds the license for WEES(LP) in Ocean City, Md., suggested the commission consider making AM spectrum available for low-power service. As an example, he used the 1710 kHz frequency, which, he said, is offered on vintage AM radios but not assigned now.

Gerbracht also suggested dropping second-channel spacing requirements between an existing station and an LP station, in addition to dropping third-adjacent spacing requirements, to allow more low-power stations in more markets.

"This is a simple thing to be complicated by large, powerful interests. The FCC needs to act in some way to protect us from the corporate goliaths," said Gerbracht.

Underwriting woes

Chris Lash, a 25-year veteran of commercial radio, said LPFM has changed his life. The president of Godstock Ministries, which has operated Christian music-formatted WFSJ(LP), Indiana, Pa., for two years, asked why low power stations can't air commercials.

"Translators do. Perhaps we'd be viewed as taking money away from commercial radio stations," said Lash. "If we are really local community radio, we should be the voice of small business. Do you think my local dry cleaner can afford Clear Channel's rates? No."

Commercial radio operators were not on the FCC hearing agenda.

> **Now that we have a seat at the table, we'd like a slice of the pie.**
>
> — Michael Shay, WRYR(LP), Sherwood, Md.

LPFMs are allowed to solicit underwriting, not commercials. Although Lash said underwriting at his station brings in "an income of five figures each month," finding enough to sustain the small stations and staff remains a challenge for many fledgling facilities.

"Now that we have a seat at the table, we'd like a slice of the pie," said Michael Shay, project manager for WRYR(LP), Sherwood, Md., suggesting that the Corporation for Public Broadcasting provide grants to LPFMs.

His all-volunteer station is "filling the vacuum of local content," he said.

Shay and other LPFM supporters said the new stations are training grounds for young radio talent, practice program and employee diversity and are proving they can operate within commission rules.

MILE STONES

CONELRAD: Cold War Relic

by Charles Fitch

Cold is the temperature of irrational fear, the fear of little understanding. The Cold War of the 1950s was a strange time in America's history.

I remember my first radio at age 4. That Zenith Royal 500 had little triangular markings indicating the Conelrad frequencies of 640 and 1240 kHz.

President Truman established the CONELRAD — for "CONtrol of ELectronic RADiation" — system in 1951 in the hopes of providing information and direction to Americans if the unspeakable horror of nuclear war ever became a reality. The system only existed for a dozen years, but its name lives on as a reminder of that time.

We knew the Nazis had used advanced radio navigation, and we suspected that the Japanese had used Honolulu radio stations to guide them to Pearl Harbor. The government did not want a new system to allow this to happen again. The scheme was simple and relied on the strengths of U.S. broadcasting — mostly AM and only a fraction of the size of the industry now.

If an attack came, stations were to cease normal operations. Select stations would move to 640 or 1240 in clusters of three or four. Emergency programming and transmitter switching would come from a central local control point via phone lines. In a pseudo-random pattern, each station's transmitter would in sequence be turned on and off to provide a continuous signal from the cluster.

The aviation world in the early 1950s (including our enemy's bombers, we thought) depended mainly on radio navigation based on signal strength. It used such reliable workhorses such as the Adcock antenna for sharp direction resolution.

The common logic was that if all AM stations were on 640 or 1240, switching from transmitter site locus to locus creating a constant weaving from station to station, that all this vacillation in signal strength and direction would confound any attempt to use them for navigation or as a homing beacon. From the air and even more so at night, station location changes in the same group and interference from stations in different groups would drive the direction needle crazy — or so our leaders hoped.

On a national level, the system was tested only once, in 1961 after the Bay of Pigs debacle raised the concern level. From my vantage point in Baltimore, both local clusters worked well.

Duck and cover: A pop culture Web site takes its name from CONELRAD.

The perceived threat of bombers permutated to a real one of ICBMs with internal guidance systems; and CONELRAD became obsolete. EBS (1963) was the replacement, and in turn was replaced by EAS (1997). But broadcasting continues to be America's first line of information and comfort in time of disaster.

The Civil Defense logo marked not only AM dials but other equipment, like this 'Gooney Box,' a Gonset two-meter ham transceiver. Many of the hams in CD activities were broadcast engineers volunteering as operators on local CD communications networks.

For more about CONELRAD and its successors, see www.westgeorgia.org/conelrad.

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

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The Single-Platform Era Is Ending

Over-the-Air Delivery Is Becoming Just One of Many Paths to Listeners' Ears

by Skip Pizzi

It doesn't seem so long ago when radio stations each had a single output that reached their respective audiences in real time via an AM or FM transmitter. While that still remains the case for most listeners, a shift to a far more diverse delivery environment is occurring rapidly, as broadcasters worldwide awaken to the new day of multi-platform delivery.

This should not be perceived as an overly threatening circumstance, as broadcasters are beginning from a position of strength, legitimately licensed heirs to one or more channels in the scarce radio spectrum. Yet as other, less rigidly controlled delivery formats grow in importance, station operators should be migrating existing and new services to these other platforms, just as most AM broadcasters ultimately did with FM decades before.

Most broadcasters have dabbled in this with the Internet; but that experience likely has been just the tip of the digital iceberg, with far more serious alternate service-delivery options lying ahead.

Broadcasters traditionally have been purveyors of both *content* and *service*. (If not creators of the content, stations are at least the market-exclusive, pass-through agents of content created by others, such as the networks with whom they are affiliated.) This dual role is atypical in today's digital media world, where content- and service-provision often are wholly distinct business functions pursued by independent organizations.

This separation of content-church and service-state applies both to the technical architectures and business philosophies involved in today's media enterprises. Radio broadcasters therefore are advised to consider their core operations as two different functions, one creating content and the other delivering it, so they can better compete in the new media environment. With this approach, broadcasters can best leverage their enviable position of having one foot in each camp.

To wit, broadcasters may act as pure content providers, such that others (i.e., pure service providers) deliver their content via means other than over-the-air (OTA) broadcast channels. This also implies that each stream of a broadcaster's content may flow over *multiple* delivery services, one of which the broadcaster operates, while others are operated by different parties.

Essence, plus

Although the same generalized content may flow over several services, however, note that such different platforms may each expose varying functionalities to the end-user.

For example, OTA analog FM service generally includes stereo audio plus limited text (via RBDS, still on relatively few receivers), while Internet radio can include multi-channel audio of up to 7.1 channels today, plus rich graphics, streaming video and more, all of which is available on practically all "receivers" — particularly with the growth of broadband service. Similarly, IBOC will offer different capabilities than analog radio, while delivering the same core content.

This implies that broadcasters soon will need to manage their *essence* (i.e., audio) and *metadata* (i.e., supportive material) assets sensibly, in a way that allows them to be centrally stored and optimally rendered over multiple delivery services with differing capabilities (more about this next time).

On the other hand, the radio station can also act as a pure *service* provider, delivering content provided by others. In the analog FM world, this has been exemplified by the subcarrier business, with clients like background music services or foreign-language operations leasing bandwidth and hitching a ride to their customers on a broadcaster's RF transmission. In the IBOC era, there may be more flexible and versatile opportunities for this. To wit, while today's subcarrier business only makes sense for clients that have a more or less full-time need for a delivery channel, IBOC datacasting may make a more "à la carte" datacasting business viable for broadcasters.

Another key distinction is the delivery of real-time vs. on-demand service. Broadcasters have always been in the real-time business, but for radio, at

See PLATFORMS, page 21 ▶

The Big Picture

Photo: Gary Hayes, BBC

by Skip Pizzi

Platforms

▶ Continued from page 20

least, that was not so much by choice as by necessity. There simply has been no viable on-demand delivery platform for audio until quite recently — even in the age of the VCR, there was no radio-only equivalent — but now there are several options emerging, and the beginnings of a real buzz in the marketplace for them. There's no reason broadcasters can't join this party.

Apple's iPod has received most of the attention in this space recently, and for good reason, given its meteoric sales history. (The iPod seems to have so captured the attention of today's youth that I've started sending my e-mails and instant messages to my kids under the alias of "iDad," in the hopes of getting a bit more of their attention. So far, it hasn't worked.)

Of course, there are plenty of other devices involved beside the iPod, which are now generically referred to as "digital media devices" (although the outdated moniker of "MP3 players" still persists in some circles). Like the iPod, most of these support the MP3 format along with others such as WMA, WAV, Red Book CD or other proprietary audio coding. While these units have been largely considered as all about commercial music, they can be used to for other radio content as well, primarily for time-shifting (i.e., store, play once shortly thereafter, and delete) purposes. This is what the recent "podcasting" phenomenon is all about, although again, it extends beyond the iPod.

Connected

What all of these players also share at present is a need to be connected to a PC or Mac computer as their gateway to content. In the future, downloads direct to handheld devices may become an interesting business for broadcasters' datacasting (and/or wireless service providers') offerings. At least for now, however, the Web (typically via a broadband connection) remains the primary path for on-demand content delivery.

Note also that for general podcasting use today, security is not a concern. The blogger community is happy to spread audio content freely via podcasting. But most of this amateur or hobbyist content is not sustainable, and will likely go the way of the "'Zines" phenomenon of the late 1990s.

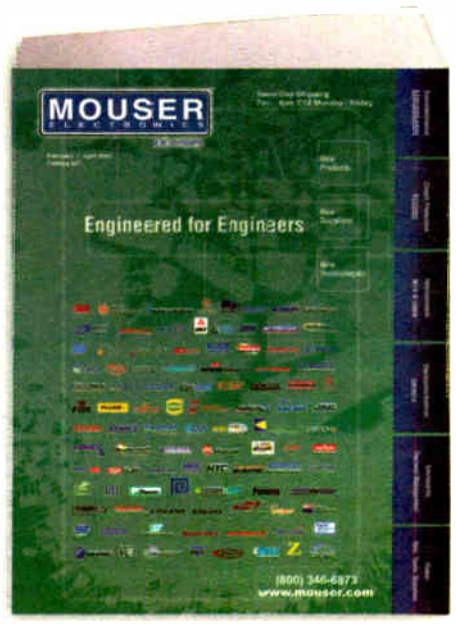
The likely long-term impact of podcasting will be broadcasters and other bona-fide media content providers offering subscription-based services via RSS (Really Simple Syndication) feeds to consumers, and driving them to the on-demand services via cross-promotional messages on their traditional (real-time) media products. Thus unlike the bulk of early podcasting, future content providers may very well want to offer their on-demand material with some form of content protection applied.

Moving broadcasters into this space no doubt will occupy much of the conversation in this publication and elsewhere in the industry in the near future. Meanwhile, though, even the set of real-time platforms that broadcasters can address is expanding. More about these in the next issue.

Skip Pizzi is contributing editor of Radio World.

MARKET PLACE

Mouser Expands Component Line



Distributor Mouser Electronics Inc. continues to publish a new catalog every three months. The most recent is 1,484 pages from its 300 or so electronic component suppliers.

The company said it has added 70 suppliers in the past year.

"These new suppliers were added to nearly every category of Mouser's broad-based product line," it stated, "which includes semiconductors, optoelectronics, passives and circuit protection, interconnects, wire and cable, electromechanical and sensors, enclosures and thermal management, as well as power, test, tools and supplies."

Recently added suppliers include Datel, Intersil, Chipcon, Applied Motion Products, Artesyn Technologies, Ault, Conxall, Delphi, ERA Magnetics, Heyco, Micro Commercial Components, MSI Sensors, Optek, Silvertronic, Varitronix, Velocity Semiconductor and Tamura.

For information visit mouser.com *or call (800) 346-6873.*

WXPN Gets Room to Stretch

In the Delaware Valley, an Iconic Noncom Station Gets a New Home

by Tom Vernon

It would be hard for a visitor to Philadelphia to miss the new studios of WXPN(FM), the award-winning AAA non-commercial station licensed to the University of Pennsylvania. Large neon signs on the top and side of the historic Hajoca Building on Walnut Street are visible to 65,000 daily drivers on the Schuylkill Expressway and thousands of pedestrians and bikers around the West Philadelphia Penn campus.

Before the radio station moved into its new home late last year, it operated from two locations, with studios in an old house on Spruce Street and administrative offices on Chestnut Street. Technical Director Jay Goldman headed up the engineering design of the move and new facility. Also involved were Engineer Jared Styles, Studio Recording Engineer Chris Williams and IT Administrator Jonny Meister.

The station, which came to the FM dial in the 1950s and has carrier-current roots back to 1945, is a prominent part of the Philadelphia mediascape, and is the home of the public radio program "World Café." WXPN's programming is also carried regionally via translators in Harrisburg and the Lehigh Valley of Pennsylvania, as well as the Baltimore area to the south.

The new center houses five control rooms and three studios. Logitek Numix consoles are standard; the station uses RCS Master Control Version XV for live assist, with storage capacity of 140 GB, as well as Selector for scheduling.

Most of the plant is digital. "We have a Broadcast Tools SS 8.1 8 X 1 audio switcher in the transmission path. This allows us to switch any control room or the automation system directly into the STL," Goldman said. "This switcher, the TFT EAS switch and Aphex Compellor are analog. Everything else is digital."

WXPN's new home, shown here in an architectural rendering, is in the historic Hajoca Building on Walnut Street in Philadelphia.

Although most of XPN's broadcast day is automated live assist, three Denon 961-Fs are available in every room for new music that is not yet in the system. For rarities on vinyl, Technics SP-15 turntables are in place. The interconnect infrastructure between studios and to the technical operations center is via Radio Systems Studio Hub+.

Asked his experience using that Cat-5 wiring system, Goldman said, "This is not a paid commercial announcement, but I love it. One bonus I discovered is that I'm able to run audio around the building, outside of the technical core area, to desktops, etc. for auditioning of offline editing purposes, using the Ethernet infrastructure."

(Radio Systems President Dan Braverman was equally complimentary: "WXPN is the radio station I listen to all day long. I would have been so jealous if any one else got to do this build. There is no other facility in the country like WXPN and 'World Café Live.'")

In the news studio, a Logitek Remora console, 360 Systems Instant Replay and AP audio wire service terminal allow the newscaster to engineer his or her own newscast without assistance from the on-air host.

While much of the facility is new, the station brought over a Logitek Audio Engine, ROC 10 and Remora 4 worksurfaces from the old facility, as well as Yamaha 02R digital mixer, 360 Systems Shortcut and Denon CD players.

The naming of the new studios reflect the station's musical roots. Rather than A, B and C, the studio signs read John, Paul, George, Ringo, Elvis and Dylan.

Network technology is leveraged for smooth workflow and efficiency. Laser printers in the studios enable the programming staff to create logs at their desks and print them out in the studios without having to leave the office. IP-based Webcams are planned in the building's entertainment venue, enabling recording engineers on the other side of the building to see the action during a session, and creates an opportunity for live feeds over the Internet.

After the station feed leaves the studios, "We run multimode fiber across campus using FIBOX equipment to the roof of a 26-story high-rise student residence building," Goldman said. "From there we have a 950 MHz Harris CD Link for the five-mile hop to the antenna farm in the Roxborough section of the city."

Member-supported

The 2-1/2 year renovation of a historic former plumbing warehouse, also owned by the university, was made possible by a capital campaign project which has raised almost $4 million. Close to 80 percent of contributions have come from individual members. WXPN began operations in the new building in September of 2004. The renovation project's cost has been estmated by the university at $15 million.

Systems integration was done by Radio Systems, while Studio Technology provided furniture and Tritech Systems completed the generator and electrical installations. Documentation was created with Microsoft Visio and Excel.

In the lower level of the building is a technical operations center, which houses the shop, telephone and network patch panels, and equipment racks that hold automation gear, file servers, satellite demods, transmission and monitoring equipment.

The operations center also houses the servers for WXPN's 24 kbps streaming audio feeds: one a Mac-friendly MP3 stream via SHOUTcast, the other in Windows Media Format. During periods when the station is playing entire CDs, a violation of RIAA restrictions on streaming media, a switcher selects an audio feed from a CD jukebox containing station-owned recordings.

The facilities are also home of the "World Café," a daily program highlighting singer-songwriters and distributed via Public Radio International. At the heart of the "World Café" complex is a 900-square-foot performance studio, providing enough space for large bands and live audiences. Soundproof windows enable the public to view recording sessions from the lower-level lobby. Two control rooms adjoin the performance studio, the larger containing a Yamaha PM 1D recording console, Tascam MX-2424 hard-disk recorders and vintage UREI LA-4 limiters. A Yamaha 02-R and Logitek console are housed in the smaller control room.

Green rooms are available for visiting artists, who often travel through the night before making an appearance.

Live entertainment

WXPN's facilities are co-located in the 40,000-square-foot building along with World Café Live, an independently owned, for-profit entity that features a 350-seat theatre and 100-seat restaurant/live performance stage. Mic lines are split and run to both the sound stage mixer and to WXPN, enabling the station to do independent recording and mixdowns from both venues.

The co-location with the entertainment venue has been hailed by organizers as an innovative partnership between a for-profit enterprise and a not-for-profit public station as well as part of the university's efforts to develop and revitalize part of campus. Station officials have said that by hav-

See WXPN, page 24 ▶

There's a new sheriff in town.

The commercial broadcast,live concert sound and recording industries have been void of new dynamic microphone technologies for the past 20 years. The performances and requirements have changed - but NOT the microphones.

Joe Walsh, friend, client and ham radio buddy of Bob Heil asked him to do something about this and design some killer new microphones for his live shows. The two put their heads and ears together. The results are stunning !

PR 40

UNBELIEVABLE.....the only way to describe the PR 40. Sounds, look, acts like a condenser but it's a Heil dynamic that gets down to 28 Hz. That's 28 !! No more phantom power to deal with. Low background noise. No fragile elements. Extraordinary frequency response with absolute phenomenal upper mids, gorgeous high frequency clarity. This is one spectacular microphone and - oh....did we tell you it's a DYNAMIC ?

(Yes, KMOX has replaced their RE 20's with the new PR 30 and PR 40)

PR 30

The new Heil PR 30 features a large 1 1/2" diameter dynamic element ....not the usual 3/4" we have been forced to use. The PR 30 delivers beautiful clear articulation. Wide frequency response 40Hz - 18kHz. Humbucking coil. Sorbothane shock mount. Beautifully constructed. Fits into the 309 shock mount. This is one sensational microphone.

PR 20

Finally -a NEW industry standard ! ! There have been so many attempts but the new HEIL PR 20 achieves the **perfect** vocal microphone. Exceptional performance by using a special magnet structure and a large low mass voice coil. Very special attention has been paid to the phasing plug assembly. Gorgeous speech articulation. Wide frequency range. There really IS a new sheriff in town now appearing on major stages and studios - the Heil PR series.

Joe's band boxed up their old microphones after hearing the great quality of the new HEIL PR series. We invite YOU to be next. There's still room in the box !.....

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352 622-7700

WXPN

▶ Continued from page 22

ing studios located with a separate but related venue "means we'll have a physical place where XPN members, our on-air talent and staff, and musical artists can come together as one community." The studios and World Café Live are financed and managed separately.

As with most post-9/11 designs, emergency preparedness and security were considerations. WXPN's studio facilities can be powered from a 60 KW ETS generator; the racks in the operations center are equipped with uninterruptible power supplies. Card key access points are located throughout the station, and television monitors connected to DirectTV are visible in every studio.

Technical Director Jay Goldman examines Logitek setup configuration in Supervisor on the TOC computer terminal.

Host Matt Reilly, foreground, and Kimberly Junod, producer of 'World Café.'

While the facility is designed for efficient operations, aesthetics are not forgotten. A large mural entitled "Sphere Music" by Paul Santoleri of the Philadelphia Mural Arts Program decorates the Walnut Street lobby, while the "Tower of Babble," also by Santoleri, is painted on the lower level hallway. Much of the World Cafe Live and WXPN operations are visible to pedestrians via large windows at street level.

While the station has moved into a 21st-century facility, the history of WXPN is not forgotten. Display cases throughout the building contain analog artifacts such as carts, vinyl LPs and reel tape boxes. There is also a display of T-shirts and coffee mugs with old station logos and slogans. A poster in the conference room contains photos of architectural details from the 1850s mansion that was the previous home of WXPN.

Tom Vernon was an engineer at WXPN from 1994-99. For historical information about WXPN, including its move to its previous home, see www.archives.upenn.edu/faids/upf/upf10.html.

Key Contractors
Systems Integrator: Radio Systems
Studio Furniture: Studio Technology
Electrical: Tritech Systems
Architect: Meyers Associates

Source and Recording Gear
Denon DN 961-FA CD Players
360 Systems Instant Replay
Tascam MX 2424 Hard-Disk Recorders
Electro-Voice RE-20 Mics
Neumann TLM 104, KM 84 Mics
AKG 414 Mics
Sennheiser SM 81 Mics

Consoles
Logitek Numix, Remora, ROC 10
Yamaha PM-1D, 02R

Studio Software
RCS Master Control Automation
RCS Selector Scheduling
SAW 32 Editing

Infrastructure
Radio Systems Studio Hub+

Master Clock System
Radio Systems

USER REPORT

Adobe: Flexibility, Power at Low Cost

by Dave Savage
Creative Director
WLCL(FM) and WGST(AM)

ATLANTA As creative director for two Clear Channel Radio stations in Atlanta — oldies station WLCL and news talk radio WGST — I produce imaging elements daily. Particularly for the news talk station, I am constantly on deadline.

When a hot news story breaks, I have to obtain sound bites from the news networks and the local news department to create other audio elements, which serve as lead-ins for announcers covering the story. I also have to get a spot on quickly afterwards to promote how well we covered the breaking story. This means I rely heavily on recording, audio editing and mixing tools.

When I first started doing radio production in the mid-1990s, Audicy equipment was the standard editing tool in many production studios. While Audicy was a digital system, it worked much like traditional analog systems, offering play, record and other functions that looked and operated like those of an analog tape deck. It provided an easy way for many producers to transition from analog to digital editing.

Then a friend introduced me to **Adobe Audition**, which was Syntrillium Cool Edit Pro at the time. Audition is a 128-track software system that functions as a great combination multitrack recorder and mixing environment. The software provided a major advancement over Audicy in terms of power, flexibility and control. It has many useful features for broadcast production, including speedy mixdowns, and the price is reasonable.

Savage likes that Adobe Audition 'doesn't mix down MP3 and WAV files in real time like other digital audio workstations.'

Adobe Audition doesn't mix down MP3 and WAV files in real time like other digital audio workstations. If I am creating a four-minute piece, I do not have to wait four minutes to get the completed project to the newsroom. Instead, it can be completed in seconds. This processing feature is crucial for me as well as other producers at Clear Channel because of the deadline-driven nature of our jobs.

Many producers at Clear Channel are using Adobe Audition. In 2003, Clear Channel Radio made a decision to purchase several hundred copies of the software for its network of stations. Management does not dictate which editing systems we should use; but many of us prefer Audition, and we use it for song parodies to sound design.

I use Audition in the production studio at work, and I often work from home on my PC. Adobe Audition does not require a sophisticated studio set-up. All that is required is a PC running Audition, a decent sound card and a high-quality microphone. It's a flexible set-up that costs little when compared with other audio editing systems.

I often record voice elements in the production studio at the station to achieve the cleanest possible sound, as I didn't splurge on a nice microphone for home use like we have at the radio station. I e-mail the files to myself or take them home on a CD. I can then use Adobe Audition to complete imaging elements like contests or promotional spots at my convenience.

Power users that prefer single-key-stroke operation like Audition because it has a list of keyboard shortcuts. You can also write your own, depending upon which functions you use most. If there is a series of functions you do often, set it up to do those functions with one keystroke. For instance, on some of my voice tracks I like to compress, equalize and normalize so I have it ready to do all three with the touch of one key.

Another timesaving feature is Delete Silence, found in the Edit menu. It detects and removes silence between words and phrases, tightening copy without having to manually highlight and cut pauses. This is a fast way to remove pauses and breathing from voice tracks, a process that ordinarily could take hours.

Audition also is valuable for those times when listeners, ad agencies or others send in an odd piece of audio that will not open on other audio players or audio editors. Audition thankfully can read an array of audio file formats, because as a producer I receive a variety of sound files.

Of course there is always room for improvement. I often hear from producers who would like a scrub wheel that would allow the user to spin the wheel and actually hear the audio shuttle forward and backward, depending on which way the wheel is spun and how fast.

I also would like Audition to link to the CD Data Base (CDDB), so it would match the WAV with the title of the song right as you insert to your session. There is no perfect editing software out there, but Audition comes close.

For more information, including pricing, contact Adobe Systems in California at (888) 724-4508 or visit www.adobe.com.

USER REPORT

DAD Deployed in Nation's Capital

Bonneville D.C. Stations Use Editing Module of ENCO System to Facilitate Voice Tracks, Newsroom

by John Spaulding
Director of Information Systems
Bonneville International
Washington, D.C. Market

WASHINGTON Any industry insider knows how important one's automation system is to the final broadcast product. The ability to playback produced audio elements, manually or in an automated setting, is a vital aspect of a radio station's operation.

To that end, there are many products that can play back audio in a reliable and user-friendly interface. What distinguishes a true "automation system" is the vendor's ability to streamline the entire audio workflow from production to broadcast.

The challenging endeavor for someone responsible for a cluster of stations is the uniqueness of each station's audio workflow. However, the benefit of a shared automation backbone means finding a single vendor that can meet these divergent needs. We found such a vendor with **ENCO Systems Inc.** and its DADpro32 automation suite.

Audio library

I work for the Washington, D.C., cluster of Bonneville International Corp. radio stations, which includes a news station, WTOP(AM/FM); federal news and talk WFED(AM); classical WGMS(FM); Hot AC WWZZ(FM); and an Internet side channel to WGMS offering contemporary and classical vocal music, VivaLaVoce.com.

Within DADpro32's shared library of audio, individual cuts can be categorized into groups. Using the security mechanism, access to groups or ranges of cuts can be controlled and assigned to users based on their job function or station. Air staff also are treated to a myriad of playback modules, all designed for various on-air functionalities.

See ENCO, page 26 ▶

ENCO

▶ Continued from page 25

As important as the studio playback modules are to the usability of the product, an often-overlooked aspect of an automation system is how the library of cuts is populated. DADpro32 offers as many options for production as it does for talent.

The way to populate the audio library is through the record module. This interface performs real-time recording of audio fed to an assigned sound card input, giving the production staff control of audio levels as well as providing an opportunity for quality control. Furthermore, the record process can be automated and scheduled.

DADpro32 can be programmed to select a switcher channel for an input, and record an element on a scheduled basis. The "play while record" functionality enables the playback audio even before it has finished recording. We find this useful in our news operation for the ability to record timed satellite news feeds and play them back within seconds of the beginning of the feed. The anchors enjoy greater flexibility because they don't have to hit the exact feed posts and have greater dynamic control of the clock.

Another production feature of DADpro32 is the ability to record voice tracks into playlists, accomplished via a specific voice-tracking module within DADpro32. Jocks can pre-record their entire show and control the audio segues, fades and timing of the voice tracks from this rather intuitive user-interface.

This module does have some drawbacks, such as the inability to allow two jocks to simultaneously voice-track different day parts on the same playlist. It is possible that heavily voice-tracked stations may not find this module as flexible as it can be, but it has met our needs quite well.

The author says interfacing DADpro32 with ENPS has helped the operation achieve a more streamlined production lifecycle in the newsroom.

The editing interface within DADpro32 allows for a fairly powerful amount of control of the broadcast audio. One can set customized head and tail markers, talk time points, fades and segues, as well as secondary and tertiary silent audio cues. These cues allow for control over external audio sources and broadcast equipment. Additionally, the editor does offer other traditional audio editing features such as cut, copy and paste.

Because the DADpro32 editor is a bit less capable than other third-party audio editing products, ENCO Systems offers its own full-featured multi-track editor, Strata, as an add-on offering to DADpro32.

CoolDad

Like many other stations, we use Adobe Audition/CoolEdit 2000 as our full-featured audio editing suite. ENCO recognized this is the case for many of its users and developed a plug-in to Adobe Audition named CoolDad. This allows the production staff to save audio into the DADpro32 library directly from Audition. Presented as a "Save As" option, a dialog box pops up that allows the user to enter the audio metadata fields available within the DADpro32 library including cut number, title, start date, kill date, out-cue and artist.

This tool has helped to facilitate our newsroom, allowing the reporters easy ability to enter audio into the system.

For remote or large batch processing audio ingestion, the company offers another add-on product, DropBox. This handy tool scans a PC folder or network share for audio. When it detects a new audio file, it copies it into the DADpro32 library. This has been useful to our classical stations, which are in the process of digitizing their vast music libraries.

The real power to this tool is the ability to populate cut metadata by using a customizable naming convention. For example, let's take a WAV or MP3 audio cut titled "67561_Vertigo_U2_Songs" copied to the Dropbox folder. The application would recognize that a new file had been entered and it would copy the audio onto the server — no bandwidth or resource overload; the file copy is throttled by Dropbox. Then it populates the Cut#, Title, Artist and Group fields with 67561, Vertigo, U2 and Songs.

This is done quickly, and large jobs with lots of cuts can be batch-processed. Configuring Dropbox to scan a secured FTP location also can be a handy way to allow secure remote access to the automation system.

What I like about ENCO Systems is their willingness to design customized production systems for a unique workflow requirement. For instance, the WTOP newsroom uses the Associated Press ENPS product. ENCO designed some custom apps and plug-ins to ENPS, offering the DADpro32 Library from within the ENPS interface. The newsroom editors, reporters and writers can audition audio, and assign and play cuts from within scripts and stories.

Furthermore, our specific requirement was to have playlists automatically created and refreshed based on the story ordering mechanism within ENPS called the Rundown. As breaking news dictates the story order change or new stories are inserted at the last minute, these changes automatically are reflected in the control room Airplay module. Interfacing DADpro32 with ENPS has helped us achieve a more streamlined production lifecycle in the newsroom.

If you are looking for an automation system with the flexibility to fit into your existing workflow and production environment, chances are you will find a solution with DADpro32.

For more information, including pricing, contact ENCO Systems in Michigan at (800) ENCOSYS (362-6797) or visit www.enco.com.

TECH UPDATE

AudioScience Releases ASI6416 CobraNet Card

AudioScience has made available its ASI6416 broadcast PCI sound card, which provides CobraNet audio networking. A Texas Instruments 32-bit floating point DSP and Cirrus Logic's CS18102 CobraNet interface allow the card simultaneously to record and play up to eight stereo or 16 mono streams of 24-bit audio over a 100 Mbps Ethernet network.

Features of the company's other ASI6000 series adapters are available such as MPEG 2 and 3 compression, MRX multi-rate mixing, TSX time scaling and mixing.

Drivers are provided for Windows 2000, XP and Linux. AudioScience supplies software that allows CobraNet routing connections to be made between the ASI6416 and other compliant CobraNet devices on the network.

Alternatively, third-party management software may be used, such as CobraNet Manager from D&R Electronica B.V. Visit *www.cobranetmanager.com*.

For more information, including pricing, contact AudioScience in Delaware at (302) 324-5333 or visit www.audioscience.com.

TECH UPDATES

PMDEdit Works With Marantz Solid-State Recorder Line

Marantz says its PMDEdit archival and editing software is designed for integration with the Marantz Pro PMD670, PMD680 and PMD690 solid-state recorders, and the CDR300 and CDR510 CD recorders. Features include file management for applications that require audio archiving, and a non-destructive editing block-based suite.

PMDEdit identifies Marantz Professional EDL markers and splits files based on marker placement for archiving, converts MP2 and MP3 to .WAV for editing. Audio is exported to MP2, MP3, .WAV, .WMA and RealAudio files. Audio tracks are imported from CD, and the company says PMDEdit is good for minute track mode users.

For more information, contact D&M Professional in Illinois at (630) 741-0330 or visit www.d-mpro.com.

BE AudioVault Offers AVProd

Broadcast Electronics integrated a production feature into its AudioVault digital audio system that it says is useful for light recording and editing.

AVProd has a recording function called Quick Record for taking listener calls or actualities. Quick Record can be enabled during on-air sessions by pressing the keyboard space bar. At any time during the session, show hosts or news announcers can tap the space bar again to begin recording. Sources can be recorded in stereo or mono, or via AES/EBU digital input, which is selectable from the tool bar, and can be aired immediately or stored as separate WAV files for later editing and insertion into the day's log.

AVProd offers a suite of editing functions for telephone audio or preparing breaking news stories and sound bites. The company says its three-panel approach to waveform editing makes it easier for broadcasters to work between multiple projects simultaneously while on-air or in production.

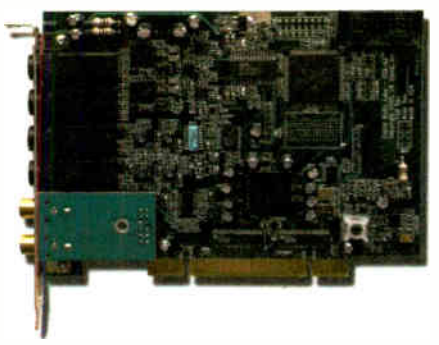
The top pane represents the entire project and shows individual audio clips. The second or clip pane illustrates the audio waveform of the selected clip. This waveform can be increased or decreased in size for easier viewing, or it can be shown as single- or double-sided. The bottom pane is the tape view of the audio, showing the waveform as it moves across the fixed-position play head.

The AVProd screen is user-configurable, allowing for adjustments in color and waveform sizes.

For more information, including pricing, contact Broadcast Electronics in Illinois at (217) 224-9600 or visit www.bdcast.com.

Digital Audio Labs Has Two- and Eight-Channel Interfaces

Digital Audio Labs' CDX-A2 is a two-channel analog and two-channel digital PCI(X) audio interface. The company says the card features an analog converter design with a modular digital interface architecture and word clock I/O. CDX-A2 also has Motorola DSP for low-latency processing. It is scheduled for a May release.



DAL plans to release the CDX-A2 interface in May.

CDX-D8 eight-channel digital interface card features four AES/EBU I/O pairs, word clock I/O and two 24/96 analog outs for monitoring. Also included is the company's WavSync system, which enables multiple CDX-D8s to be connected and synchronized for larger multi-channel applications. Supported sample rates include 32, 44.1, 48, 88.2 and 96 kHz, and supported resolutions include 16 and 24 bits per sample. A non-audio mode enables transfer of encoded streams.

For more information, including pricing, contact Digital Audio Labs in Minnesota at (952) 401-7700 or visit www.digitalaudio.com.

How to Submit Letters

Radio World welcomes your point of view on any topic related to the U.S. radio broadcast industry.

Send letters via e-mail to *radioworld@imaspub.com*, with "Letter to the Editor" in the subject field; fax to (703) 820-3245; or mail to Reader's Forum, Radio World, P.O. Box 1214, Falls Church, VA 22041.

USER REPORT

Weather Service Reports to Studio

Prophet NexGen Software Enables DayWeather To Transfer Warnings, Updates to Station

by Don Day Jr.
President/Chief Meteorologist
DayWeather Inc.

CHEYENNE, Wyo. DayWeather Inc. has been providing weather forecast and broadcast services for dozens of radio stations across the Rockies and High Plains since 1992.

DayWeather first began delivering programs to radio stations via a phone feed. While a reliable way to deliver the program, the audio quality of phone feeds was lacking. Many times the programs were over or under-modulated, the audio levels between the forecast and advertisements would be unbalanced and DayWeather would incur high long-distance phone bills delivering the programs.

Then digital audio (MP3/WAV) and the Internet came along. Digital audio gave us the ability to produce weather broadcasts that sounded great and were easy and inexpensive to create, while the Internet enabled us to deliver the programs to their radio clients quickly via e-mail or FTP download. MP3 or WAV files easily could be put into automation or played directly on air from a studio PC.

Don Day Jr. in the DayWeather studio.

It seemed that the hurdles of getting good-sounding programs to radio stations quickly, reliably and inexpensively had been overcome. However, DayWeather soon found out that there were unforeseen pitfalls with MP3/WAV production and Internet delivery.

Rain delay

A great-sounding weather forecast does no one any good if it is a week or even a day old. DayWeather began receiving phone calls from irate listeners with complaints that the forecasts they were hearing were outdated or played during the wrong time of day.

While most radio stations faithfully were downloading the latest weather programs, many would forget to delete old forecasts from their automation. Old forecasts would sometimes run and we didn't have the flexibility to change our weather forecasts if Mother Nature changed her mind.

The only way to solve the problems inherent with Internet delivery was to find a system that allowed our programs to be produced in a digital audio format and delivered to stations in a seamless manner. The Prophet Systems NexGen Digital system fit the criteria.

We are meteorologists and not radio engineers, so we needed a system that was easy to learn. We deployed NexGen for the cost of a computer and the Remote Studio software. Our forecasters mastered its production, VoiceTRAC and WANcasting features quickly.

With NexGen, DayWeather could continue to produce its programs in Cool Edit/Adobe Audition and deliver its programs via Internet. However, instead of radio stations having to download the programs on their own, the optional WANcasting module of NexGen allows DayWeather to produce and edit its programs in digital audio and then transfer the program via Internet directly to the radio station's programming computers.

WANcasting enables the transfer of data across systems and stations using NexGen Digital and AudioWizard via wide-area network linking. The data transferred can consist of audio, VoiceTRACs and logs.

In some instances, we can insert our programs directly into programming within minutes before the weather program is played on air, which is important when informing the public of rapid weather changes. DayWeather can update listeners or issue a severe weather warning without assistance from anyone at the station.

We can record the new forecast or alert in NexGen's VoiceTRAC mode and immediately transmit the program. The voice track is heard exactly the way it will sound on the air, and we can adjust the fade, zoom in for a closer look at a particular section, export the voice track into a multi-track editor to add and mix elements, tweak segues and adjust cross-fade points.

The program then is automatically inserted into the station's programming. A secure virtual private network is used for secure Internet delivery to the stations.

NexGen and WANcasting technology play a vital role in making sure a station's listeners have the most current forecast and weather warning information.

For more information, including pricing, contact Prophet Systems Innovations in Nebraska at (877) 774-1010 or visit www.prophetsys.com.

ProFiler client success stories. Everyone post!

"ProFiler gives our Program Directors access to logged audio on any station PC. They're delighted."

Jim Davies, KSUI/WSUI
University of Iowa

"ProFiler solved a particular problem for us with WAXY because we needed to keep this 'logger' off our house LAN and give access to it to non-employees whose computers live on a totally separate network. ProFiler fills the bill nicely."

→ Gary Elvy, Jefferson-Pilot Miami ←

"We're running 3 ProFilers at our stations in New York. I want to keep audio logs for years, not just months. So I installed a terabyte hard drive, I can store 4-5 years of audio on it! I love ProFiler."

Mike Tocco, SBS New York

"Even sales people who aren't computer savvy can use it. Ours learned ProFiler real easily – now they save spots and send them to clients without having to ask production."

– George Seifert –
WAKS - WCHE - WQMX

"No more forgotten aircheck since ProFiler is automatic. It saved at least one student from failing last year, since he kept forgetting to roll tape. It's hassle free!"

– Professor Mark Seigenous
KTIS, Northwestern University

There was a notice of proposed rulemaking, so I decided to install **PROFILER** just in case the Commission decides to require it – it's a good defensive move. ProFiler's doing great: it's effective, it's easy to access audio... It does the job."

Jeff Zeismann, WNKR-FM

"We had a problem with competitors recording our live sports broadcasts and rebroadcasting them in their own news. We used ProFiler's scheduled record feature to spot record those stations... then our lawyers took care of them. We're very pleased with ProFiler... I bought four of 'em!"

Dennis Eversoll, Susquehanna Indianapolis

"We'll have internal audits required by the University, or a University official will get a request for a transcript, so we use ProFiler for long form logging and skimming. I use removeable drives & get a year's worth of audio; when one's full I just pull it out and store it."

– Jeff DePolo, WRTI-FM
Temple University, Philadelphia

"We use our hard-drive playout system to record and re-air portions of our morning and midday shows. We use ProFiler as a backup recorder as well as for logging and skimming, and it's saved us a few times! Plus, when the jock says 'I did the greatest bit in the world!' it's nice to have an immediate high-quality version for promos or archiving."

>> Erick Steinberg, KFOG, San Francisco <<

We call it ProFiler. Our clients call it indispensable.

What would you do with a **computer-based audio logger?** Telos ProFiler's MP3 audio logging features alone (expandable to capture up to **8 streams** one one PC) are enough to satisfy most folks, but ProFiler is loaded with other tools... like a **skimmer** that switches to a higher bit-rate when the mic is open, **export functions** that help you assemble great-sounding airchecks and composites quickly, and remote **access via IP.** But – as you can see – our clients tell us that ProFiler helps them do even more.

Now, it's your turn. Tell us how *you'd* use a software logging package this powerful and you could win your very own copy. First, discover all of ProFiler's capabilities by browsing **www.telos-systems.com/ProFiler/**. Then, tell us what problem ProFiler could solve for your station; e-mail your ideas to **ProFiler@telos-systems.com** by March 31, 2005. If yours is the coolest, we'll send you a **free ProFiler*** (plus, we'll use your idea in one of our upcoming advertisements).

Telos ProFiler. How will *you* use it?

Telos
AUDIO | NETWORKS

*Free ProFiler p/n 2201-00017, includes software and one Telos ProFiler audio card.

Products & Services SHOWCASE

TECH UPDATE

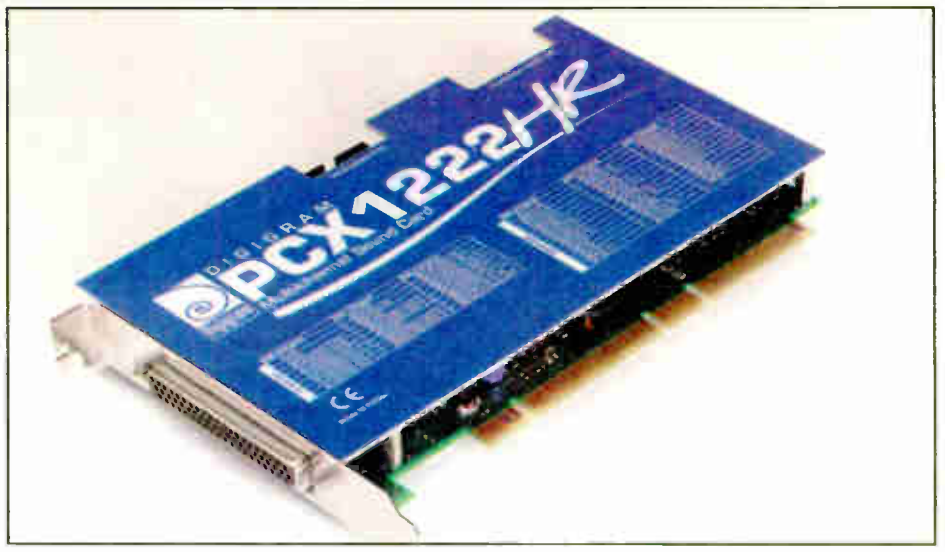
Digigram Adds to Its HR Sound Card Series

Digigram says its PCX1222HR mulitchannel sound card is an extension of the company's HR series of PCX cards. It features one stereo input and six stereo outputs in balanced analog and AES/EBU formats, and is suitable for production and live-assist systems in radio.

Because only one PCI slot is occupied in the host computer, the user can feed six different stereo signals to the production console while recording the program to hard disk. The PCX1222HR supports the simultaneous playout of two 5.1 surround signals.

The HR series offers 24-bit/192 kHz converters, drivers such as Digigram np Runtime, WDM DirectSound, WAV and ASIO, hardware sample rate converters and a 66 MHz/64-bit PCI interface. I/O connections are available on a breakout cable or a rackmountable external breakout box.

For more information, including pricing, contact Digigram in Virginia at (703) 875-9100 or visit www.digigram.com.



The PCX1222HR sound card.

360 Systems Short/cut 2000 Records, Edits

360 Systems says its Short/cut 2000 hard-disk recorder and editor is faster than Short/cut Editor and replaces earlier analog and tape machines, as its operating controls combine features of tape machines and word processors.

Short/cut 2000 also enables fast recording for on-air shows. It can enter Record mode quickly from the previous mode, and new recordings can be titled using the keyboard. If the user is in a hurry, cuts will be auto-named.

Editing functions include a large scrub wheel that provides a simulation of rocking a tape reel while an illuminated LCD shows large waveforms with variable zoom resolution. Like a word processor, segments can be highlighted for basic cut-and-paste operations. Selected regions also can be previewed, looped, gain adjusted or moved. Individual ARM buttons permit single-track editing and insert recording, which the company says enables flexibility when preparing news interviews and call-in segments.

Edit marks can be placed on the fly during recording or playback to identify regions for instant access in the future. A Find command can locate directly to any point in the recording. To retrieve a file, type its name on the keyboard. A Zero Mark also is included, which is similar to Reset on a tape machine.

Recordings can be copied to several cartridge disks, and removed like a reel of tape. File translation programs enable them to be played on equipment from other manufacturers.

A parallel-port (25-pin D) is provided and connects to drives having this interface. An optional SCSI card is available on special order to connect drives employing that standard. The SCSI card can be added after taking delivery on the Short/cut 2000.

Short/cut 2000's D-NET File Transfer Network uses standard AES digital outputs to transfer files to other 360 Systems products for playback. Transfers include cut names, ID numbers, running times and formatting information.

For more information, including pricing, contact 360 Systems in California at (818) 735-8226 or visit www.360systems.com.

USER REPORT

Phantom Has Post-Log Edit Tools

Wilkins Communications Network Uses Phantom MPIII For Traffic Management, Cart Information Editing

by Greg Garrett
Network Operations Director
Wilkins Communications Network Inc.

GREENVILLE, S.C. I'm not an engineer. I don't pretend to be an engineer. I'm just an all-around radio guy who's been in the business for 26 years and loves every aspect of it. From a user standpoint, I can certainly attest as to what a tremendous asset the recent addition of the **Register Data Systems** Phantom has been to our various operations. When it comes to radio automation systems, there are many names from which to choose, and the list always seems to be growing.

In my position as network operations director, my goal was to find an automation system that is powerful, adaptable and expandable, and easy to program and maintain by even the most non-technical member of the staff.

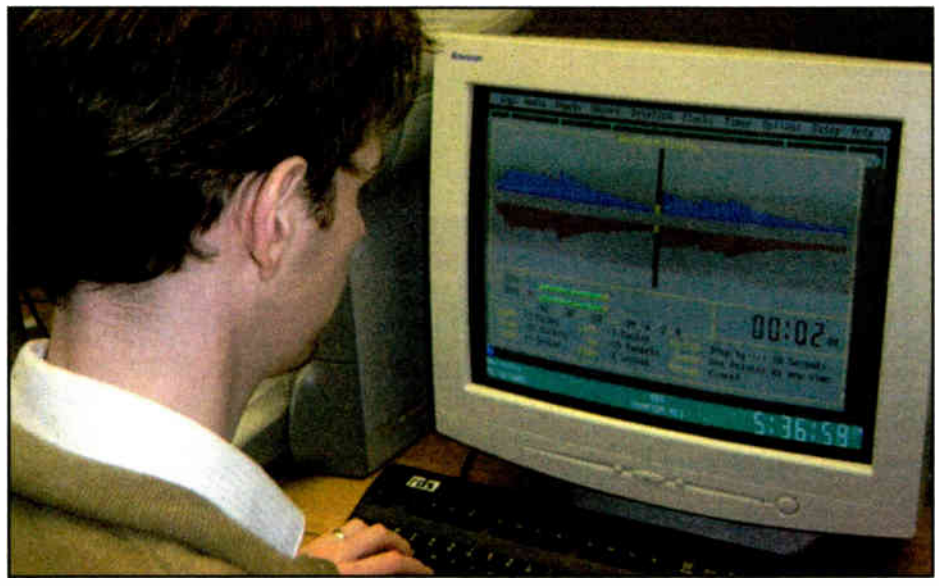
Automation Factor

Having been introduced to The Phantom MPIII several years ago at another company, I was familiar with its ability to run a simple satellite-delivered format, but I wasn't aware of the other features incorporated into the system.

We needed automation that could be programmed using a standard traffic package, and would be able to handle live satellite and network programming, operator-assisted time slots, deal with network rejoins and optional breaks and retime and auto-fill short breaks without special programming commands from the traffic package.

Furthermore, we wanted to handle voice-drops, including local overlapping audio from the hard drive, to record/splice/bulk separate network feeds, and flow between local and network programming, without the sloppy sound I've heard on so many stations.

The Phantom retimes a local or network break without commands, or having manually to highlight or select breaks from the log to adjust. It monitors control room equipment simultaneously, including all items connected to the audio switcher, audio from the console, all satellite receiver ports (independently or simultaneously, as needed), and to be able to adjust the system clock utilizing time-synch codes or closures.



Anthony Norman, station manager of KCNW(AM) Kansas City, edits in Phantom.

We can record satellite feeds for rebroadcast while simultaneously playing other source material from the hard drive, utilizing the same audio card. I wanted to be able to play MP3 audio, not just WAV or MP2 audio. We needed to interface with a PC connected to the Internet in another studio to extract audio from CDs digitally and bring files from Internet servers into the main control room.

The Phantom MPIII automation system also offers post-log editing features such as Quick Break, which facilitates cart insertion for on-the-air playback of quick news updates or long-running programs. Additionally, I can go into the log and edit, or edit a programming clock from the log entry position, which RDS says saves programming time and permits time for last-minute changes without importing a new log.

Phantom stores general information about each recorded cart. In the Record Audio screen, type in the cart's name, description, out-cue, start date, end date and desired length. The system does not air a cart before its start date or after its end date.

The user may change the length of a cart, a feature used automatically when re-timing breaks. Phantom uses the original recorded length, the desired length specified or any variation needed to retime each spot in the stop set. The result is a break within a fraction of a second of the scheduled length. RDS says this dynamic break re-timing is important to satellite programming where short or long breaks are big mistakes.

Production tools such as Splice Editor let the user trim dead air from the heads and tails of carts, as well as allow for the assembly of segments from various cuts into composite carts. The Bulk Separator lets the user split bulk feeds or long-form programs into individual carts for ease of integration into the log.

The Phantom operates in a Windows environment, but also is available in DOS models for those who are still a little reluctant to trust Windows for a total walk-away system. Although several engineers who have had nightmarish experiences with other systems have commented on how trouble-free the Phantom has been for our operations.

For more information, including pricing, contact Register Data Systems in Georgia at (478) 745-5500 or visit www.registerdata.com.

TECH UPDATE

Pristine CDS32 Manages Markers, Produces Promos

The CDS32 Content Delivery System from **Pristine Systems** is a live assist, satellite automation and music-on-hard-drive system. Its Cart Information Editor's Marker Point Manager provides a real-time method of setting points of interest in an audio file.

There are two sections to the interface. The main section of the form allows the user to play the current audio file and click Mark buttons to set the intro, and the default trip point. The optional Preview Clip Markers section is used to mark a segment of the audio cut, which may be used for purposes such as producing promos.

The + and - buttons are used to make fine adjustments to the marked points. Clicking with the left mouse button changes the marked point by 0.01 seconds. Clicking with the right mouse button changes the marked point by 0.1 seconds.

CDS32 Auto Promo Builder creates "coming up next" style promos using clips of songs and/or companion voice files. Promos are created live at playtime so they accurately reflect any recent music log changes.

The structure of each promo is configured through a promo template that specifies the elements to include. A typical promo might have an opening voice file, followed by a short voice file that identifies the artist and/or song, followed by a brief clip of the hook of the song. Usually several of these voice/song combinations are played, followed by a closing voice file or jingle.

Each song that could be promo-ed must have its Preview Clip markers set using the Manage Markers button in the Cart Information Editor. Voice files must be recorded for use with song clips. Voice files are normal carts that have the same filename as the Music file they accompany with a ~ character added.

For more information, including pricing, contact Pristine Systems in California at (800) 795-7234 or visit www.pristinesys.com.

TECH UPDATE

Audion Adds Effects to VoxPro PC

Audion Labs says version 3.3 of VoxPro PC digital editing software incorporates features for on-air users. Its screen interface and editing capabilities work on computers with Windows 2000 or XP-Pro. An optional control panel or computer keyboard is used for applying editing functions.

Other features include more efficient deleting, copying or moving of files from user-to-user or room-to-room; gain adjustment after recording in single or both tracks; and compatibility with most sound cards. Formats such as MP3 are imported and exported.

The company says it fixed networking bugs from prior versions of 3.3. For instance, if user A was copying files to user B on another machine while user B was actively recording or editing, the record/edit operation would fail. Likewise, if user B were importing a file while user A attempted to copy files to user B, that copy operation would also fail. The glitch has been corrected.

Additionally, Audion says some warning/error boxes were not being displayed in the foreground and were instead hidden behind other dialog boxes or the VoxPro main window. This problem was acute on XP machines. Dialog boxes, including the floating progress bar, are now positioned correctly in Windows Z-order.

Other added effects include the ability to stretch or compress an audio segment in time without altering its pitch, or conversely, to alter the pitch of a segment without affecting its timing, or length. Also, Microsoft Direct Music Objects found on the computer are available for use in the Effects menu. For example, DirectX 9 includes echo, reverb, chorus, flanging, compression and distortion effects.

For more information, including pricing, contact Audion Labs in Washington state at (206) 842-5202 or visit www.audionlabs.com.

BROADCAST Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

Want to Sell

ANTENNAS/TOWERS /CABLES

Want to Sell

Pirod 180' self support 6' base. James Phillips, WOOO LP, POB 438, Pauldine OH. 419-782-8592.

3-Bay tuned to 103.1, with 150' foam coax, on tower, buyer to remove, used as back up through 2002. BO. Bruce Kierking, KNDY, 1212 11th Rd, Marysville KS 66508. 785-562-2361 or kndy@bluevalley.net.

Shively 4 bay w/radomes tuned to 103.1 FM. Removed for upgrade 2002, $4000/BO; 300' 1-5/8" gas coax on tower, buyer to remove, BO. Bruce Kierking KNDY, 1212 11th Rd, Marysville KS 66508. 785-562-2361 or kndy@bluevalley.net.

Want to Buy

3-1/8" and 1-5/8" coaxial relays. Continental Communications, 314-664-4497, Fax 314-664-9427, ccontcomm@sbcglobal.net.

CART MACHINES

Want to Sell

Broadcast Electronics Series 2100C (4) old cart machines, one record unit and three players, units are without top covers and may need slight repair, $200 takes all four units and a 96 cart rack, individual unit purchase possible, delivery possible. Jeff Riehl, Bethel College Radio, 1001 W McKinley Ave, Mishawaka IN 46545. 574-257-2542 or 574-252-8601 (leave message).

ITC 99-B stereo record/playback in excel cond, $350. Tom Toenjes, KJTY, 1620 Riley Cr, St Marys KS 66535. 785-640-6047, tomt@oct.net.

COMPLETE FACILITIES

CONSOLES

Want to Sell

ADM 3643 stereo broadcast console, 36 mixing channels, 24 mic/12 line, 4 subs, 3 output masters includes patch panel rack. FREE! Pay moving expense. Bob Heiney, 281-460-6043 or bbheiney@sbcgloval.net.

Gates Yard tube type mono console, $250. Tom Toenjes, KJTY, 1620 Riley Cr, St Marys KS 66535. 785-640-6047. tomt@oct.net.

Ramko DC 38-10S, old broadcasting board, comes with manual and extra parts, 10 channels w/4-input capability per channel, audition and pgm. Outputs, needs some fixing up, $400/BO. Jeff Riehl, Bethel College Radio, 1001 W McKinley Ave, Mishawaka IN 46545. 574-257-2542 or 574-252-8601 (leave message).

DISCO-PRO SOUND EQUIP

Want to Sell

Shure M267 classic 4-channel mixer in good condition, $90. Mark Larsen, KBQR, Box 20335, Piedmont CA 94620. 510-465-6035.

Shure M267, new in box, $250. John Brewster, Radio Deluxe, 2401 Blanche Rd, Manhattan Beach CA 90266. 310-546-6451.

LIMITERS/AUDIO PROCESSING

Want to Sell

Drban 8100A Optimod. James Phillips, WOOO LP, POB 438, Pauldine OH. 419-782-8592.

CRL SG-800, etc. FM processor in excellent condition, $750. Tom Toenjes, KJTY, 1620 Riley Cr, St Marys KS 66536. 785-640-6047, tomt@oct.net.

Want to Buy

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

CRL SEC 800 spectral energy compressor. Randy Swaffer, WEEN, 231 Chaffin Rd, Lafayette TN 37082. 615-666-2169.

MICROPHONES

Want to Buy

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

MISCELLANEOUS

Want to Sell

Antique record cutter, complete RCA 73A. James Phillips, WOOO LP, POB 438, Pauldine OH. 419-782-8592.

Comrex DXR-1 codec G.722 codec for OSO data circuit, both ends, 1 yr old w/Adtran modems, $1500. Dave Bischoff, KPAM, 888 SW 5th Ave, #790, Portland OR 97204. 503-552-3291.

Want to Buy

1-5/8" motorized 4-port RF coaxial switch. Preferred motor voltage 120vac. Preferred control voltage 12 – 24vdc. Gary Curtis, KTLW, 818-779-8455 or email: gcurtis@ktlw.net.

MONITORS

Want to Sell

Belar FMS-1 modulation monitor with instruction book, $495. Hugh or Carol Ellington, Ellington Radio Inc, POB 468, Brewtor AL 36427. 251-867-4824.

RECORDERS

Want to Sell

MCI J110 1/2 studio r-r, Ampex 351 stereo. James Phillips, WOOO LP, POB 438, Pauldine OH. 419-782-8592.

Dtari DTR85 DAT recorder w/manual, like new, $600. Danny Brou, KJMJ, 212 Wainwright Rd, Pineville LA 71360. 318-445-4843.

REMOTE & MICROWAVE

Want to Sell

120 Watt Vocom STL amplifier. 8.8 watts input. "N" female I/O connectors. Includes rack ears. $1500. Call John at 217-220-1195.

Dolby/Marti 2 channel digital DSTL. $12,500 when new. $8000 or best offer. Call Jaycee Marshall, 817-219-1178.

Moseley STL complete composite 6010 Tr + 606 Rec, 948.000 mHz, Harris CD Link, CDL 950R, Dolby DP5501 + DP5502 DSTL. James Phillips, WOOO LP, POB 438, Pauldine OH. 419-782-8592.

SATELLITE EQUIPMENT

Want to Sell

Complete Ku Band Uplink! SierraCom 2600 VSAT controller, Comstream digital audio codes/Mux, Comstream PSK digital modem, BO. Bob Simmons, Simmons Bdctg of North Dakota, 9453 Highway 1, Langdon ND 58249. 701-256-1080 ext 12.

STATIONS

Want to Sell

2 AM Radio Stations: both 1kw day & night non-directionals. Located 26 miles apart in W. Texas. Recent upgrades with solid state transmitters and land. 2004 sales $183,000, profitable and growing. Dwner retiring. Contact Jim Hoffman at 520-818-9441. Email: jfhoff@att.net.

KDDK-FM/KFRA-AM Franklin, Louisiana. Upgraded, renovated, automated. $895,000 with seller financing. 337-924-7102; kddk@bellsouth.net.

TAPES/CARTS/REELS /CD's

Want to Buy

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357

TRANSMITTERS

Want to Sell

McMARTIN BF-5K, 5kW FM. Factory rebuilt in perfect, like new condition, includes new tubes, tested & tuned on your frequency. Guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Enterprises Inc, 402-493-1886.

CCA 5KW FM xmtr, 1987, model 5000G w/spare tube, single phase, grounded grid, solid service, removed for upgrade3 2002, $12,500/BO. Bruce Kierking, KNDY, 1212 11th Rd, Marysville KS 66508. 785-562-2361 or kndy@bluevalley.net

Harris B, Gates 1, 1kw transmitter on 1560, bought in 1998, great condition, all as is. Buyer responsible for S/H, $7000. Gary Hayes, WATJ/WKKY, Geneva OH 44041. 440-466-9559.

Harris BC10H, 10kw AM in good cond, 1410 kHz, $4000. Tom Toenjes, KJTY, 1620 Riley Cr, St Marys KS 66535. 785-640-6047. tomt@oct.net.

Consultants

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Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations *only*. All other end users will be charged. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

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Radio World

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10-19 col inch (per inch)	$95	85	75	65
Distributor Directory	$135	130	125	120
Professional Card	$105	100	95	90
Station/Studio Services	$200	170	145	124
Classified Line Ad	$2/word			
Blind Box Ad	$15 additional			

Call Simone Fewell, Ext. 154, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA, MASTERCARD and American Express.

www.rwonline.com

TRANSMITTERS Cont.

Harris MX 15 FM exciter, 1984, removed for upgrade 2002, $1000/BO. Bruce Kierking, KNDY, 1212 11th Rd, Marysville KS 66508. 785-562-2361 or kndy@bluevalley.net.

Optimod 8000A FM exciter in excel cond, $700. Tom Toenjes, KJTY, 1620 Riley Cr, St Marys KS 66535. 785-640-6047. tomt@oct.net.

Want to Buy

AM Phasors, phasor parts, AM-19 phase monitors, RF switches, AM Transmitters. Continental Communications, 314-664-4497, Fax 314-664-9427, ccontcomm@sbcglobal.net.

TUBES & COMPONENTS

Want to Sell

4CX250BC used tube in good condition. Made 100% power when last used. Was kept as stand by, $75; 4CX250BC (NEW) tube, $100. A. Martin, 27518 County Rd 3, Merrifield MN 56465. 218-765-4321.

EMPLOYMENT

HELP WANTED

Broadcast Engineer: Muskingum College, located 70 miles east of Columbus, Ohio seeks broadcast/radio-TV systems engineer. Full-time position provides technical and operational support for radio/TV studios, transmission systems, and classrooms; maintains technical compliance with FCC regulations for the college's noncommercial FM station and provides expertise in installing and maintaining analog and digital audio/video systems and computer networks. Minimally requires Associate's Degree in Broadcast Engineering or equivalent professional experience. Review of applications will continue until position is filled. Send cover letter, resume, transcript, and contact information for three references to: Jeff Harman, Director of Broadcasting, Muskingum College, 163 Stormont Street, New Concord, Ohio 43762. EOE.

CLEAR CHANNEL RADIO

Clear Channel Radio has openings for Market Engineering Managers in several markets. Successful candidates will oversee all technical aspects of the market and must be highly skilled not only in technical matters, but also exhibit strong management skills. This position will have substantial hands on requirements, so if you are looking for a desk job, this probably isn't for you.

Clear Channel Radio leads the industry in technological innovation and support for quality engineering. We offer Excellent Pay, Technical Training programs, 401K, Employee Stock Purchase Plans, Great Benefits and many Opportunities for growth and advancement.

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Contact:
Steve Davis – Sr. Vice President - Engineering
Clear Channel Radio, 2625 S. Memorial Dr., Ste. A
Tulsa, OK 74129, 918-664-4581 Fax 918-664-3066
stevedavis@clearchannel.com

Clear Channel is an Equal Opportunity Employer.

Missouri AM/FM seeks assistant Chief Engineer. Knowledge of studio and transmitter maintenance and repair, hard drive automation, computer and networking. EOE. Resumes to: HYPERLINK "mailto:kbrooks@j98.com" kbrooks@j98.com or Fax: 573-756-1110.

POSITIONS WANTED

Looking for Experience? 2 years in broadcasting, 8 years of production. Worked for highly rated stations, and familiar with radio production software. Contact Eric, 817-726-2295.

Powerful voice! Charismatic, lively, hard working individual capable of producing commercials, voice-overs, sportscasting, on-air work, etc. Willing to travel. Luan Aliji, 972-875-9904 or gostivar34@sbcglobal.net.

Program Directors, seeking an experienced, versatile broadcaster? Sports, new, production, I'm it! Hard working, and willing to do what it takes. John Lewter, 580-775-3774 or abcjohnlewter@yahoo.com.

Recent ABS grad ready to relocate for the right position in sports talk, play-by-play, color, on-air DJ, production and copywriting. Ryan, 405-226-2509.

Searching for radio excellence...jackpot! 26 years young, chameleon female jock. Any genre, willing to relocate. Excellent voice, boards, and production. Monica, 817-874-3804 or alonsomonica@sbcglobal.net.

Stop looking! Female jock you want! 29-year old, willing to relocate full of excitement and passion. Great voice, boards, and copy. Amy Baker, 817-874-3804 or jinx75@sbcglobal.net.

ABS graduate, creative writer, a natural at production with a great voice, willing to travel for that big break. Tony, 405-376-5169 or tonjudi@msn.com.

Love radio, ready to work! Excellent at production, both video & audio, seeking production, imaging, sports, news or an air show. Vince 972-613-9792.

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31	AEQ	www.aeqbroadcast.com
10	AudioScience	www.audioscience.com
33	Autogram Corporation	www.autogramcorp.com
13	Axia, A Telos Company	www.axiaaudio.com
16	Belar	www.belar.com
33	Broadcast Devices, Inc.	www.broadcast-devices.com
15	Broadcast Electronics	www.bdcast.com
17	Broadcast Electronics	www.bdcast.com
24	Broadcast Warehouse	www.broadcastwarehouse.com
19	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
33	Circuit Werkes	www.circuitwerkes.com
7	Comrex	www.comrex.com
1	Continental Electronics	www.contelec.com
30	Cortana	www.cortanacorporation.com
3	Electronics Research Inc.	www.eriinc.com
26	ESE	www.ese-web.com
33	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
22	Grace Broadcast Sales	www.gracebroadcast.com
23	Heil Sound Ltd	www.heilsound.com
30	Henry Engineering	www.henryeng.com
8	Inovonics	www.inovon.com
6	Kintronic Labs	www.kintronic.com
22	Kozacko Media Services	www.fybush.com
30	Mager Systems	www.magersystems.com
9	Omnia, a Telos Company	www.omniaaudio.com
21	Orban	www.orban.com
5	Radio Systems	www.radiosystems.com
30	S.C.M.S.	www.scmsinc.com
18	Scott Studios	www.scottstudios.com
27	Sierra Automated Systems	www.sasaudio.com
25	Sine Systems	www.sinesystems.com
33	Studio Technology	www.studiotechnology.com
29	Telos Systems	www.telos-systems.com
11	Valcom	www.valcom-guelph.com
2	Wheatstone	www.wheatstone.com
39	Wheatstone	www.wheatstone.com
40	Wheatstone	www.wheatstone.com

READER'S FORUM

HD Radio

▶ Continued from page 38

a great format, bother you?

Maybe it should. And here's what I suggest Ibiquity do about it. If Ibiquity has a marketing rep, the company should give him a new set of marching orders: "Get visible to the public, *now!*" If those orders are already delivered but not being followed, get a new marketing rep. Either way, get visible with the public immediately.

Do what it takes to get HD Radio on the air and listened to, everywhere. The audio quality, on both FM and AM, will sell itself. It sure beats having the public pay $10 and up for radio every month.

Addendum: I am not alone in my thinking, nor did I think I'd be. The president, CEO and chairman of Emmis Communications, Jeff Smulyan, has echoed similar sentiments, quoted in Inside Radio in January. As my friend from a small-market operation put it, "There seems to be too many parallels to the situation which occurred with AM stereo in the 1980s and '90s."

That sort of thinking is going to have to stop, and it's Ibiquity that has to take the lead in stopping it — Crawford, Clear Channel and the major markets notwithstanding.

The major markets are, for the most part, embracing HD Radio. I don't have a problem with that. And ironically, it's in the major markets where XM and Sirius have, to this point, the lesser measure of success, simply because local radio there can satisfy almost any taste.

But it's in the medium and small markets where HD Radio is most needed, because it is in the medium and small markets where the lesser choices opens the door widest for the acceptance of satellite radio. It's exactly there where the listeners need to know there is a quality audio alternative to paying $10 a month just to listen to radio without any possibility of local content. And it's exactly the place where HD Radio isn't happening yet.

But time is running out. The time to make the big marketing move is now, Ibiquity. You, and radio broadcasting in this country, have too much to lose to not to get the population of the United States on your bandwagon and keep them there.

This commentary appeared in The Local Oscillator, the newsletter of Crawford Broadcasting Co. Corporate Engineering. The author is chief engineer for Crawford Broadcasting Co./Chicago.

Modulation Clarification

I believe Skip Pizzi has it backwards in his article ("Digital Radio, Surrounded," Jan. 19) when he says vertical groove modulation represents L+R and lateral L-R. Proof, of course, would be to play a mono record on a stereo set. If lateral represents L-R, a conventional mono LP recording, which is lateral, would reproduce out of phase in the two stereo channels.

It also should be noted that while stereo playback systems were backward compatible, the stereo discs themselves were not playable on most monaural phonograph systems, as the mono playback systems were almost never designed with stylus compliance in the vertical direction. The L-R components would, when resisted by the stylus, cause tracking problems and distortion while their own peaks managed to be chiseled off of the groove.

David Morrison
Columbia, S.C.

Skip Pizzi responds:

David is correct. The way this was worded in the article is inverted: the L+R signal is modulated laterally and the L-R is modulated vertically in the Stereo 45/45 disc cutting format, thus making it backward compatible for playing mono discs with stereo cartridges — but not vice-versa. This is why separate mono and stereo records were sold for a number of years — like leaded gasoline.

Put another way, the left-channel audio is modulated perpendicular to the inner groove wall, and the right-channel audio is modulated perpendicular to the outer groove wall. (Both groove walls are diagonal, and they meet at a right angle at the bottom of the groove, hence the 45/45 nomenclature, referring to each groove wall's deviation from vertical.) Thus if the left and right channel's audio is the same and in phase (i.e., proper mono), there is only lateral modulation in the groove.

Some of us can still dimly recall when this was all common audio engineering knowledge, but it's now historical lore that we have to look up. (That's my excuse and I'm sticking with it.) My apologies for the error, and thanks to David for catching it.

Memory Lane

I greatly enjoyed your mention of WCCO's amazing 80th birthday yearbook ("WCCO's Yearbook Is a Treasure," Dec. 15).

It has some personal significance to me, as Brian Whittemore, the former WCCO GM who gave the go-ahead for the book project, was the guy who hired me (fresh out of college) at WBZ(AM), bringing me on board as a morning tape op/cart slinger for what was probably just about minimum wage.

I'll never forget the way he pitched the job to me: "You won't get rich or famous, but it's a great foot in the door," which indeed it proved to be.

I've lost track of his whereabouts in recent years, and would love to hear from anyone with current contact information to put us back in touch.

Scott Fybush
Rochester, N.Y.

Note: A spokesperson for WCCO confirms that the limited quantities of the book shipped to Borders Bookstores have sold out and there are no plans to reprint.

GUEST COMMENTARY

Reis: HD Radio Has A Marketing Problem

IBOC Will Never Hit The Masses If Marketing, Promotion Aren't a Priority

by Art Reis

I had a talk the other day with a longtime friend and fellow radio geek-wizard in a smaller market. I asked him what his station's plans were for digital broadcasting. His answer was, "None."

"Never?"

"Nope. Not for the foreseeable future."

"Why?"

"The fees, the lack of radios and XM and Sirius are running marketing rings around Ibiquity out here. Nobody knows about IBOC. Who cares?"

I know that this story is anecdotal, but it does beg the real question: "Ibiquity, Ibiquity, where art thy marketing?"

Consider:

• How many times have you heard an ad for the Ibiquity in-band, on-channel HD Radio digital, CD-quality radio in *any* media, print or broadcast?

• How many ads have you heard or seen for Sirius Satellite or XM Satellite?

You don't have to tell me your answers. It wouldn't be something you'd want to share anyway, and most of us have the same answers you do.

Folks, we have a problem here. It is called public relations at Ibiquity, or rather, the lack of it.

Where is the marketing support that is supposed to help launch Ibiquity IBOC HD Radio into the public mainstream of the electronics industry? Where are the ads on radio, TV and in print? As it stands right now, Ibiquity isn't even on the public's radar screens. Just walk into any Radio Shack and ask about Ibiquity or HD Radio. You've got questions, they've got just blank stares. Or, their response is, "Oh, yeah! Sirius! Sure, we have that! Right over here!"

That, folks, is a danger sign.

Can't forget the Motor City

How come there were, until mid-2004, *no* Ibiquity HD Radio stations in the most important market in the country for all new mobile sound technologies, Detroit? Didn't *anyone* at Ibiquity understand how important it was that Detroit be one of the *first* markets into which HD Radio should have been introduced? Doesn't *anyone* understand that *all* the decision-making about such things as the makeup of in-car sound systems, including the Japanese and many of the European cars, are made first in Detroit? Doesn't *anyone* understand that it is the auto industry that usually leads in the development of sound technology?

I'm from Detroit, so I understand this. In Detroit, the automobile absolutely rules, so it is important that anything reliant on the automobile be involved with Detroit. Every marketing major in college should — why doesn't Ibiquity?

Crawford Broadcasting, Clear Channel and other broadcasting chains have committed themselves to the growth and development of HD Radio on their stations across the country. They've had to, in their own enlightened interests. But that's only half the battle. That's the choir talking to the choir. We need to get the word to the congregation — the listeners — and get them interested and involved. They have much to gain by doing so. We as an industry have much to lose if we don't.

Note the waivers

Ibiquity's licensing fee revenues will be much greater for receiver sales than they ever could be for the transmitter end. Which brings me to the next point: Just where is the good in charging all broadcasters a license fee for the use of the technology, given the circumstances I've just mentioned?

Note that when push came to shove, those Detroit-area broadcasters that signed up to inaugurate HD Radio in Detroit, on an emergency basis, were rewarded with license fee reductions or outright wavers. That should be another message to the folks at Ibiquity: Charge the license feeds on the consumer end and keep them low. And cut out taxing the broadcasters for making your technology available to the end-user. Your reward will be at the bank.

The problem of marketing HD Radio where there are no HD signals yet also will be solved, a problem XM and Sirius don't have. Make the signals happen, market it, keep the receiver licensing fees low, remove the licensing fees for the transmit end and they will come.

I have a partial solution, but it asks: Is Ibiquity's solution to its marketing shortcomings simply to turn the marketing of the technology over to the local stations that use it? If so, why didn't they just tell us? Not that the station managers and sales departments would go for it, but why not suggest a trade-out of ad time for licensing fees, if you have to?

Even so, doesn't such a strategy inevitably give rise to a spotty, fragmented and possibly contradictory marketing effort? And, doesn't that let the door open for a "divide and conquer" strategy by the likes of XM, Sirius or Leonard Kahn, who always seems to throw a monkey wrench into the works? Does the thought of HD Radio suffering the same fate as Motorola's C-Quam AM stereo, which for its time was

See HD RADIO, page 37 ▶

Recruiting Engineers

Attend any technical conference or SBE meeting and you'll hear talk of how hard it is to find an experienced engineer. There are many reasons.

In 25 years our industry has progressed from tubes and turntables to satellite-delivered programming, solid-state transmitters and all things digital — digital audio storage/delivery/automation, digital audio production, consoles, telephone interfaces and processors, STLs. Required experience may range from AM directional antennas to multiple station satellite and automation and HD Radio. Technical knowledge has expanded and now includes analog audio, digital, IT and RF concerns. With the span of technology comes the requirement to have the knowledge to install, maintain and repair it. Engineers must know FCC rules and possess business skills, especially if they are contractors.

Reliability of equipment has improved. Engineers find themselves doing more IT work than broadcast equipment repair and maintenance. Also, many engineers are responsible for more than one station, working in a cluster or handling multiple clients as a contractor.

How many engineers have elected to leave broadcasting for careers in cellular, IT or other technical pursuits? What are the attractions of those industries compared to broadcasting? Respect, pay scale, working hours and environment are just a few.

Our sense is that the "brain drain" problem isn't as acute as it was five years ago. And the shirt-and-tie engineering manager working behind a desk or at a laptop in airports is now a staple at many broadcast companies.

But we also continue to see engineers relegated to rusted desks and broken chairs in the storage area. And engineering remains a second-class job category for some employers.

It has been said that in 1965 the typical GM read Billboard but now reads the Wall Street Journal. The landscape in broadcasting has changed, in technology and business practice.

In this environment, especially, respect must be earned, it is not a given. An important part of earning respect is image. How an engineer presents himself or herself when discussing investments, strategy and integration is important; but many engineers have not learned this lesson.

Compensation should be commensurate with services rendered. Many managers will not balk at invoices presented by lawyers, accountants or doctors. The same should be true for engineering services, provided they are professionally delivered; and engineers must be willing to advocate for themselves in this area.

Whose responsibility is it to provide experience to prospective broadcast engineers? Many managers or owners are unwilling to pay for an assistant for a full- or part-time engineer. But they are among the first to complain about a lack of qualified candidates. We need more radio engineers.

If you know someone interested in a career in broadcast engineering, foster them. Encourage high-school students to sign up as SBE Youth Members.

Contact your local high school or college career counseling office and offer to host a group visit to your cluster — including, if practical, the tower site, so often omitted from station tours.

If your employer has a job program or takes part in career fairs, remind your management to include engineering opportunities in their outreach materials.

Establish an internship program, even if you are a one-person engineering shop. Teach your charges the facets and practical skills necessary to apply their technical knowledge. As interns, they may have to perform some basic duties; however they must progress to a level of competence where they can practice the craft on their own.

The bottom line here is that engineers must be proactive in advocating for themselves and their profession.

And if your employer is one that appreciates and fosters its engineering talent, take a moment to say thanks to top management. That kind of attitude is not an accident.

— RW

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