

NEWSWATCH

Software Radio Group Eyes White Space

WASHINGTON The SDR Forum, a wireless industry association, is taking a look at the so-called "white space" issues with an eye towards developing standards for wireless devices to operate in the unused TV spectrum.

The FCC said last month that unlicensed devices can now use the empty space between TV channels on a secondary basis, subject to restrictions to protect

broadcasters from interference.

Broadcasters opposed the move, citing interference concerns for wireless mics. The SDR Forum says the use of white space provides opportunities for different types of wireless broadband technology, including software-defined and cognitive radio.

The group has formed a white spaces task group; its initial focus will be on developing a common set of test requirements that enable entry into the personal portable device market. The task group plans to meet in January in San Diego; its next step is to coordinate with the SDR Forum Cognitive Radio Work Group and other standards bodies to produce standard test procedures.

Revenue Weakness Continues

It may take radio revenues until sometime in 2010 to revive. That's according to one observer, reacting to news from the Radio Advertising Bureau that U.S. commercial radio revenue fell 9 percent in the third quarter compared to a year ago and was off 7 percent for the first nine months of the year. RAB said reports indicate widespread year-to-year declines across all media, not just radio.

The RAB data included off-air revenue, which was up 5 percent in the quarter and

9 percent for the year, a moderately bright spot but a smaller part of the overall radio revenue picture.

Analyst Jim Boyle of CL King & Associates said in his client newsletter that radio is headed for its worst year since 1954. "If the recession lasts for all of 2009 and the weakness persists in many of the major radio ad categories, such as auto, to a point where spending severely plunges, then it may be 2010 or beyond before radio revives."

Small-market radio has outperformed big-market radio in 19 of the past 20 months, according to CL King's research, which found that the average small radio market has grown revenue by 0.6 percent per month during that period while the average big market has seen revenue off by 4 percent per month.

Boyle said it's ironic that a few large radio groups have been selling off their relatively smaller-market stations to "rationalize" their giant platforms.

New Prez, New FCC Outlook

BALTIMORE A new party in charge at the White House also means changes at the FCC. Eventually there will be a new chairman — though Kevin Martin says he's in no hurry to leave — and at least one new commissioner. A new Democratic majority on the commission will translate to changes in the way issues will be examined and their eventual outcome.

For example, the commission's broadcast localism proposals, if adopted, might become more stringent under a Democrat-controlled FCC, said Garvey Schubert Barer attorney John Crigler, who spoke during a legal session at the

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WINNING THE RATINGS WAR VORSIS: THE TECHNICAL STUFF

The loudness wars are over. The winner? Nobody. Why? Because when everyone became as loud as possible, using the same limited tools, the personality of every station got lost. We call it "the sameness syndrome."

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Vorsis is the first line of air-chain processors designed for today's 21st century radio listener. It's a complete ground-up rethinking with those well-known processors. Here we talk about a few of the innovations that make the flagship AP-2000 Spectral Dynamics Processor the incredible tool that it is. Many of these advances are shared among the entire range of Vorsis solutions.

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Think about having the full engineering control you've always dreamed of — being able to find the whispers as well as the screams in your station's sound, crafting an aural signature that's so good, so transparent, you will have people calling to find out how you do it.

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Five-band AGC (four-band in the VP-8) ensures a consistent spectral balance. Vorsis' exclusive SST™ Sweet Spot Technology manages the behavior of the AGC in real-time so that



what the incoming level or era of the music.

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Vorsis Bass Management System extracts and reveals the nuances in the program that are simply not heard in any

and use L+R to L-R signal ganging to prevent the image from wandering uncontrolled. It's already field-proven to manage wide discrepancies between the recording techniques of various eras (oldies to the over-mastered music of today) and even reduce multipath interference.

Surgical Limiting and Clipping

To some the idea of 31 bands is scary. Not to us. It's simply amazing what can be done with it. Limiting and clipping's primary purpose is peak control to increase loudness; the less audible in its action, the better. 31 bands allow surgical limiting — its dynamic operation is nearly inaudible to the ear so the resulting sound is louder AND cleaner. It also provides unprecedented opportunity to further fine-tune the sound. FM and HD/DAB have entirely different transmission characteristics, so Vorsis processors have completely separate limiting and final peak control sections for analog and digital broadcast.

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other radio processor. It puts deep pristine bass on the air without the distortions of common bass clipper technologies. VoiceMaster is a special Vorsis clipper management tool that has its own automatic processing chain dedicated to detecting and specially processing live speech signals, giving you the loudest and cleanest on-air voices ever.

Superior Stereo Enhancement

In rethinking Vorsis, it became clear that stereo enhancement HAS to be integral to the processing. It is, after all, a manipulation of the amplitude of the L/R difference signal that creates the perception of a wider sound field. With Vorsis, you'll get smear-free enhancement that can be as wide as you desire. But that's only the beginning — you can also control the stereo image width on a frequency-conscious basis

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• 31-band limiter/clipper
- FM-2000**
AP-2000 without HD/DAB section
- AM-10HD**
Digital Audio Processor for AM analog and HD
• 5-band dynamics controller
• 10-band limiter/clipper
- FM-10HD**
Digital Audio Processor for FM analog and HD/DAB
• 5-band dynamics controller
• 10-band limiter/clipper
- VP-8**
Multi-Band Processor for FM, AM, FM-HD/DAB, AM-HD, MP3/AAC
• 4-band dynamics controller
• 8-band limiter/clipper
- HD-P3**
Production HD, STL Processor
• 3-band AGC
- M-1**
Digital Mic Processor



palette of controls are not accessible. The Vorsis GUI is designed for intuitive operation, from the front panel or remotely on your PC. No control is more than two clicks of the mouse away. The screens offer a logical layout with a virtual control surface above and monitoring graphs and meters below. You can see and hear the results instantly. Nothing is easier.

it always operates in its "sweet spot." The multi-band compressor, operating in concert with the AGC, provides unprecedented dynamics control. All operate in sum and difference — the highest signal controls the amount of processing. This is a completely new way to manage multiband dynamics to maximize the consistency of your station's on-air presentation — no matter



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A Digital Shotgun Marriage?

Interest Groups Are Divided on Whether FCC Should Mandate IBOC in Satellite Receivers

WASHINGTON Some 50 commenters expressed their opinions to the FCC recently about whether to mandate HD Radio receive capability in satellite radios. The topic is the subject to a Notice of Inquiry issued by the agency as part of its decision to allow the two sat-casters to merge.

Now that the deadline for initial comments to MM Docket 08-172 has passed, we get a better sense of how the affected industries are seeing the issue. Our excerpts published in the Nov. 19 issue focused mostly on satellite radio subscribers.

Here, we excerpt comments from broadcasters, engineers, Sirius XM and the auto industry.

There's still time to file; the reply comments on this issue are due Dec. 9.

The broadcasters filing these comments ... operate 500 radio stations nationwide in markets of all sizes. Encouraged by and relying on the commission's commitment to the public interest benefits of free, over-the-air digital radio and the commission's commitment to rapid implementation of HD Radio, [we] have invested more than \$46.3 million in developing and implementing HD

HD Radio may never be fully realized, given the enhanced horizontal and vertical integration resulting from the FCC sanctioned merger of XM and Sirius. ...

The commission has ample authority to condition Sirius XM's ability to enter into contracts for the manufacture, distribution or sale of SDARS receivers upon the inclusion of HD Radio reception technology by virtue of Sirius XM being an FCC licensee. The contractual limitations advocated herein ... are fully consistent with other instances in which the commission has exercised jurisdiction over SDARS licensees, most particularly the requirement initially imposed on Sirius and XM to create an interoperable receiver.

As a matter of policy, the dominant competitive position that Sirius XM now enjoys as the sole digital satellite radio broadcaster will enable, and may encourage, the merged entity to inhibit the digital conversion of terrestrial radio, thereby undermining the commission's expressed commitment to the HD Radio rollout. Because Sirius XM is now a monopoly, the vertical integration between Sirius XM and manufacturers, distributors and sellers of SDARS receivers has been substantially

More specifically, Sirius XM will be able to discourage manufacturers and retailers from developing, manufacturing and selling interoperable devices by limiting subsidization or technological support to SDARS receivers that do not include HD Radio technology.

— The above joint filing was signed by Beasley Broadcast Group Inc., Bonneville International Corp., CBS Radio Inc., Clarke Broadcasting Corp., Emmis Communications Corp., Entercom Communications Corp., Greater Media Inc., Journal Broadcast Corp., Premier Broadcasters Inc. and Saga Communications Inc.

No commission action is warranted or authorized ... and under no circumstances should the commission require satellite radio receiver manufacturers to include HD Radio capabilities in their devices, absent a comparable requirement imposed on HD Radio manufacturers in HD radio receivers.

First, any commission requirement for satellite radio to include HD Radio technology is unnecessary and unwarranted. HD Radio is hardly a nascent start-up. It is an extension of AM/FM radio — an industry that dominates radio listener-

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Radio at their stations to date, and the radio industry has invested hundreds of millions marketing HD Radio to the listening public.

[We] believe it is critical and fully appropriate for the commission to mandate inclusion of HD Radio reception technology in all Satellite Digital Audio

enhanced.

The "voluntary commitment" accepted by Sirius XM to permit receiver manufacturers to include other technologies, including HD Radio, in SDARS receivers does not provide sufficient incentive for the development, promotion and sale of interoperable SDARS/

ship. The current audio entertainment marketplace, including HD Radio, is thriving. Radio manufacturers are developing products that incorporate multiple audio entertainment functionalities, including HD Radio, satellite radio, MP3 and iPod capabilities. As the market for HD Radio and other technologies matures and consumer demand for multi-functional devices grows, receiver manufacturers will integrate a variety of audio technologies into satellite radio receivers. The commission should allow this process to respond to consumer demand.

Second, any effort by the commission to impose such a mandate on receiver manufacturers or licensees would raise radio prices and be fundamentally anti-competitive. Increasing the cost of satellite radios may be good for terrestrial radio broadcasting interests. It is not good, however, for manufacturers or consumers who may or may not want to pay for satellite radios to include that capability.

Third, the commission does not have the authority, either express or ancillary, to require satellite radio manufacturers to include certain technologies in their products. Similarly, the commission lacks authority to require satellite radio licensees to certify that receiver manufac-

Radio Service receivers that are the subject of contractual relationships between Sirius XM Radio Inc. and receiver manufacturers, distributors or retailers as a condition of the recently approved Sirius XM merger. [We] respectfully submit that without the relief requested in these comments, the well-recognized benefits of

HD Radio receivers. The "voluntary commitment" does nothing to prevent Sirius XM from using financial incentives, and disincentives, including subsidies, cross-marketing and promotional arrangements, to limit the commercial introduction and success of such interoperable devices.

— Joint filing of 10 radio groups

See MANDATE, page 5 ▶

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Make the Most of This New Tool

The folks responsible for marketing HD Radio have been placing ads beyond radio in certain other advertising media. It's about time.

The digital technology has been in need of a wider marketing press; ideally that would mean TV ads, billboards, social network sponsorships, you name it — not just spots running on radio stations, as nice as they are.

The HD Digital Radio Alliance is wise to expand its use of newspaper inserts, mobile texting, online ads and giveaways, as it said it would do in its Dec. 2 announcement of a holiday marketing campaign. We need more, lots more. (Hey, HD Radio does have a Facebook page, albeit with only 154 members.)

To limit marketing essentially to running radio spots, as was the case in the past, sends a message: "We think this thing is cool, but not cool enough to spend money to proselytize about it outside of our own channels, where air time costs us little to nothing." So the broader push is overdue.

Receivers are in fact becoming more affordable and more widely available. That's good news and critical to kick this rollout into the higher gear its proponents dream of.

But each of our own visits to retail outlets, as reported in RW, have found that few electronics store salespeople or managers appear to share the enthusiasm for HD Radio apparent in the alliance's latest marketing announcements.

HD Radio I think is at an important plateau. Broadcast equipment manufacturers tell me their hardware orders have dropped off. The data on our HD Radio Scoreboard reinforce the sense that the technology has penetrated many of the largest groups but that small and medium-sized owners continue to view it with caution.

In itself this is not surprising. The 87 percent of U.S. radio stations that are not yet on the air in HD Radio apparently have decided to wait to see a value proposition proven. So now is the time for its heralds to do that. While proselytizers do more to educate listeners and

the retail chain — and while they push and nag to get the number of deployed receivers up to at least the first million units — it's imperative that radio stations already airing HD Radio do a better job of investing in content on the multicast channels to attract excitement and loyal listeners, even as they explore profitable data applications in the background.

Again we face the dilemma: Do the owners and programmers of modern-day radio entities know how to create content that will appeal in a compelling way to a modern media consumer, particularly someone born after, say, 1980?

Nothing will answer critics better than to create remarkable and profitable content on multicast outlets. But broadcasters must not wait until receivers penetrate the market.

Many industry critics think the answer is no and can cite plenty of evidence (time spent listening, radio stock prices, radio's anecdotal reputation). Nothing will answer those critics better than to create remarkable and profitable content on multicast outlets. But broadcasters must not wait until receivers penetrate the market to start thinking about this; that's to ask an egg to lay a chicken.

Meantime I do hope radio has the stamina to continue its build-out of the national digital infrastructure, even in the increasingly strong economic headwinds, and that it can resolve its issues over digital power level and interference.

But nothing will drive demand for

receivers better than compelling content, and nothing will cause the industry in general to create compelling content like realizing that a competitor (hopefully you) has leapt out to an exciting position with a new and innovative channel.

I believe that soon we will be reading national news accounts of certain hot multicast stations and how they are attracting specialized, loyal (young?) audiences. That will be exciting. It would be a shame if that benefit accrued only to the 13 percent of U.S. radio stations that have adopted HD Radio so far, or if those stations that did invest in the technology let these new channels go underused.

Radio World will profile more HD Radio broadcasters in coming months, asking managers about their strategies for both audio and data applications and how they view the challenges facing the technology.

Here's an idea for iBiquity and the HD Digital Radio Alliance, from someone dear to Radio World.

Why not start a new venture and go public? Buy or lease the Eckington Place headquarters of XM Radio in Washington, and launch the "HD2 Incubator & Content Vault." This could serve as the national center for program syndication.

Consider that facility, sitting there under one roof, full of studios and gear (and fine programming talent, either current and laid off) and something of a drag right now on Mel Karmazin's wallet. What a treasure begging to be discovered. Who would want all of that radio creation infrastructure?

Hmm. Maybe some young passionate entrepreneurs could start a new publicly traded company. Maybe Washington would even provide grants to help get it jump-started.

We've heard a great deal of talk about the Fairness Doctrine this fall. Conservative commenters in particular

From the Editor



Paul J. McLane

worry that Barack Obama and/or his Democratic allies will push for a return to the days when "fairness" in on-air programming was mandated through requiring time for opposing viewpoints.

Much of what I hear tuning around the talk radio dial strikes me as distasteful; but a return to the Fairness Doctrine would not be welcome to me.

Yes it's appropriate to discuss what constitutes responsible policy concerning content on the public airwaves. But in the long term, our society is healthiest when we promulgate more channels and proliferating points of view, not restrict those we have. As Voltaire's philosophy is often described, I disagree strongly with what you say, but I will defend to the death your right to say it.

However I predict that nothing will come of this. I detected no credible push for a new Fairness Doctrine prior to the election; it was online yabber itself that drove this discussion in the first place, with pre-election bloggers predicting that Obama would definitely push for a new Fairness Doctrine when in fact he is on record saying he doesn't favor such a change. My read is that the incoming president is too pragmatic to push for such a thing despite the liberal extremist label some slapped on his back earlier.

Certainly, some Dems would like to see such a policy return. But I do not think they are numerous or that they will find political headway on this issue.

Radio will face plenty of interesting regulatory concerns in the coming year, but worries over a renewed push for Fairness Doctrine, I think, will turn out to have been just a puff of political hot air. 🌐

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TECHNOLOGY

Mandate

► Continued from page 3
 rurers include certain technologies in their devices.

— Sirius XM Radio Inc.

MEI fully supports the concept that the FCC should regulate not only transmission devices but also fully regulate the devices designed for reception of those transmission services. MEI believes that as currently written, Title I of the Communications Act gives the FCC broad discretion in all such matters. Unfortunately, the FCC has traditionally relied upon "marketplace factors" to resolve issues regarding the operation and performance of receivers. This lack of self-leadership has led to the misconception that the FCC does not have such authority. ...

Failure of government to regulate receivers encourages patent holders of new technologies, licensees, equipment manufacturers and consumer manufacturers (especially car manufacturers) to artificially manipulate the marketplace by entering into exclusive predatory deals which ultimately harm competition and thwarts the public interest by limiting consumer choices and by stifling innovative technological developments.

In the case at hand, the main difference between a satellite system and the traditional broadcast system (AM, FM, IBOC, FM-SCA, and DTV) is satellite is a subscription service and broadcasting is a free over-the-air service. ... This free broadcast system is in danger of collapse, if technological barriers are permitted to be erected which artificially hampers their ability to compete. ...

The mandated receivers should include minimum performance specifications. The FCC and the FAA have argued for more than 25 years about potential interference from broadcast FM facilities to the frequencies immediately above FM used by the aviation industry. ...

If the decision is for the FCC to mandate receiver compatibility it should look towards some sort of Software-Defined Radio (SDR) design. This would more easily permit the retrofitting of older receivers when technologies change. ...

Receivers (especially in automobiles) should provide a standard means of interface that can be used by external devices. This might also be the perfect time to

incorporate a standard by which vehicle drivers can be made aware of emergency information (national and local police/fire) with or without the radio being in the On position. Such emergency capability could be accomplished with the help of WiFi and GPS.

— Mullaney Engineering Inc.

BMC takes no position on the commission's authority to mandate that SDARS receivers include DAB. Nevertheless, should the commission determine that it does have the authority either by existing law or by future legislation, BMC urges the commission to provide for the inclusion of the LPFM, NCE and/or AM services, as proposed in the Channels 5 and 6 (76-88 MHz) spectrum, in the SDARS receivers.

— The Broadcast Maximization Committee

Alliance of Automobile Manufacturers Inc. ... members oppose any action by the commission that would require the incorporation of HD Radio technology into satellite radio receivers. ... The Alliance, whose members include BMW Group, Chrysler LLC, Ford Motor Company, General Motors, Mazda, Mercedes-Benz USA, Mitsubishi, Porsche, Toyota, and Volkswagen, is a trade association composed of the world's leading car and light truck manufacturers. ...

[T]he Alliance fully supports the comments jointly filed by General Motors Corp. and Toyota Motor Sales USA Inc. in the Sirius-XM merger proceeding, in which those companies state that "HD is already penetrating the automotive sector without a mandate," and that "[s]everal manufacturers are either currently offering HD or have announced plans to make HD Radio standard or optional in future models." The Alliance agrees that "[t]he automotive environment is extraordinarily competitive and there has been no showing in the record to support the proposition that if consumers continue to show an interest in HD technology that those manufacturers currently pursuing other entertainment strategies will not take notice and adjust their strategies."

Second, the Alliance believes that a government mandate requiring that HD Radio features be integrated into satellite radio receivers would increase the costs

to vehicle manufactures of integrating audio entertainment systems into their vehicles, thus increasing the costs to consumers. In fact, the Alliance agrees with Delphi Corp. that "[i]ntegration will

undue economic burden on the automotive industry as a whole. ... [N]ew vehicle sales have dropped from an anticipated 15.6 million vehicles at the beginning of 2008 to just 11.2 million vehicles as

An HD Radio mandate would represent an unprecedented level of government interference in the decisions typically made by automobile manufacturers and consumers.

— Alliance of Automobile Manufacturers

drive higher costs... where the consumer has chosen either HD Radio or [satellite radio] but does not have a desire for both," and that "[r]equiring an HD Radio system to be integrated with [a satellite radio] will unduly burden the consumer by adding significant cost to the [sale] price compared to the stand alone [satellite radio] receiver." ...

Third, given the current extraordinary contraction of the U.S. economy and lower automobile sales, imposing the additional burden of requiring the incorporation of HD Radio technology into satellite radio receivers would create an

of Oct. 15. This represents a greater than 19 percent drop in expected vehicles sales. ...

While the Alliance is committed to an open and free competitive marketplace, an HD Radio mandate would represent an unprecedented level of government interference in the decisions typically made by automobile manufacturers and consumers regarding the types of entertainment technologies that are available in the automobile environment.

— Alliance of Automobile Manufacturers Inc.

NewsWatch

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Eastern Region Public Media meeting in Baltimore. Those proposals include requiring the main studio to be in the city of license and returning to the days of 24/7 staffing.

Margaret Miller of Dow Lohnes said that after the change in administration eight years ago, no decisions came out of the commission for quite some time. Crigler predicts something similar will happen at all federal agencies.

Ernest Sanchez, principal of The Sanchez Law Firm, said there may be an unusual amount of so-called "linkage" between the election and future decisions coming out of the commission. He noted

that Sen. John McCain, R-Ariz., is "a leading advocate" of LPFM. McCain championed a bill to drop third-adjacent channel protection for existing broadcasters in order to shoehorn more low-power stations onto the FM band. Public radio sources said they expected that issue to get more traction in the coming year.

Also, Sanchez said President-Elect Barack Obama has told confidantes he believes eight years is too long a term for a broadcaster to hold a license. That may signal more public interest sensitivity from a new FCC chair, he said.

News Roundup

SIRIUS XM: Mike Elgan, a columnist for IT trade publication Datamation, pre-

dicted satellite radio will be gone within two years, a victim of money problems and technology innovations that threaten to bypass the service. Among pressures he cites is the rise of MP3 phones and MP3-compatible cars as well as the rise of podcasting and the coming wave of mobile broadband dashboards. These changes, as well as a worsening economy and Sirius XM's heavy long-term debt, spell bad news for the company, Elgan predicts.

PLUM BOOK: The so-called "Plum Book" is an inventory of some 8,000 federal government jobs that will soon be vacated by the Bush administration. Published after each presidential election, the Plum Book (www.gpoaccess.gov/plumbook/index.html) data covers positions such as agency heads and their

immediate subordinates, policy executives and advisors, and aides who report to these officials. There are nearly 2 million federal employees. Pay runs the gamut, from well-compensated jobs such as the chief of staff at the Commodity Futures Trading Commission, who earns \$221,100 a year, to a member of the Arctic Research Commission, a part-time, four-year-gig paying \$571 annually.

FCC commissioners are listed at pay level IV, making \$149,000 for 2008, while the chairman's post is a level III, listed at \$158,500 for the year under the executive salary schedule.

WAHL: NPR's Bruce Wahl is the new mayor of Chesapeake Beach, Md. By day, Wahl is senior solutions architect in the Distribution Division, involved in the architecture of Content Depot. Chesapeake Beach in Calvert County is on the Chesapeake Bay. Wahl, a resident since 1985, has been on the town council for about 20 years, the last eight as vice president. The term for the volunteer position is four years. Wahl has begun a four-day work schedule at NPR to devote Mondays to his mayoral duties.

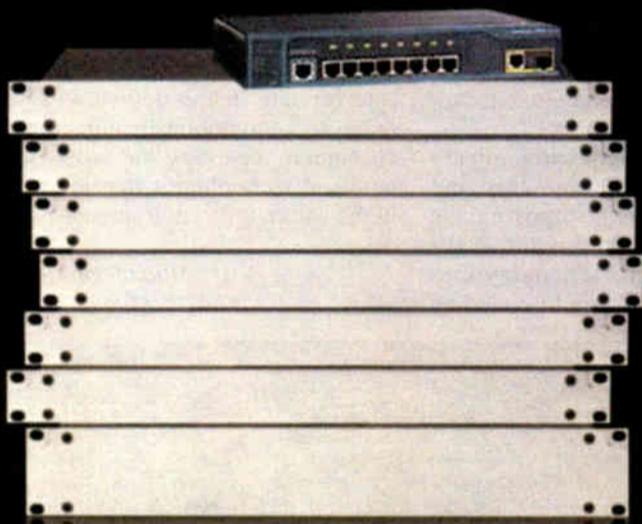
RADIO ADDRESS: President-elect Barack Obama has expanded the distribution of the weekly Democratic Address from the traditional radio to Web video at www.change.gov. He plans to post weekly updates through the transition and then from the White House, according to a statement from his transition team. The address will also continue to air on radio each Saturday.

KAUFMAN: The Broadcasting Board of Governors, which oversees U.S. government-supported, non-military international broadcasting, lost a board member. Edward Kaufman, an aide to Vice President-elect Joe Biden, resigned after he was named by Delaware's governor to fill Biden's Senate seat for the next two years. He'd been with the board since it was created in 1995. The BBG said Kaufman worked to stop censorship of U.S. international broadcasting, most notably of the Voice of America and Radio Free Asia in China, and advocated for emergency surges in broadcast hours to areas of the world — when crises erupted. The board said he also was instrumental in the launch of Radio Free Asia in 1996 and the move of the Office of Cuba Broadcasting (Radio and Television Martí) from Washington to Miami the following year.

LOUD TECHNOLOGIES: The parent company of Mackie and other familiar pro audio brands planned to cut staff. Loud Technologies said it reorganized marketing, sales and engineering functions in a way that will generate a net reduction of about 90 jobs.

SIRIUS SANS DIRECTED: Directed Electronics and Sirius XM are parting ways. DE plans to leave the satellite radio business in early 2009 to focus on its core products for security and entertainment. Directed became the primary retail distribution partner for Sirius Satellite Radio in 2004. Sirius or its new distribution partner will purchase substantially all remaining satellite radio receiver inventory from Directed and assume responsibility for product returns and warranty costs. DEI says the move will allow it to pay down debt by recovering some \$20 million of working capital.

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—Matthew Galek, Broadcast Engineer for The Metropolitan Opera

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ACCESS

'Franken'

▶ Continued from page 1

lower end of the FM band, at 82 to 88 MHz. Audio for TV Channel 6 is broadcast at 87.75 to 87.9 MHz. Many car and table-top FM receivers are able to receive these adjacent TV audio signals (indeed, some Channel 6 TV licensees promote that fact).

But the stations in question here are providing minimal video programming and pitching themselves as commercial radio stations. In one case, an LPTV licensee allegedly is broadcasting nature video over and over again.

"It is happening," said John Crigler, a communications attorney with Garvey, Schubert and Barer. "Apparently these licensees are not asking for authority to do this kind of thing. They are just doing it, and it appears that they are within the rules to do so. However, it appears the FCC is reviewing the matter again and deciding how to proceed. This is obviously not the FCC's intended purpose of low-power TV."

Bite of the Big Apple

An example is WNYZ(LP) in New York, the nation's most populous market, where FM spectrum is an extremely valuable commodity.

The station is a 3 kW LPTV licensed to Mega Media Group. The TV station typically broadcasts video of nature scenes and travelogues repeated throughout the day, said Alex Shvarts, chief executive officer of Mega Media Group. Its programming content is music transmitted on

the audio subcarrier at 87.75 MHz. The TV station promotes itself on www.pulse87.com as "Pulse 87 — Pure Energy." Shvarts told RW that WNYZ (LP) is operating within the rules governing low-power TV. "The FCC is aware of what we are doing. I'm not aware of any concern on their part." (See sidebar.)

The legal argument Shvarts makes is based on Sec. 73.653 of the FCC rules governing low-power television licensees, which states: "Operation of TV aural and visual transmitters ... the aural and visual transmitters may be operated independently of each other or, if operated simultaneously, may be used with different and unrelated program material."

Several attempts for this article to reach other licensees who are practicing the same business model were unsuccessful. Publications including the newsletter CGC Communicator have cited instances in the Chicago, Los Angeles and Dallas areas, and several "TV as FM" operations are identified on Wikipedia and other online sources.

In 1999, according to legal observers, the FCC staff ruled that LPTV broadcast stations must transmit both visual and aural services to remain in compliance.

That ruling was the result of a complaint by several radio stations in Anchorage, Alaska, which claimed that KZND, a low-power TV station, was "operating as an FM radio station, broadcasting only an audio signal and marketing itself as an FM station that can be received at the bottom of the dial."

The FCC found that KZND(LP) was violating the commission's low-power television rules and policies by transmit-

The Pulse

WNYZ(LP) may transmit television nature images across New York City on Channel 6, but it's clear the station's focus is on radio, with TV being of minor consequence. With a dance-intensive rhythmic top 40 format, Pulse 87.7's signal reaches the city's five boroughs and most of Long Island, according to people familiar with the station.

Joel Salkowitz, the station's program director, is an alumnus of music station WQHT(FM) in New York. He described the station's format to Web site All Access as "top 40/rhythmic, leaning away from rock and rap and more towards club and dance sounds in their place. It's familiar rhythmic hits mixed with the very best new music."

Station licensee Mega Media Group is a multimedia entertainment holding company with several subsidiaries that offer a range of services including music production and distribution and video production.

Mega CEO Alex Shvarts believes that WNYZ(LP) is operating within the FCC's rules governing low-power TV.

"We are fulfilling obligations as a licensee. It's perfectly legal to send audio separate from video. We operate (Pulse 87.7) under the audio portion of our LPTV license. The FCC is aware of what we are doing. I'm not aware of any concern on their part," Shvarts said.

Mega Media has marketed itself as a radio station since 2005. The company announced earlier this year that Pulse 87.7 is being rated under the Arbitron Portable People Meter system. Mega claims the radio station had more than half a million listeners and 540,700 Cume persons age 6 and older during one specific week in September.

Shvarts said he is not sure what will happen to Pulse 87.7 if and when the FCC mandates a transition of LPTV stations from analog to digital TV. A switch to digital would leave consumers unable to receive the audio at 87.75 MHz.

"We will worry about that when it happens. We expect the commission will give us a long transition period to figure it out."

— Randy J. Stine

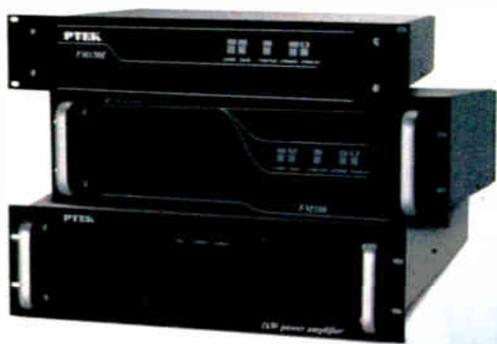


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ting an aural-only service.

Crigler said the commission "basically said there had to be simultaneous transmission of visual and aural content. ... It does not specify what kind of visual content. And the audio and video does not have to be related or synchronized. However, it's clear that these LPTV stations cannot be aural-services only. They need a visual carrier, too." He said he was unaware of any appeal filed in the case by the licensee, Fireweed Communications Corp., which also operates one of the stations listed in the sidebar.

"The advantage these LPTV broadcasters have is that they are at the bottom of the FM band and they realize that it is a lot cheaper to play records than to cultivate TV programming," said Harry Cole, a communications lawyer with Fletcher, Heald and Hildredth, who is also a Radio World columnist.

LPTV sunset

"They are within the rules. There is nothing to say that you can't separate video and audio. Plus, they sound much different than anyone else at that chunk of the FM band."

TV Channel 6 also is immediately adjacent to the noncommercial portion of the FM band, not an area where you would typically find a "commercial-sounding radio station," Crigler noted.

Some broadcasters and their attorneys are not so sure about the legality of the practice, which is why the commission is looking into the matter, sources not quoted elsewhere in this article told RW.

One observer thinks this is a big deal. "I believe that the use of TV frequency spectrum as an FM broadcast station, not transmitting any discernible visual signal, is in serious violation of the FCC

See 'FRANKEN,' page 10 ▶

As Long as the Mood Is Right ... FM

Here is a partial list of low-power television stations licensed at Channel 6 that appear to be operating predominately as radio stations. The list was compiled using Wikipedia and the FCC database. Tell us about such stations in your area; write to radioworld@nbmedia.com:

KCIO(LP), Victorville, Calif.
Almavision Hispanic Network
www.almavisiontv/6.html
www.justin.tv/almavisionradio

KESU(LP), Hanamaulu, Hawaii
Chang Broadcasting Hawaii LLC
<http://en.wikipedia.org/wiki/KESU-LP>

KFMD(LP), Redding, Calif.
Venture Technologies Group LLC
<http://en.wikipedia.org/wiki/KFMD-LP>

K060L, Antelope Valley, Calif.
Adelman Broadcasting
<http://en.wikipedia.org/wiki/K060L>

KOAN(LP), Anchorage, Alaska
Fireweed Broadcasting
<http://en.wikipedia.org/wiki/KOAN-LP>

KSFV(LP), San Fernando Valley, Calif.
Venture Technologies Group, LLC
<http://en.wikipedia.org/wiki/KSFV-LP>

WNYZ(LP), New York, N.Y.
Mega Media Group
www.pulse87.com

Who's standing behind our consoles?

(A lot of guys who wish they had chairs.)

Experience matters

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How It began

"20-odd years ago," says Axia President Michael "Catfish" Dosch, "I was designing custom consoles for recording studios. Somebody at **PR&E** liked what I was doing and invited me to move there. Work with Jack Williams, the guy who practically

invented the modern radio console? I jumped at the chance; BMX consoles sounded great, and were very nearly indestructible!

"PR&E was a dream job.

Jack taught me how to design consoles without compromise — how to **over-engineer** them. It's great to see, 15 or 20 years later, that many of the boards I designed are still on-air.

"By the late 1990s, computers and routing switchers were becoming an essential part of the broadcast studio, and I'd been thinking about how useful it would be to combine console, router, and computer network. I shared some of my ideas with Steve Church, who'd introduced digital phone hybrids and ISDN codecs to radio. He thought the same way I did about using computers in radio studios, and we decided to work together."

A new kind of console

"In 2003, we launched Axia to make digital consoles, but with a twist: Axia consoles would be integrated with the routing switcher, and **networked** to share resources and capabilities throughout the studio complex. This intelligent network of studio devices lets Axia build consoles that are **more powerful** and easier for talent to use than ever before."

Axia's team of engineers have blended the best ideas from old-school analog consoles with innovative new technology to produce **bullet-proof boards** that can actually make shows run smoother and sound better.

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Thanks to this scalable network technology, **integrated router control** is a standard feature of every Element. Any source in any studio can be loaded on any fader with no need for add-on panels.

Feature packed

We designed Element to be user-friendly, yet have all the power of a full-on production board.

For example, Element **Show Profiles** let operators recall their favorite settings with the push of a button — audio sources, fader assignments, and personalized Mic Processing and Voice EQ settings (so the midday guy will stop badgering you for "just a little more low end").

Did we say "**mic processing**"? You bet. Every voice channel has studio-grade compression, de-essing and expansion from the **processing experts at Omnia**, plus three-band parametric EQ to sweeten the deal. Built-in headphone processing means you don't have to build a separate side-chain just for the studio cans.



First Axia console prototype. Nice test stand, Catfish

Making a mix-minus the old-fashioned way is hard to do. So Element **constructs mix-minuses automatically**. And mix-minus settings are saved for each audio source, so sources, backfeed and machine logic all load at once. Plus, every fader has a "Talkback" key to **communicate with phone callers**, remote talent or other studios using the console mic.

Board-ops have enough distractions without having to reach for an outboard phone control panel. Element has **hybrid controls with**



dedicated

faders for Telos

talkshow systems; jocks

can dial, pick up, screen and drop calls without ever diverting their attention from the console.



The plastic module overlays used on most consoles crack and chip — especially around switches and fader slots, where fingers can easily get cut on the sharp, splintered edges. Element overlays are **inlaid on the machined aluminum module faces** to keep the edges from cracking and peeling — expensive to make, but worth it. **Custom bezels** around faders, switches and buttons also guard those edges. Element modules will **look great for years**.

Nearly every air talent has accidentally changed a fader's audio source while it was on-the-air. To prevent that error, Element "**queues**" **source changes**: the operator must turn the fader off before the next assigned source "takes".

More than just products

Catfish learned something else important from his time at PR&E:

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are you'll never need that assistance, but if you do, we'll be ready for you. Our 'round-the-clock help line is +1-216-622-0247.



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If you're looking for a cheap, disposable console, this isn't it. But if you're one who seeks out and appreciates excellence wherever you may find it... Axia consoles are built **just for you**.



www.AxiaAudio.com

KGO

► Continued from page 1
building is seen by 80,000 commuters every day, according to a station spokesperson, providing a high-visibility location that helps calls attention to the latest in solar power technology.

The project is the outcome of a long-standing relationship between KGO and Pacific Gas and Electric Co.

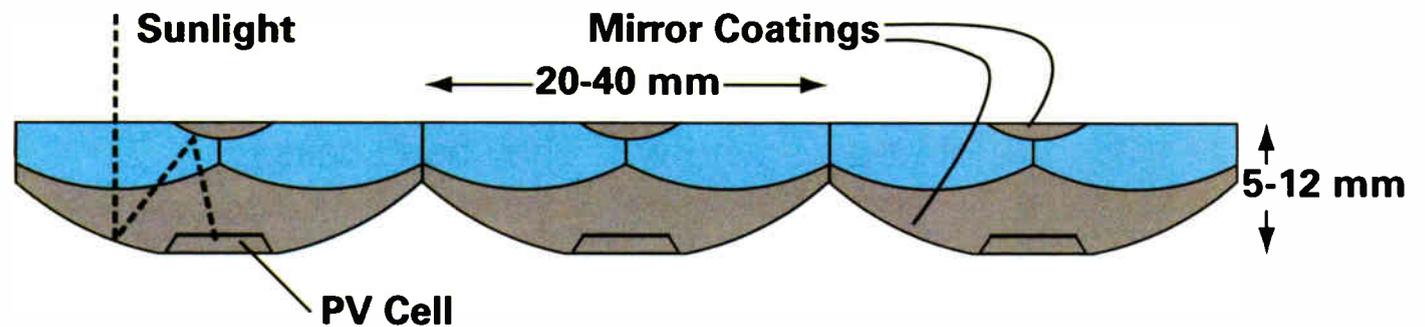
"We have a partnership with PG&E to communicate with their customers in emergencies. I visited them recently and asked what we could do to save energy at the transmitter site," said KGO General Manager Mickey Luckoff.

"They were very enthusiastic about solar, and helped us assemble a team of contractors and suppliers, including SolFocus."

SolFocus is a startup company in Mountain View, Calif., that develops and manufactures concentrator photovoltaic (CPV) solar cells.

KGO became involved in the green movement several years ago, first with internal projects such as recycling, gradually adding green initiatives in programming and on the station Web site.

The KGO project is a hybrid of traditional flat-panel and cutting-edge concentrator photovoltaic technology (see sidebar). The installation costs were about \$250,000, a little higher than expected, according to Talbot, due to the unusual location next to a public highway and in a salt pond.



Sunlight enters from the top, striking the primary mirror. The light is reflected to the secondary mirror, then concentrated onto a 1 mm triple-junction cell which is optically coupled to the glass. The design results in a smaller, thin, flat, molded glass CPV tile.

We'll be looking at what's offered to us by anyone who partners with PG&E, and expect to see a lot of ongoing R&D projects with SolFocus.

— DOE Joe Talbot

KGO will get about \$33,000 back from the state through a solar incentive program, and between \$30,000 to \$40,000 back over several years in the form of federal tax credits. It projects savings of around \$3,000 annually on its utility bill.

"We get about 7,300 watts from three CPV cells on trackers, which enable the cells to follow the sun on two axes. The remainder comes from GE flat panels installed by Premier Power, which are ground-mounted and installed on the roof of the transmitter building and garage," said Director of Engineering Joe Talbot.

He adds that the approximately 20 kW total limit is a result of the relatively small amount of real estate available on the site.

The flat-panel portion of the installation consists of fifty 200 Wp (Watt-peak) GE solar modules, yielding a 10 kilowatt-

peak system capacity. The SolFocus portion of the installation uses three 12-panel CPV arrays rated at 2.46 kW each for a total of 7.38 kW.

The array uses a recently-designed SolFocus/Inspira tracker and controller.

The system is simple. Both solar arrays feed inverters that go directly to the building AC, reducing power demand from PG&E. Since the load always exceeds the supply, there is no need to store power in batteries.

The two solar systems at KGO complement each other. Traditional flat-panel arrays do not require direct sunlight, and can generate power on cloudy days. Since they do not require trackers, they can be mounted on rooftops.

Concentrator photovoltaic panels are more efficient than flat panels, but can only operate when pointed towards direct

See KGO, page 12 ►

'Franken'

► Continued from page 8
left behind in the digital transition and may be struggling to find new business models. It's not clear if any have openly applied for FM licenses.

"I wouldn't expect the sunset date for LPTV to go digital to come before 2012 and it may be as late as 2015," said David Oxenford, a communications attorney with Davis Wright Tremaine LLP. "But there will come a day when these analog LPTV Channel 6 signals will go away,

"I wouldn't expect the sunset date for LPTV to go digital to come before 2012 and it may be as late as 2015," said David Oxenford, a communications attorney with Davis Wright Tremaine LLP. "But there will come a day when these analog LPTV Channel 6 signals will go away,

There will come a day when these analog LPTV Channel 6 signals will go away, and when that happens you will no longer be able to receive them on FM receivers.

— David Oxenford, Davis Wright Tremaine

"The FCC should immediately issue a shutdown order on all non-television-format signals remaining on the air that do not look like standard analog or HD television signals."

The commission established low-power television service in 1982 to provide opportunities for expanded television service. Effective radiated power of the TV signal is 3 kW for VHF channels and 150 kW for UHF channels. The FCC reports more than 2,000 licensed and operational LPTV stations in the United States.

Since low-power television stations currently have no mandatory digital transition deadline, industry experts observers expect this trend of LPTV licenses becoming FM broadcasters to continue. Some observers speculate that LPTV licensees are worried about being

and when that happens you will no longer be able to receive them on FM receivers."

Much of TV Channel 6 spectrum will be repurposed after February's DTV transition. What eventually happens to that spectrum is anyone's guess right now, Oxenford said.

"There are lots of proposals out there for TV Channels 5 and 6. A number of folks are suggesting it should be used for expanding the FM band. There are plenty of people against it as well," Oxenford said. RW reported on one such proposal in the Sept. 10 issue.

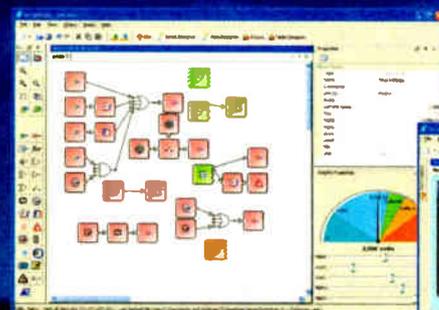
Are any TVs operating as radio stations in your area? Tell us at radioworld@nbmedia.com.

News Editor/Washington Bureau Chief Leslie Stimson contributed to this article. ●

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KGO

About CPV Cells

► Continued from page 10

sunlight, necessitating the use of trackers, and making them unusable on overcast days.

Talbot adds that the real complexity comes with the control and monitoring of the system. "The systems installed by SolFocus and Premier Power have incompatible control systems, since there are no standards for monitoring solar systems yet. The two are connected through a gateway." Premier Power installed the flat-panel portion of the project.

Talbot said initial concerns about the installation of the panels and controllers in a high RF field proved to be unfounded. "We had ferrite beads and capacitors handy to filter out RF, but didn't need to use them."

"The trackers are microprocessor-controlled, so it's certainly prudent to consider the RF environment and its impact on computers and controllers. If you can make a microprocessor-based remote control work in your RF field, then you should have no trouble with this technology."

Maintenance on the solar system is expected to be easy. "Basically it's a matter of washing the panels periodically to clean up after the seagulls and remove accumulated dirt." Power output from the cells decreases as grime accumulates, Talbot said.

"We also need to grease the tracking mechanism for the CPV arrays," accord-

ing to Talbot, who adds that a more refined program may be worked out as they spend time with the system.

The installation also marks the beginning of a long-term relationship for the station with SolFocus and PG&E to use the site as a test bed for emerging solar technology.

"We'll be looking at what's offered to us by anyone who partners with PG&E, and expect to see a lot of ongoing R&D

Most solar cells in use today are flat-plate PV, which produce electricity when sunlight strikes panels lined with sheets of costly photovoltaic cell material. This technology, with some refinements, has been in use since the inception of solar power about 30 years ago, according to SolFocus.

Concentrator photovoltaic (CPV) technology, recently developed at the Palo Alto Research Center in conjunction with SolFocus, achieves greater efficiency by using mirrors or lenses to concentrate solar energy onto smaller areas of PV material. Additionally, CPV technology uses multi-junction, or 'III-V' solar cells.

These new cells convert energy more efficiently than traditional solar cells, approximately 35 percent today, with expectations of 45 percent as the technology is further refined, according to SolFocus. These efficiencies contrast with typically 13 to 18 percent efficiency for silicon cells.

CPV arrays work by focusing sunlight onto a small area of silicon. The arrays must be pointed directly at the sun to achieve maximum efficiency.

This necessitates the use of trackers, which follow the sun's trajectory throughout the day. Trackers historically have been expensive and unreliable, but recent advances have produced lightweight, reliable devices enabling rooftop installations producing from 10 to 100 kW of electricity.

The SolFocus CPV modules claim to halve costs and operate at double the efficiency of average flat-plate PV panels. The modules also use glass, which has a 30-year life span, and they have dry, passive cooling, requiring no liquids or fans. The modules have one-quarter the focal length of other systems, making them compact.

— Tom Vernon

projects with SolFocus," according to Talbot.

KGO announced the solar project in February. Talbot and Transmitter Engineer Art Lebermann supervised the

installation. Lebermann maintained a solar blog with progress reports and photos: dynamic.kgoradio.com/solar.php.

Work was scheduled to be completed by mid-March, but rains delayed pouring the concrete foundations and other outside construction. Progress was later slowed, according to a SolFocus spokesperson, when the company updated the solar tracking technology used in the installation.

The construction work drew interest from commuters on the adjacent Dumbarton Bridge. "Many of these people grew up in the Bay Area, and have a keen interest in everything the station does," said Talbot. "We received a number of phone calls and e-mail inquiries, and it's going to be a great avenue to promote the station and what it's doing with solar power."

Other efforts to "green" the KGO transmitter site are under consideration, according to Talbot. A more efficient air conditioning system may be installed to replace the current one, which was designed to handle the building's original Harris MW-50 transmitters.

Talbot said the heat load from the current Nautel transmitters is much less than the older units. Also under consideration is a plan to replace lamps in the beacons on the station's three-tower array with LEDs. 🌍

NEWS WATCH

CIRCUIT CITY: Circuit City, the second-largest CE chain in the U.S. by sales after Best Buy, filed for Chapter 11 bankruptcy protection this fall and said it would continue to operate with the help of \$1.1 billion in debtor-in-possession financing from lenders. The company said it took the action to make sure that vendors continued to ship it goods during the holiday sales season. It said manufacturers' concerns about its viability escalated since it announced it would close 155 of its 721 stores and lay off thousands of employees.

TWEETER: Tweeter sought bankruptcy protection for the second time in 17 months after Schultze Asset Management failed to revive it. Tweeter listed assets and debt of less than \$100 million each in Chapter 11 documents filed in U.S. Bankruptcy Court. The high-end CE chain said it has begun liquidation sales at the 94 shops it operates in 17 states.

PPM: A federal judge is allowing a lawsuit by New York State Attorney General Andrew Cuomo over the Arbitron Portable People Meter ratings methodology to proceed. Arbitron had sought a temporary restraining order and a preliminary injunction against the N.Y. AG. Arbitron said the ruling by U.S. District Judge for the Southern District of New York Denise Cote does not affect its right to publish PPM audience estimates in New York. Cuomo's lawsuit alleges that Arbitron deceptively claimed the PPM is a fair representation of the radio market and he said PPM undercounts minority listeners; Arbitron says the allegations are not true.

WRC-11: FCC Chairman Kevin Martin named Thomas Navin and R. Paul Margie as co-chairs of the commission Advisory Committee for WRC-11. The

committee will provide the commission with recommendations on matters relating to the international conference in 2011. WRC convenes every few years under U.N. auspices to manage international use of radio-frequency spectrum. Navin is a partner in Wiley Rein and is former chief of the FCC Wireline Competition Bureau and its Policy Division. Margie is a partner with Harris, Wiltshire & Grannis and former senior director for technology partnerships at the United Nations Foundation. Alex Roytblat, who directed the FCC's prep work before the 2007 WRC, will do so again. He is assistant chief of the Strategic Analysis and Negotiations Division of the International Bureau.

DRM: Early 2009 is the target for a new joint radio service that will serve European audiences via Digital Radio Mondiale shortwave. It was announced by the BBC World Service and Deutsche Welle.

HARRIS: Broadcast revenue was up 8 percent in its first quarter compared to a year ago, to \$158 million. "Sales of transmission systems increased at double-digit rates in the first quarter, driven by the over-the-air digital TV rollout in U.S. markets," the company said.

ENGINEERS: Wisconsin broadcasters are committing money to developing engineering talent. The Wisconsin Broadcasters Association and the WBA Foundation announced a summer intern program with grants to stations as well as "fellowship grants" to help experienced engineers acquire continuing education.

CRYSTAL: Entries are due Feb. 3 for stations that hope to win an NAB Crystal Radio Award in 2009. The awards recognize commitment to community service. Finalists are announced in March. Go to the NAB Web site at (www.nab.org) for more information.

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World Radio History

Workbench

Radio World, December 17, 2008

Past columns are archived at radioworld.com

Yes, I'm Going Up There to Work!

Document Your Chores to Remind the Boss That the Transmitter Site Visit Is No Picnic

by John Bisset

Do you ever get grief for "visiting the transmitter site"?

I don't know what managers think goes on out there; but more than once I got eye-rolling when I announced we'd be working there for the day.

Photos of your maintenance efforts help, especially when they are posted in the lunchroom for everyone to see.

Keep air dielectric line pressurized and moisture-free for reliable operation of FM and high-power AM facilities. If you let a nitrogen tank go empty or fail to repair dehydrator, condensation may form inside the line, with a resultant flashover.

A hunter used the lines shown in Fig. 1 for target practice; whether the damage is from a hunter or moisture, arcing makes for an ugly day for the engineer.

To the right in the photo is the upper connector, cut from line that burned. The lower connector was pretty well ruined.

Note the soot on the Teflon insulation. Rigid line usually can be disassembled and cleaned by passing rags wet with alcohol through them, inspected and reassembled. But the ridges in flexible line, plus the inability to remove the center conductor, may render the line scrap when damage as shown in Fig. 2 occurs.

So check the nitrogen pressure on a regular basis. Invest the few hundred dollars in a low-pressure alarm switch that can be tied to the remote control and installed on the transmission line to warn of a low-

pressure condition. Even some positive pressure in the line is helpful. The point is not to let pressure drop to zero.

If you maintain an older transmitter with no VSWR protection, another investment is an RF power monitor. Bird and Coaxial Dynamics offer these. When interlocked into the transmitter, they will shut the transmitter off when an arc or other high VSWR condition occurs. Transmitters without this protection can turn into virtual arc welders once a fault begins.

Thanks to Rich Hill at the Citadel Carlisle, Pa., cluster for sharing the damage pictures.

Organize your tools and keep them organized. This practice makes for improved efficiency, especially when you're under the gun to get a critical piece of equipment back online.

Fig. 3 on page 16 shows a nice labelling job by Transmitter Supervisor Ken Sleeman of Bonneville's WTOP in Washington. Every tool has its place in the appropriate drawer.

A tool drawer/chest doesn't have to be expensive. Discount builder supply stores offer a variety of sizes and styles, and some are upgradeable to grow along with your tool requirements.

Sleeman can be reached at ksleeman@attglobal.net.

See TOOLS, page 16 ▶



Fig. 1: This flashover damage to transmission line was caused by a hunter.



Fig. 2: Soot is nearly impossible to clean from flexible lines.

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Logitek Electronic Systems said its first JetStream IP-based console system was ordered by KFCF(FM), licensed to Fresno Free College Foundation.

The Pacifica affiliate is based in Fresno, Calif. It ordered a JetStream Mini router and a Remora control surface.

Separately, WBUL(FM), a Clear Channel station in Lexington, Ky., purchased a Logitek Audio Engine, a Mosaic console and a Remora console. WLBT (TV) in Jackson, Miss., purchased an Audio Engine and Artisan console, and KOAA(TV) in Pueblo, Colo., ordered an Audio Engine with an Artisan console.

In Ireland, 4FM ordered two Audio Engines and four Mosaic consoles through Logitek's dealer BTS. In the U.K., Logitek dealer Preco took an order from EMAP for four Audio Engines, three Mosaic consoles, one Remora console and the vScreen GUI for locations in Stockton and London. Also in the U.K., GCAP ordered five Audio Engines and five Remora consoles through Preco.

And the Australian Broadcasting Corp. expanded its Tamworth operation with a Remora console. ...

PTEK released details of several past custom RF military and government projects.

They include work on computer/radio/GPS communications for the Army Land Warrior project; a wideband jammer for the Olympic Games; a project for the Air Force allowing remote trans-

mission to initiate the self-destruction of failed launch vehicles and missiles; and a multiple-frequency band jammer for convoy protection against improvised explosive devices or IEDs.

The company has also provided a 500 watt transmitter for use in the Air Force's Commando Solo special operations aircraft, and various self-contained FM broadcast systems for remote operations.

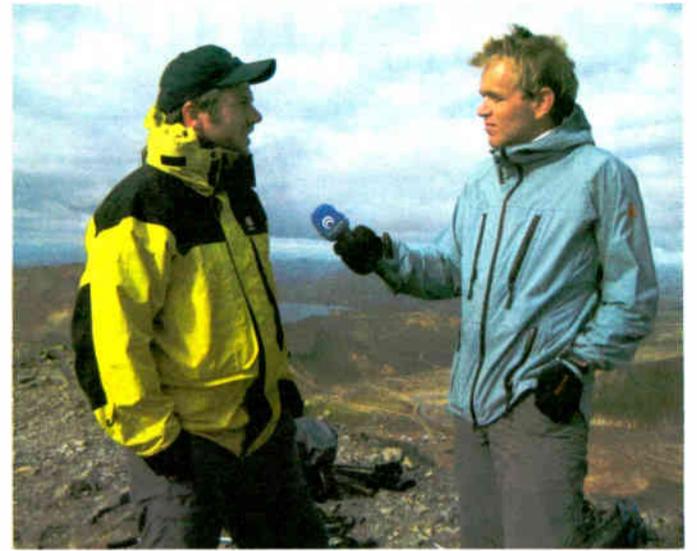
The projects are all completed and the company is now able to release limited details about them. Project dates vary over the past eight years. ...

ENCO Systems reported several notable sales.

KSJV(FM)/KMPO(FM) in Fresno, Calif., owned by Radio Bilingue, will install a five-studio DAD system. KSPN(AM) and the LA Live project in Los Angeles are taking a 20-studio DAD system. Another 20-studio DAD system will go into

Chicago's WBEZ (FM), home of "This American Life" and "Wait, Wait, Don't Tell Me," replaced a digital console in its music performance studio with a Solid State Logic AWS 900+ Analog Workstation System. The AWS provides WBEZ with integrated control of the Pro Tools HD system; the project is the first radio application of an AWS 900+.

Mary Gaffney is audio supervisor for WBEZ, which has four production



Guðmundur Gunnarsson uses the HHB FlashMic to record interviews for an Icelandic National Broadcasting radio show.



Solid State Logic AWS 900+ Analog Workstation System at WBEZ(FM)

KESN(FM) in Dallas, and a five-studio system is headed to KAJX(FM) in Aspen, Colo., owned by Aspen Public Radio. CTV in Toronto is taking a nine-studio system. ...

rooms, two news and/or production rooms, an air studio, 10 editing booths and the large performance studio. The AWS room is used for live and captured music

production, political debates, theater presentations and other speciality programs. The console was purchased from GC Pro Chicago's Dan Scalpone. ...

Icelandic journalist Guðmundur Gunnarsson used the HHB FlashMic for a series about life in a town for Icelandic National Broadcasting.

The manufacturer said this was likely one of the most rigorous applications given to the product to date. Gunnarsson conducted hundreds of interviews in various environments over three months. ...

The radio division of Radiotelevisione Italiana (RAI) in Italy chose NTP audio routing and router control systems when it commenced a major upgrade and large-scale expansion of master control equipment at its Rome facilities earlier this year.

RAI Radio placed the contract with Comteck Video Enterprise (CVE) following a bid process. The project involved exchanging and expanding an existing NTP AES/EBU and analog audio routing system. ...

Wegener Corp. said Dial Global, Triton Radio's sales and programming division, placed a \$2.1 million equipment order this fall for iPump 6420 audio media servers and network products. Following its acquisition of Jones Media America, Dial Global purchased the equipment to upgrade and expand the Wegener file-based broadcasting platform that Jones Media uses to manage its 2,000-station network from its Denver network operations center.

"This is the initial phase of a multi-year project to ultimately expand Dial Global's file-based distribution of programming, advertising and related services to their 6,000 radio affiliates," Wegener stated. ...

Liquid Compass, a streaming delivery network, signed an updated contract with Crawford Broadcasting to provide streaming media and RIAA royalty reporting services to 22 stations. The supplier also will provide interactive sales training to the Crawford staff. ...

Broadcast Electronics said Rede Itatiaia in Belo Horizonte, Brazil, would receive the first BE FMi 35DT transmission system combining FM and HD Radio broadcasts.

Rede Itatiaia 95.7 FM was to take delivery of the system in early December and begin broadcasting in HD Radio soon after. The transmitter will feed Rede Itatiaia's separate analog FM and HD Radio antennas. The new system was supplied through Savana Comunicações Ltda., BE's supplier in Brazil. ...

Tools

► Continued from page 14

Well, after hundreds of *Workbench* columns, I should have known readers would spot the use for that old clunker relay shown in Fig. 1 of the Nov. 5 column. Sure can't fool you!

Of course, it's a poor man's power failure detector. The AC plugs into a non-UPS fed outlet, and the contacts are wired to a remote control status input.

But what if you don't have a UPS on your remote control? That's where other readers picked up on the cross-connect wire, soldered to the relay contacts.

This is used by a number of engineers at remote transmitter sites. The C (common) and NC (normally closed) contacts from the relay are connected to the tip and ring of the transmitter site telephone line. When there is AC power, the relay is energized and presents an open circuit to the phone line. When the AC power goes away, the relay de-energizes and presents a short to the phone line. When the transmitter telephone line is called, the caller gets a busy signal since the phone appears off-hook. Simple; but it's important troubleshooting information.

This little device has saved engineers countless trips to the transmitter when a



Fig. 3: Organization of tools can make a great impression on your manager.

call to the power company may be all that's necessary. Although it could be left hanging in a rack, it's better engineering practice to house the relay in a box, fuse the circuit and perhaps add a 620-ohm resistor in series with the relay contacts.

As one reader stated, the device we pictured certainly could be used to "surprise" an unsuspecting engineer who stuck his hand in the rack. (But then that never happens.)

Another wrote: "It's always interesting to revisit a simple but very helpful idea from the past."

Thanks to those who took the time to comment. Got a photo of a clever or puzzling gizmo? Send it along.

John Bisset has worked as a chief engineer and contract engineer for 40 years. He recently joined Nautel as regional sales manager for Europe and Southern Africa. In 2007 he received the SBE's Educator of the Year Award. Reach him at johnbisset@verizon.net. Faxed submissions can be sent to (603) 472-4944.

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

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World Radio History

ROOTS OF RADIO

Fessenden — The Next Chapter

Efforts to Corroborate the Legendary Story Also Came Up Empty 52 Years Ago

by James E. O'Neal

It's been more than two years since my article about Reginald A. Fessenden and what may have been the world's first broadcast appeared in *Radio World* (see radioworld.com, keyword Fessenden).

Readers will recall that in the last months of his life, Fessenden claimed to have sent out a short program of speech and music on Christmas Eve, 1906, with reception reports being received from as far away as Norfolk, Va., nearly 500 miles away.

He also claimed that a similar broadcast conducted a week later drew response from the West Indies, more than 1,500 miles from his Brant Rock, Mass. laboratory.

This was a great account and one I had enjoyed telling and retelling for some 40 years. However, even after much investigation, only a single document could be found to substantiate Fessenden's claim.

This was a letter dated Jan. 29, 1932 from Fessenden to Sam Kintner, a Westinghouse vice president. It apparently was written in response to an inquiry from Kintner about Fessenden's involvement in broadcasting-related activities.

I left my 2006 article "open ended," hoping that someone might come forward with some artifact that would bolster Fessenden's claim and settle the matter, especially as Fessenden had declared that many heard the transmissions and that proof existed in the form of multiple ships' logs (and supposedly the letters he received from ear witnesses).

While my article generated a lot of response, no one has yet come forward with proof positive of the event. To the contrary, additional evidence surfaced that would tend to disprove the Christmas Eve story. Some of it even offers a clue as to what might have really happened.

Francis Hart demystified

One of the more interesting artifacts uncovered during my 2006 research was a radio log kept by Francis A. Hart. It had been donated to the Smithsonian Institution in the 1960s and little was known about it.

Hart started the log in the fall of 1906 and it spanned roughly three years, providing a wealth of information about what radio was like 100 years ago. I decided to prepare an article about the log itself, and in the process, discovered that Hart's son, Burton, was still alive. Burton and another radio history buff, George Flanagan,

were able to provide a great deal of insight into the elder Hart's life.

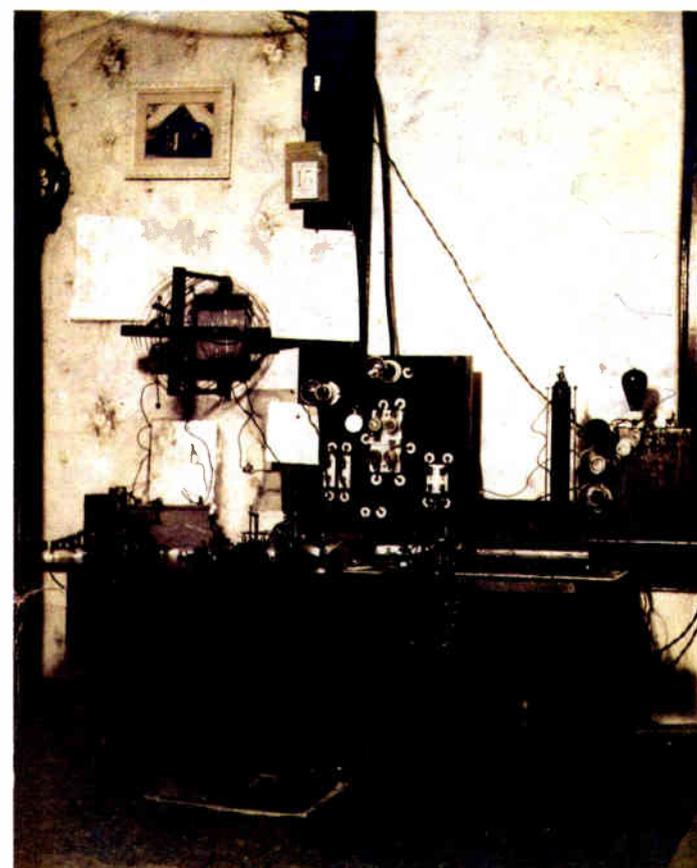
To correct an earlier assumption, Hart, at the time he kept the log, did not live in Sayville, N.Y. His early life was spent in Brooklyn, some 45 miles to the west. Hart had a strong interest in wireless, and as this was something of a nov-

tion. (This was perfectly legal then.) According to the newspaper report he worked all such land stations within a 20 mile radius of his home (the limit of his transmitter). He "checked in" almost every evening.

- Hart was able to tune both "regular" and "long" wavelengths with his receiving apparatus.
- He had access to an antenna (some three miles long) that would have favored the long wavelengths Fessenden used.



Francis A. (Frank) Hart operates the wireless station he helped construct at the Brooklyn Children's Museum in New York.



Hart's wireless station, constructed in his bedroom. Object at right near panel with darkened lamp bulbs appears to be a tuning coil for low-frequency (LF) wavelengths. This would have allowed him to hear Fessenden's alternator transmissions. The wall calendar places the date as May 15, 1907.

NARTB
Inter-Office Correspondence

cc: Mr. Baudino
Mr. Wasilewski

TO Mr. Allerton
FROM Louise K. Aldrich
SUBJECT The Christmas Eve Broadcast, 1906, by Fessenden
DATE April 16, 1956

Attached is a copy, and two carbons, of research in published sources and elsewhere for verification of the broadcasts of Christmas Eve and New Year's Eve, 1906.

While the conclusion has been reached that documentary proof is not possible, there is a possibility of personal records in "unknown" libraries or archives.

Louise K. Aldrich

Memo attached to Louise Aldrich's 1956 report on her findings about the purported Fessenden Dec. 24, 1906 broadcast.

ely then, he and his amateur station were the subject of several newspaper articles. These revealed Hart was not just a DXer; he was also frequently "on the air."

The newspaper clippings also provided the following information:

- Hart was able to copy radio traffic from as far away as 1,400 miles on a fairly regular basis.
- Most evenings, he made it a point to "listen in" to a daily 10 p.m. news feed from the Marconi land station at Cape Cod that was sent to ships crossing the Atlantic.
- Hart exchanged QSOs with commercial stations, including a Fessenden opera-

it seems inconceivable that he would not have been aware of Fessenden's "broadcasts" and made some sort of log entry about them.

Other searches

Part of my research for information on the broadcasts had involved the Smithsonian Institution, and in August 2007, I received a call from Elliot Sivowitch, an emeritus curator with that organization informing me that some additional material had been located that might be of interest.

These were copies of an exchange of letters between George S. Turner, chief of the FCC's field engineering and monitoring bureau in the 1950s, and Joe E.

Baudino, a Westinghouse Broadcasting Co. vice president.

The Smithsonian papers also included a lengthy report from Louise K. Aldrich to a "Mr. Allerton." These were employees of the National Association of Radio and Television Broadcasters (NARTB), now the National Association of Broadcasters. The report was dated April 16, 1956 and was "cc-ed" to "Mr. Baudino" at Westinghouse.

In examining this new information, it became readily apparent that the research conducted by myself and others in 2006 into the authenticity of Fessenden's claim was not the first.

I reported that Hart logged no unusual traffic on Christmas Eve, New Year's Eve or any time around these dates in 1906.

As the newspaper articles establish that Hart was in an excellent position to have heard the broadcasts, or at least the fallout from them,

The papers indicate that early in 1956, to commemorate the 50th anniversary of the "broadcasts," Westinghouse's Baudino was interested in corroborating Fessenden's 1932 account, enlisting the help of both the FCC and NARTB. The long and short of it is that even though the investigation continued through 1957, Baudino did not get his wish.

Aldrich's 12-page document indicates that she not only searched many U.S. and foreign publications for evidence, but also reached out to many other sources, including the U.S. Navy and the United Fruit Company for their ships' radio logs.

In addition to searches of periodicals and Fessenden's collected papers, Aldrich also approached a still-living Fessenden contemporary, Major Theissen. He'd served as an assistant to Fessenden, and in 1956, lived in the Washington area and was a member of the board of the Fessenden Foundation.

Theissen related that he "thought the broadcast had occurred" and provided Aldrich with a possible published reference. This didn't pan out either.

Aldrich summarized her investigation with the following statement.

"From the search just described, while not an exhaustive search, it has been
See FESSENDEN, page 20 ►



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Fessenden

► Continued from page 18
concluded that neither the Christmas Eve broadcast nor the New Year's Eve broadcast of 1906 was noted in newspapers, magazines or in scientific papers on wireless telegraphy. Nor did Dr. [sic] Fessenden refer to the broadcasts in any of his writings during that period."

Aldrich, in her memo accompanying the report, stated:

"While the conclusion has been reached that documentary proof is not possible, there is a possibility of personal records in 'unknown' libraries or archives."

The FCC's Turner also stayed busy in contacting early radio people who might have firsthand knowledge.

One of these was Tom Stevens. He stated:

"... I am afraid that I cannot confirm the information you are seeking re the Fessenden experiments with radiotelephony. I was discharged from the US Navy at Provincetown on October 12, 1906 and had returned to my old home town of Austin, Texas. I was working for the DeForest Wireless Telegraph Company of Texas at San Antonio during the Christmas Season of 1906. I did not hear BO - Brant Rock transmit radio telephone signals at any time. However, I heard that station sending the letter D on many occasions and also heard it send test messages many times."

Another old-timer contacted was Harry Gawler. He reported that while he thought others might have heard such broadcasts, he had no direct knowledge.

"I was in Chicago around Christmas reporting on the wireless activities going on there for Fessenden, so I only know of the telephonic tests [this is a reference to the Dec. 21 Brant Rock radiotelephony demonstration] by what I was told upon my return to Washington." [Fessenden's company, NESCO, had an operation there.]

Gawler provided several names of people who might be able to substantiate a Christmas Eve broadcast, but these apparently led nowhere. The exchange of letters between Turner and Baudino ended in December of 1957.

George Clark

In my 2006 research I discovered a 1936 memo in the George Clark collection at the Smithsonian that captured the recollections of three radio pioneers (Arthur Van Dyck, H.E. Halborg and John V.L. Hogan) concerning the "broadcast." It had obviously been prompted by Clark.

(George H. Clark was active in early radio, a long-term RCA employee, an historian and a pack rat of the first order. During his lifetime he obtained and saved an enormous amount of radio-related photographs, letters, memos and other documents.)

The Clark collection also contains the "copy" — the original has never been located — of the Jan. 29, 1932 Fessenden/Kintner letter.

In additional searching of the Clark

collection, I found two documents that indicate Clark was eager to learn the truth about the "broadcasts."

The first is a letter dated Jan. 25, 1932 from Kintner to Clark. It covers several bases, but the first paragraph is quite interesting as it strongly suggests that it was actually Clark who prompted Kintner in early 1932 to contact Fessenden about his broadcasting activities:

"Dear Clark — With reference to your letter of January 5th, I want you to know that I immediately wrote to Fessenden, but as yet have not received an answer."

We know, of course, that Fessenden did respond four days later.

Even after receiving Fessenden's response, Clark seems not to have been satisfied, as indicated by the previously mentioned 1936 memo. The second letter I located indicates that Clark was still questioning the broadcasts well into the 1940s, as it is dated Dec. 23, 1946 and was penned by James C. Armor, another former Fessenden employee.

Westinghouse Electric & Manufacturing Company



East Pittsburgh, Pa.

Office of
M. Kintner
Vice President

January 25, 1932.

Mr. G.H. Clark,
c/o Radio Corporation of America,
570 Lexington Avenue,
New York City.

Dear Clark -

With reference to your letter of January 5th, I want you to know that I immediately wrote to Fessenden, but as yet have not received a reply.

The only way I know of getting a published record would be to take it from the record of Fessenden's testimony in the suit of the National Signaling Company vs. the Government. In order that you may determine whether this record would meet your requirements, I will have Mrs. Murphy (Miss Bent) make a copy and I will forward it to you.

Letter dated Jan. 25, 1932, from Sam Kintner to George Clark, indicating that it may have been Clark's search for the truth about the Christmas Eve event that sparked Fessenden's Jan. 29, 1932 letter in which he declared that he did it.

MR. JAMES C. ARMOR
652 HIGHLAND PLACE
BELLEVUE, PITTSBURGH, PA.

Dec 23^d 1946
Dear George -
I was in Brant Rock on Dec. 23^d (or perhaps 22^d or 24^d) I think the 23^d for a few hours. Went for a friendly visit with Prof. Fessenden. On my way from Scotland to Pittsburgh. He showed me the high freq. alternator. At this time cannot add anything to info. you now have. Will write later. Your letter was received about 11 o'clock. My wife

Letter dated Dec. 23, 1946 from James C. Armor to George Clark. Armor was a NESCO employee who was working at the company's Machrihanish, Scotland wireless station in 1906. He recalls visiting Fessenden's Brant Rock station on or about Christmas Eve 1906 and seeing the HF alternator, but nothing about any plans for a general broadcast.

"Dear George — I was in Brant Rock on Dec. 23d (or perhaps 22d or 24th) I think the 23d for a few hours. Went for a friendly visit with Prof. Fessenden. On my way from Scotland to Pittsburgh. He showed me the high freq. alternator. At this time cannot add anything to info that you now have. Will write later."

To make more sense out of this, Armor was at the NESCO station in Scotland in early December 1906 when the 420-foot antenna there was destroyed in a wind storm. With the loss of the antenna, the station was closed and Armor returned to the United States. It is inferred that he sailed to Boston and decided to pay Fessenden a Christmas weekend visit before he traveled

on to his home in Pittsburgh.

This letter puts Armor at Brant Rock just after the Dec. 21 radiotelephony demonstration and close to the time of the "broadcast." It would have been a natural flow of things for Fessenden to mention the planned broadcast and to have invited Armor to witness it. But this didn't happen.

Fessenden's radiotelephone equipment

Readers may remember that Fessenden performed a demonstration of his radiotelephone system for invited guests on Dec. 21, 1906, three days prior to the first claimed broadcast.

This event basically was for the bene-

To commemorate the 50th anniversary, a Westinghouse executive set out to corroborate Fessenden's 1932 account.

fit of telephone company people, as he was trying to convince them of the merits in expanding the reach of their system with radio. However, others were also present, including members of the press. The demonstration involved the radio transmission of speech and music to a receive site located in Plymouth, Mass., with demodulated audio also being returned to Fessenden's Brant Rock transmitter site via telephone lines. The successful test was well documented and is mentioned in Fessenden's Jan. 29, 1932 letter to Sam Kintner.

My store of Fessenden information was greatly enhanced with a copy of the telephone company engineering report on this demonstration provided by radio historian Alan Douglas.

The report is dated Dec. 24, 1906 and was issued from Boston. It contains full technical details of equipment used, what was demonstrated, sketches of apparatus and schematic drawings. It also notes that Fessenden had prepared a "handout" for attendees. The report is unsigned, but it is speculated that it was prepared by Greenleaf Whittier Pickard, a telephone company engineer.

The document notes that Fessenden's alternator was running at "50,000 cycles," and while designed to produce 300 W, the actual output, as measured, was only 36 W. The report says 24 of these were dissipated by the modulating device (carbon microphone), leaving only 12 W of RF to feed the antenna.

The depth of modulation was not especially impressive either:

"It was stated by Prof. Fessenden, and seemed probable to me, that the present transmitter (microphone) only varied

See FESSENDEN, page 22 ►



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Fessenden

► Continued from page 20
about 5% of the total radiated energy.”

Of particular interest is an estimate of transmission distance that Fessenden may have been able to accomplish then. (Recall that the receive site for the demonstration was in Plymouth, Mass., some 10 miles from Brant Rock.)

“The alternator, altho [sic] operating at 50,000 cycles, was designed for 100,000. At this frequency [100,000 Hz], the radiation from the antenna, other factors remaining the same, is greatly increased. As the radiation increases with the fourth power of the frequency, this doubling of periodicity would increase the radiation sixteen-fold, and, as the range varies with the square root of the radiation intensity, the distance of communication would be increased four times. This would mean about 40 miles, with the present equipment.”

While the assumption that doubling operating frequency would quadruple the range might be subject to question, the report does indicate rather clearly that the maximum transmission range was limited to about 10 miles, or the distance from Brant Rock to the receive site.

The report's author speculates that if sufficient improvements (frequency and depth of modulation) could be made, the transmitting distance might be improved.

“Probably with the apparatus I saw in operation worked to its maximum efficiency, a range of about 100 miles might be reached, preserving commercial transmission.”

Alternator problems and limitations

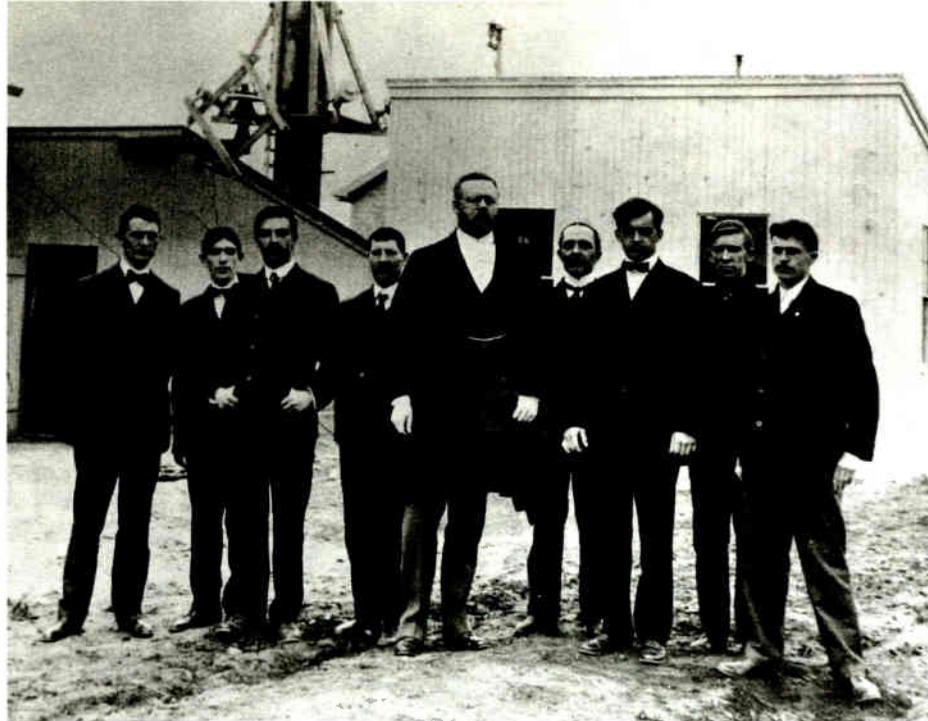
I discovered some fairly extensive communication records between Fessenden and employees of the General Electric Company, manufacturers of the high-frequency alternators. One of these sheds some light on the problems with bringing the Brant Rock machine up to speed and full power on Dec. 21. It's dated Dec. 7, 1906 and was written by Fessenden to Mr. H.G. Reist at GE. It indicates that his alternator was indeed hobbled.

“We managed to patch up one armature out of the different armatures sent us and have been using it to telephone from here to Plymouth. We get very good results and we have also completed a telephone relay which works very satisfactory [sic] we expect to make some tests shortly in telephoning from here to New York, part of the way by wireless and part by wire.

“The present range of 50,000 cycles seems to be about fifty miles. If we can raise this frequency to 100,000 cycles the range will be about 200 miles.”

This is in line with the telco engineering report. Also, as the date of the letter is only two weeks prior to the demonstration, it has to be assumed that the problems (loss of power output with frequency) were not resolved by the demo date.

An earlier communication (Sept. 19, 1906) between Fessenden and D.C. Haskins at General Electric finds Fessenden complaining that the best output he can get from the alternator when



Reginald A. Fessenden posed with his employees at the Brant Rock radio facility. The base of the facility's 420-foot insulated base vertical radiator is visible behind the group.

North Carolina State Archives

Readers are left to speculate on the amount of signal that could have reached receivers at great distances from Fessenden's 12 watt transmitter.

operated above 30 kHz is less than 50 watts. This tracks closely with the 36 watts in the Bell Telephone report.

This 1906 power limitation and Fessenden's stated maximum transmission distance of 50 miles cast substantial doubt on claims of reception from Norfolk and the West Indies.

Amplifying this is a passage from John V.L. Hogan's 1923 book, "The Outline of Radio."

“It is well known, however, that in 1906, Fessenden gave numerous practical demonstrations of radio-telephony between his experimental stations at Brant Rock and Plymouth, Massachusetts, and that in 1907 he increased his range from this distance of about twelve miles to such an extent that Brant Rock was able to communicate with New York, nearly two hundred miles away, and Washington, about five hundred miles.”

Hogan was a well-respected radio engineer and a former Fessenden employee.

While he may be slightly off base with his estimate of the distance to Washington, he does fix 1907 as the year for increased alternator power (and range) for Fessenden's transmissions.

This is backed up further by later correspondence between Fessenden and General Electric about the delivery of more powerful and higher frequency alternators in 1907 and beyond.

Another document recently discovered provides more evidence of Fessenden's transmission range limitations. This comes from Fessenden's critique of a

radio engineering book penned by British author, Dr. J. Erskins-Murray. The letter is dated May 27, 1907. While disputing and correcting some of the book's chapters, Fessenden provides information on the capabilities of his radiotelephone transmitter.

“You may be interested to know that I am now fixing up apparatus for telephoning between Boston and Washington, a distance of 400 miles.”

The implication is that in mid-1907, he was still unable to reach this distance.

Even two years later, as 1909 drew to a close, radiotelephony over long distances was evasive enough to warrant a story in the New York Times. One of Fessenden's backers, Hay Walker Jr., declared then in a special interview that Fessenden had just broken the 200 mile barrier. (Actually the report, dated Dec. 22, mentioned that Fessenden was doing even better then, with reception of his signals logged a few days earlier in Omaha.)

Physical facts

Early in the 20th century, any improvement in a radio signal's range had to be done at the transmitting side of things, as prior to de Forest's triode, radio receivers were all essentially unamplified diode detectors. The best of these in use at the end of 1906 were based on Fessenden's electrolytic detector. De Forest's amplifier would not be available until 1907. At the time of the "broadcasts," a radio receiver was nothing more than a tuned circuit, a detector and a pair of headphones.

Fessenden's transmitting antenna also needs to be examined. It was a 420-foot insulated base vertical radiator with some top loading added.

The telco engineering report shows that in late 1906, Fessenden was transmitting at 50 kHz. That wavelength is nearly 20,000 feet, close to four miles. A quarter wavelength is around 5,000 feet, or more than 10 times the length of Fessenden's antenna. A 420-foot antenna at 50 kHz is about 1/47 of a wavelength.

Even with top loading, questions have to be raised about efficiency. To put things in perspective, this is the equivalent of a station transmitting on 700 kHz

with a 30-foot stub!

While Fessenden was well ahead of his time in using a series-fed vertical radiator, there's no evidence that he employed our present-day system for grounding with multiple buried radial conductors. His ground system probably consisted of several rods tied together.

The primary mode for propagation of radio waves in the long-wave portion of the spectrum is ground wave. Even across seawater, published losses at 50 kHz are 56 dB at 500 miles and 62 dB at 1,000 miles.

Readers are left to speculate on the amount of signal that could have reached receivers at great distances from Fessenden's 12 watt transmitter. Speculation also is necessary as to the ability of an unamplified detector to create a useful output from such a minuscule and poorly modulated amount of RF.

Please note that anyone who has experimented with radio knows that propagation miracles can and do occur. I've certainly experienced my share. However, it stretches the imagination to believe that "lightning" could strike twice exactly one week apart for Fessenden (Christmas and New Year's Eve).

What may have happened

My 2006 article became a topic of conversation in some Internet chat rooms, and I was directed to one particular posting by RW reader Dan Hughes.

R.R. King had located stories from several December 1909 newspapers describing an extensive long-distance radio communication test planned that month between Fessenden's Brant Rock station and U.S. naval vessels. Ships were to travel down the U.S. East Coast, on to the West Indies, Northern Africa and other distant points. Hampton Roads, Va., was listed as one stopover, as was Guantanamo Bay, Cuba.

The object was to stay in radio contact as much as possible. While the tests would primarily involve radiotelegraphy, the Navy had been keenly interested in radiotelephony for at least a couple of years, keeping tabs on the work of von Arco, de Forest and Fessenden.

By 1909, Fessenden had a much more powerful alternator. Also, while not strictly a commercial device then, de Forest's triode was available for purchase, and many radio operators were experimenting with it. This combination could make the transmission of speech and music over extended distances feasible.

Is it just possible that Fessenden, with his larger alternator, decided to do something "special" for Navy radio operators involved in the testing that Christmas Eve and got feedback from those near Newport, Va. (Hampton Roads), and a week later got verification from others at Guantanamo Bay (West Indies)? The Dec. 22 news story cited above mentions that Fessenden had been experimenting "over water" with two naval vessels operating "in West Indian waters.")

By the end of 1909, radiotelephony no longer had much of a "wow" factor, as others besides Fessenden had been transmitting speech and music for some time. Most wireless operators had been exposed to radiotelephone transmissions, or at least were aware they were possible. This could well account for the absence of published notices of holiday broadcasts.

There is some amount of evidence that Fessenden, like a lot of us, didn't have a particularly good memory when it came to recalling names and dates after several

See FESSENDEN, page 23 ►

Fessenden

► Continued from page 22

years. And, by the time Kintner's 1932 letter arrived, Fessenden had had more than his share of emotional and physical jolts. Taking this into consideration, it's understandable that he might have been steered by Kintner into claiming that special broadcasts were done in 1906, when they actually took place three years later.

Conclusions

In the aftermath of my 2006 Fessenden article, I was accused of trying to prove a negative after 100 years. I would readily agree that categorically proving Fessenden's broadcasting claims were false is a near impossibility after a century; but in examining the facts at hand, it's also equally difficult to prove a positive.

It is clear that he could have taken to the airwaves on the evening of Dec. 24, 1906; he demonstrated three days earlier that he had equipment for doing so.

What exactly constitutes a broadcast still remains a matter of semantics and is open to debate.

The fact that speech and music were transmitted on Dec. 21, albeit a distance of only a few miles, could qualify Fessenden as the world's first broadcaster. His signal was not encrypted, nor was it directed into a narrow point-to-point beam that could only be intercepted at Fessenden's receive site. Anyone within range possessing an AM receiver could have listened in.

In fact, in his 1932 letter to Kintner, Fessenden comments on this in a rather ambivalent way:

"If you mean by broadcasting the transmission of speech, music and signing to other stations of the same ownership as the transmitter, then the [Dec. 21] program given to Dr. Kennelly, Prof. Elihu Thompson, the engineers of the Western Electric and A.T. & T. and other companies ... would be a broadcast, as indeed would be the exhibitions of wireless telephony between Washington and Annapolis in 1903, and 1905.

"If, however, you do not call this a broadcast, then the program sent out Christmas Eve and New Year's Eve, 1906 would be the first broadcast."

What exactly constitutes a broadcast still remains a matter of semantics and is open to debate.

The question mark that does exist in all of this falls squarely over the claimed Christmas Eve and New Year's Eve events. Despite a substantial amount of time spent near the 50th anniversary of those events, researchers could find nothing of substance to bolster Fessenden's claim; and this was at a time when a number of individuals who could have had firsthand knowledge of the "broadcasts" were still walking the earth.

An extensive and continuing search by this writer 50 years later also has pro-

duced little tangible evidence to back up the claims in Fessenden's 1932 letter.

It is my belief that while this case will never be "closed" with certainty, due to the amount and nature of counter evidence unearthed, any future references to the Dec. 24 and Dec. 31, 1906 broadcasts must be done with a certain degree of qualification.

Reginald Fessenden's abilities as a scientist and an engineer are undeniable. He was first rate; a person very much ahead of his time. He single-handedly lifted radio science out of the spark or "whipcrack" era and into one of continuous wave technology. He was an incredible thinker and his work changed the very complexion of radio communication. We are all indebted to Fessenden for the wealth of scientific accomplishments produced during his 65 years of life.

In examining the "handout" that Fessenden provided attendees at his Dec. 21, 1906 technology demonstration, it's evident that he was trying then to sell the telephone company on the idea of expanding service with his radiotelephone system. But he also made a strangely prophetic statement concerning another use for his invention:

"Telephony is admirably adapted for transmitting news, stock quotations, music, race reports, etc. simultaneously over a city, on account of the fact that no wires are needed and a single apparatus can distribute to ten thousand subscribers as easily as to a few. It is proposed to erect stations for this purpose in the large cities here and abroad."

With a perspective of more than 100

years since these words were written, one is inclined to wonder what would have happened if Fessenden had focused on just this one plan. Perhaps listeners wouldn't have had to wait another 15 years for radio to enter the home.

James E. O'Neal is a retired broadcast engineer with nearly four decades of experience in radio and television broadcasting. He began a post-retirement career in 2005 as technology editor for RW's sister publication, TV Technology. He holds both commercial and amateur radio licenses; he is a life member of the Society of Broadcast Engineers and a member of the IEEE and SMPTE, serving on the board of editors of the latter. He is the author of a number of articles on broadcasting history that have appeared in Radio World and other publications.

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PRODUCT EVALUATION

Sony's Tuner Is Rich in Features

The XDR-F1HD Component Tuner Packs Lots of Benefits for Not a lot of Cost

by **Ira A. Wilner**

Sony has released an inexpensive (\$99.95) add-in high-fidelity component tuner, bringing HD Radio performance to the audiophile crowd. It takes advantage of an RF DSP engine to provide remarkable analog FM signal processing along with HD Radio.

The XDR-F1HD shines on FM with superb selectivity and extended sensitivity and signal-to-noise ratio, especially in stereo. Using DSP noise reduction, the Sony appears to offer about a 20 dB improvement in stereo over conventional consumer receivers.

This means the old 20 dB penalty of multiplex FM stereo has finally been erased. There is no longer any reason to blend to monaural to reduce the noise. It is amazing to be able to lock to a distant FM station, hear its audio with little or no noise and maintain excellent stereo separation. The unit might make a good, inexpensive, front end for a translator.

In my opinion, the analog FM mode of the XDR-F1HD is outstanding.

What you get is a diminutive tuner, smaller than normal component tuners such as the Onkyo Integra T-9090, which has been my benchmark radio for many years. At only 7 inches across by 2-1/4 inches high by 6-1/4 inches deep it can easily be lost in a pile of brochures.

It has a calm 2-3/4 inch wide LCD display,

black letters on light blue backlight, with three user-adjustable brightness levels. The display is always lit. The dimmest setting can be used as soft night light.



The two-pronged power cord is captive. The other connections on the rear panel are a pair of RCA pin jacks for audio out, an F female panel jack for antenna and a pair of press-release wire posts for the external balanced AM loop antenna.

It is truly balanced to help reduce stray noise pickup from the receiver. If you connect an unbalanced AM antenna the locally induced noise will go up dramatically.

Control features

Sony also packed a wire dipole antenna, identical to the one that came with my Boston Acoustics Receptor HD. I'm guessing it's a generic wire antenna manufactured in China and used by most

manufacturers whose products are being made there. This type of antenna is only useful for strong city-grade signals. At my house, that limited the number of full quieting signals to less than six.

The infrared remote duplicates all the controls on the radio itself with the addition of direct buttons for display brightness, sleep mode and numeric keypad for direct selection of presets. Unfortunately there is no way to directly select frequencies. You only get up/down buttons to navigate across an entire band either AM or FM.

Thus, you have to make use of the 20 AM and 20 FM preset memories to provide instant numerical access; this is available via the remote. Preset memories will store multicast channels. The pushbuttons are on top of the tuner as there is insufficient real estate on the front panel.

It is a bit awkward to go from the presets to manual dial mode. If you press Tune/Select plus or minus when in preset mode, the unit will dump you into non-preset register one channel higher or lower than your last preset memory, based upon which button you pressed.

If you press the Band button it will switch to the opposite band. Press Band again and it will return you to the same band and same frequency you had in preset mode.

There are two Scan functions, normal analog and HD Radio only. Each will sample the entire band, stopping on strong enough signals for a few seconds before moving on.

HD Radio Scan attempts to look for and lock to HD Radio carriers before moving on. The unit will mute all audio until it locks to a digital signal. It can be

Product Capsule: Sony XDR-F1HD Tuner

Thumbs Up

- ✓ Very responsive; few bugs
- ✓ Superb FM selectivity and extended sensitivity and S/N ratio
- ✓ Can be programmed to remember the last multicast stream
- ✓ Audiophile-quality sound
- ✓ Good AM IBOC reception

Thumbs Down

- ✓ No direct frequency input capability for tuning
- ✓ Loses settings and preset memories upon power loss
- ✓ No restart upon power loss and restoration
- ✓ It cannot be programmed to receive only odd frequencies.
- ✓ It cannot do split mode or any other engineering mode.

PRICE: \$99.99 MSRP

INFO: www.sonystyle.com. Go to the MP3 and Portable Electronics tab, and click on Radios and Boomboxes.

a slow process.

The display does not indicate Stereo mode as it is always ready to decode any L/R audio information it can detect. If you want to force reception to monaural you'll have to mix L+R audio together outside the radio.

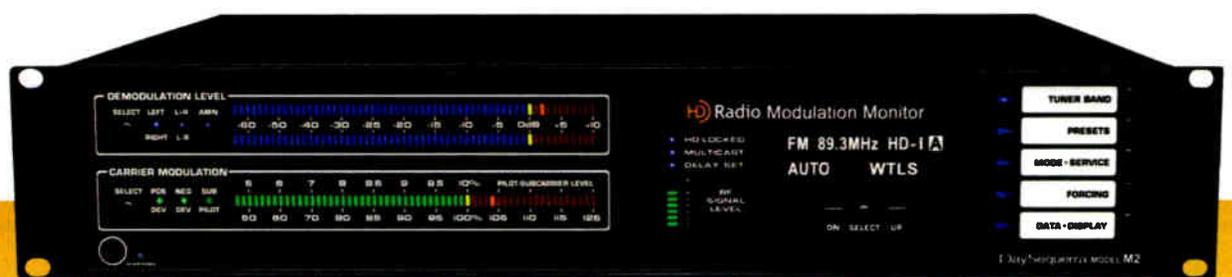
The display does decode RDS or PAD data, a nice touch since few HD Radios do both. The display button toggles through three modes, one line of RDS/Pad data plus frequency, one line of RDS/Pad data plus time of day or up to three lines of scrolled RDS/PAD data.

In spite of some of the awkwardness of the controls, the radio responds quickly and reliably without exhibiting any of the glitches and freeze-ups we've come to expect from many of the HD Radio receivers already on the market.

The XDR-F1HD is a tuner, not a receiver and doesn't have speakers or a headphone jack.

See SONY, page 28 ►

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Sony

► Continued from page 26

Another annoyance is the inability to choose only North American FM channel spacing. The Sony tunes to both odd and even frequencies.

Real-world reception

I operate a Class B FM station, the tower of which is shadowed from my home by a large hill to my east. This station is also short-spaced from two other Class Bs to the north and south.

Here is where it gets interesting. With my 10-element rooftop antenna aimed north, the Sony tuner fully captures the northern station, which is at least 90 miles away. I can hear a little bit of distortion on their FM stereo signal due to co-channel noise, but it is listenable without a trace of my station's FM audio. However, within a few seconds the Sony will lock to the HD Radio carriers of my station.

Suddenly I'm hearing my signal in clean HD Radio. This is because the short-spaced stations to my north and south are not yet transmitting HD Radio carriers!

There is a Class A classical music FM station approximately 75 miles to my north. It is a joy to listen to as its stereo signal is noise free much of the time, has good separation and no hiss or static from that distance, with an ERP of only 400 watts. None of my other receivers, including the Onkyo, can do this trick while maintaining full stereo.

There are two Class A stations on the air at 99.3 approximately 90 miles apart, one to my north and the other to my south. With an estimated best-case antenna front-to-back ratio of 20 dB, the Sony can reproduce either station with full quieting depending upon antenna orientation.

For serious FM DX testing I tuned to WALK(FM), in Patchogue Long Island on 97.5 MHz. The distance is 158 miles. In the summer, the daytime signal is about 50 percent of the time. At night and in winter it's more like 80 percent availability. It is full quieting in monaural at least 40 percent of the time. This path is probably mostly over water including the Connecticut River. With the Sony, it is equally quiet in stereo.

For yet another serious DX test I aimed my antenna north towards Montreal, Canada. CKMF(FM) runs 75 kW and is 173 miles to my north. The Sony reproduces its FM stereo signal well. My BA Receptor can also pick up this station, but not in stereo and with a bit more noise.

IBOC sensitivity seems to be almost identical between various models when given the same quality outdoor antenna. My BA Receptor, while exhibiting worse FM performance than the Sony, is pretty much identical in HD Radio.

Some have given the BA Receptor a bum rap regarding sensitivity. It does generate a lot of self noise, but given a good external antenna I've had excellent results comparable to other quality FM receivers.

It is possible to use the Sony for FM HD Radio multicast monitoring. The unit

will stay tuned to an HD2 or HD3 stream if you save it as a preset. But it has a quirk. The display will not give you an HD2 indication if you tune away and tune back after loss of RF.

But it will play back the HD2 stream called for by that preset memory. The other caveat is loss of AC power. The radio will reset to off, upon even the briefest power blink.

Also, nonvolatile memory retention is short. One of the modifications circulating on the Web (see Brian Beezley's Web site, www.ham-radio.com/k6sti/xdr-flhd.htm), is to upgrade the memory capacitor to a larger value. If you replace it with at least a 1.5 farad super capacitor I believe that you can increase retention to more than a day.

A UPS with sufficient run time might be a prerequisite unless you can figure out how to force the Sony to power back up after an outage. A reed relay and the appropriate logic could be added to pulse the radio's On/Off switch circuit upon restoration of AC power.

FM and HD Radio audio quality is very good and can be improved to near-perfectly flat audiophile quality with the addition of better audio low-pass filtering. This modification is also posted on Beezley's site.

What about AM?

Analog AM reception is good but the audio fidelity is lacking as it doesn't attempt to provide the available 10 kHz audio bandwidth. Instead it opts for the more common 5 kHz or lower brick-wall limit. Testing AM capability has been a challenge for me as I am not within significant groundwave of any AM station, either analog or IBOC.

My AM HD Radio station is about 5 miles too far away and behind a hill, to boot. Also, while the Sony's balanced AM input and its loop antenna are quite effective in reducing local noise, the unit is insufficient to receive weak AM signals. You really need a larger loop or long-wire antenna located away from living areas that these days are filled with RF noise generators.

I have a modest amateur radio vertical antenna hidden amongst the trees away from my house. It works well as an AM broadcast band receive antenna. The problem is matching the low-impedance balanced input of the Sony to a 50 ohm coaxial line.

The display decodes RDS or PAD data, a nice touch. Few HD Radio receivers do both.

I found that eight turns of telephone interconnect wire wrapped around the Sony-provided AM loop antenna made a sufficient match. In fact, I could decode the PAD data from Radio Disney WQEW(AM) on 1560 kHz in New York City. Unfortunately, the signal was not strong enough to permit recovery of the audio stream.

In the daytime, my 1220 kHz AM IBOC station operates at 1,000 watts. Using my amateur radio vertical antenna I was able to achieve digital lock with the Sony. I've not been able to do so with the

BA Receptor even with its loop antenna coupled to my vertical.

Sony appears to be somewhat more sensitive for AM IBOC reception. In analog mode I can hear noise but it will still lock to digital. The fidelity difference is dramatic. The blending back and forth is smooth and not jarring.

On AM, the BA Receptor soft mutes earlier than the Sony. When listening to both radios simultaneously it's obvious that Sony's DSP engine is running faster as it exhibits less audio delay.

We tend to forget a lesson from the early days of AM radio and television. A good antenna is key to good reception regardless whether the receiver is deaf or state-of-the-art.

With the proliferation of cellular handsets with hidden internal antennas and wireless networks used by laptop computers without visible aerials, folks have come to expect radio gear to function miraculously without them. This just isn't so.

Cell phones work because of the very short wavelengths at cellular frequencies and short distances to multiple cell sites. Even in an urban area with many city-grade signals, a good external or outdoor antenna will provide significant improvement.

To summarize, if you need engineering functions you'll have to look elsewhere and spend more money. But if you are looking for one of the best-performing analog FM tuners in commercial production, an inexpensive HD Radio that can be used to reliably monitor multicast channels, a high-quality IBOC tuner to add to your high-end sound system, the XDR-F1HD is it.

The author is chief engineer of Saga Communications in Keene, N.H., and owner of Wilner Associates in Putney, Vt.

DIGITAL NEWS

SiPort Sets Up Fund After Killings

SANTA CLARA, Calif. The board of SiPort appointed a co-founder of the four-year-old company, Vice President of Engineering Aiman Kabakibo, as chief executive. That came after the violent deaths of three employees in the chipmaker's Santa Clara offices. Police told the San Jose Mercury News that a recently fired employee shot CEO Sid Agrawal, Human Resources Manager Marilyn Lewis and Vice President of Operations Brian Pugh. Police charged Jing Hua Wu with three counts of murder, according to the San Francisco Chronicle.

In a statement, iBiquity Digital Corp. said: "We are shocked and saddened by the tragic deaths at SiPort. Our thoughts and prayers are with Sid, Brian and Marilyn's families and colleagues."

SiPort has established a memorial fund toward supporting charitable causes identified by the victims' families. Checks should be made out to Silicon Valley Community Foundation, noting "SiPort Memorial Fund" in the memo line and mailed to 3255 Scott Boulevard, Santa Clara, CA 95054.

In August iBiquity certified the SiPort IC, a single-chipset solution for HD Radio tuners; SiPort recently shipped the SP1010, a low-cost, low-power consumption chip.

RETAIL: If you go into a consumer

electronics store and don't see HD Radios on display, or they're turned off or in a closed display case, talk to the store manager — and iBiquity Digital.

The technology developer wants to hear about retail experiences for HD Radio, good and bad. iBiquity Vice President of Broadcast Business Development Scott Stull said during a Broadcast Electronics Webinar that if the retailer is local, a radio station should establish a relationship so that the retailer knows about the station and its interest in IBOC.

Approximately 80 HD Radio receivers are available at retail now; iBiquity projects that to increase to 100 by year-end. The typical price range is \$100 to \$149.

NPR LABS: New faces at NPR Labs include Paul Littleton, a research assistant who hails from the Democratic Republic of the Congo. He started in June as a paid intern, working with John Kean on mapping for the digital radio coverage and interference analysis that has been submitted to the FCC. Littleton helps on propagation mapping issues and is involved in IP testing and configuration issues. He attended a college of applied technology at home and hopes to make a career working with satellites and audio transmission. Also NPR Labs now has Daniel Schwab and Mary Hinch as technical research assistants on the accessible radio projects, working for Dr. Ellyn Sheffield. Matt Burrough and Kyle Evans have moved on, though both remain consultants to NPR Labs on software applications they developed while working there.

'SAVE SIRIUS': Some members of a shareholders group called "Save Sirius" planned to travel to New York for the first shareholder meeting since the merger of Sirius and XM Satellite Radio, set for Dec. 18. The group, led by California real estate broker and Sirius shareholder Michael Hartleib, filed a lawsuit charging Sirius XM executives with mismanagement, on behalf of some 600 shareholders. The group accuses Sirius executives of racketeering and "unjustly enriching themselves at the expense of the corporation." Sirius XM told the Securities and Exchange Commission it planned to seek shareholder approval to expand the share pool to 8 billion shares and then institute a possible 50-to-1 reverse stock split, something the Save Sirius group wants to prevent. Sirius called the suit baseless and said the company plans to challenge it.

HD RADIO ADS: Listeners can hear Santa's elves talking about HD Radio in a holiday campaign from the HD Digital Radio Alliance. The flight began Nov. 5 and runs through Dec. 28. Apparently Santa has had enough milk and cookies, so his elves and reindeer discuss getting him an HD Radio receiver in the ads. Listeners are reminded in the spots that they can text SANTA or GIFT to 58011 to hear about HD Radio specials and discounts. Also listeners can go to www.hdradio.com to see a holiday streaming mini movie that matches the ad campaign and receive info on iTunes Tagging and receivers.

— Leslie Stimson

Radio World's HD Radio Scoreboard is published in alternating issues. Selected data is from BIA's MEDIA Access Pro™; the scoreboard also uses information supplied by sources including iBiquity Digital Corp., the HD Digital Radio Alliance and RW's own research.



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Wish List for 2009

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MEDIA FINANCE

PRODUCT EVALUATION

CC Witness: Is That AM We Hear?

C. Crane Imports an All-in-One AM, FM and MP3 Player/Recorder

by James Careless

Imagine an iPod-sized MP3 player/recorder that can also tune in FM and AM radio broadcasts — and record them. And not just record them, but allow you to schedule recordings based on time, date and frequency.

Then add in a built-in microphone, a mini-plug jack for plugging in a broadcast microphone for recording voice interviews, onboard 2 GB storage (with USB file transfer) and a slot to add a 16 GB compact SD memory card.

Throw on inboard stereo microspeakers, an LCD display and an iPod-style user interface and what do you have? The C. Crane CC Witness, sold for \$229.95.

“We knew we had a good product as soon as we saw it,” says Bob Crane, owner of the California-based company. “It was originally made in South Korea for the Japanese market. C. Crane did have to spend a few tough months developing the interface to normalize it to American culture.”

Details

Measuring 4 inches tall, 2.2 inches wide and 0.6 inches deep, the 3.6 oz. CC Witness feels like a hefty iPod. It is built in a matte black plastic case with silver metal trim, and displays its operations using a 1.85 inch monochrome LCD display.

Below the display are located buttons for Edit (left) and Record (right). Under these resides the interface-wheel. The wheel has four function positions located at the 12, 3, 6 and 9 o'clock positions. In the center is a Play button. Around the wheel are four buttons designated Menu, Play Speed, Back and INT/SD A< >B, the last of which allows you to toggle between the internal memory and the SD card, among other functions.

I would describe what each button does in detail, except that each does so many things.

For instance, the Play button turns the CC Witness on and off; opens a highlighted file folder; selects, plays and pauses a highlighted file; saves timer settings; and lets you save an AM or FM station as a preset (10 of each).

Other features: The CC Witness has a pair of built-in 0.6 W speakers and a built-in mic; a headphone jack and a Mic/Line in jack; a Lock switch (to prevent accidental powering on when in transport); an SD card slot, a USB connection for transferring files directly to your PC/Mac; and a volume toggle switch.

The CC Witness uses a long-life lithium battery that recharges when you plug it into your computer via a USB cable. C. Crane also sells an optional AC adaptor, charging cradle and protective silicon case. The battery is not replaceable by users.

Functionally, the CC Witness interface is built on a series of file folders, which you access by using the wheel interface. You can create new files on your PC/Mac, then transfer them over directly

via USB. The CC Witness does not require special software to do this; it's plug-and-play.

Worth noting: C. Crane offers firmware updates on its site. The most recent, version 2.32, added One-Touch Recording (with time intervals preset at one, two, three or four hours for talk

also possible to record from a better AM radio using the CC Witness input jack.”)

The CC Witness is easy to load with music files, and plays them back with excellent audio quality via the included earbuds. The onboard speakers are a bit tinny, but the audio is clear. Functionally, this device works like most MP3 players:

You can play one song at a time or all the songs in a given folder, with or without repeats, and you can set the CC Witness to play them back randomly (shuffle mode). The search function consists of looking through the files



An accessory kit includes charging cradle, AC adapter and silicone cover; it retails for \$39.95

shows) and an SD card incompatibility fix. When you update the CC Witness' firmware, be sure to save your files externally first. The firmware wipes the unit's internal memory clean when it installs.

Performance

Bob Crane decided to brand and sell the CC Witness because of its radio recording capabilities, plus the fact that it offers AM tuning.

“In most MP3 players, the circuit noise is too strong to allow AM reception,” he explained. “But the Korean firm who builds the CC Witness has found a way to keep the noise down through shielding. This matters in their home market, because students there hear and record lessons carried on AM radio.”

The CC Witness timer makes it easy to record your favorite radio program. You drill down into the Set Timers screen to preset up to 20 timers, the source for your program (AM or FM), then the frequency, date and start/stop times. The feature is easy to set up and works as advertised. The result is that your preferred shows can be waiting for you, the next time you use your CC Witness.

The FM side of the CC Witness works very well while the AM radio has reasonable dynamic range thanks to the unit's 7 kHz bandwidth filter (the C. Crane Web site provides detailed specs as well as the user manual).

On the downside, this wide filter results in powerful AM stations slopping over onto adjacent frequencies as you tune; that's what happens when you trade off selectivity for improved dynamic range. As well, I did have some problems with intermodulation, where lower-band stations ended up ghosting on higher harmonic frequencies.

“Is the AM reception any good?” C. Crane asks in its online FAQ. Its answer: “The AM reception is good when tuned to a strong signal. The AM tuner in the CC Witness will not receive distant AM stations like the CCRadio plus. With the display screen off reception is better. It is



The CC Witness is an MP3 recorder-player with both FM and AM radio reception, priced at \$229.95.

on the CC Witness' LCD screen.

As for recording interviews: The CC Witness can indeed be used with an external microphone to serve as a radio news recorder. The unit even allows you to select the quality of recording you want, in order to maximize its storage time.

For instance, recording at 32 kbps will give you 140 hours on the 2 GB memory; add a 16 GB flash card, and you get a total of 1,260 hours (or 52.5 days). In 256 kbps, the onboard memory can hold 17 hours; with the card added, you get 153 hours (6.375 days). The CC Witness also lets you choose between using a mono or stereo microphone. Once back at the station, you can drag and drop your MP3 files directly to your editing program.

“We are currently researching which microphones work best with the CC Witness,” said Crane. “To this end, we are asking broadcasters to provide us with their results, and we'll post them on our site.”

Limits

The CC Witness is relatively intuitive. Still, for reporters accustomed to the simplicity of sliding in a cassette tape and hitting Record, using it will take a bit of practice.

The graphics on the CC Witness are pretty basic and not always easy to read. At times, you may think you have been taken back to the days of DOS and 286 PCs.

Product Capsule:

C. Crane
CC Witness

Thumbs Up

- ✓ AM/FM/MP3 player/recorder functionality
- ✓ Long battery life
- ✓ Onboard recorder can be used for broadcast; accepts external microphone
- ✓ Timers can be set to record radio broadcasts
- ✓ Ruggedly built

Thumbs Down

- ✓ Confusing user interface
- ✓ AM radio reception prone to intermodulation
- ✓ Speaker audio tinny
- ✓ No HD Radio

PRICE: \$229.95

INFO: www.ccrane.com

Radio station intermodulation on harmonic frequencies is an issue on the AM band.

The CC Witness does not support HD Radio, nor does Bob Crane have any plans to do so with future models.

Although the optional silicon case does provide padding to the unit, it leaves the LCD screen and certain buttons/slots open to the air. This means that

**The 3.6 oz.
CC Witness feels
like a hefty iPod.**

the CC Witness cannot be assumed to be waterproof. There is also nothing in the specs about its operating temperature range. Thus stations wanting to use the CC Witness outdoors in extreme weather should run tests first to see what it will tolerate and what it won't.

The CC Witness AM tuner is not a DX machine, and cannot accept an external antenna as the FM tuner can. (You can record from another through the line-in jack.) Crane plans to come up with a version of his external Twin Coil Ferrite AM antenna that will link to the Witness' antenna inductively. Until then an inductively-connected Select-A-Tenna should do the job, but you may suffer from adjacent interference due to the CC Witness' wide bandwidth filter.

Limits notwithstanding, the CC Witness is an impressive all-in-one AM/FM/MP3 player-recorder. For radio stations or freelancers wanting something small, versatile and affordable, it is a tool worth checking out. 🌐



MARKET PLACE

Amplifier Is for FM RF Designers

The Res-Ingenium FM550-108, sold by Richardson Electronics, is a pallet amplifier designed for FM and HD Radio FM broadcast applications. It is aimed at engineers designing FM transmitters, translators and exciters.

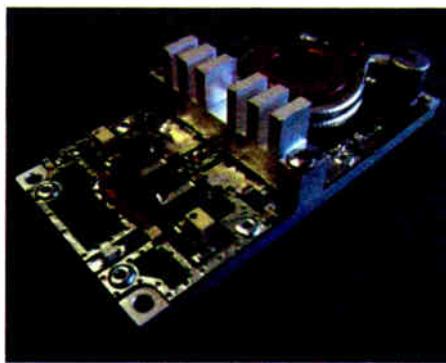
The Class B amplifier will deliver 500 to 600 watts CW output power, up to 82 percent collector efficiency and very good harmonic suppression (-30 dBc), Richardson stated.

The system uses the MRF6V2300NBR1 LDMOS transistor from Freescale Semiconductor and operates from -10 to +60°C.

The typical gain allows a system designer to supply minimal input power, eliminating gain stages to save cost.

Connectorized versions are available upon request. Data sheets and samples are available.

Contact Richardson at (800) 737-6937 or visit www.rfwireless.rell.com/amplifiers.asp.



BroadView Broadens Management Product Software

BroadView Software, a developer of broadcast information management systems, has developed a product offering integrated traffic and sales management for radio.



F.R. "Bunk" Robinson, radio sales director, said, "We take an enterprise-wide perspective to information management. Sharing these information resources — whether at a station, group or network level — creates tremendous gains in efficiency and utility."

BroadView's radio broadcast-oriented product is being used for traffic, billing and sales at approximately 50 radio stations.

It is a modular, scalable management information system; alternatively, individual elements such as traffic can be integrated within an existing infrastructure. Its functionality includes tools such as roll-up reporting and it is scalable from stand-alone stations to large radio networks, supporting an unlimited number of channels.

Info: www.radiobroadview.com.

Matt Connor Is Remembered

Matthew A. Connor died in November in Millsboro, Del.; he was 46.

He began his career at family-owned Connor Broadcasting on the Delmarva Peninsula. From the mid-1980s through the 1990s Connor



worked at stations in Washington, New York and Los Angeles as chief engineer. He held engineering positions at one time or another for WKYS(FM), WASH(FM), WJFK(FM) and WBIG(FM) in Washington; WNEW(FM) and WYNY(FM) in New York; and KCAL(TV), Los Angeles. More recently he was a consultant.

"Although skilled in all areas of his field, he was particularly known for his achievements in broadcast audio quality and in antenna design," according to a bio from his family. Connor also was involved in the early manufacture and sales of TransLanTech Ariane Audio Processor.

The manufacturer's David Reaves attended the services.

"I was joined by fellow engineers and former co-workers from all over the country, including Gary Blau (Lincoln Media Services, Miami), Mager Kizziah (Mager Systems, Phoenix), Jeff Loughridge, (CBS Radio engineering in Washington) and lots of other friends of Matt," Reaves told Radio World "At the service, a special remembrance written by Frank Foti was read by Matt's friend Lisa Barr.

"Matt's death was a shock to all of us, and he will be greatly missed. He was an extraordinary engineer whose winning smile and enthusiasm for broadcasting touched a lot of people."

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2008: The Year in Rearview

For Many, This One Is Best Seen Receding in the Mirror

The year that's coming to a close has been a momentous one, but it contained much that most of us simply are glad to have now put behind us.

For example, regardless of your feelings about the outcome of the presidential election, it's nice to have that process over with. And few would like to see the economy's performance in the fourth quarter stick around.

In fact, so much of importance happened late in the year that we may not be far enough away from it yet to assess it properly. But we almost undoubtedly will look back at 2008 primarily as the year Barack Obama was elected president and the year the market crashed (again) — hopefully in that order.

Closer to home, though, what else happened in 2008?

Objects may appear larger than they really are

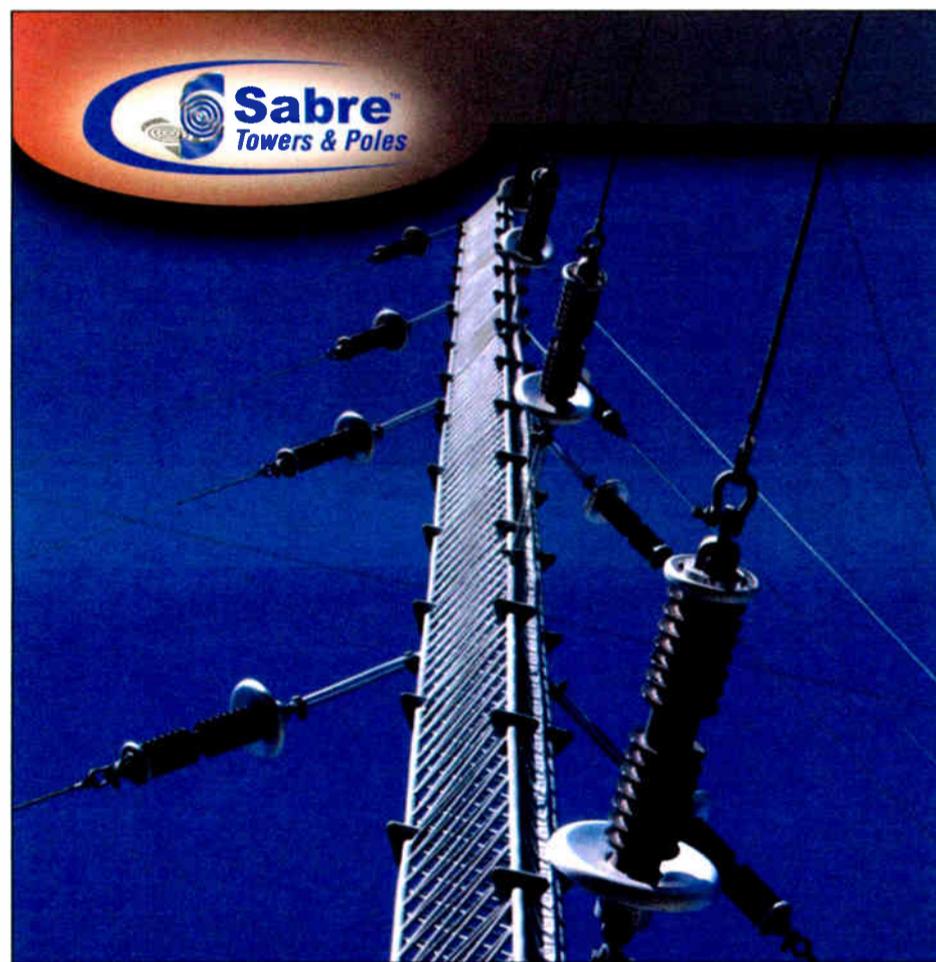
In the radio business, one big story was the approval of the satellite radio merger — although the merged company's subsequent financial problems may already be eclipsing that event. A reverse stock split (1 for 10, 1 for 20, or perhaps even higher) has been proposed to get the company's share price back above \$1.

More debt problems and litigation from disgruntled stockholders are likely to follow. Thus the merger has not yet brought happy times to satellite radio, and it's unclear whether it ever will.

The National Association of Broadcasters has had a tough year, too. After putting its big guns on the line against the satellite radio merger and coming up

2008 may be remembered less for itself than for the era it brought to a close.

empty, it pushed hard against unlicensed devices in DTV white spaces and whiffed there, too. In the past, if NAB's position wasn't fully upheld, it could at least soften the blow by forcing compromise. But in both of these cases the legendary lobby was almost completely shut out, with their opponents winning on practically every point.



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The Big Picture



Photo: Gary Hayes, BBC

by Skip Pizzi

Speaking of Washington, there's already plenty of speculation on what the new government will bring for broadcasters. We'll have to wait for this to play out, but rest assured, we'll be watching closely here and will bring you our analysis as it happens.

Another area of attention will be how the credit crisis affects radio. The big story at the moment appears to be how the

OUT	IN
Kevin Martin & Deborah Taylor Tate	A new FCC chairman, and two new commissioners (1D, 1R)
Surfing the Web on your phone	Listening to Internet radio on your phone
Satellite radio systems merging	Satellite radio stock shares reverse-splitting
NAB as a lobbying powerhouse	"Performance tax," return of the Fairness Doctrine, new LPFM rules, reregulation of media ownership rules, etc.?
IBOC as AM's savior	Analog FM simulcasting as AM's savior
Listening to AM stations over the air	Listening to AM stations online
FM translators for extending FM stations' coverage	FM translators for simulcasting AM stations
AM radio broadcasting	We can't think of anything else to try
HD Radio services for the visually impaired	HD Radio services for the visually and aurally impaired
Analog TV	White spaces
Diaries	PPMs (again)
On-air audience ratings	On-air and online audience ratings
HD Radio adds conditional access	HD Radio adds EPG
Interference to noncom FMs from analog TV Ch. 6	Interference to noncom FMs from digital TV Ch. 6
New music discovery on PCs	Tagging on handheld devices
Tagging via HD Radio	Tagging via RBDS RT+
Tabletop IBOC	Portable IBOC
Election ad revenue	Renegotiating debt covenants
W.	Government we can be proud of

major station groups will fare regarding their debt loads. Something not widely known until recently is that most of these groups' credit agreements include covenants with limits on how much they can borrow against their current earnings. As advertising revenues decline, some of these groups are coming perilously close to those limits. If these agreements are not renegotiated, some groups may be forced to liquidate assets.

Perhaps this is the market's own way of placing new caps on media ownership. At least it may save regulators the trouble.

Keep the windshield clean

The new year will see some dramatic movement in venues adjacent to radio.

Most notably of course is the end of analog television broadcasting early in the year, with some interesting business adjustments likely thereafter. Meanwhile the music industry continues along its rocky path, and further contraction is likely to occur there.

While on the subject of music, one bright spot in 2008 was the introduction of music "tagging" during radio broadcasts, for both HD Radio and FM (the latter via RBDS RT+).

This could usher in a new measure of corporate synergy between the music and radio industries. This will be another area

to watch in 2009 and beyond.

Finally, there's one thing I wish I could put on this year's In/Out list, but I can't, not yet at least. It's an idea inspired by my longtime friend and colleague Jay Allison in his introduction to the book "This I Believe II," and with which I agree. In our list lingo, it would read, OUT: Talk radio fear-mongering; IN: Talk radio thoughtfulness.

There's certainly *some* talk radio programming that already qualifies as the latter, of course, mostly at the left end of the dial, but the bulk of the genre still seems rooted in the former. We can only hope to see such an entry finally make it to the list in the future.

Ultimately 2008 may be remembered less for what it was itself than for the era that it brought to a close. It's likely that the first eight years of the current millennium will be equated historically with the Harding or Hoover administrations, particularly if the period that begins in 2009 follows suit as a substantially improved time.

But we're not done with 2008 yet. So until then, put the top down, turn up the radio and drive as fast as you can toward Jan. 20.

Skip Pizzi is contributing editor of *Radio World*. *RW* welcomes other points of view. Comment on this or any article to radioworld@nbmedia.com.

MARKET PLACE

LBA Snags RF Test Franchise for Schomandl and Kathrein

LBA Technology was appointed exclusive distributor for Schomandl and Kathrein RF test equipment in the Western Hemisphere.

Schomandl is a subsidiary of Kathrein. LBA Technology is a unit of the LBA Group Inc.

The German RF equipment manufacturer makes devices for radio, digital TV, wireless, CATV, satellite and laboratory use.

Among the products to be carried by LBA is the SafeOne Personal RF Safety Monitor, a wearable alarm that warns tower climbers, technicians and other personnel working around "hot" antennas if they encounter unsafe radiofrequency energy fields.

LBA is also carrying the manufacturer's portable signal analyzer to analyze digital and analog RF systems such as for high-definition television.

The unit combines a range of terrestrial TV, CATV and satellite test equipment functions. It can test RF signals through antennas, cable transport and over-air transmission. It handles formats such as DVB-T, DVB-S, DVB-C, AM, FM and ATSC, plus most other international digital and analog formats.

The distributorship also includes frequency synthesizers, RF signal generators and frequency standards for test laboratory, medical MRI and other research applications.

For information contact LBA at (800) 522-4464 or www.lbagroup.com/test-equipment.

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CGS Automation's CloseNow for Radio is a Web-based aggregator for collecting and disseminating weather-related closings and event cancellations.



CloseNow gathers information via phone calls or from password-protected input via the Web. Information is presented to station personnel and can be sent automatically to station Web sites.

Using the SnoGo module, automated e-mail alerts can then be sent to subscribing listeners. SnoGo is compatible with cell phones and pagers, too.

Info: www.cgsautomation.com.

SBE Certification Corner

In each issue of Radio World Engineering Extra



+ at radioworld.com

BW Broadcast Ships AM DSPXmini

BW Broadcast has developed an AM version of its entry-level DSPXmini processor. A range of user presets and algorithms are optimized for AM processing. The company touts



the system's intelligibility and fatigue-free sound. It retails for under \$1,500.

The unit is built on the DSPXmini platform; it offers four bands of AGC, four bands of limiting and an anti-aliased clipper in one rack space.

Features include adjustable low-pass filtering to accommodate various AM standards, high-frequency equalization, asymmetrical clipping, low-frequency transmitter tilt compensation and a tone generator to help with installation and adjustment.

BW Broadcast, based in London, also makes solid-state FM transmitters, RDS encoders and digital audio processors for FM, AM and digital radio.

For information call the company toll-free at (888) 866-1671 or visit www.bwbroadcast.com.

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Radio World

Antennas, Power Products & Transmission Support

December 17, 2008

USER REPORT

Jampro Helps WLIR Change Direction

New Antenna Is an Important Part of the Station's Successful Site Move

by John Caracciolo
President and Director of
Engineering
WLIR(FM)
The Morey Organization Inc.

RONKONKOMA, N.Y. You wouldn't think that a new antenna could make that much of a difference, but in our case it led to a major life-change for our station and helped open up an unexpectedly new and profitable business model.

WLIR(FM) is based in Ronkonkoma, which is about in the middle of Long Island. In 2007, we played alternative rock; our station was affectionately known in the New York area market as "The World Famous WLIR" because we have played alternative new wave music since 1982 and the fact we launched the careers of many famous disk jockeys,

like Denis MacNamara, Larry The Duck and Malibu Sue, and we were the first station in the country to play bands like Depeche Mode and Erasure.

New opportunity

At that time we had the opportunity to relocate our antenna site about 5 miles westward. This move would not only substantially increase our population coverage, but also allow us to reach Montauk Point, the furthest point east on the island and be able to cover the affluent communities in the Hampton's, a highly desirable, valuable demographic.



Jampro Penetrator

I knew it would be an asset to the station to make this move. It would increase our coverage and increase our population, but the directional pattern I needed was a tough one and critical to making the move.

I knew I needed to work with an antenna company that could partner with me to develop a unique directional pattern. Although I had never bought a Jampro antenna, I had worked with them a few years earlier when we were looking at a pattern that never materialized. But after checking around, doing my research and talking to other engineers about my problem, they all said that Jampro and its engineering staff out there in California were second to none.

The company offered a range of antenna models and full-field testing facility.

na with the custom pattern and a lower-power JMPC single-bay with an omnidirectional pattern to use for backup and maintenance.

We leased space at the new location on a Verizon tower. In September of 2007, we had no problems putting up the two-bay at 300 feet and the single-bay below it. The instructions were perfect and the installation was a breeze because the tower crew had worked with Jampro many times. The crew swung the antenna to the proper azimuth and our ground surveyor certified it.

Because we mounted on a Verizon tower, we were concerned about downward radiation and interference from many kinds of telecommunications gear, T1 lines, switching equipment and cellular transmissions. However, there have been no ill effects whatsoever since we've been on the air with the new antenna.

Improved coverage

With the new antenna location we cover all of eastern Suffolk County, from Montauk Point to mid-Suffolk County. It's a great coverage area for a Class A station of 6,000 watts, reaching highly populated areas and affluent towns.

Our penetration into buildings has also improved, it sounds cleaner with less picket-fencing. I haven't had a

Our penetration into buildings has also improved, it sounds cleaner with less picket-fencing. I haven't had a single listener complain that they could not get the signal.

First, I actually designed a rough pattern myself and found exactly what I needed. I also gave Jampro a sketch of where the populations and water were located. I sent this information to the Jampro engineers and worked with them, back and forth many times, as they fine-tuned the pattern on the test range to maximize every point of coverage.

It was a challenge. The pattern had to be unique. Our station is short-spaced to a co-channel and also on the eastern end of Long Island. We faced problems from the north from Connecticut, problems from the southwest with New Jersey and a host of problems from New York City to the west. The only problem we didn't have was east towards France.

It was a very, very tight pattern and I had to look to maximize it where I could; I had some nulls that I had to hit to make the FCC happy and meet the contour protection that they required.

Easy modification

Jampro was great when it came to modifying the pattern several times.

When we found a pattern that I was comfortable with, they shipped me a JMPC two-bay "penetrator" model anten-

single listener complain that they could not get the signal. In areas where we had been a little scratchy before, the signal has improved dramatically and we experience less multipaths.

As a result of the new location, increased coverage and signal being so good, ESPN decided they wanted to extend their coverage. In January we inked a deal with 1050 ESPN out of New York City to become an affiliate and simulcast the ESPN Sports Radio feed, which we now carry as our exclusive programming. ESPN is thrilled with our new signal and the fact that it also covers the Hamptons, a premier demographic that they wanted to reach.

ESPN comes into us via satellite and we go out single-mode fiber optic to our tower. We changed nothing in our transmission facility and kept our Harris Z-10. We just got an outstanding antenna from Jampro, developed a unique pattern and moved it to a better site. ESPN Sports Radio has picked up additional advertising for us and it has helped us with business by increasing income to the station. It's worked out very well for us.

Contact Jampro in California at (916) 383-1177 or visit www.jampro.com.

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WHEN: Wednesday, December 17, 2008, 12:00 PM Eastern US

WHERE: Your computer via Internet browser

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Radio World

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TECH UPDATES

Furman Power Conditioners Protect Valuable Equipment

High-tech radio studios have invested a great deal of money in high-end, sensitive electronic equipment. Furman provides sound power management systems for such applications.



The PL-PRO DMC is a sturdy, rack-mountable 20 Amp power conditioner/light module with power protection and filtration. A total of nine protected and filtered 120 VAC outlets in two isolated banks (20 Amp total capacity) are available in a compact space.

This power management system features SMP surge protection that provides what the company describes as the highest level of surge and spike protection available, Linear Filtering Technology (LiFT) that offers AC noise filtration to ensure clean power for audio and video clarity and ES voltage protection: that detects dangerous voltage conditions and safely powers down equipment until voltage is corrected.

Other features include three rear-panel outlets spaced to accommodate large "wall-wart" AC transformers, with secure straps to hold plugs in place; a rear BNC lamp connector that accommodates a gooseneck lamp for rear rack illumination; dual pull-out LED lights; switchable, dimmable dual voltmeter/ammeter displays input voltage and output current with Protection OK, Extreme Voltage and color-coded Voltage Range indicators; and a front-panel USB charger for cell phones, portable media devices and other electronic devices.

For more information, contact Furman at (877) 486-4738 or visit www.furmansound.com.

Shively: No Reliance On Computer Modeling

When yagi antenna systems are to be used for full facility directional operation, the FCC requires a formal pattern range test and a certification of the patterns test.

Shively says its engineers build systems "based on real antennas, measured on real towers," which comply with the FCC rules for directional antenna systems.

Shively Labs says every coverage pattern it replicates is developed on one of its two test ranges, and it never relies upon computer modeling. This allows the company to incorporate the details of the tower, transmission lines and other adjacent antennas accurately into the final design.

For more information, contact Shively Labs at (888) 744-8359 or visit www.shively.com.

New Avionics' Optical Ice Sensors Offer Heaters

New Avionics Corp. has a new heater option for its Ice*Meister Model 9734 Ice Detecting Sensor System.

The new heater-feature option allows radio broadcasters to reset their antenna ice sensors after sensing ice to control antenna heater systems. According to the company this should improve control of antenna heaters and extend heaters' useful life.

General Manager Richard Hackmeister said: "We have had radio broadcast customers request that we build a heater into the 9734 sensor head so customers can reset the ice sensor to a no-ice condition after they have detected ice and energized the antenna heaters. This way, the host control system exercises tighter control over the antenna heater. Instead of having the antenna heaters energized until the sun's heat has melted offending ice from the sensor head, this new option allows the 9734 system to cycle in real time between ice-alert and no-ice states; this saves energy and minimizes wear and tear on antenna heaters."

The new self-heaters are implemented as two 40 ohm heater elements, wired in parallel, one on either side of the sensor window. The heaters are attached internally to two black-anodized aluminum windows positioned on either side of the sensor window, connected in parallel, and powered by external 24 volts. Each heater element is governed by its own thermal switch; the two switches are wired in series. This ambient heat field melts offending ice away from the sensor probe, so that it can cycle back and forth between the ice-alert and no-ice states.

For more information, contact New Avionics Corp. at (954) 568-1991 or visit www.newavionics.com.



PowerClamp Ramps Up To Series 4

Since 2003, Henry Engineering has offered PowerClamp Transient Voltage Surge Suppressors (TVSS) to the broadcasting industry. These TVSS units help eliminate damage to broadcast transmitters caused by lightning-induced transients on the AC power line.

The Series 4 PowerClamp has been added providing similar protection to studio equipment and other sensitive electronic gear.

It will handle an AC spike of up to 60,000 amps, and is suitable for use on a subpanel or a transmitter site where a Series 8 PowerClamp unit is installed "upstream."

The most important aspect of any TVSS device is how low it "clamps" spikes and surges to the normal AC waveform, Henry notes. PowerClamp TVSS units typically attenuate spikes to within a few volts of normal voltage. This allows them to "scrub" noise and harmonics from the power line, in addition to protecting downstream equipment from surge damage. PowerClamp units do not degrade over time, and require no maintenance, Henry says.

The manufacturer cites users in its marketing; among them is Chuck Ide, chief engineer of KYSR(FM) in Los Angeles. Henry quoted him: "We use a pair of Continental 816 transmitters, which use internal SCR regulators to control the screen and plate voltages. We had a continuing problem that was caused by the third and fifth AC power line harmonics generated by these SCR regulators. When the voltage of one AC phase was high, the SCR regulators would kick in, generate harmonics on the AC power line, which would cause the other transmitter to go off the air. The two 816s would fight each other, knocking each other off the air."

"When we installed a PowerClamp TVSS unit, it totally solved the problem. The PowerClamp unit attenuated the power line harmonics by about 50 dB, which we verified on a Fluke network analyzer. We haven't had this problem since."

For more information, contact Henry Engineering at (626) 355-3656 or visit www.henryeng.com.



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WINNING THE RATINGS WAR

VORSIS: THE TECHNICAL STUFF

The loudness wars are over. The winner? Nobody. Why? Because when everyone became as loud as possible, using the same limited tools, the personality of every station got lost. We call it "the sameness syndrome."

We hate the sameness syndrome and believe it's a good part of the reason ears are turning to alternate sources. They are just plain tired. Fatigued.

Imagine, then, scanning a radio dial and finding an aural oasis – sound that's breathtaking in its natural quality, but loud and still retaining a sense of dynamic range. Impossible? If you think so, you haven't heard Vorsis.

Vorsis is the first line of air-chain processors designed for today's 21st century radio listener. It's a complete ground-up rethinking of the tired and traditional approach that is inescapable with those well-known processors. Here we talk about a few of the innovations that make the flagship AP-2000 Spectral Dynamics Processor the incredible tool that it is. Many of these advances are shared among the entire range of Vorsis solutions.

Intuitive Interface and Operation

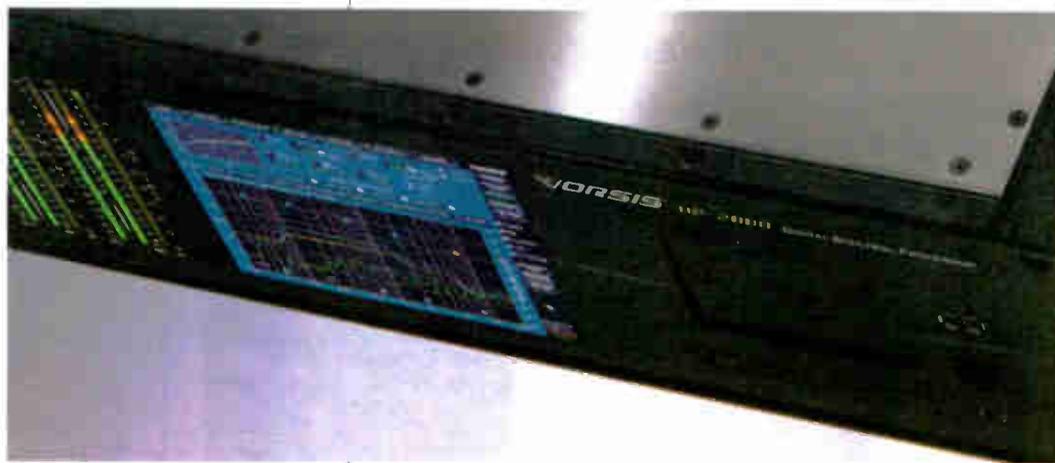
No processor can meet its full potential if it's not something that's easy to use or if the full

Think about having the full engineering control you've always dreamed of – being able to find the whispers as well as the screams in your station's sound, crafting an aural signature that's so good, so transparent, you will have people calling to find out how you do it.

Vorsis Dynamics Control

Vorsis completely rethought dynamics control – AGC and compression – and came up with a design that's intelligent AND amazingly flexible to control and shape your station's "sound."

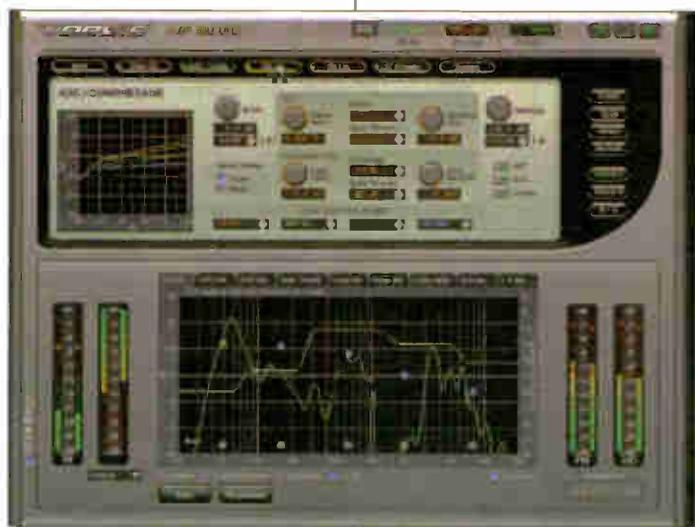
Five-band AGC (four-band in the VP-8) ensures a consistent spectral balance. Vorsis' exclusive SST™ Sweet Spot Technology manages the behavior of the AGC in real-time so that



what the incoming level or era of the music.

Powerful Bass, Incredibly Clean Voice

Vorsis Bass Management System extracts and reveals the nuances in the program that are simply not heard in any



palette of controls are not accessible. The Vorsis GUI is designed for intuitive operation, from the front panel or remotely on your PC. No control is more than two clicks of the mouse away. The screens offer a logical layout with a virtual control surface above and monitoring graphs and meters below. You can see and hear the results instantly. Nothing is easier.

it always operates in its "sweet spot." The multi-band compressor, operating in concert with the AGC, provides unprecedented dynamics control. All operate in sum and difference – the highest signal controls the amount of processing. This is a completely new way to manage multiband dynamics to maximize the consistency of your station's on-air presentation – no matter

other radio processor. It puts deep pristine bass on the air without the distortions of common bass clipper technologies. VoiceMaster is a special Vorsis clipper management tool that has its own automatic processing chain dedicated to detecting and specially processing live speech signals, giving you the loudest and cleanest on-air voices ever.

Superior Stereo Enhancement

In rethinking Vorsis, it became clear that stereo enhancement HAS to be integral to the processing. It is, after all, a manipulation of the amplitude of the L/R difference signal that creates the perception of a wider sound field. With Vorsis, you'll get smear-free enhancement of the stereo image that can be as wide as you desire. But that's only the beginning – you can also control the stereo image width on a frequency-conscious basis

and use L+R to L-R signal ganging to prevent the image from wandering uncontrolled. It's already field-proven to manage wide discrepancies between the recording techniques of various eras (oldies to the over-mastered music of today) and even reduce multipath interference.

Surgical Limiting and Clipping

To some the idea of 31 bands is scary. Not to us. It's simply amazing what can be done with it. Limiting and clipping's primary purpose is peak control to increase loudness; the less audible in its action, the better. 31 bands allow surgical limiting – its dynamic operation is nearly inaudible to the ear so the resulting sound is louder AND cleaner. It also provides unprecedented opportunity to further fine-tune the sound. FM and HD/DAB have entirely different transmission characteristics, so Vorsis processors have completely separate limiting and final peak control sections for analog and digital broadcast.

Welcome to the 21st Century

Vorsis is the first processor designed for the needs of a modern radio station and its listeners. Visit the web to learn more and read our application notes and white papers. Call us to set up a demo today.

It'll make a HUGE difference in your station's sound AND your bottom line.

The Vorsis Lineup

- AP-2000**
Digital Spectral Processor for FM analog and HD/DAB
• 5-band dynamics controller
• 31-band limiter/clipper
- FM-2000**
AP-2000 without HD/DAB section
- AM-10HD**
Digital Audio Processor for AM analog and HD
• 5-band dynamics controller
• 10-band limiter/clipper
- FM-10HD**
Digital Audio Processor for FM analog and HD/DAB
• 5-band dynamics controller
• 10-band limiter/clipper
- VP-8**
Multi-Mode Processor for FM, AM, FM HD/DAB, AM HD, MP3/WAC
• 4-band dynamics controller
• 8-band limiter/clipper
- HD-P3**
Production HD DAB Processor
• 3-band AGC
- M-1**
Digital Mic Processor



W H E A T S T O N E
VORSIS

TECH UPDATES

Vycon Offers Direct Connect DC Power Systems

New Vycon VDC and VDC-XE Direct Connect DC power systems provide clean continuous backup power that is reliable, predictable and environmentally-friendly, Vycon says. The systems feature higher power and more energy storage in a smaller footprint, Vycon says.

Using the company's flywheel technology, the VDC unit provides up to 220 kW of DC power; the VDC-XE (Xtended Energy) model supplies up to 300 kW of DC power within a single cabinet. For longer run times and higher power capacities, VDC models can be paralleled without a special communications link, providing ride-through protection to transfer to a standby engine generator for a continuous power system.

The VDC units are compatible with major brands of three-phase UPS systems and available from channel partners Eaton and Chloride. They provide a 20-year life without a major service interval, according to the company.

The energy storage systems replace traditional lead-acid backup batteries used with UPS systems, thus providing a greener approach, Vycon says, because lead-acid batteries are toxic, heavy and maintenance-intensive.

For applications without an engine generator, the VDC and VDC-XE can operate in parallel with batteries. In this configuration, the VDC is a first line of defense against power disturbances, saving the batteries for prolonged power outages. By absorbing power glitches, the VDC systems increase battery life by handling over 98 percent of the discharges that would have shortened the batteries' life.

For information call the company in California at (714) 386-3800 or visit www.vyconenergy.com.



Phase Technologies Aims for Power Perfection

Phase Technologies' new Phase Perfect PT series digital phase converters expand on the design of their existing DPC series three-phase converter. The new compact, lightweight, wall-mount design offers clean, balanced power using solid-state power switching technology that eliminates the need for a continuously running motor.

Voltage balance is ± 1 percent under all load conditions and an efficiency of 97 percent is typical. The Phase Perfect PT models can now be used worldwide with either 50 Hz or 60 Hz and have EMI enclosure and filtering options. A vacuum fluorescent display with 36 character text for status indicators is also available.

The Phase Perfect converter provides protection for equipment due to under-voltage, over-voltage and single phasing. The Phase Perfect PT series is available in five sizes ranging from 15 kVA to 80 kVA.

Installation is simple and usually can be accomplished in minutes with a minimum of additional equipment required.

For more information, contact Phase Technologies at (866) 250-7934 or visit www.phaseperfect.com.



TLM-1 Helps Avoid Lighting Fines

FM Services of Wilkesboro, N.C., offers the TLM-1 Tower Light Monitor.

This is a microprocessor-based system designed to monitor the status of FAA Type A incandescent tower lights.

Features include monitoring of incandescent-type tower lighting systems; individual alarm outputs for photocell, flasher, beacon and marker failures; general alarm output for any failure type; and status outputs for lights on/off and beacon on/off.

Also featured are LED indicators for each alarm and status output; opto-isolated outputs to protect external site monitoring equipment; and easy setup with one-button calibration.

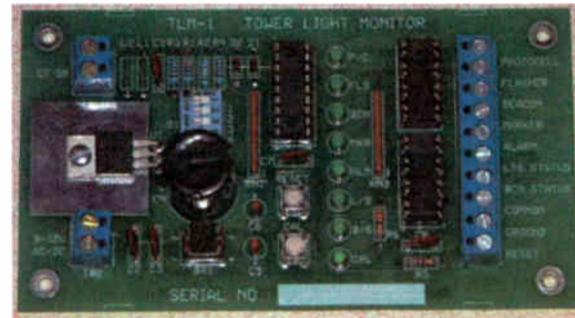
The unit installs inside the transmitter building, even if the lighting control equipment is at the tower.

The company says the system ensures total lighting compliance, with alarms for single bulb failure (marker and beacon), beacon flash rate or on/off ratio outside of FAA specifications and photocell failure. Also provided are failsafe alarms; alarm outputs are normally closed with no alarm condition. A power failure causes an alarm open-circuit condition.

The system compensates for an antenna tuning unit bulb on the same circuit.

The design uses off-the-shelf components, and all ICs are socketed.

For information contact the company in North Carolina at (336) 667-7091 or visit towermonitor.com.



View of the internal board

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ERI Combats Corrosion

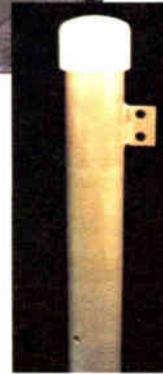
Underground and thus undetected anchor rod corrosion was the second-leading cause of guyed tower failure last year, according to one estimate. Due to this common problem, a vertical real estate company lost two towers within one week.

Electronics Research Inc. (ERI) offers two new products to combat galvanic anchor rod corrosion. One product is for detection and the other for prevention.

The Ultra anchor shaft provides the owner with a means to interrogate the anchor rod for structural anomalies including underground corrosion and stress cracks. This patent-pending design provides easy access for commercially available ultrasound equipment to inspect the shaft without excavation or alterations to the rod construction.

The Mag-Rod is both a sacrificial anode and excellent electrical grounding system. It reverses the polarity of the destructive galvanic cell, thus eliminating the corrosive action and preventing guyed tower anchor shaft material loss.

For more information, contact ERI at (812) 925-6000 or visit www.eriinc.com.



TECH UPDATES

SWR 'Supersizes' LPFM

When it came to the low operating power and tight budget needs of LPFM stations, until recently SWR produced only conventional FM antennas appropriate for the application.

Now a new, lower-cost version of the Illumitron has been introduced. The company says that although it has a maximum RF input power rating of 1 kW and a power gain figure of 1.0 horizontal and vertical, the SWR Model FMIL3 shares the features and specifications of the high-power versions of the Illumitron.

Like its larger and more expensive siblings, the LPFM Illumitron features a unique elevation pattern that puts more than 99 percent of antenna input power into a single lobe on the horizon. This keeps RF energy off the ground and away from others sharing the same site, the company says. RF radiation and RF interference problems virtually are eliminated, and multipath is reduced.

If a conventional FM antenna is replaced with the SWR Illumitron, signal variations due to multipath will be reduced to ± 1 or 2 dB, SWR says. While the average signal strength remains unchanged, the minimum value at points on the 60 dBu contour may increase by as much as 10 dB. FM receivers will have acceptable signal input at greater distances, and in areas previously shadowed. High-quality reception will often extend to the predicted 50 dBu contour, rather than 60 dBu. This improvement in coverage is equivalent to increasing the station's ERP up to 10 times its current licensed power, although actual ERP remains unchanged.

Although the Illumitron FMIL3 is designed for LPFM service, it is also suitable for FM boosters, translators and other applications limited to 1 kW ERP.

The FMIL3 uses circular polarization and a uniform nondirectional azimuth pattern. It is intended for side mounting on a pole or tower leg up to 3 inches in diameter. It can be supplied for any frequency from 88 to 108 MHz, with a maximum input of 1.0 kW and a power gain of 1.0 H&V. More options soon will become available for the LPFM Illumitron including a dual-input version for IBOC digital broadcasting.

For more information, SWR at (800) 762-7743 or visit www.swr-rf.com.



Kintronic Offers Array Solutions PowerAIM 120 Vector Impedance Analyzer

Kintronic Labs is the exclusive marketing and sales representative for the Array Solutions PowerAIM 120 Vector Impedance Analyzer.

The PowerAIM 120 is a lightweight, low-cost, single-port test instrument that can be used with a personal computer to provide swept frequency measurements of antennas operating in the 0.1-120 MHz frequency range, which includes the LF, MF, HF and FM bands.

The software for the PowerAIM 120 is upgraded frequently. New features that have been added since the introduction earlier this year include a scan rate that is approximately 50 percent faster than the original model; polar plots can be displayed for SWR, impedance and reflection coefficient; graphs that have been saved can be overlaid for comparison; multiple bands can be scanned while skipping the unwanted interval between them and Circuit Q can be plotted and readout with the cursor.

Also, the RF output can sweep repetitively between start/stop limit. Start pulse and marker pulses are sent to the scope so the response can be viewed on a scope; Smith chart displays the date and time and has a button for displaying the marker data and SWR data can be output as a variable tone or by speaking the numbers.

Kintronic says the PowerAIM 120 is gaining acceptance as a test instrument for field engineers due to its weight, incorporation of digital signal processing filters to permit measurements in the presence of incoming RF on the same channel at levels up to 50 volts peak-to-peak and the minimal time required to set up the instrument and obtain the required impedance sweep with as many tabulated data markers as may be required.

For more information, contact Kintronic Labs at (423) 878-3141 or visit www.kintronic.com.



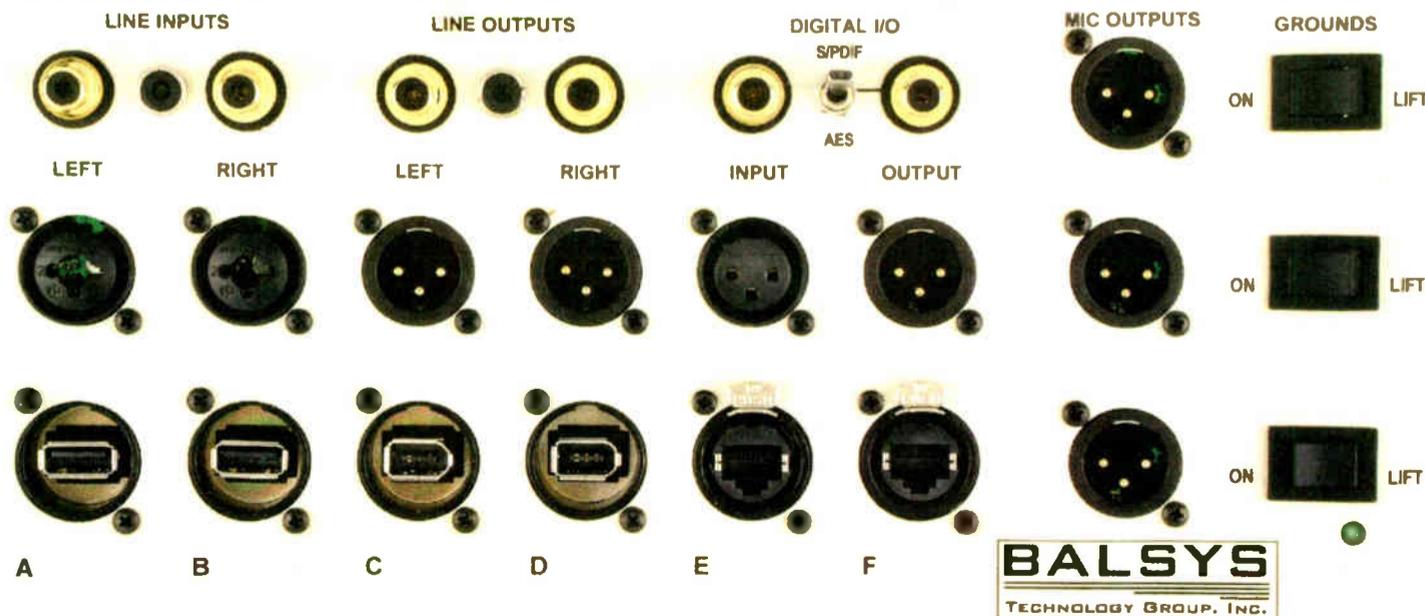
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TECH UPDATE

Eaton Ups Power For Powerware 9395

Eaton Corp. has extended the power rating for its Eaton 9395 uninterruptible power system (UPS). Part of the Powerware series, the new 1100 kVA model is the largest in the industry, according to the company. This UPS delivers greater than 94 percent efficiency across a wide load range while providing cost-saving scalability.

In addition, Eaton has introduced the Eaton 9395 System Bypass Module (SBM) which allows users to parallel 9395 UPSes with different kVA ratings. Previously, it was possible to parallel four to six UPSes with similar kVA ratings; with Eaton's SBM technology you can parallel up to 32 differently-rated power modules of the 9395 UPS. This gives

large data center customers flexibility to increase power as their needs grow.

In addition to the extra power from the 9395 1100 kVA UPS, the SBM technology maintains a smaller footprint and higher operating efficiencies; which translate into space savings and decreased utility costs.

The 9395 has been adopted in organizations as varied as financial institutions, telecom companies, broadcast and entertainment and manufacturing sites where data processing, storage and power protection are important to business continuity.

UPSes provide continuous, efficient power during a power disturbance, allowing enough time to properly shut down equipment while waiting for the generator to power up. The manufacturer noted that



clean, continuous power is especially critical to radio stations that serve as sources for the Emergency Alert System.

For more information, contact Eaton Corp. at (919) 870-3252 or visit www.powerware.com/9395.

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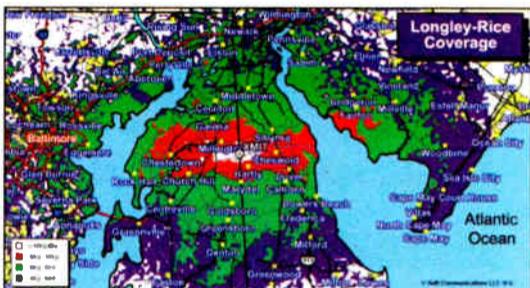
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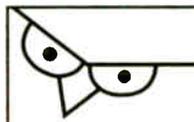
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◆ READER'S FORUM ◆

A Proliferation of Channels

I have suggestions for the proposed 76 to 87.7 MHz band ("Could EXB Band Be Your New Home," Sept. 10).

I would use Digital Radio Mondiale (DRM), and not DRM+, in the new band. I would break each channel into five 20 kHz wide sub-channels that would each have a maximum of 72.0 kbps, 64-QAM and a minimum of 30.6 kbps, 16-QAM, so the broadcaster would have the option of having up to five different programs at once.

Each broadcaster should also have the option of linking any or all of these sub-channels together so the maximum bit rate would range from 153 kbps to 360 kbps with all sub-channels linked.

Let me show you what this would look like for an AM station that moves to the new band. I use AM 1230 in Waco, Texas, for a hypothetical example. The station would move to, let's say, 83.9 MHz and would in the first hypothetical example use five channels separately.

1.	83.85-83.87	Tech news only (in my dreams)
2.	83.87-83.89	News only
3.	83.89-83.91	Programming from AM 1230 (talk shows)
4.	83.91-83.93	Left-wing talk (for example)
5.	83.93-83.95	Big band & standards music (another dream)

In my second hypothetical example, two stereo programs and one mono program are broadcast:

1.	83.85-83.87	Right-channel program A (guitar music)
2.	83.87-83.89	Left-channel program B (piano music)
3.	83.89-83.91	Programming from AM 1230 (talk shows)
4.	83.91-83.93	Right-channel program B (piano music)
5.	83.93-83.95	Left-channel program A (guitar music)

In my final example the broadcaster chooses to link all sub-channels together for maximum bit rate for best audio quality and therefore no list of sub-channels is needed.

The system needs to have the details worked out.

There should be an option for iBiquity's digital system as an option only, never a requirement because I believe that no broadcaster who has received an FCC license to broadcast should have to pay iBiquity thousands of dollars before being able to broadcast.

James Johnson
Arlington, Texas

Let's Trot for Bill

My dad Bill Ashley ("Bill Ashley Turns a Career Page," April 9) was diagnosed with pancreatic cancer earlier this year. He began his battle with this disease by undergoing major surgery in April.

After a recovery period he began chemotherapy and radiation treatments. These treatments have taken their toll on him, but he remains in good spirits. He always has a joke or a story to tell, never seeming to run out of "one-liners."

Soon after dad was diagnosed, my husband was searching the Web for information on pancreatic cancer and came across the Pancreatic Cancer Action Network, a non-profit organization working to advance research, support patients and create hope for those affected by pancreatic cancer.

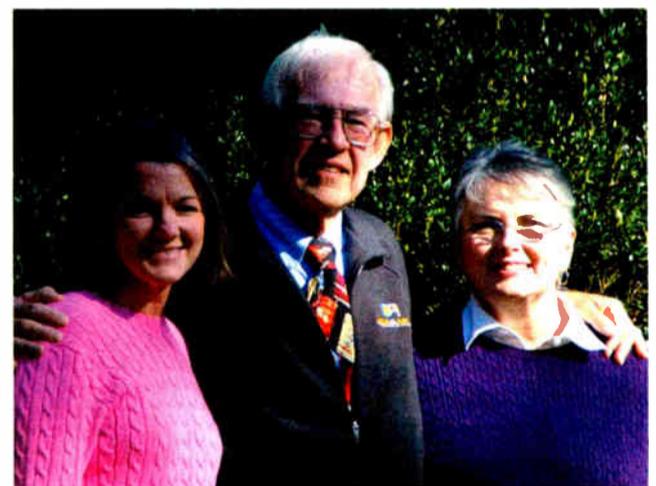
The organization funds research grants, provides information and resources to patients and their families at no cost, pushes for increased federal research funding and educates the public about this disease.

The ING Miami Marathon is one of the events in which the Pancreatic Cancer Action Network participates. I have decided to run the marathon (26.2 miles) on Jan. 25, 2009 as a way to honor my dad and to help raise awareness of this devastating disease.

Pancreatic cancer is the fourth-leading cause of cancer deaths in the United States, yet it receives less funding per patient than other leading cancer killers. Your support helps the Pancreatic Cancer Action Network fulfill its mission and provides hope to the more than 37,000 Americans who will be diagnosed with pancreatic cancer this year.

Please visit my personal Web page to learn more (<http://tinyurl.com/ashleyRW>). Thank you for your support.

Elizabeth Kutz
Haymarket, Va.



Bill Ashley, center, with daughter Elizabeth Kutz and wife Martha



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GUEST COMMENTARY

Managing the Transition to IP Audio

*Is It Suitable for My Application?
If So, How Should I Plan Deployment?*

by Rolf Taylor

I get many questions about IP audio transport. Generally, these involve technical issues of one sort or the other. This article takes a different approach. Instead of tech, we will look at the management analysis involved in evaluating if IP audio transport is suitable for your application. And, if so, what analyses are needed during pre-deployment and deployment.

First we'll examine project scope, and then take a look at risk, some comments on implementation, and finally we'll look at cost.

Project scope

APT has worked with projects ranging from dozens of stations linked in a fully meshed network across distances of hundreds of miles, to simple STL links to 10 watt repeater stations 20 miles away.

On large-scale projects, like that which the BBC has recently deployed in Scotland, IP makes sense for several reasons:

- Modern MPLS networks can offer a fully meshed network where each site has equal access to another site, all with controlled quality (delay, jitter and packet loss all guaranteed by a Service Level Agreement).
- Such networks also allow your IP traffic to be handled within a multiple class-of-service hierarchy. Therefore, your IP audio can utilize the same network as your general wide-area network (WAN) data traffic between the various sites. For example, IP audio may be given the highest priority, followed by VoIP traffic, followed by general business traffic.

On the opposite side of this spectrum are the needs of small, typically nonprofit stations that need STL connectivity to low-power repeaters. The number of listeners on a repeater may be quite small, so typical STL options are often too expensive. There is also a strong aversion to licensed STLs. In this case generic IP paths can be an attractive for the following reasons:

- A variety of xDSL and cable modem options means that odds are good you can get something at your sites.
- Simple to order, and license not needed.
- Professional-grade codecs include extensive support, which can be leveraged during deployment.

Between these two examples are the many customers who have implemented IP radio connectivity (both licensed and unlicensed) between two or more sites. In this particular case, the skills required include RF site design, as well as IP and audio skills. There are advantages here as well:

- Complete control of the IP environment.
- The simplicity of configuration in IP over the tedious configuration of T1 time slots and drop and inserts that would be required for complex multisite projects.

A key consideration will be not only the current scope of the project but also the potential future scope of the network.

IP itself is flexible and easily upgradeable when bandwidth requirements change but the associated equipment, chiefly audio codecs, may not be. A modular, card-based system is recommended for applications where future expansion is a possibility.

Considering risk

In most cases, IP audio transport techniques are fairly young and in some cases you may be one of the first to implement it in a specific way.

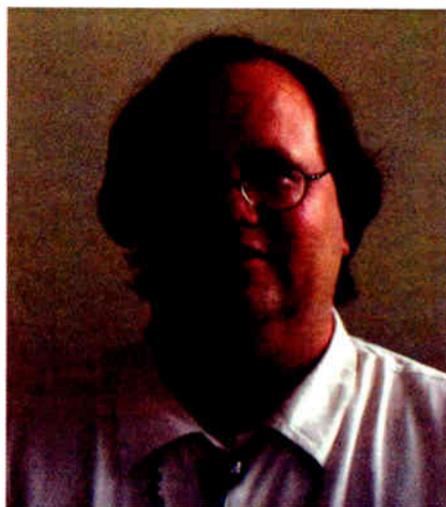
Needless to say, there is always some risk involved in being an "early adopter." Of course, this risk generally is balanced by the benefits of new technology. In any case, it behooves one to understand the risk involved, and take steps to ameliorate it whenever possible.

Some factors to consider are:

- The skill set of the implementers. A solid in-house IT person can be a valuable asset; it is important to involve him/her early in the process so as not to appear that the audio project is intruding on their turf. Ideally, a certified network engineer would be involved, though this is often not the case. In the case of a large scope project, this is a requirement. In the smallest deployments this is certainly not required.
- If RF IP links are involved, extra care must be taken to ensure the path calculations prioritize reliability over speed. Typical IP applications allow data to be re-sent, and therefore are generally optimized for speed. Audio networks require error rates that are lower by several orders of magnitude and thus this must be taken into account during the design stage or results will suffer.
- The reputation and reliability of your suppliers. Ensure that your codec supplier has experience in deploying the equipment in IP applications relevant to your own and that the units have been tested in the field.
- In medium- to large-scope projects you will need to ensure that the network meets the quality level required for audio. In many cases this means ensuring the IP provider can guarantee, in writing, that service will be maintained within pre-determined limits. Typically this involves the carrier using a Quality of Service (QoS) mechanism, and you need to ensure that your equipment supports the method to be used. The parameters for acceptable performance must be addressed in the negotiation/ordering phase and the carrier should provide you with a "Service Level Agreement" (SLA), which outlines these details in a legally binding agreement. Be sure to get this prior to signing the contract, and review it with your IT team and codec provider before doing so. A handshake will not do in place of an SLA!

Implementation

- Expect to qualify/test your network end-to-end as soon as it is available. This should be done rigorously over a period of at least a week and can generally be performed rather easily with software tools on a regular PC. Even simple tools such as the "ping -t" com-



Rolf Taylor

mand can provide substantial information. Your codec manufacturer should be able to recommend additional tools (or e-mail us at support@aptx.com for a copy of APT's IP Verifier Tool). Compare your results to the SLA. In some cases the network provider has online tools that will also allow you to monitor the connection, but at the time of initial testing it is important to use other tools as well.

You may be one of the first to implement IP audio transport in a specific way. It behooves you to understand the risk involved and steps to ameliorate it.

- If the network will handle non-audio data, pay careful attention to assign equipment to the correct "Class of Service" (CoS) using Diffserv or other QoS mechanism. The amount of data at a given CoS level must not exceed the amount specified in your contract or severe problems can result.
- Considering the above, it is recommended that your second-round testing be configured to emulate the audio data closely (for example, APT's IP Verifier software tool can be configured with the same bit rate, QoS and IP ports you will be using for audio). Next start adding applications (starting with those at the lowest CoS) to the network. Once all non-audio applications are working successfully, and your testing continues to show that the top CoS is working properly, deploy the audio network. Then use the diagnostics built into your codecs to continue to monitor a few weeks further.

Costs

While the dollar discussion comes last in this article (as indeed it should within the analysis of the various options available for audio delivery), it will not be considered ancillary at the station manager and CFO levels; in fact, it *will* be the decision.

As with any WAN upgrade, the migration to an audio over IP platform has both "hard" and "soft" costs associated with it. Specifically, the challenge of the engi-

neering and IT departments is to capture all of the costs associated with a new private IP MPLS network (both hard and soft) and articulate these in an all-embracing Total Cost of Ownership (TCO) model that reflects true Return-on-Investment (ROI).

The TCO model compares two different solutions (the existing "business as usual" to the "the proposed private IP network") over a period of time (typically five years) in "today's dollars."

Hard costs include access and port costs, along with premiums for 100 percent real-time CoS required for audio transmission (along with other time-sensitive applications such as VoIP and video conferencing). It is vital that all existing hard costs are captured.

For example, a radio station's core competency may be audio broadcast but it is also communicating with the outside world on a private data level (to other stations and corporate headquarters, for example), on an Internet level and with voice calls. Modern MPLS-powered private IP networks typically are capable of aggregating *all* types of traffic (audio, data and voice) through the same MPLS port.

The soft costs are even more interesting. How about down-time? With the fully-meshed topology of MPLS private networks and the (typical) "five 9s" service guarantee of most Tier One carriers,

there are a number of options available outside the audio application that are not typically possible in an Internet or in many of the current WAN environments. Just one example is intra-corporate video conferencing.

A final word about cost savings of migration to a private IP network powered by MPLS: It is our experience that the new port and access costs often will cost more than the current solutions, but not much more, particularly if care is taken to capture all STL, MAN and WAN costs currently in place.

Furthermore, it does not take too much of a deep dive to uncover the hidden advantages such as flexibility and scalability that will be enjoyed through migration to the MPLS platform, in most cases resulting in a positive ROI for the investment for years to come.

APT has garnered great experience of working in partnership with broadcasters facilitating the migration to an IP audio infrastructure. From major national, country-wide networks to individual STLs or remote links, the key principles are always the same. Take utmost care in the selection of your service provider and codec equipment and plan to ensure optimum reliability, optimum audio quality and minimal risk.

The author is applications/support engineer with APT.

The company offers "A Practical Guide to IP Audio Networking," available by e-mailing info@aptx.com.

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Tagging, You're It

RT+ Music Tagging Could be a Big Deal

Among all the new ideas introduced to U.S. radio broadcasting in 2008, we believe among the most exciting is the addition of music tagging to analog FM.

When the tagging concept was announced as an additional feature for HD Radio, we found it interesting, but upon learning how cumbersome the process was to execute by listeners, and how few devices supported it, we tacitly concluded it was much ado about little in the near term.

Now that the concept has been applied to analog FM broadcasting via the RT+ extension to RBDS, however, we think there may be some real value here. A substantial number of radio broadcasters have already introduced the service (and are collecting revenue from it), and at least one family of Microsoft devices is supporting it with, we hope, more to come. That all this has happened within a few months we also find impressive.

Because tagging can now truly work as a "portable impulse buy" — with the user able to complete a transaction in a few seconds, on an undocked, handheld device — we feel this could be the start of something big for radio. Perhaps it will convince consumers and the rest of the media world that FM broadcasting can still be relevant in the new media age — particularly given recent survey results showing that radio remains a primary music-discovery resource among younger audiences.

It's been awhile since we've seen radio engineers so excited about a new service offering as those with whom we've spoken about FM tagging. The fact that a listener can hear a song on the radio and with a few quick keystrokes purchase and download the song before it finishes playing on the air — with a portion of the transaction's revenue going to the broadcaster — seems groundbreaking even to the most jaded. It shows that at least some new business models for radio can be more productive than the smoke and mirrors many previous ventures have proven to be.

Admittedly, today this service only works as described on some stations, and only with certain devices under specific conditions, but it *does* work, and there is no real obstacle to more stations and devices joining the party. Meanwhile, for consumers who like the service, those involved stations, devices and conditions are differentiated into a preferred status. And that's what drives adoption of new technology: the enabling of desirable, new functionality for all stakeholders — service providers, device manufacturers and consumers.

Of course we hope for more similar developments in the future, including those that will help drive HD Radio adoption in particular. But for now, we like the way this one promises to breathe some new life into plain old FM.

— RW

◆ READER'S FORUM ◆

Jim Cowan

I was greatly saddened to read of Jim Cowan's death ("Neutrik's James Cowan Dies," RW Newsbytes, Nov. 7). I consider him a good friend.

I met Jim when we both served on an exhibitor advisory council many years ago and enjoyed visiting with each other at the various trade shows we attended over the years. Jim was totally devoted to his wife and kids; every time I saw him at a show I would get the latest news of his sons' achievements along with his regret that he wasn't at home with them at the time.

I offer my condolences to his family. Jim was a caring, genuinely nice person and will be missed by many people both in and out of our industry.

Elaine Jones
Elaine Jones Associates
Marketing and Public Relations
Salt Lake City

Protect Your Brand

Paul McLane mentioned in the Oct. 22 issue that iBiquity "takes pains in spelling out how to use the trademarked phrase HD Radio" — for instance, using "HD Radio technology" instead of "HD Radio," etc.

As a newspaper columnist and freelance writer, when I'm not doing my daily radio shift I run into company guidelines about all sorts of products. The leader, by far, is the Xerox Corp., which goes to great lengths and takes equally great pains to protect its nearly-generic name. One way it does this is to place running ads in writers' magazines to point out that the word is protected.

NFL Enterprises Inc. is about to send its annual letter urging us to use "The Big Game" instead of its protected "Super Bowl" in connection with non-affiliated sponsors.

If iBiquity wants to make sure it keeps the reins on HD Radio, it would do well to spend a few dollars and place regular small ads in the various trade publications informing readers that while "HD Radio technology" is fine, "HD Radio" is not, unless it is iBiquity's and is followed by the "tm" symbol.

A few dollars in continuing ad space is a wise investment.

Tom Carten
WRKC(FM)
Assistant Faculty Advisor
Wilkes-Barre, Pa.

It's About Reaching The Audience

The quote in the Oct. 24 story "Mike Dorrough Lends His Voice to Delano VOA Effort" (RW Newsbytes) is misleading in calling the government's Delano transmitting facility "the one intact VOA in existence."

Far from being the only VOA transmitting station, Delano is part of a network of more than 70 transmitting sites and nearly 20 facilities worldwide run by the Broadcasting Board of Governors (the organization that provides broadcast and engineering support for VOA and other

U.S. international broadcasters).

The Delano facility has been a valued asset in our efforts to promote the values of democracy for 63 years but shortwave broadcasting is no longer the most effective way to reach our audiences in all parts of the world.

To put it into perspective, in Iran, VOA reaches one quarter of adults each week via satellite TV. In China, use of Internet and SMS by 15-to-29 year olds is three and seven times greater than radio listening. In other places, such as Afghanistan, radio listening remains prevalent.

Our Greenville, N.C., facility now covers the Latin American regions that Delano used to handle, and broadcasts to Africa as well.

Some of the Delano transmitters will be moved to our broadcast facilities in the Philippines to improve our reach to critical audiences.

We are proud of our important history and investing in the future. By any measure, shifts of our broadcast resources have proven successful, growing our international audience — on radio, TV and the Internet — by 75 percent over the last eight years.

Letitia M. King
Office of Public Affairs
Broadcasting Board of Governors
Washington

Letters to the Editor

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

Letters should be 100 to 300 words long; the shorter the letter, the better chance it will be published in full. We reserve the right to edit material for space. Longer commentaries are welcome but may not reach print as quickly.

Include your name, address, contact information and permission to print, as well as your job title and company if appropriate.

Send letters via e-mail to radioworld@nbmedia.com, with "Letter to the Editor" in the subject field; fax to (703) 852-4585; or mail to Reader's Forum, Radio World, 5285 Shawnee Road, Suite 100, Alexandria, VA 22312-2334.

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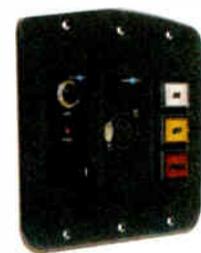


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