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**Beeler Remembered**

Colleagues mourn Scott Beeler, known to many broadcasters from his work at Allied, Harris and ERI.

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**Radio Makeover**

Bob Conrad and Cleveland's unusual frequency swap.

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# Radio World

\$2.50

The Newspaper for Radio Managers and Engineers

October 23, 2002

**INSIDE**

**ENGINEERING**

▼ John Bisset shares a circuit for monitoring your tower lights.

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▼ Cris Alexander discusses antenna gain vs. transmitter power.

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**GM JOURNAL**

▼ Jean-Paul Colaco talks about his strategies and plans at Radio Disney.

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**STUDIO SESSIONS**

▼ MediaForm's Scribe CD Replicator, Promusic's Audio Express CD Collection and Mike Orotolano of 'Open House Party.'

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## NAB Radio Show



## Product Highlights

Shown: Dielectric DCR-S Antenna

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## FCC Okays 'Historic' IBOC Order

by Leslie Stimson

**WASHINGTON** Oct. 10 was the day digital radio proponents have been anticipating for more than a decade.

On that day, the FCC approved in-band, on-channel digital audio broadcasting as the technology U.S. stations will use to go digital. The IBOC approach maintains the AM and FM band system so familiar to U.S. consumers, and preserves the frequencies of current license-holders. Its hybrid design means stations can add a digital signal even as they continue to broadcast in analog as well for the foreseeable future.

The decision clears the way for stations to use the system developed by Ibiqity Digital Corp.

FCC Chairman Michael Powell called the decision historic, and said he is glad to see radio join other media in going digital. "I'm thrilled to see the radio wagon train get to the other side."

Ibiqity was pleased; it had pushed the agency for a decision this month so that its receiver manufacturing partners could get IBOC radios built in time for introduction in January at the Consumer Electronics Show. Those radios will carry IBOC's

See FCC, page 6 ▶

**2002 Radio World READERS' CHOICE Sweepstakes**

**WIRELESS WONDER**

▼ A New Jersey reader wins an Audio-Technica 3000 Series UHF wireless system from Bradley Broadcast & Pro Audio.

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# ◆ NEWSWATCH ◆

## EAS Now Mandated For LPFMs

**WASHINGTON** The FCC now is requiring LPFMs to install certified EAS decoders.

The new low-power stations had received a temporary waiver from the new EAS requirements passed in February because there weren't yet EAS decoder-only products on the market. Now that the commission has certified a TFT EAS decoder, LPFMs have up to a year from when the Sept. 19 notice was published in the Federal Register to install a unit.

## CPB Tightens Funding Belt

**WASHINGTON** The Corporation for Public Broadcasting is changing how it doles out federal funding to noncommercial stations. In light of the national economic situation, the group plans to refocus its activities and streamline its internal processes "in order to more effectively support public broadcasting," according to President Robert Coonrod.

CPB plans to conduct a system-wide review of financial pressures on radio stations and how to handle them,

including developing a more targeted approach to using CPB radio resources and creating precise content development goals.

The organization plans to hire a new vice president of radio and address several issues in public radio and TV. Coonrod announced the changes in September.

He said CPB also would make changes to ensure more effective use of federal funds. CPB will create a unit that will handle and document transactions and streamline reporting processes and improved internal communications about projects in development.

## FCC Ponders Media Ownership

**WASHINGTON** The FCC's third biennial regulatory review of broadcast ownership rules is underway. Affected radio rules are local radio ownership limits and the radio/TV cross-ownership restriction. Attendees at the recent NAB Radio Show said it was too soon to tell if local ownership limits, allowing one company to own up to eight stations in a market, might change.

In the 1996 Telecommunications Act, Congress mandated the FCC to review its media ownership regulations to determine "whether any of such rules are necessary in the public interest as a result of competition."

In a Notice of Proposed Rulemaking, the commission asks for public comment on several questions, including: Is there enough media competition in the marketplace? Do the current rules advance the commission's goals for media of diversity, localism and competition?

The agency is commissioning studies examining the state of the media marketplace, including how consumers use media and how advertisers view different media outlets.

## ABC to Swap Signals in L.A.

**LOS ANGELES** Radio Disney and ESPN Radio, both 50 kW stations, will swap signals in the Los Angeles market. On New Year's Day, Radio Disney will move to 1110 kHz while ESPN Radio migrates to 710 kHz.

In making the announcement, ABC said  
See NEWSWATCH, page 7 ▶

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### OPINION

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NEWS MAKER

# Consulting Is 'the Place to Be'

*Consolidation Means Busy Times for Sam Garfield And His 'Home for Abused Engineers'*

by Randy J. Stine

**RALEIGH, N.C.** Sam Garfield is harshly critical of the broadcast industry for its treatment of engineers. However, he also admits he owes part of the success of his consulting engineering company to that very same reason.

"Broadcasters no longer believe it's necessary to pay enough to attract and retain qualified broadcast engineers. That's why our company and others like it are thriving today," Garfield said.

Garfield founded Technical Broadcast Consultants along with partner Chuck Britt in 1990. His company, based in Raleigh, N.C., handles radio frequency projects for both radio and television, including transmitter engineering, antenna and transmission line diagnostics and site relocations.

"Basically, if you're off the air, call us," Garfield said.

Garfield, vice president of Technical Broadcast Consultants, is no longer surprised at the stories he hears from CEs

across the country about what is asked of engineers in the field.

"It's a shame how (engineers) are treated at times. So many stations, particularly radio, have their engineer doing everything but engineering work. He's changing light bulbs and fixing toilets instead of engineering. They look at these guys as maintenance men," Garfield said.

Garfield often refers to his company as "a home for abused engineers." His own experience as a CE in radio and TV gave him a close look at what many engineers in the broadcast industry are forced to put up with.

"One of the ways we keep people is to pay them well. We believe in a reward system. The more the company earns, the more they earn. The key is not being greedy, and sharing with your employees," Garfield said.

Garfield, 54, was born and raised in Cleveland. He delved into broadcasting for the first time as president of the Audio/Visual Club at Cleveland Heights High School.

"I was always into sound and recording. But music was really my first love and why broadcasting always interested me," Garfield said.

**Air Force training**

Following graduation in 1966, he enlisted in the Air Force and pursued electronics training in ground radio communications. He was first stationed at



Sam Garfield

Keesler AFB Technical Center in Biloxi, Miss., during the Vietnam War.

"It was really a neat experience. We worked on these monsters (unit size) ... multi-band tuning stuff. They were 5 kW and 10 kW. Half of my training was tubes and half solid-state, so it was a very good training ground," he said.

Garfield finished his active duty at Otis AFB near Hyannisport on Cape Cod in 1969.

"So I had to fight, all right. I had to fight the summertime crowds at the beaches," Garfield said with a laugh.

A move back home to Cleveland resulted in Garfield making a cold call on a radio station he listened to frequently.

See GARFIELD, page 8 ▶

DIGITAL NEWS

# More IBOC/HD Gear Is Coming on the Market

by Leslie Stimson

A variety of products is now available to serve the expected needs of stations converting to IBOC/HD Radio.

At this fall's NAB Radio Show, exhibits included some new products and some that had been on display in the spring. Here's a quick rundown.

Several vendors touted a new FM IBOC implementation that proponents say eliminates injector loss and reduces or eliminates many of the startup costs to make the digital transition for multi-stations using a master antenna.

Broadcast Electronics is one of those companies. In its booth, BE picked up a digital signal off a Visteon HD radio from Entercom Seattle station KISW(FM). The station is transmitting Ibiqity's in-band, on-channel digital audio broadcasting system to a master antenna system without injecting the digital signals into an FM analog carrier.

BE says this approach eliminates the 90 percent loss in digital signals and 10 percent loss in analog signals associated with injecting the digital signal into the FM analog carrier, the standard high-level combining scheme.

In August, Entercom engineers and engineers from Ibiqity Digital, Broadcast Electronics and Shively Labs tested the concept at Entercom Seattle's auxiliary site on Cougar Mountain, and provided preliminary findings to the FCC (Radio World, Sept. 11, page 6).

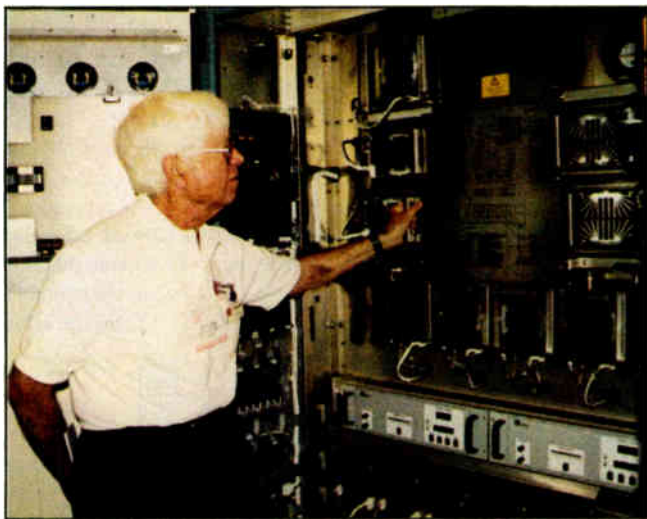
At the convention, BE's Richard Hinkle, director of RF engineering, called the separate antenna concept "unique" and said attendees asked a lot of questions about the concept.

"The reason it's important is because in a high-level combine system, you have a 10 dB loss in your IBOC path. ... It's the difference between buying a 5,000-

watt IBOC transmitter and a 500 -watt IBOC transmitter. That's a significant cost (savings) in implementation.

"Entercom has proven it works and works well," he said. "For those people, the big question is, 'Do I have room on my tower and loading...that will take it?' If they do, it's a cost-effective implementation. That's really the difference in what we're showing. It's not only the end-to-end commercial product, but a new implementation of IBOC in the real world."

BE also showed its IBOC exciter, the FXi series, which BE says allows stations



Sam Lane shows off a Nautel IBOC-compatible Q20 series FM transmitter.

to choose either common or separate amplification from one unit and IBOC-compatible transmitters.

Nautel displayed its NE IBOC Digital AM/FM exciter and associated transmitters.

Harris Broadcast Communications Division introduced an IBOC-ready, low-power line of AM transmitters called DAX. A 5/6 kW model was on display.

Harris' Daryl Buechting said the main advantage of the DAX is that it is ready to have the digital exciter plugged in and transmit. No modifications are necessary for the unit to transmit IBOC, he said. Next spring, Harris plans to introduce 1 kW and 3 kW versions.

Dielectric displayed an FM isolator that could be used for IBOC implementations. The product does not yet have a name. The

See IBOC, page 8 ▶

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# Products: We Inform, You Decide

Should Radio World give editorial coverage to low-cost products that compete with established items already on the market?

The answer is yes; but you may be surprised to learn that not everyone thinks that way.

This question is relevant now in the area of automation and scheduling software. A supplier recently suggested to me that Radio World should not give ink to the recent raft of automation products that cost users little or nothing to buy.

Such coverage is not fair to established companies in the business, he hinted; it's bad for the health of the market, and it may undercut Radio World itself, because the manufacturers of low-cost products are unlikely to be as supportive with advertising.

I accept neither the assumptions of this argument nor its conclusions.

## Important trends

I am reminded of the marketing manager for a broadcast dealer who stopped me on the floor of a convention several years ago to complain about a story we had just published.

The story asked whether ownership consolidation would lead radio groups to buy direct from the factory rather than through dealers, and also to use their buying power to press suppliers for better prices. This marketer complained to me, vehemently, that printing such stories was "like covering terrorism. It

doesn't help anybody."

Obviously I disagree; and as things turned out in that instance, our story correctly predicted important trends in the wake of radio consolidation.

The truth is that some business trends are inevitable. Smart suppliers will anticipate them and respond proactively. Complaining to a trade publication about covering them is akin to spitting into the wind.

My job is to inform you about the breadth of products and technologies available to help you do your job better. Just as I would be wrong to give bad ink to non-advertisers, so I would be doing you a serious disservice if I restricted our coverage only to those products that have been on the market for a while or whose makers have the deepest pockets.

Further, some established suppliers were themselves the upstarts just a few years ago. By covering their products, we help maintain a vibrant marketplace of supply for radio managers and engineers.

I think our readers are smarter than the complaining manager gives them credit for. Readers know that simply because we give a particular product a review does not mean the product is best for them.

For instance, if I were in the market for an automation system today, I would be foolish not to investigate low-cost alternatives to familiar big-name products.

However, I'd also be asking myself some questions: Has this vendor been around for at least five years? Can they provide me with the names of established broadcasters who use their products so I can call them and investigate? Does this product come with warranty service or do I have to pay for it? What kind of customer support can I expect if my automation system fails at 5:30 a.m. on a busy weekday? Does it have the features I need?

Many low-budget names would fail these questions.

## Not just price

No purchase is made in a vacuum; no buying decision should be made on the basis of price alone. The purchase of a "backbone" product like an automation system or a transmitter needs to be researched, weighing all of these questions and others unique to your situation.

Meantime, smart established automation suppliers are responding to market pressure and introducing lower-cost, more-powerful versions of their own products. That's a healthy symptom of a healthy marketplace.

We will continue to report on new products aimed at radio stations. We will continue to provide resources like the *Buyer's Guide* in this issue that focuses on Automation and Digital Storage. We will continue to invite established companies to tell us, and tell you, about their new products.

We will be here to inform you about the alternatives. The rest is up to you.

Speaking of *Buyer's Guide*, allow me to clarify its purpose so you can be as well-informed as possible about what you are reading.

*Buyer's Guide* is intended to help you research the purchase of equipment and services. Thirteen times a year, in every other issue, we publish User Reports in a given category, like Transmitters, Microphones or Test and Measurement.

The User Reports are testimonials. They are written by users, your peers in the industry, who explain why they made the purchasing choices they did. The idea behind this section is that readers will

## From the Editor



**Paul J. McLane**

benefit if they see that someone they respect — an Andy Laird, a Norman Philips, a Mark Olkowski, a Steve Shultis, all of whom have written in recent months — has made a buying choice. The writers receive no compensation for User Reports.

Do not confuse User Reports with Product Evaluations.

Product Evaluations are reviews by third-party writers to whom we ship a model of the product to try out. These stories are intended to give a more in-depth look at the product. The writers are paid by us and must include both "thumbs up" and "thumbs down" points in their summary. The suppliers have no say in who writes the article, they cannot influence the content and they are asked only to check the technical facts for accuracy.

Both types of articles are intended to help you keep informed about this busy marketplace of ours.

Starting with this issue, Elizabeth Prevatt joins us as editor of *Buyer's Guide*. She takes over from Michael Hedrick, who moves to the contract publishing side of IMAS Publishing.

Prevatt has written for the West Virginia Moorefield Examiner and been published in Southern Discourse, an academic journal for college writing teachers. She is a recent graduate of James Madison University, with a major in English and a minor in Technical and Scientific Communications.

Companies that make or sell radio broadcast equipment or services and wish to include that information in *Buyer's Guide* should contact her at Radio World via e-mail to [eprevatt@imaspub.com](mailto:eprevatt@imaspub.com).

Scott Boudin of WHTZ(FM) in New York wins our prize this week. It's the new Audio-Technica 3000 Series handheld wireless system, courtesy of the good folks at Bradley Broadcast Sales & Pro Audio. Retail value is \$799.

Bradley is a dealer that carries several hundred lines of professional broadcast and audio gear. The AT 3000 Series features UHF technology and digital ToneLock squelch. It is a diversity system with indications for low battery power, signal loss and input overload. Included is the new T341 microphone modeled on the Artist Elite AE4100 cardioid dynamic element.



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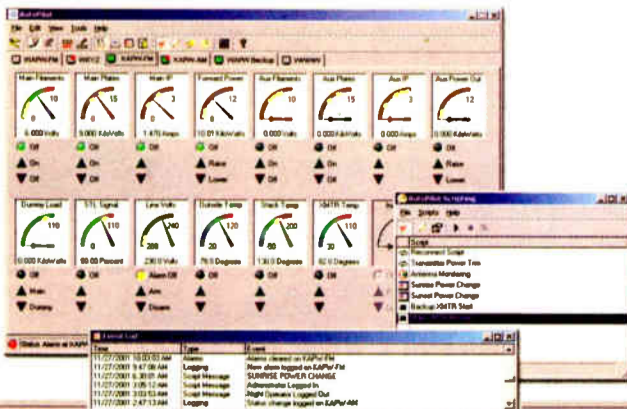
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# LPFM Interference Study Begins

*Results of Study Mandated by Congress Could Open or Close Door to More LPFMs*

by Naina Narayana Chernoff

**WASHINGTON** Would low-power FM stations cause unacceptable interference to existing licensees operating on the LPFMs' third-adjacent channels?

Experts hope that question, central to the full deployment of more LPFMs, will be answered next year following a full-scale study by government-contracted engineers.

The long-awaited field tests, slated to get underway this month at six locations, are expected by the FCC and Congress to end the debate over separation requirements for LPFM licensees. Depending on the findings of this study, an unknown number of LPFM stations could be eligible for licensing if the FCC determines the third-adjacent channel protections are unnecessary.

Congress ordered the study in December 2000 as part of an appropriations bill calling for an impartial engineering firm to conduct testing in no more than nine markets. Many incumbent broadcasters and the NAB worried about the addition of low-power FM stations, warning that they would create further interference on an already crowded band.

Last year upon receiving funds from Congress, the FCC asked Mitre Corp., a nonprofit organization specializing in government contracts, to search for an engineering firm to conduct the tests. In late August of this year, Mitre selected a subcontractor, Comsearch, to conduct the testing and analysis at experimental stations.

Comsearch will be measuring interference to existing FM stations in Winters, Calif.; Avon, Conn.; East Bethel, Minn.; Benicia, Calif.; Brunswick, Maine; and Owatonna, Minn.

Comsearch chose these locations from a list of 40 communities identified by the FCC as having pending LPFM applicants. The locations also met a range of parameters specified by Congress, including specific types of terrain and population density. Also to be tested in those communities is whether third-adjacent LPFMs interfere with radio reading services, carried on existing FM subcarriers.

Each FM station chosen for the sub-carrier testing is adjacent to a proposed LPFM frequency in the market.

In late September, the FCC had approved three applications for the experimental LPFM stations: Winters, Calif., Avon, Conn. and East Bethel, Minn. Applications for the other communities were pending.

## Testing timetable

According to a source close to the study, the tests should be complete by the end of December. Comsearch is expected to deliver a report on the field tests to Mitre by Feb. 1. Commission staffers expect to receive the report analyzing the data and recommendations for any service rules that could be implemented to relieve the interference by May 31. As specified by Congress, the agency would solicit public comment on the report at that time.

For the field tests, Comsearch is setting up LPFM broadcast equipment — including a mobile crank-up tower, transmitter and antenna — at each experimental station, and will use a variety of radio receivers to measure interference to the

existing FM station, one source said.

During the study, Comsearch is testing with various combinations of power and antenna height. For LP100 stations, these will range from 100 watts ERP at 30 meters height above average terrain (HAAT) to 50 watts ERP at 30 meters HAAT. For LP10 stations, tests will be conducted with power and antenna height settings ranging from 10 watts ERP at 30 meters HAAT to no less than 1 watt ERP.

## LPFM Test Stations

Location	Frequency	Adjacent FM Licensee	Location	Frequency
Winters, Calif.	103.1	KSFM	Sacramento, Calif.	102.5
Avon, Conn.	107.5	WCCC	Hartford, Conn.	106.9
East Bethel, Minn.	91.7	KNOW	St. Paul, Minn.	91.1
Owatonna, Minn.	106.3	KROC	Rochester, Minn.	106.9
Brunswick, Maine	97.3	WCME	Boothbay, Maine	96.7
Benicia, Calif.	100.3	KFRC	San Francisco, Calif.	99.7

Depending upon weather conditions, accessibility to locations and interruptions from community events, the time spent testing at each location could vary from a minimum of three days to several days, the source added.

In order to maintain the impartiality mandated by Congress, Comsearch is not inviting the public or interested groups to observe the testing and would not release information about when the tests will take place in each city. Both the FCC and Mitre have received requests from individuals seeking to participate in the testing.

"We're not trying to hide," said the source. "We don't want anyone to think that we were influenced in any way from anyone looking over our shoulder."

Although the public cannot observe, the congressional mandate does require public comment on whether interference can be heard during the testing. Comsearch is planning to inform communities that a study is being conducted in their listening areas by placing ads in local newspapers and on radio stations before and during the tests asking listeners to call a toll-free number, staffed by another subcontractor, to report interference heard while listening to any FM station in the market.

Though the provision allows Comsearch to obtain public input, the source said, it may be difficult to draw a conclusion about interference to an existing station from an LPFM in a particular market based upon the public feedback. The hotline may receive calls about stations other than the one Comsearch is studying.

## Station perspective

The testing will be valuable for many FM licensees seeking definitive answers about the effect of an adjacent LPFM on their stations.

"It will put to rest the concern about third-adjacent channel," said John Ramsey, chief technical officer at WCCC(FM) in Hartford, Conn., one of the stations Comsearch will listen to during the tests. "We're glad to participate even though it's in a passive way."

In keeping with the unbiased nature of the tests, Ramsey said neither Comsearch nor the FCC contacted WCCC about the study, a fact that does not bother him.

"They didn't notify us because there is no reason to. Comsearch is not supposed to identify the stations," he said. "In my professional opinion, the third-adjacent channel is not an issue. In Connecticut, similar stations have coexisted for years."


With 40 licensed stations on the air and a dozen or more on air with construction permits, experts say it is still too early to tell whether additional stations will cause interference. FCC staffers said its Audio Services Division has received no complaints concerning interference from neighboring FM stations so far. NAB has not received any complaints to date, said a

the Audio Services Division, which also handles full-service stations.

The FCC issued two public notices in September including an announcement that the division is opening a filing window to allow certain LPFM applicants to amend their applications in compliance with the current third-adjacent channel rules.

From Oct. 28 to Nov. 1, communities and groups will be allowed to reapply for frequencies they originally requested during two application windows in 2000 before Congress passed legislation to apply channel protection standards for LPFM applicants. The applications were technically acceptable as filed but were considered defective by the adoption of third-adjacent channel protection standards. Following the passage of the bill in December 2000, the FCC accepted applications that adhered to the new channel protections.

The FCC staffer said the division is still sifting through non-contested applications, and expects to finalize decisions on those applications by the end of the year. Of the 3,000 applications originally received by the FCC for LPFM frequencies, according to the staffer, the FCC has sifted through about one-third.

The agency has issued about 430 construction permits from the 600 to 700 applications it has accepted for filing, including 150 applications from Alabama, Arkansas, Guam, Kentucky, Massachusetts and Montana the agency accepted on Sept. 6. An estimated 200 to 300 have been flagged because of deficiencies such as missing exhibits and typing errors; applicants are allowed to modify their paperwork in those cases. 

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# FCC

► Continued from page 1  
consumer brand name, HD Radio.

The company believed FCC action also would encourage further commitments from receiver makers to the format.

"It's clear that HD Radio has arrived as a serious player," said Ibiquity President and CEO Robert Struble after the commissioners voted in favor of IBOC at the Oct. 10 public meeting. For broadcasters, he said, "There will be a quick return on HD Radio investment and (terrestrial) radio will be able to compete with satellite radio."

Although the commission said it is no longer considering using TV Channel 6 for digital radio use, it did not close the

door on systems requiring new spectrum, should such new spectrum be identified.

The text of the Report and Order was not immediately made public, but commission officials said it allows FMs to transmit both a digital and analog signal both day and night. AMs may do so only during the day.

The AM nighttime tests undertaken by Ibiquity to satisfy concerns about how IBOC would perform on stations operating on skywaves at night continue. Ibiquity expects those to be completed by the end of the year. At that time, Ibiquity said, it would work with the National Radio Systems Committee to craft operating parameters for nighttime AM IBOC. The NRSC and Ibiquity are working on setting a technical standard for IBOC. Both groups expect the FCC to seek public comment on the standard

when ready, perhaps by mid-2003.

Given differences of opinion in the industry about the power level at which daytime AM IBOC should be implemented, the FCC left that up to broadcasters. Those who want to implement AM IBOC at full power can do so; those who fear interference with a neighboring station may choose to operate at a lower power if they inform the commission of their intentions, said FCC Audio Division Chief Peter Doyle.

## STAs

For the first two or three months, stations that want to begin digital transmission must file requests for Special Temporary Authorization with the FCC.

After that initial period, the FCC is expected to issue a blanket order allowing all stations to convert by simply sending the FCC a letter. The STA requirement was needed for the commission to comply with federal rule procedures.

Ibiquity had said it wanted to reach roughly 50 percent of potential listeners in its six initial rollout markets by the end of the year, or about 70 stations. But given the late time-frame, Ibiquity believes 40 to 50 stations converting in 2002 is more realistic.

Group owner Radio One said in September that it had ordered IBOC transmission equipment to convert stations in five markets. It was the first major group to do so. Like many other major group owners, it is also an investor in Ibiquity.

When asked if other radio groups had stepped forward with commitments after the FCC's action, Struble said the company was in "deep" discussions with other owners and

expected more to commit shortly.

Commissioners praised the Ibiquity Digital Corp. system for its spectral efficiency. Commissioners Kathleen Abernathy and Michael Copps expressed eagerness to purchase IBOC receivers.

Ibiquity Vice President of Broadcast Engineering Glynn Walden, who has been involved with efforts to find a DAB solution for the United States for more than 10 years, said, "IBOC is a concept rooted in the American concept of a free over-the-air broadcast system ... a concept and a technology that allows each and every broadcaster to transition from an analog world to a digital future while re-using the existing infrastructure and allocated broadcast spectrum.

"IBOC is such a compelling concept that technology was developed. With this FCC decision, those benefits are now available for broadcasters to bring the benefits of HD digital radio to the U.S. public."

The FCC staff feels it will learn much about IBOC technology when stations start to transmit digital signals. If any interference occurs from a station that is transmitting both signals, especially interference to first-adjacent channels or to services broadcast on FM subcarriers, the commission hopes the parties would work it out.

The agency would be ready to intervene in cases where stations are unable to come to an agreement about how to solve the interference, officials said.

They said it was too soon to tell when the FCC would promulgate final IBOC rules, including operating parameters and other technical specifications. 🌐

IBOC Q&A

## Licensing Fee Waiver Demystified

*This is one in a series in which Ibiquity Digital Corp. answers questions about how to implement HD Radio, the newly-trademarked name of what used to be called in-band, on-channel digital audio broadcasting. Director of Broadcast Business Development Scott Stull answers here. Past answers are posted at [www.rwonline.com](http://www.rwonline.com) under the tab "IBOC DAB."*

**Q:** *Ibiquity's licensing incentive requires stations to convert to IBOC by the end of 2002 in order for the fees to be waived. Is it reasonable to assume a station can convert that fast?*

**A:** Ibiquity is offering the early-adopter incentive to accelerate the adoption of HD Radio technology in 2002. HD Radio-compatible receivers will launch at the Consumer Electronics Show in January and will be available to consumers shortly after.

It is in the best interest of the radio industry to have a critical mass of stations broadcasting by then with special attention on the rollout markets of New York, Los Angeles, Chicago, San Francisco, Miami and Seattle in order to drive receiver makers to introduce more digital products.

Ibiquity realizes that factors beyond the control of a station may impede its ability to broadcast HD Radio signals by the end of the year. Therefore, the fee waiver is contingent on a station using its best efforts to be on the air by the end of 2002.

The specific terms of the incentive require a broadcaster to 1) enter a licensing agreement with Ibiquity; 2) place orders for the equipment necessary for the transmission of HD Radio signals with a

licensed manufacturer of such products by Dec. 15, 2002; 3) commence HD Radio broadcasts by the end of 2002 or within 21 days following delivery of the transmission equipment; and 4) use its best efforts to continue to transmit an HD Radio signal until at least Dec. 31, 2004.

In return, Ibiquity will waive the licensing fee for the perpetual license to broadcast audio with HD Radio technology.

In addition to waiving the fees for audio licensing, Ibiquity also has opted to waive the licensing fees for auxiliary data until 2005. Because the added revenue potential for wireless data applications that HD Radio will enable is unknown at this time, we felt it was more important to allow broadcasters to develop data business models without having to pay a license fee.

As applications mature, Ibiquity will work with broadcasters to develop a license fee model that is acceptable to both parties. This approach provides an extra incentive for broadcasters to experiment and develop datacasting business opportunities over the next several years.

Ibiquity has been working with a growing number of groups and stations that are budgeting and planning for HD Radio conversion in the coming months. We strongly believe that this incentive will help ensure a timely rollout of the technology and AM and FM radio's successful transition to digital.

Broadcasters interested in learning more about the requirements for the early-adopter incentive plan are encouraged to contact Scott Stull, Ibiquity's director of broadcast business development, toll free at (877) 501-3273 or via e-mail to [stull@ibiquity.com](mailto:stull@ibiquity.com).

Send your IBOC questions to [radioworld@imaspub.com](mailto:radioworld@imaspub.com).

Radio World welcomes other points of view.

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DIGITAL NEWS

## XM 'On Track' for 350,000

WASHINGTON XM Satellite Radio said it is "on track" to hit its target for the end of the year of 350,000 subscribers.

It said ended the third quarter with 201,500 total subscribers despite a soft consumer electronics market.

The company said it also initiated its factory-installed rollout in 25 GM 2003 models.

President and CEO Hugh Panero said, "We're bolstered by what is truly the second launch of XM in new vehicles from General Motors and other automakers like Nissan and Honda."

According to XM, General Motors, which is one of its investors, expects to enable 350,000 to 400,000 XM subscribers for the 2003 model year.

NEWSWATCH

Continued from page 2

ESPN Radio in L.A. would carry the play-by-play broadcasts of the baseball Anaheim Angels next year. "The switch returns the Anaheim Angels to 710 AM, which was the team's radio broadcast home for over 36 years," the company said.

## Orban/CRL Appoints COO

SAN LEANDRO, Calif. Saying he brings "a new level of professional management to our company," Circuit Research Laboratories Inc. has appointed Phillip T. Zeni Sr. as its executive vice president and chief operating officer.

Among his responsibilities is to consolidate and streamline the integration of the Orban and Dialog4 System Engineering divisions into the parent company. CRL acquired both in the past two years.



Phillip Zeni

Zeni has been a member of the CRL board. He is founder of a publishing company and has held executive positions with NBC Radio, Westinghouse/Group W and Multimedia Radio as well as government positions on the state and federal level.

Jay Brentlinger, president, CEO and chairman of CRL, praised Zeni for his experience "as an owner, CEO, COO, senior manager, consultant and innovator in a variety of corporate settings, both public and private."

Zeni arrives during a time of financial challenges for CRL/Orban. The publicly held company has been working with Harman International Industries to restructure loans totaling \$8.5 million owed to Harman from the purchase of Orban. CRL reported a 28 percent drop in net sales in the first half of this year compared to the same period a year earlier. At that time Brentlinger expressed confidence in the strength of the company's line and its long-term outlook.

## Nissan Offers Satellite Radio Options

Nissan has begun offering satellite radio as options in 2003 model year vehicles.

XM- and Sirius-equipped Nissan Pathfinder sport-utility vehicles were arriving at dealerships in late September. XM- and Sirius-equipped Infiniti I35 luxury sedans, M45 sedans, Q45 performance luxury sedans, G35 sedans and coupes and the new Nissan Murano crossover SUV will reach dealerships later this year.

— Leslie Stimson

## Panasonic Ships Sirius Radios

Panasonic has released its Sirius Satellite Radio products. Consumers can buy a universal adaptor kit, the CR-SRF100. The adaptor connects to most car audio systems through an existing FM tuner, enabling vehicles with an FM radio to receive Sirius programming.

The adaptor kit consists of a vacuum fluorescent display controller/FM modulator and die-cast receiver unit. The CR-SRF100 will be available to Panasonic aftermarket retailers and specialty markets such as marine, RV and large truck. The unit lists at \$229.99. Antennas are sold separately.

Rob Lopez, national marketing manager for Panasonic's car audio group,



Panasonic's Sirius Satellite Radio display controller/FM modulator

said, "Once consumers listen to Sirius on a Panasonic system, it will be hard to go back to regular radio."

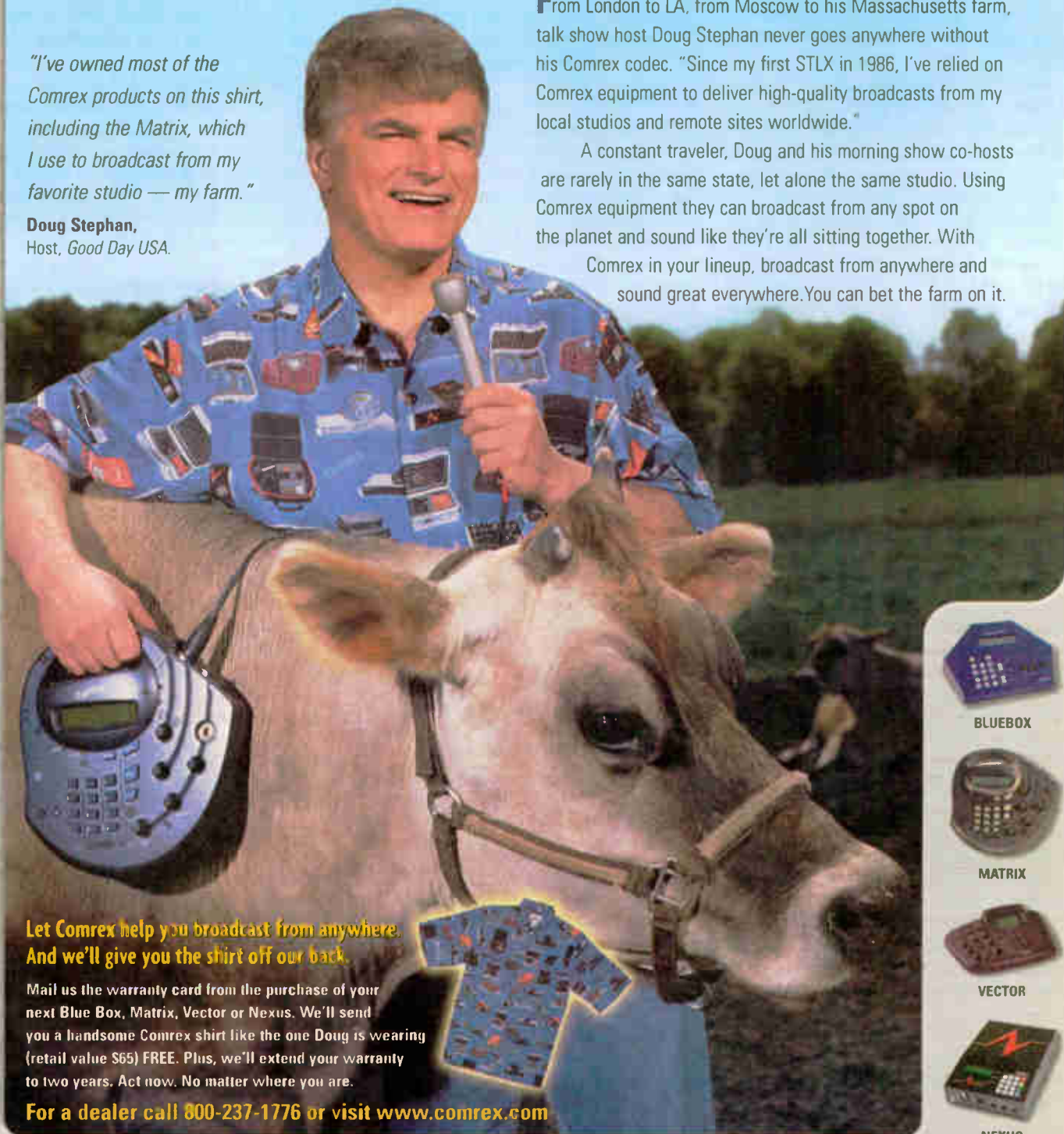
Panasonic also plans to introduce its new CR-SRT100 receiver in January that will list for \$159.99. This receiver will be compatible with a line of 2003 Panasonic Sirius-ready mobile head units.

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Doug Stephan,  
Host, Good Day USA.



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# Garfield

► Continued from page 3

"I had noticed the sound of the station was horrible. When I called them the owner told me, 'My engineer just quit. If you have a First Class license, the job is yours.' That was my first big break," Garfield said.

Garfield worked at that station, the former WNOB(FM), and in television simultaneously at noncommercial educational WVIZ(TV) in Cleveland.

"You could say I was a bit of a workaholic at the time. I learned a lot of TV and radio in a short time," he said.

A short stint with Nationwide Communications' WGAR(AM) and WNCR(FM) in Cleveland followed. Garfield crossed paths with Don Imus, the morning man on WGAR.

"He was a nervous wreck even back then. It was one cigarette after another. He was good, but it was more fun to watch him in person," Garfield said.

Next was a move across town to a job as CE with General Cinema Corp.'s WGCL(FM) in 1972.

"(WGCL) was one of the first FMs to start playing rock and roll music. It carried the Solid Gold format and used the old Schafer Automation System with the pegs and relay switches and those huge reels. What a trip," Garfield said.

Working for General Cinema allowed Garfield the opportunity to travel the country and work on company projects. "It kind of gave me a taste of consulting because I had a chance to go in and contribute to so many projects," he said.

Garfield spent the 1980s working for George Beasley and his Beasley Broadcast Group, first as CE at then WDMT(FM) in Cleveland and eventually ascending to group director of engineering for Beasley's radio group.

"I had a chance to work on station upgrades and relocations. I also planned

and designed studios and facilities. It was really where I got the experience I needed to run my own company," he said.

At the behest of group management, Garfield moved south to work out of Beasley's corporate offices in Goldsboro, N.C. That move would lead eventually to a stint as CE at Beasley's WYED(TV) in Raleigh from 1987 to 1990.

Television is really just radio with pictures, Garfield said of the differences between the media.

Garfield left Beasley Broadcast Group to join the University of North Carolina Center for Public TV in 1990, the same year he and partner Britt formed Technical Broadcast Consultants.

"Chuck and I had been doing some work together on the side. It was really the perfect opportunity to start the company. (Chuck) worked full time at it and I contributed financially and with as many hours after working at public TV as I could," Garfield said.

Garfield was RF communications supervisor for UNC's public TV station WUNC(TV) and maintained a microwave television system for the statewide Public Broadcasting Network.

## The next step

"I met with my CPA in 1995 and he told me, 'You're doing three times more financially with the company you own than you are with the state.' By that time we'd groomed the (consulting business) to the point where I left my job with public TV in and devoted my efforts full time to the company," Garfield said.

Garfield said there were several early signs that starting a consulting engineering firm was a good idea, including the Telecommunications Act of 1996 and the beginning of consolidation.

"I actually had predicted to my wife 20 years earlier what the radio and television industry would become. It was very interesting to try to understand where politics and where broadcasting were going. I just figured consulting engineering was the

place to be," he said. "Besides, I didn't picture myself being 50 years old and still toting a tool bag around."

Today, Garfield's company typically is maxed out with projects, and must turn away some potential customers.

"We don't advertise, so we know it's the quality of work we are doing. We are not cheap.

"If you have a \$10 station, hire a \$10 engineer. I can maybe fix something in one hour; hire someone less qualified and it may take them eight hours. Where do you come out ahead?" he said.

Garfield said contract servicing is an efficient way to go for broadcasters.

"We see a lot more problems than the guy at a single station. We go into a station and fix the problem and the engineer feels bad that he didn't find it. Well, we explain to them, 'Don't feel bad. We see this stuff every day. We specialize in one area and that's RF,'" he said.

Garfield said Technical Broadcast Consultants employees are asked to honor certain scruples when it comes to the quality of the work they perform.

"We tell everyone who comes to work for us, 'It's fixed once and it's fixed correctly.' We are very selective in hiring people who can give us the caliber of work we want," Garfield said.

Garfield said one of the biggest challenges of running a technical consulting firm is juggling the demands of clients across the country.

"We are fortunate in that we have a lot of resources, both people and equipment. That gives us a buffer zone. One day Harris will call needing a crew somewhere, and then Acrodyne (Transmitter Industries) needs help right away. Sometimes things just drop out of the blue and we go," he said.

Tower siting issues continue to frustrate Garfield and his clients.

"So much of this debate has been brought on by all of the cell towers popping up. There are many misconceptions out there feeding the worries of communities. I do think that antenna farms are the answer. My advice to broadcasters is to co-locate when you can," Garfield said.

Radio acknowledges that consolidation has been in a big benefit for his consulting business, Garfield said.

"The good news is that some of the big players have given the green light to major projects that had been put off for a long time. However, they also have driven so many engineers out of the business through cutbacks and poor pay that I think there is a shortage of talent available. So when things break, they call companies like ours."

Although only about 20 percent of his business comes from radio, "that's still a sizeable number for us," Garfield said.

"I love radio. That's what I started out in. The real big money right now, though, is in TV work. Business is going like gangbusters thanks to the digital TV conversion," Garfield said.

"We've been doing a lot of installs. Everyone thinks this will all be done within a year or two, but I think the DTV boom will continue until 2012. Beginning in 2006 you'll have all of these broadcasters moving from temporary channels back to their original channels (VHF Channels 2-13) if they choose to do so. There will be a whole lot of business for us."

Garfield believes DTV will present new opportunities for radio station operators.

"DTV is a wonderful chance to put a new radio station on the air. I tell all of

my TV clients they should be looking for radio partners. People forget they can do 5.1 channel sound with DTV. Tell the radio guys you'll put on their audio and (TV) will take care of the video. The TV station could just sell slides or something. Broadcasters are so fixated on traditional. Well, that's not going to cut it anymore," Garfield said.

In-band, on-channel HD Radio has Garfield excited, especially the potential benefits to AM broadcasters. However, technical challenges remain.

"It will be better than what we have. Is it the end-all, be-all? No. I'm not sure what the public demand will be. You have to get the receivers out there first. I think some of our radio clients are considering it but are worried about the conversion costs involved," he said.

Satellite radio service should not worry terrestrial radio broadcasters, Garfield said, noting that XM Satellite Radio and Sirius Satellite Radio say they need large infusions of cash to remain in operation through next year.

"They are targeting such a select market that I have my doubts about whether they'll succeed. Unlike cable TV that comes in the home and stays there, I think it's going to be hard to justify paying a subscription if all you do is stay in one city.

"XM is good for the guy who travels the country, but no one does that by car much anymore. You also lose the localism.

"I hate to be doom-and-gloom, but I don't think either one will survive."

## Advice for engineers

Garfield believes radio's technical experts need to bone up on the money and management side of the business.

"As engineers, most of us are comfortable living in the back room. We really don't want to be involved in the money.

"Well, you have to be. You need to take off the blue jeans and project yourself in a professional matter. And realize that a lot of stations look at you as a liability since the engineer is not a profit center.

"Only the good companies look at engineers as an asset because they keep them on the air," Garfield said.

Garfield said anyone wanting to get into the consulting engineering business should first find a partner you can trust.

"This is really a two person business to get started. Find someone you know well and can trust with the finances. You'll need them to lean on during the tough times," he said.

"Set your goals and know how you're going to get there. Grow the company slowly and hire only people you have confidence in who will reflect your values."

Garfield said some basic RF equipment is a must to get started. "You'll need a spectrum analyzer, audio precision test kit, GPS unit, TDR (time domain reflectometer, an electronic device used for detecting and locating broken transmission lines), and a notebook PC. Look into buying used equipment. There is a lot of good refurbished RF gear out there," he said.

"Get your SBE certification. It's the only way to measure if you are qualified. And finally, don't be afraid to charge your customers...ask for what your worth."

Garfield is CPBE- and CBNT-certified and was recently elected national secretary of the Society of Broadcast Engineers. He's been active in SBE since the early 1970s in Cleveland.

Garfield is married with two children in college. He and his wife Jean reside in Raleigh. 🌐

# IBOC

► Continued from page 3

isolator keeps the transmitted analog and digitals separated so that they do not interact.

Dielectric FM Product Manager Matthew LeLand said separation, using the isolator, could eliminate the high insertion loss typically associated with a standard combining method. He said the product is not for all applications and customers may need to choose between a larger, more expensive antenna and filter vs. a higher-power transmitter. The isolator could also be used on existing constant impedance combiner systems and when the analog and digital signals are kept separate and sent to two separate antennas.

ERI displayed photos of a dual-input antenna, in which all the array elements will radiate both the analog and digital signals. This antenna combines the digital and analog signals without the 10 dB loss associated with the hybrid combining approach, according to ERI. A project is underway to retrofit an existing ERI antenna on top of the Prudential Building in Boston with this technology for Greater Media.

Eric Wandel, ERI's director of product development, said Greater Media will have a choice to reverse-feed the digital signals through the existing combiner system, but may choose to use a new line of ERI's low-power filters in a separate



Broadcast Electronics' Richard Hinkle holds a Visteon HD Radio. BE picked up a digital signal from Entercom's KISW(FM) at this fall's NAB Radio Show.

combiner system. Wandel said this would allow the radio group the flexibility of adding other stations that could transmit from the dual input antenna.

ERI displayed its IBOX combiner for 10 dB high-level combining. The product has a flange-to-flange separation of 10 inches, which ERI says makes the unit compact and simple to adapt to existing transmission line runs.

Shively displayed its IBOC filter-combiner as well as its Interleaved Analog-Digital Antenna for use with low and medium-power systems.

Armstrong showed HD Radio-compatible amplifiers. 🌐



# CLEARLY NOT FOR EVERYONE

Your Grandmother is certainly a very nice lady, but a Porsche is probably not her ride.

It's the same with processing: Some people should stick with the conservative stuff. Give them something too fast and they just won't know what to do with it.

Frankly, the new Omnia-6 is probably not for them. It's just too potent, too flexible.

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# NAB Radio Show

# Product Highlights

Here's a sampling of products shown at the NAB Radio Show in Seattle last month. Information was provided by exhibitors. If your company showed a product that we missed, send e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com) so we can tell our readers in a future issue.

Contributors to this section include Paul McLane, Sharon Rae Pettigrew, Michael Hedrick and Michelle Kramer Peterson.

## BE Demos IBOC Implementation

Broadcast Electronics showed an approach to FM IBOC that eliminates injector loss and limits startup costs.

BE picked up a live digital signal from a Visteon HD radio from Seattle station KISW(FM), the first station to introduce Ibiqity IBOC DAB to a master antenna system without injecting the digital signals into an FM analog carrier.

According to the company, KISW is using an alternative to the standard high-level combining approach that lets it run digital signals separately through a balanced combiner at the same time as FM analog, but in the reverse direction.

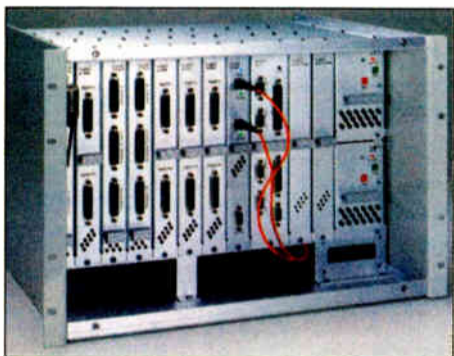
It is feeding digital signals from a BE linear 1 kW transmitter through a circulator RF isolator into the normally terminated input port on a combiner hybrid station module. The digital signals exit the combiner through its wideband port, the terminated load of which was removed to output a digital signal to the antenna. The combiner is feeding analog to the top half and digital to the bottom of the six-bay master antenna.

For more, see the article "IBOC Idea Tested at Cougar Mountain," Radio World Sept. 11.

For information contact the company in Illinois at (217) 224-9600 or visit [www.bdcast.com](http://www.bdcast.com).

## Logitek Adds Router Features

Logitek Electronic Systems is out with a redesign of its Audio Engine, a digital audio router with mixing, summing and intercom capability. It now functions as a full cross-point router in addition to its function as the "heart" of Logitek digital consoles.



The Audio Engine is modular, based on a card cage architecture; users plug in cards for the desired number of analog and digital I/Os, networking with other Audio Engines and DSP audio processing capabilities. Analog inputs are con-

verted to digital at the user's specified sample rate; digital inputs are converted to the desired sample rate.

As a cross-point router, the Audio Engine can manage the audio in a facility, permitting selection of any input to any output. Various control panels, software or physical, are available.

The company also is now shipping its new Remora, a small, expandable digital console and control surface for its Audio Engine. And it has implemented what it calls a "significant upgrade" to its flagship digital console, the Numix, adding a large LCD panel with color graphics, improved intercom functions, programmable buttons for executing custom commands and dedicated talkbacks for each fader channel.

For information contact the company in Texas at (800) 231-5870 or visit [www.logitekaudio.com](http://www.logitekaudio.com).

## RCS Wins Agreement From Labels for iSelector

RCS said it has entered into licensing agreements with the major record labels to allow U.S. radio stations to participate in its iSelector Internet player system.

iSelector lets a listener create an online version of his or her favorite radio station by increasing or decreasing the frequency of certain songs or artists from lists approved by the station, and while retaining the station's promos, jingles and liners. Loyal P1 listeners are the most likely target of this online marketing tool.

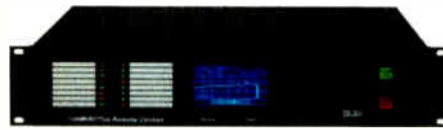
To begin to participate, the client station provides RCS with a copy of its on-air Selector schedule. RCS maintains the audio, collects monthly fees from online listeners and shares the income with the station.

For information contact the company in New York at (914) 428-4600 or visit [www.rcsworks.com](http://www.rcsworks.com).

## Burk Demonstrates ARC Plus, Other Upgrades

Burk Technology showed a working prototype of its ARC Plus transmitter remote control system, suitable for multi-site or dial-up operation for consolidated groups or single sites. It connects to 16 sites with up to 256 channels each. The user can access the system from any unit, a computer or by phone call. The display allows custom status and metering views. Readings are in real time or on a historical

graph. Outputs are controlled by Smart Switch command buttons, with channel-specific control labels on the buttons.



Also new are firmware and software upgrades for the ARC-16, GSC3000 and VRC2500 transmitter remote controls. Burk says the releases improve performance and are more convenient. AutoPilot 2.2 is available from its Web site. Updates for the GSC3000 and VRC2500 will be complete later this year, along with new EAS encoder/decoder firmware. An Amber upgrade will be a free download.

For information contact the company in Massachusetts at (800) 255-8090 or visit [www.burk.com](http://www.burk.com).

## Harris Ramps Up For IBOC

Harris Corp. said it has ramped up production capacity and is prepared to meet heavy demand for IBOC/HD Radio equipment in the final months of this year.

At the Radio Show, the company also introduced an IBOC-ready low-power AM transmitter line, the DAX family of 1 kW to 6 kW AM transmitters. A DAX unit requires installation of an HD Radio IBOC exciter for hybrid broadcast. Features include Digital Adaptive Modulation technology to monitor the transmitter load and correct for distortion; redundant hot-swappable RF modules; and wideband design. Harris also displayed its Z-HD IBOC transmitter for FM.

Separately, the company said group owner Radio One has chosen Harris for a turnkey implementation of IBOC HD Radio for stations in Los Angeles, Dallas, Boston, Detroit and Atlanta.

The company also exhibited its new Hydraflex line of custom studio furniture, which uses a power hydraulic system to change the height of various parts of the furniture with the push of a button.

And it announced in-depth digital certification programs for broadcasters and consultants to begin in November. The five-day courses will cover topics including digital transmission and exciter issues for AM and FM; IBOC modulation methods; test equipment considerations; and digital audio processor, console and music storage issues.

For information contact the company in Ohio at (513) 459-3400 or visit [www.broadcast.harris.com](http://www.broadcast.harris.com).

## SAS Extends 32KD With RIO Link

The RIO Link is an extension of the 32KD digital audio network from Sierra Automated Systems. It provides inputs and outputs from the mainframe at a remote location, such as the air studio, via either fiber or a Cat-5 connections.



Capacity for a RIO Link chassis is 32 input channels, 32 output channels and 16 bi-directional data channels. This corresponds to 96 twisted pairs, all of which can be replaced with one fiber or Cat-5 connection.

The 32KD is a digital audio routing switcher, promising "more crosspoints in less space for less money." This system performs switching, mixing, DSP, IFB and mix-minus functions using SAS DTDM bus architecture, enhancing fault tolerance and minimizing single-point failure issues.

Fiber-optic interfaces allow multiple mainframes to be linked for expansion. Analog and digital I/Os are supported on user-selectable connector panels. The system handles non-audio formats such as serial data, and provides contact closures through a general-purpose interface. A variety of control methods are available.

For information contact the company in California at (818) 840-6749 or visit [www.sasaudio.com](http://www.sasaudio.com).

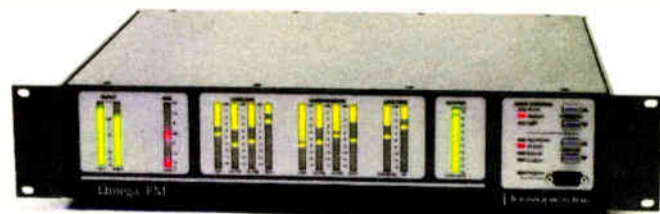
## Inovonics Has V.2 of Omega\_FM

Inovonics showed Version 2 software for its Omega\_FM digital on-air processor. Expanded features include an internal scheduler for dayparting and a fourth section of parametric equalization.

Performance enhancements include advanced logic in the AGC section and a digital composite output filter.

In anticipation of terrestrial DAB, the Omega\_FM provides an AES/EBU digital line output concurrently with the composite/MPX FM baseband signal. A software command can configure the digital line output without pre-emphasis or independent high frequency limiting, allowing FM and DAB exciters to be fed simultaneously and with the proper characteristic for each transmission channel.

For information contact the company in California at (800) 733-0552 or visit [www.inovon.com](http://www.inovon.com).







## StudioHub+ we get letters

**(This is not a picture of Rick Kemp).**

**Celebrity Impersonation by:  
Jeff DePolo  
Broadcast and Communications Consultant  
Valley Forge, PA 610-917-3000**

Dear Radio Systems:

Last year I was charged with the task of building a new studio facility to house our 6-radio station cluster in Boise, ID.

Part of the challenges were:

**Use as little new equipment as possible.**

**Keep costs down wherever possible.**

**Keep all 6 Radio station on the air during construction and while moving.**

I had used the early version of StudioHub about a year previous to build a new studio in an existing building. The building was cramped, to say the least and had the added feature of being co-located with a 10,000 watt AM transmitter with a ground system from 1947.

I was elated when we installed StudioHub and the Radio Systems' supplied console interface cables and there was no ground "Hum" whatsoever. It was the cleanest room I had in that building.

So, when it came time to do the "big build-out", I naturally gravitated towards StudioHub.

Gerrett Conner worked with me and helped layout & design what we would need as far as the StudioHub accessories and he also offered to replace my old version hubs with the new 568B compatible StudioHub+.

I also had Radio Systems build the custom console interface cables that connected the Hubs to the 5 new Harris Impulse Consoles we purchased.

When the actual wiring took place, I was able to get each studio connected and "ready to rack" within a matter of weeks.

The Radio Systems matchjacks, headphone amps and accessories integrated into custom cabinet network that we had contracted locally. Radio System's design using standard electrical box dimensions for cutouts greatly simplified the customizing process and has the added attraction of looking completely "pro." I get a lot of compliments on the custom counterwork and this is in no small part due to the StudioHub's custom look.

When it came time to move our studios, we started on December 26 and were on the air and operating completely from the new location by December 28th. No station was off the air at any time during the transition from the old location to the new. This was due in large part to the "plug and play" approach to studio installation I was able to implement using the Radio Systems' StudioHub+.

But your service didn't stop there. Gerrett called me back and asked how things were going and if there were any interface pieces we needed to return or exchange. To my surprise, there were several items that we did not use that Radio Systems took back gladly. It is great to see a company that puts as much effort into working with a client after the sale as before!

All I can tell you is that I am extremely pleased with the results we have gotten from StudioHub+ and with the company that makes it! I would be pleased to recommend Radio Systems' StudioHub+. Much success in your future endeavors.

Very truly yours,

Rick Kemp,  
Chief Engineer  
Journal Broadcast Group, Boise Radio Operations



601 Heron Drive, Logan Township, New Jersey 08085-1741  
(856) 467-8000 voice (856) 467-3044 fax [www.radiosystems.com](http://www.radiosystems.com)



## Staco Has FirstLine DR CPS

Staco Energy Products Co. exhibited a conditioning power system that it says gives users the protection of a premium UPS system affordably and without the maintenance costs associated with batteries.

It said the FirstLine DR Conditioning Power System protects against 95 percent of power problems and features its own diagnostic tools. The cost can be as little as half that of a typical UPS system, the company said, and provides equal or better protection against everything except complete blackouts.

"Without the continued cost of replacement batteries and the uncertainty of recharging them, the FirstLine DR is the best choice for critical load applications where protected power is a must, but the high cost of batteries cannot be justified," a company spokesman said. "It fills a gap between traditional UPS systems and power conditioners."

For information contact the company in Ohio at (937) 253-1191 or visit [www.stacoenergy.com](http://www.stacoenergy.com).



## New Freed Studio For Rock Hall

The Rock and Roll Hall of Fame showed mockups of its Alan Freed Radio Studio, a new studio for on-site radio remotes that will replace its existing facility. In addition to a new name, the studio will have new equipment and acoustic treatment.

Freed, the WJW(AM) Cleveland disk



jockey credited with coining the term "rock 'n' roll," was inducted into the Rock and Roll Hall of Fame in 1986. Construction of the new studios at the museum was set to begin this month.

According to John Grayson, corporate donor manager for the Rock and Roll Hall of Fame and Museum, the demolition and construction will be Webcast, allowing viewers to see how a radio studio is built from the ground up. The images will be archived, creating a time-lapse video of the project.

Broadcasters General Store, the principal technology sponsor for the project, facilitated gifts from a number of vendors for the project, including Logitek, Studio Technology, Tannoy, Marantz, Telos Systems, Comrex, MediaTouch, Atlas Sound and Gepco.

Programming consultant McVay Media is working with the museum, handling the scheduling of remote broadcasts from the facility.

For information contact the Rock and Roll Hall of Fame in Cleveland at (216) 515-1234.

## Benny & Delilah

Singer Benny Mardones and radio host Delilah entertained at the Rock & Roll Hall of Fame booth in Seattle. They talked about how they met and discussed Mardones' song "I Need a Miracle."

Mardones promoted his album "A Journey Through Time" and the single "I Want It All."

Delilah and Mardones met when one of his songs was released four years ago. Her show is syndicated by Jones Radio Networks.

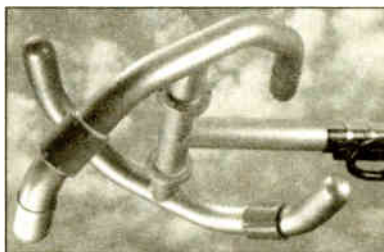


Mardones is known for his 1980 hit "Into the Night." Delilah said she had been urging Mardones to release the song "I Need a Miracle" for some time even before he was diagnosed with Parkinson's Disease.

For information from Jones Radio Networks, contact the company in Washington state at (206) 728-2741 or visit <http://jonesradio.com>.

## Dielectric Introduces FM Antenna

Dielectric Communications used the Seattle convention as a backdrop to introduce its DCR-X FM antenna. It features solid insulator supports, radial pressure seal, standard lightning protection and a variable transformer included with each array, which allows for VSWR optimization after installation with no need for shorting stubs. Directional patterns are available for the DCR-X as is half-wave spacing to meet new personnel safety standards.



The DCR-X can be configured to broadcast one or multiple signals and complements Dielectric's line of single and master antenna systems.

For information call (207) 655-4555 in Maine or visit [www.dielectric.com](http://www.dielectric.com).

## Measurement Tools From Coaxial

Coaxial Dynamics displayed its line of RF Wattmeters. The high-power, remote devices are designed for the accurate measurement of complex RF Waveforms such as DAB, AM and FM. A variety of models are available to measure forward and/or reflected power in 50-ohm coaxial transmission line systems with either 5/10/25 or 15/30/60 scales.

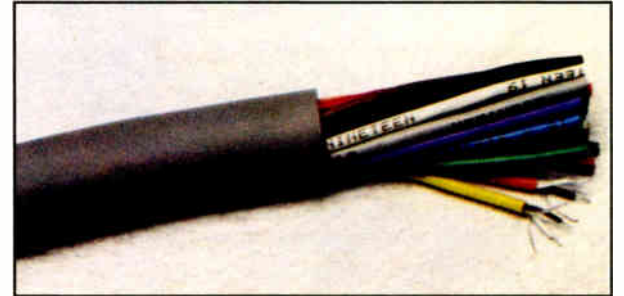
Coaxial also featured the "Digital Watchman" rack-mounted station monitor/alarm (shown), also designed for the accurate measurement of complex RF

## Gepco Expands Multi-Pair Series

Gepco International Inc. expanded the 5526GFC series of 110-ohm digital audio multi-pair to include the 24-pair 552624GFC. Combined with its existing four-, eight-, 12- and 16-pair versions, the 552624GFC allows interconnection between digital audio consoles, recorders, processors and routers.

The 552624GFC features 110-ohm impedance, low jitter and attenuation, ease of termination and flexibility. Pair construction consists of two stranded 26-gauge conductors, foam polypropylene insulation, 100-percent foil shield with drain wire and a color-coded and alphanumerically numbered PVC jacket.

For information call (800) 966-0069 in Illinois or visit [www.gepco.com](http://www.gepco.com).



Thin-Profile 24-Pair AES/EBU Digital Audio Snake

waveforms. The device monitors forward and reflected power and protects the station transmitter. Transmitter shutdown occurs in less than 15 milliseconds should abnormal conditions warrant. Fault is indicated by an alarm and light.



Line section and elements for both devices are sold separately.

For more information call (800) COAXIAL in Ohio or visit [www.coaxial.com](http://www.coaxial.com).

## Register Data Systems Features 'The Phantom'

The Phantom MP III is the latest offering from Register Data Systems.

New features include the ability to import and play MP3, MP2 or PCM files, increased storage capacity up to 600 hours with standard 20 GB HDD, sample rates up to 48 kHz, digital and analog I/O, a tower case and CD-ROM.

The Phantom also uses the latest technology from ASI.

For more information call (800)

521-5222 in Georgia or visit [www.registerdata.com](http://www.registerdata.com).

## Radiotechniques Launches Point Manager

Monitoring the directional antenna monitor points of AM radio stations can be a big job, especially if there are several stations to be monitored in one market.

Point Manager version 1.0 is a personal digital assistant program from Radiotechniques Manufacturing that manages the measurement of AM broadcasting station directional antenna monitor points. The program uses a Palm PDA with a GPS to navigate to each monitoring point, enter and check the measurement data against licensed values, date and time stamp the data, and provide for data management and transfer to a PC database for analysis and tracking.

The full version of Point Monitor sells for \$250, and includes HandBase Pro, a database manager that formats data for transfer to PC-based database or spreadsheet programs.

A free functional demo version of the program is available that handles only one station and does not include the HandBase database program.

For more information call (856) 546-8008 in New Jersey or visit [www.radiotechniques.com](http://www.radiotechniques.com).

## Musicam USA Shows Off SuperLink

Touting it as "a new generation of audio and data gateway products," Musicam USA offered up SuperLink in Seattle. SuperLink is suitable for use as a multichannel STL with automatic ISDN backup, or as a multichannel audio codec with advanced data handling capabilities.

The unit features interchangeable function modules that support many applications, user-configurable hardware and software, a DSP-based audio codec and popular compression algorithms.



SuperLink also works with high-speed data via T1 or E1 with flexible timeslot handling, an Ethernet port for network audio, Internet protocol audio streaming through an NT or Windows 2000 server, multiple BRI ports for ISDN and multiple V.35, X.21, RS422 and RS530 ports.

Multi-channel audio, remote command and control capability, integrated functions for automatic program handling, flexible alarm handling with programmable relays included and universal power supply round out the unit's features.

For more information call (732) 739-5600 in New Jersey or visit [www.musicamusa.com](http://www.musicamusa.com).



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*Telos*  
www.telos-systems.com

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## Prophet Provides Portable Signage

Remote Buddy is Prophet Systems' new product for remote radio. Audio, video and lighting control are available in a portable box.

Moving text and effects can overlay video to create eye-catching signage. The display can be customized to include sponsored specials, contest rules, winner lists and other information. Audio sound effects can be loaded into the Remote Buddy to enhance on-site appearances.

Demographic information on attendees can be gathered with RFID and other technologies. With the addition of lighting fixtures, sweeping spotlight, patterns, spinning station logos and strobe lighting can be used.

Remote Buddy also has the ability to use discrete GPIO to control other appliances, including multiple display options.

For information, contact Prophet Systems in Nebraska at (877) 774-1010 or visit [www.prophetsys.com](http://www.prophetsys.com).

## Stardraw Launches Web Application

Stardraw.com launched a Web-based CAD system, Stardraw.net, a tool that allows users to design and document integrated systems through a browser using an online library of 30,000 industry-specific symbols.

Stardraw.net adds Web-based technology that incorporates new tools and data for use with the company's conventional software packages. Users can customize their symbol sets, drawing from the libraries.

The application is designed to run within a Web page, and is delivered through HTML pages, using tools that download themselves as and when they are needed. Functionality such as Cut, Copy and Paste commands or drawing lines is executed on the client side for speed, and symbols libraries, pricing, etc. are stored in databases on the server. An advantage of the client/server split is that if the Internet connection is broken, users can continue to work and save files locally.

For information, contact Stardraw in New York at (212) 672-1855 or visit [www.stardraw.com](http://www.stardraw.com).

## AEQ Talk Show Software for ISDN

The AEQ Systel 6000 Talk Show and Multiplexer Software for ISDN lines includes features for multiconferencing, intercommunication, CUE/PFL and on-air control for circuits coming from PSTN networks, ISDN or audio lines. Lines can be analog or digital, internal or external.

At the Radio Show AEQ also displayed its BC 2000 D digital audio on-air console for radio and television production.

New modules were shown for the Impact-Caddy Audio Routing System, including an E@sy dual PS autoranging and autoredundant power supply that allows monitoring through the E@sy Control Bus for Impact DC and Caddy DC.

For information contact the company in Florida at (954) 581-7999 or visit [www.aeqbroadcast.com](http://www.aeqbroadcast.com).

## Orban Updates 8400, Shows Opticodecs

At the NAB Radio Show, Orban introduced new firmware for its Model 8400 FM processor.

Version 2.1 adds features including multi-level security with a choice of five privilege levels from "recall presets only" to "full administrator." It reduces delay to 15 ms and adds ASCII interconnect to any automation system via RS232 port.

The company also demonstrated its Model 6200 IBOC/DTV processor and presented the 8400-IBOC as "the market's first single-package processing solution for IBOC."

Also on display were new Orban Opticodec products, made by Orban Europe. Model 7000 is touted as the only portable codec that combines recording, editing and ISDN in a battery operated package.

Model 7400, shown, is a rack-mounted codec that can be used with ISDN or TCP/IP over LAN or WAN; it is in use as an STL by a California station.

For information contact the company in California at (510) 351-3500 or visit [www.orban.com](http://www.orban.com).



## AKG Mic Designed For On-Air Use

AKG displayed its C4500B-BC large-diaphragm condenser microphone, aimed at the on-air announcing market. Features include a front-end firing capsule position, electro-magnetic screening and internal pop filter.

The front-end firing capsule position offers the best position for close-to-mouth placement.

Proximity effect is reduced by a capsule design optimized for a working distance of two to three inches.

A 120 Hz rolloff filter is integrated into the microphone. A 20 dB preattenuation pad permits users to replace dynamic microphones without changing the adjusted gain structure on associated equipment. The low noise and high overload point of the C4500B-BC offer a dynamic range of more than 135 dB.

Contact the company in Tennessee at (615) 620-3800 or visit [www.akgusa.com](http://www.akgusa.com).



## Comrex Codex Optimize Flexibility

Comrex touts its BlueBox as a low-cost option for remote broadcasts over plain telephone lines (POTS/PSTN) or wireless services. It is compatible with other Comrex POTS/PSTN codecs. The portable unit weighs 1.5 pounds, so it is suitable for breaking news, sporting events and interviews.



Also on display was the Matrix, which the company says is its most flexible because it allows POTS/PSTN, ISDN (with

optional module) and wireless operation and works with other Comrex POTS/PSTN and ISDN codecs as well as other manufacturers' ISDN codecs with the G.722 and ISO MPEG Layer III algorithms.

The Matrix can broadcast on a variety of circuits; its multipurpose data port and modular design will allow it to broadcast on new circuits as they become viable for live audio transmission.

Both models are field upgradeable. Comrex also displayed its new DX-300 ISO MPEG Layer III codec.

Contact the company in Massachusetts at (978) 784-1776 or visit [www.comrex.com](http://www.comrex.com).

## Larcan Displays FM Exciter Range

Along with its FM-25 25-watt FM exciter, Larcan had on display its FM-100 (100-watt) and FM-250 (250-watt) FM exciters. Larcan promotes them as among the most compact low-power, all-inclusive transmitters available.

The design includes redundant and safety features. Units have a frequency-agile synthesizer, phase locked for stability, and remote frequency control for remote or N+1 operation.



Features include stereo decoded audio signal VU meter (left and right), ALC circuit with front-panel indicator, SCA and RDS operation, cooling fans, modular design, 100 Hz baseband and wide-band operation.

Available options include stereo encoder and audio limiter and system monitoring via RS-485 telemetry interface.

Contact the company in Colorado at (303) 665-8000 or e-mail [sales@larcan.com](mailto:sales@larcan.com).

## RadioSoft Packages Support Station Planning

RadioSoft was at the NAB show to promote services including mapping, engineering software, frequency finding, site location, unlimited tech support and free upgrades.

ComStudy 2.2 radio engineering soft-

ware provides prediction mapping of sites. The package accommodates interference, antenna, location, topography and power modifications with real-time 3D displays.

FrequencyFinder searches FCC rules and databanks to identify new broadcast locations.

RadioForms is a software package that helps locate and engineer new sites or frequencies and helps handle the paperwork. The software provides forms to submit applications to your coordinator or to the FCC for licensing.

A bundle of the three called the UltimatePackage is available.

Contact the company in Florida at (386) 426-2521 or visit [www.radiosoftware.com](http://www.radiosoftware.com).

## Software Variety From WBS

Wicks Broadcast Solution showed several of its software systems.

The DeltaFlex 4 Broadcast Management System is traffic and billing software with a GUI that echoes Windows in appearances, taking advantage of point and click mousing where appropriate and retaining keyboard entry where it is most efficient. New printer handling routines allow DeltaFlex reports to be printed any printer. Other features allow files to be audited and keep track of every change made to a contract, such as schedule changes, additions and deletions, permitting tracking of spots missed on one day and "made good" on the another.

SalesMinder Sales Automation software helps managers and account executives manage sales information.

The Control Tower Warehousing System provides warehousing capability to Wicks Broadcasting traffic and billing systems.

Contact the company in Alabama at (334) 749-5641 or visit [www.wicks-broadcastsolutions.com](http://www.wicks-broadcastsolutions.com).

## AirPlay Upgrade Now Available

The latest version of AirPlay, the fourth-generation live assist interface for ENCO Systems' DADpro32, is now shipping.

The company said this version incorporates enhancements to allow stations to "roll their own" user interface. Features include user-configurable cut information displays, optional VU meter display, customizable talk timers, color-coded elements, enhanced skipped cuts display window and several DAD Command Language buttons that allow user-written commands to appear on the screen integrated into the interface.



ENCO also showed a preview of its new speech-recognition module for DADpro32, called Phonetica. Using a speech-processing engine, it allows users



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to search libraries of spoken material for specific words or phrases by typing in the words to search for.

The software searches and displays a list, ranked in order of confidence, of the instances of the desired words. The audio cut can be auditioned where the word occurs and the DADpro32 editor opened, centered on the target word.

For information contact the company in Michigan at (800) 362-6797 or visit [www.enco.com](http://www.enco.com).

## Marti Gets Synthesized

Marti RF STL and RPU product lines are transitioning from crystal-controlled to synthesized. The compa-

ny says it is making these changes to make its products more reliable and powerful and easier to tune. Delivery times also will be shortened.

Among the new products is the SRPT-40A, shown. It is a frequency-agile, wideband higher-power RPU that replaces the SRPT-40 and the SRPT-40E.

Depending on the frequency band, the SRPT-40A delivers 20 to 50 watts. It operates at 50 watts in the 45- and 455 MHz bands. The frequencies in the selected band can be chosen from the front panel; bandwidth can vary from 25 to 50 MHz depending on the fre-



quency band selected.

For example, an export version for the 300 MHz band will cover from 300 to 320 or 320 to 350 MHz in 10 or 12.5 kHz steps. The VHF version can tune from 135 kHz to 185 kHz at 50 W.

For more information contact Marti in

Texas at (817) 735-8134 or visit [www.martielelectronics.com](http://www.martielelectronics.com).

## Burli Expands Audio Editor

Burli Software Inc. previewed its updated and expanded audio editor for radio news production.

The Burli computer newsroom system includes integrated single and multi-track audio editors for producing voice reports and longer-form news features for radio.



Burli audio editors were designed for radio news production. The editor includes expanded editing, mixing and audio processing features and is suitable for radio producers preparing pieces with mixed sound. The new editor ships as an integrated part of Burli's newsroom system.

Burli also plans to include the enhanced editor in its standalone Freelance Reporter news production package for laptops and single-workstation bureaus.

Contact the company in Vancouver, Canada at (604) 684-3140 or visit [www.burli.com](http://www.burli.com).

## Spot Box Is Instant Audio

From Scott Studios is the Spot Box, shown, which provides 40 buttons to play commercials, jingles and sound effects instantly and digitally from a hard drive. The buttons look like 1-inch-wide LCDs, similar to those on cell phones.



The box connects to a traffic computer and can auto-load logged recordings. Cuts also can load by 10-key and by name from alphabetical Cart Walls.

The Scott Studios Lazer Blade, not shown, auto-records call-ins; place-markers can be set while recording to allow quick access when editing. Editing is simple — zoom in and out of visible waveforms, hear edit points by "scrubbing" or "rocking reels" with the jog wheel.

Announcers and callers are on different tracks that can be locked or separated. Tracks can slide separately to improve timing. Hot Keys can be added for effects, bleeps and pauses, and jocks can rerecord their parts at any time.

Contact the company in Texas at (888) 438-7268 or visit [www.scott-studios.com](http://www.scott-studios.com) or [www.lazer-blade.info](http://www.lazer-blade.info).

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## WIRED FOR SOUND

# Wīr, Wira, Ēlektron & Capulare

by Steve Lampen

Gather 'round, boys and girls, as Grandpa Lampen continues his journey through the history of wire and cable.

I left our column in the Sept. 25 issue talking about technology found, and lost, and rediscovered. We will see this a lot in our journey. I may take a liberty here and there by talking about "telecommunications" instead of just wire and cable. But in each instance we'll find some version of wire and cable allowing the technology to work.

The word *wire* in English dates from before 900 AD, from the Old English word *wīr*. A similar word, meaning a thin round elongated piece of metal, appears in old Norse languages. It's probably also related to an old German word "wira," which meant fine work in gold jewelry, which looked like wires, I would think. The word "cable" probably is from the Latin *capulare*, which mean a rope or halter such as that used with horses or cattle.

You can see that "vine" and "wine" share the same root. This makes sense; wire is like a vine, or vines are kind of "wiry." Engineers will be happy to know that "wire" and "wine" are related. So fill your glass and toast those whose intellect and curiosity forged new (conductive) paths.

Our next stop is the year 1729. That was when Stephen Gray (1667-1736) dis-

covered that the electric force, made by rubbing glass, could be sent long distances over a wire.

Electricity had been produced by rubbing objects since the time of the ancient Greeks. Ēlektron, from which electricity is named, means "amber" in Greek. Amber, when rubbed, is a good source for static electricity.

## Henry Cavendish, who developed the concepts of capacitance and resistance, was deathly afraid of women. He may have been the first real nerd.

In his earlier experiments, Gray suspended himself and became the conductor to prove his point. The charge from one object can be transferred to another by the use of a conducting material, in this case himself. He did the same experiment using wire, which must have been a lot easier on his body. He also concluded that there were conductors and non-conductors (insulators).

We move on to Pieter van Musschenbroek (1692-1761). In January 1746, he perfected the Leyden Jar, a device made by putting metal layers inside and outside a glass jar. It became a capaci-

tor; it could store a charge. Van Musschenbroek would charge these up and arrange them in series, connected with wires. In his experiments, he and his assistants touched the end wires of the charged Leyden Jars and received nasty shocks, even rendering an assistant unconscious for a few seconds. A whole series of new

Dutch swear words were born.

Around 1775, Henry Cavendish (1731-1810) put experiment and theory together and invented "capacitance" and "resistance." In his experiments with resistance, he measured the current on a wire by touching it and *estimating the pain*. Most of his work was not published until a century later. He was deathly afraid of women, and only one quick sketch of him remains. Maybe the first real nerd.

In Italy, in 1793, Count Alessandro Volta (1745-1827) performed all sorts of experiments with frogs, getting their little dead muscles to twitch with electrical

pulses. In doing so, it became apparent that different metals, with the liquid in the frog, could produce the animating voltage.

By creating layers of alternating metals, copper and zinc, separated by thick paper soaked in salt water, he produced the first modern battery, called the Voltaic Pile. Hey, it only took exactly 2,000 years to reinvent the battery. (You did read last month's column, didn't you?) The volt is named for him. He also discovered the idea of a circuit, in which electricity passes from pole to pole, and that a circuit must be complete before current can flow.

### Needles and silk

If you can time-travel, you might want to visit the garden of Sir Francis Ronalds in Hammersmith, London, in 1816. He had more than eight *miles* of wire strung in his garden. Using just static electricity, he could send a charge down each wire. The charge attracted a little cork ball suspended near the end of the wire. As the ball moved, it revealed a letter. In this way messages could be sent. The British Navy was not impressed.

In 1820, Hans Christian Oersted (1777-1851) discovered that electric current flowing in a wire caused a compass needle to move. This indicated a relationship between electricity and magnetism. Only a week later, Andre Marie Ampere (1775-1836) discovered that parallel currents oppose each other and opposite currents attract. This led to the theory of Michael Faraday (1791-1867), who wondered in 1831: If electricity could produce magnetism, why couldn't magnetism produce electricity?

Indeed it could, and the electric generator and motor were born.

In 1826, George Simon Ohm (1787-1854) determined that the current in a wire was related directly to the voltage of the source and the resistance of the wire. This relationship was so controversial that he delayed publishing these results, now known as Ohm's Law, for a number of years.

In 1830, Joseph Henry (1797-1878) was teaching a class. He said, in effect, that there is no connection between electricity and magnetism. To prove it, he energized a wire, running near a second wire with a crude meter that showed electrical current. When he energized the first circuit, the meter moved. He had failed to prove his point.

Not only that, he found that, if he coiled up one or both wires, he could intensify the effect. And if he wrapped the wire around a piece of iron, the intensity of the magnetism was enhanced further.

Of course the wires could not touch each other, or the iron, or they would short-circuit. So he took his wife's silk dress and covered the wires with silk. Silk-covered wire was the hottest thing in the wire biz until well into the 20th century. Open up an operator's switchboard from the turn of the last century and what will you find? Silk-covered wire. We'll revisit silk-covered wire in a future column.

But there is much more to this amazing story. Don't miss the next exciting episode, where a bookbinder's apprentice gets fired for reading the books he is binding and becomes one of the greatest electrical geniuses of all time. And find out about the mad inventor who built the biggest ship to that time but died before it solved a worldwide wiring problem.

Past articles are available in the Reference Room section of [www.rwonline.com](http://www.rwonline.com).

Steve Lampen's latest book, "The Audio-Video Cable Installers Pocket Guide," is published by McGraw-Hill. Reach him at [shlampen@aol.com](mailto:shlampen@aol.com).

## AudioScience Has PCM-Only Audio Adapter

The AS15111 is a PCM-only audio adapter for professional broadcast use from AudioScience that retails for \$545. It is scheduled to ship Nov. 1.



It offers two stereo record streams from either a balanced analog input or AES/EBU digital input and four stereo play streams mixed to both a balanced analog output and an AES/EBU digital output.

Also included is a mic input, with mic preamp and 48V phantom supply.

The company also promoted the AS12214 SoundSlice multistream USB2.0 audio peripheral, capable of playing eight mono/stereo streams to four stereo/eight mono outputs and recording one stereo input simultaneously over the USB serial bus.

For information contact the company in Delaware at (302) 324-5333 or visit [www.audioscience.com](http://www.audioscience.com).

## Radio Systems Makes Time

Radio Systems showed production models of its new CT-2002 line of clocks and timers at the Seattle NAB Radio Show. The line has features not available in the company's CT-6

clocks and timers, including SMPTE time-code reading and infrared remote-control capabilities.



When used with the IR remote, the timers can operate as down-timers as well as up-timers; six down-time presets are available.

The clocks are backwards-compatible to the CT-6 line and continue to offer the master and GPS options. The CT-2002 line starts at \$155 and is available.

For more information contact the company in New Jersey at (856) 467-8000 or visit [www.radiosystems.com](http://www.radiosystems.com).

## Marketron Takes Software Approach

Marketron Radio offers a suite of sales, traffic and "business intelligence" products for radio.

Its software approach incorporates client-server and Web-based technology with Windows-based user interfaces. Components include:

Marketron Radio Sales, for salespeople to research, negotiate and schedule spots at the best possible value. Features include automated research, sales, yield management and proposal tools;

Marketron Radio Traffic, which manages spot scheduling and billing via a single interface. Features include electronic order workflow, traffic, copy and billing.

Marketron Radio Business

Intelligence, which provides executives with sales and inventory information. Features include consolidated, Web-accessible reporting for local station, regional market and corporate executives.

For information contact the company in Alabama at (205) 321.3065 or visit [www.marketron.com](http://www.marketron.com).

## NRSC Seeks Members

New to the show floor was the National Radio Systems Committee booth.

The NRSC, a technical standards-setting body co-sponsored by the Consumer Electronics Association (CEA) and NAB, is engaged in developing standards for in-band, on-channel digital radio.



Shown are Dave Wilson of CEA, left, and David Laver of NAB, who administer the NRSC for their respective organizations.

During the Radio Show, broadcasters and manufacturers were given details on how they can participate in the IBOC standards-setting effort and were encouraged to join.

For information about the NRSC, visit [www.nrscstandards.org](http://www.nrscstandards.org).





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Radio One Inc. committed to turnkey implementation of IBOC HD Radio from Harris Corp. for stations in Los Angeles, Dallas, Boston, Detroit and Atlanta. The order includes the new Z-HD solid-state digital DAB transmitters and Dexstar

AM/FM IBOC exciter.

John Mathews is Radio One director of engineering. ...

It's a tricky STL shot; but Moseley says the first StarLink Composite STL is on the air

and operating "flawlessly" at Clear Channel's KTYD(FM) in Santa Barbara, Calif.

The shot had been served by a Moseley PCL-606C with a cavity filter to fight off cellular interference. The studio is downtown on E. Cota Street; the transmitter is at Gibraltar Peak.

Ran Bullard is station engineer for KTYD.

"The path passes directly through an antenna farm site that is about 500 feet below the KTYD transmitter, also up Gibraltar Road, (and) includes cellular phone transmitters and receivers, pagers as well as other FM stations," the company said. "In addition to the strong interference from collocated pager transmitters (930 MHz band) and cellular service (800 MHz band), several other transmission systems that are directed towards the lower site are also pointed towards the KTYD microwave receive dish."



Dalet has provided systems for Cyprus Broadcasting Corp. CBC's entrance is shown here.

The system uses 128 kHz sampling to digitally convey an FM composite signal. ...

Greater Media purchased a Telos Systems Series 2101 Multi-Studio Talkshow System for its new Detroit studios. Separately, All India Radio bought 12 Telos TWOx12 Talkshow Systems for use at Radio City FM's New Delhi studios. ...

Cyprus Broadcasting Corp. chose DaletPlus from Dalet as its live assist and playout system. CyBC is Cyprus' public broadcasting service, airing on three radio and two television channels. The 400 radio staffers will have access to a central database and storage server with a capacity of 6,000 hours of audio.

Separately, Dalet said Washington and Lee University in Lexington, Va., chose its DaletPlus Media Asset Management System for digital content management, newsroom training, cable broadcasting, "smart classrooms" and Web publishing. ...

Comedy Central's original film, "Porn 'N Chicken," will include a scene in a college radio station. Appropriately battered used studio equipment was provided by Radio Systems for the film shoot in New York City.

The film is based on Yale University's underground club that received national attention for its mission to meet every week to eat chicken and watch pornography. ...

Sporting News Radio ordered Netia Radio Assist 7 systems for use in Boston and Los Angeles; a system was already in place in Chicago. Each of the sites has its own database; the systems are connected via WAN and communicate via T1, allowing instant sharing of audio "documents."

The vendor stated, "This new installation confirms Netia's presence in the United States." ...

MusicMatch Radio MX and MusicMatch Jukebox will be shipping with all Gateway PCs for consumers for the second year.

Radio MX is a digital music subscription service. It is available through the company's Jukebox software program.

"Who's Buying What" is printed as a service to our readers who are interested in how their peers choose equipment and services. Information is provided by suppliers.

Companies with news of unusual or prominent sales should e-mail information and photos to radioworld@imaspub.com. ☺

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*HRS120—a fine choice to be the ".1" in surround mixing applications.*

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And speaking of mo' bass, the new HRS150 uses a 15-inch active driver, two 12-inch passive radiators and 950 watts of FR Series power to achieve frequency response that's only 0.5dB down at 10Hz. Yes, you read that right. Ten Hertz!

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World Radio History

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## A Circuit for Tower Light Monitoring

by John Bisset

Tower light monitoring is still high on the "hit lists" of the FCC and the FAA.

The interface Ray Fantini provided for tower light telemetry caused John "J" Harris at KUAC(FM) in Fairbanks, Alaska, to drag the following circuit from his files.

For the price of a few active components and a wall-wart power supply, you can get a cyclic flash indication and a logic LOW when the flash fails. You can also use this logic LOW to give you a log printout when the failure occurs.

J's circuit has worked several years without problems, and he still has the board artwork, if any reader would like it. Send a self-addressed, stamped envelope to J. Harris, KUAC, Box 755620, Fairbanks, Alaska, 88775. KUAC is

licensed to the University of Alaska.

The motivation to develop this circuit was vandals shooting out the tower lights. The transmitter site is semi-remote, which provides a great place for teen parties. After one occurrence, soon after last year's 9/11 disaster, the FBI got involved. Law enforcement's first question is "when?" Connecting the circuit to a printer and logging any outage will record the time of the event. Although no one was apprehended, the circuit "lies in wait" for the next time, should it occur.

Fig. 1 shows the schematic of the circuit. The interface conditions the pulse from the tower light pickoff, and provides a buffered "flash out." The 555 is a missing-pulse detector, which gives a logic LOW when the pulses do not arrive within the period set by R1 and C1. The values of R1 (200 kohm) and C1 (47  $\mu$ F) set

a period of about 13 seconds.

The LEDs used in the circuit provide a visual indication for the flash pulse and the

ers brought an interesting challenge. The electrical inspector required a non-conductive shield to be constructed between the RF network and the electrical box.

The inspector reasoned that if someone working on the electrical box on the left in Fig. 2 were shocked or fell, the

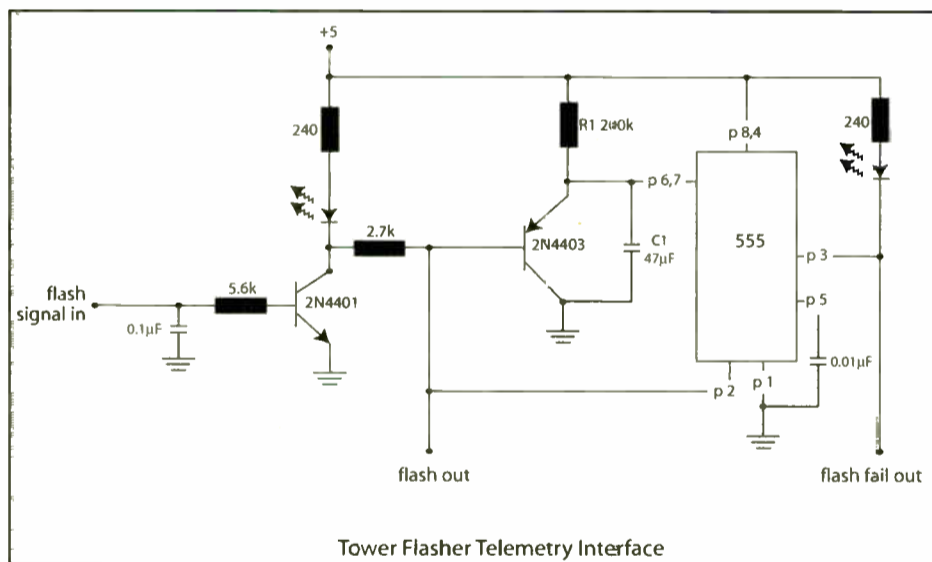


Fig. 1: With a few components and a wall-wart, you can get a cyclic flash indication and a logic LOW when the flash fails.



Fig. 2: This wooden barrier protects workers from accidental contact with the RF network on the right.

flash fail. The transistors can be any small-signal transistors. I chose Q1 to be a NPN 2N4401, and for Q2, a PNP 2N4403. The circuit can be mounted on a 2-by-2-inch breadboard, nice and compact.

\*\*\*

Mike Gilbert had the responsibility of building a new 50 kW directional site for Multicultural's KVRI(AM) in Blaine, Wash. The site is diplexed with KARI. The construction of the doghouses to house the antenna tuning units for the tow-

wooden shield would prevent them from falling into the RF network on the right.

Fig. 3 on page 26 shows a bonus the wooden shield provided: support for a shelf for the dehydrator. Note also the conduit leaving the building, to the lower left of the dehydrator. Mike sealed the entry with expanding foam, and guarded against vegetation growth by graveling the outside of the building, as seen in Fig. 4. Keeping the conduit inside the tower fence, before it goes underground, also protects against vandalism.

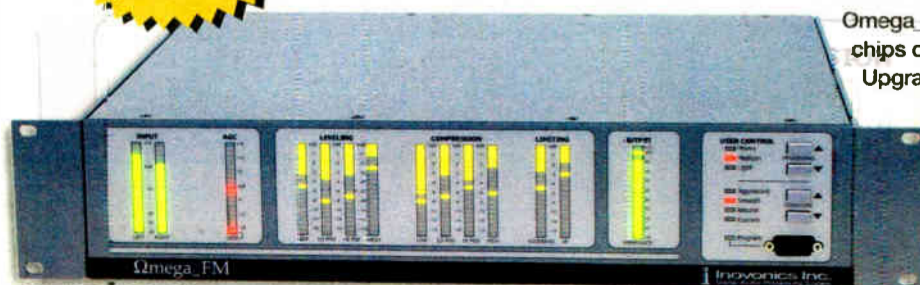
See WORKBENCH, page 26 ▶

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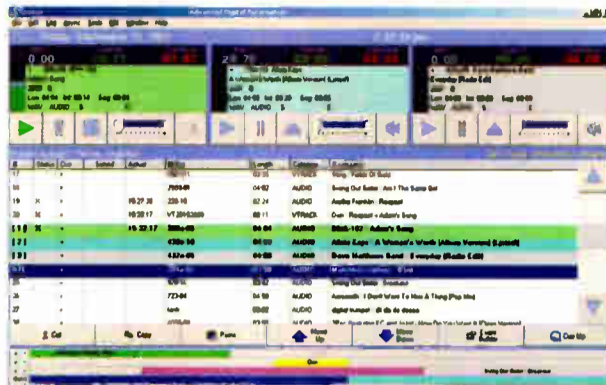
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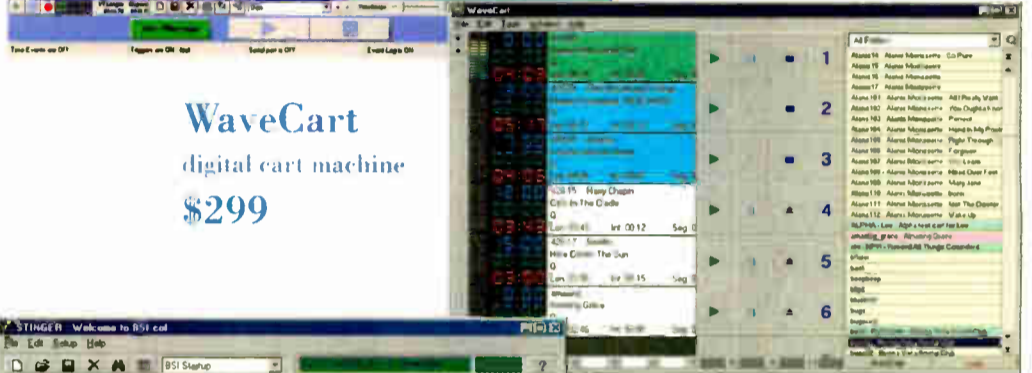


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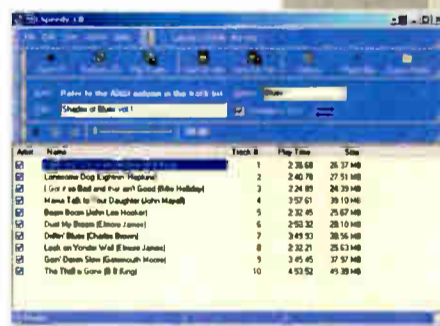


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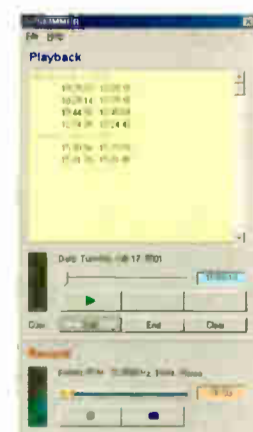
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# Cleveland's Unusual Frequency Swap

*Classical Station WCLV(FM) Lives on, and Converts Its Facilities to Digital*

by Ken R.

Detroit doesn't have a classical music station anymore. Neither does Philadelphia, or San Diego, or Tulsa.

Cleveland could have gone the same way. Its commercial classical station, WCLV(FM), could have been sold for \$40 million.



During construction, Assistant Engineer Randy Davis works on studio wiring.

Instead, the station now is run by a nonprofit foundation. Thanks to a complex frequency swap, Beethoven and friends will continue to be heard in Cleveland. As a bonus, a big-band format on AM was saved from oblivion.

The swap in the country's 25th Arbitron market involved Salem Communications, Clear Channel Communications and a new consortium of nonprofit arts organizations called the WCLV Foundation.

Smack in the middle of it all were the president of WCLV, Robert Conrad, and his partner Rich Marschner, executive vice president and general manager, who initiated the swap and are upgrading their station facilities as part of the project. Conrad and Marschner are the former majority stockholders in Radio Seaway Inc., (WCLV-FM), which is now in the hands of the WCLV Foundation.

Conrad's involvement with the station goes back to 1962, when he was brought to Cleveland to help convert the former WDGO(FM) to classical.

Even though the AM/FM remains a commercial entity, future profits from the FM will benefit the Cleveland Orchestra, the Cleveland Museum, the Cleveland Institute of Music, the Cleveland Playhouse and the Cleveland Foundation. This is all part of an agreement between the WCLV Foundation and these community organizations.

Conrad and Marschner worked with broker George Reed from Media Services in Jacksonville, Fla., and Washington attorney Patrick Amer of Cleveland law firm Speith, Bell, McCurdy and Newell to navigate these roiling waters.

WCLV(FM) relinquished its 95.5 MHz frequency to Salem Communications in exchange for the frequency and tower site of WHK(AM) at 1420 kHz plus an undisclosed amount of equity in July of 2001. "We got some equity, we got a new AM to play with, and on Nov. 1, 2001, we gave the FM to a non-profit foundation, a gift of \$14.5 million," Conrad said.



Bob Conrad

The WCLV Foundation received an upgraded Class A at 104.9 from Clear Channel, which in turn received Salem's 98.1 frequency in nearby Canton, Ohio.

Conrad originally planned to simulcast WCLV(FM) on 1420 AM, but five weeks prior to the closing of this deal in the summer of 2001, Salem also announced it was going to move its WKNR(AM) sports/talk format from 1220 to its WRMR(AM) spot on the dial, 850, thus



displacing a big-band station.

Cleveland listeners were upset and wrote letters to the Cleveland Plain Dealer protesting the loss of their favorite music.

WCLV management decided to hire seven members of the soon-to-be-defunct WRMR and purchase the "intellectual property" — the big-band format and some equipment. Thus classical music and big-band standards will be on the air in Cleveland for the foreseeable future.

## Musical studios

The addition of an AM studio and other changes necessitated an almost total rebuild for WCLV, one studio at a time. Conrad invited the announcers to participate in planning the new facilities.

"Believe it or not, they wanted stand-up consoles, so (chief engineer) Jerry Goforth had to rip everything out and redesign the rooms," he said. "The announcers also had input in the placement of the computer screens and other equipment."

Conrad said the \$150,000 budget for the studio rebuild had to take into account the added AM station. Another need was ample space to record and duplicate syndicated shows.

WCLV(FM) offers a number of classical music programs through its Seaway Productions arm including "Adventures in Good Music With Karl Haas," "The Cleveland Orchestra," "The Detroit Symphony" and "Milwaukee Symphony Orchestra." Conrad had to make the most of his facilities to have room to handle duplication and distribution of these shows.

"Before the upgrade we had three production studios, a talk studio and one air studio. We moved the AM station into one of the production control rooms and made a production room out of the talk studio. All five of our studios are in the same building."

The studios have been converted to digital; the FM air studio was undergoing renovation in September.

Of course nothing goes as smoothly as planned. In this case, Conrad said the former WHK transmitter site had to be upgraded because the ground system was unsuitable and the FM site built by Clear Channel had a few bugs that had to be worked out.

"The AM site is historical," said Conrad. "It goes back to the 1940s but we had to clean out the equipment left over from several previous regimes. We saved a few things, but most of it went into a dumpster."

Conrad said the driving force behind the move to digital was the quality of the sound.

"As a classical-music station, we're interested in the best sound we can produce because we have a very critical audience," he said. "We occasionally play an archival analog tape and you can really hear the difference compared to CDs."

But good sound isn't just necessary on the FM band.

"Our AM format plays a lot of recordings made many years ago," Conrad said. "But fortunately the technology is there so we can get clean versions of them on CD, and I'm quite pleased with the result."

Assistant Chief Engineer Randy Davis installed much of the new equipment including Logitek Roc-10 consoles; Logitek vMix Virtual Mixer software, which allows a computer to become another workstation using a 17-inch flat touch screen; ENCO's DADpro32 delivery system; Harris Intralex TI STL; and a satellite dish inherited from the previous owner.

See WCLV, page 26 ►

## Who Went Where

*The Cleveland frequency swap involved some Byzantine twists. Here is a scorecard to help clarify the changes that took place in 2001. Sources: Robert Conrad of Radio Seaway Inc. and Dionne Petitpas of Salem Communications Corp.*

**Radio Seaway** gave up its 95.5 frequency, former home of WCLV(FM); the frequency now is occupied by WFHM(FM), a contemporary Christian format owned by Salem Communications. Radio Seaway took 104.9 from Clear Channel for its new classical location on the dial; it had been Clear Channel's WAKS(FM), a contemporary hit music station. WCLV(FM) is a commercial licensed operation, now owned by the WCLV Foundation, a non-profit organization. Conrad and his partner transferred their ownership to this organization.

**Clear Channel Communications** moved adult-contemporary station WKDD(FM) from 96.5 to 98.1, which Clear Channel received from Salem. The 96.5 frequency is now WAKS(FM).

**Salem Communications** gave up its 98.1 frequency, which had been WHK(FM) simulcasting religious programming from its WHK(AM). (The 98.1 frequency is licensed to nearby Canton.)

Salem also owned a big-band station, WRMR(AM) at 850 kHz, which it switched to sports/talk. The loss of the big-band format prompted the owners of WCLV 1420 AM to buy the intellectual property of that station for Cleveland Classical Radio LLC, in the hands of the original stockholders of WCLV. The big-band format, as well as seven of the former employees, continue at 1420 kHz. Salem moved its WKNR sports format from 1220 to 850 kHz, formerly WRMR(AM) and the religious format that had been on 1420 to 1220 kHz, which is now WHK(AM).



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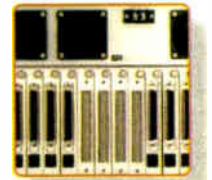
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# Workbench

► Continued from page 22

★ ★ ★

Don't overlook a hobby store for unique parts. When putting together test cables, small flat alligator clips can be useful in tight places. The biting or "action" portion of the clip is flat, instead of serrated. Before broadcast users discovered them, these clips were used to clamp onto the leads of model rocket

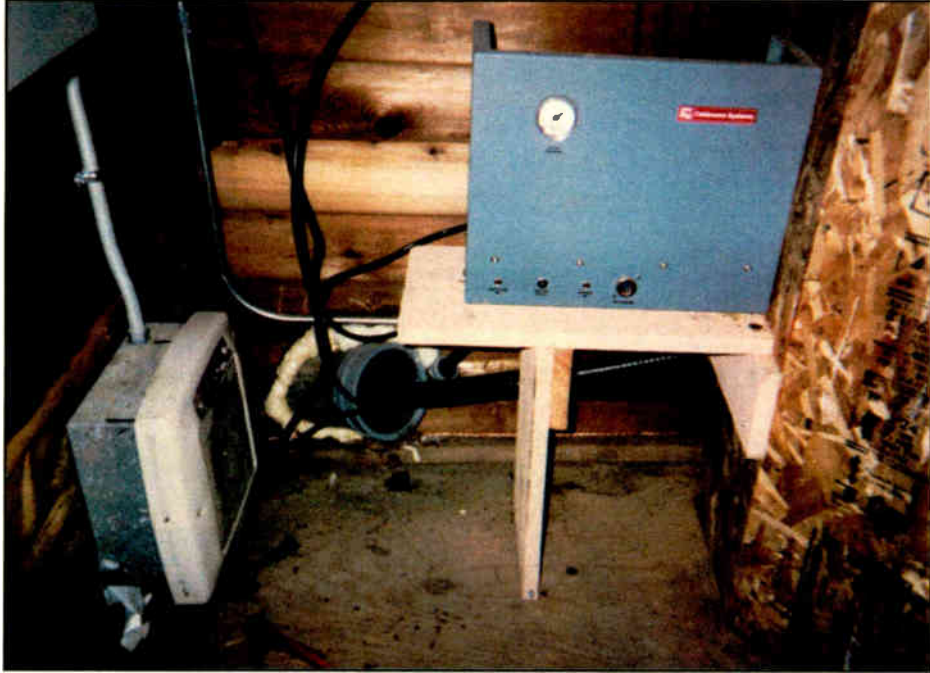


Fig. 3: The wooden shield also supports a shelf for the dehydrator.

engine squibs.

Hobby shops have a wide variety of lubricants, glues and graphite compounds. The latter become useful now



Fig. 4: Expanding foam and gravel protect the building from flora and fauna.

that cooler weather prevails.

Make sure your fence and tower locks get a spritz of liquid graphite or lock lubricant to keep the internal mechanisms working. A number of years ago, I saw a neat use of tire rubber inner tubes. A square piece of this rubber was cut and slipped over the lock hasp, or in the case of locked buildings, mounted on the wooden frame.

The rubber would collect the ice and snow and protect the lock. Because the inner-tube rubber was flexible, shaking it would remove any ice, giving you instant access to the lock.

★ ★ ★

In cooperation with the U.S. Consumer Product Safety Commission, Fluke Corp. voluntarily is recalling about 40,000 digital multimeters. About 17,200 of these meters were sold in the United States. The recalled units take longer than normal, up to 18 seconds, to display readings of AC voltages above 500 volts. Users can misinterpret the delayed reading to mean that high voltage is not present. If high voltage is present, users can be exposed to a risk of shock, electrocution or thermal burns.

The meters are identified by the name "Fluke" and the model numbers, 175,

177 or 179 written on the front. Recalled meters have serial numbers below 79,000,000. Consumers should stop using these meters immediately, and call

Fluke at (800) 260-4819. You may also visit the Fluke Web site at [www.fluke.com/170recall](http://www.fluke.com/170recall).

A picture of the recalled products can be seen at the Consumer Product Safety Commission's site [www.cpsc.gov/cpsc/pub/prerel/prhtml02/02231.html](http://www.cpsc.gov/cpsc/pub/prerel/prhtml02/02231.html)

John Bisset has worked as a chief engineer and contract engineer for more than 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to [jbisset@harris.com](mailto:jbisset@harris.com).

# WCLV

► Continued from page 24

The latter is used to take feeds from the "Wall Street Journal Reports." Feeds of AP Radio News come from a dish at the studio site, as do various public radio feeds that WCLV(FM) uses, such as the BBC World Service News.

WCLV had been using the recently

it through the inputs of one of our Otari reel-to-reel decks. We've been transferring material from the Scott System into the DADpro32, adding music as we go along.

"We wanted to run the DADpro to keep everything simple and uniform from music to traffic. We're able to combine the logs in DADpro along with (RCS) Selector for the AM music."

Both WCLV AM and FM are automated to some degree. The DADpro



In the talk studio, the station uses Logitek vMix software, controlling a Digital Audio Engine from a computer screen.

developed cardioid capacitor AT4047/SV microphone from Audio-Technica for announcing and post-production of the Cleveland Orchestra. The station ordered 12 more of the mics for the digital facility.

The FM control room still has turntables and a reel-to-reel deck for certain classical material not available on CD.

"We use consumer CD players with analog outputs because we found that for the cost of a consumer deck, we don't mind replacing them every few years," said Davis. "It's better than spending \$1,000 or more for CD cart machines, which in my experience tend to fail. If one of our CD players goes down, we just go to the store and get another one for \$150."

The AM transmitter is a Gates 5 manufactured by Harris.

The FM air chain uses a CRL DP-100 processor and 5 kW Nautel transmitter. The transmitter site is 27 miles from the studio. The station has two ComStream ABR 700 demods for satellite reception, with StarGuide II and III demods at the AM transmitter site.

The syndication department has two Microboard DSR-8880 CD duplicators with five slaves per unit. With a program loaded into the machine's hard drive, the operator can run 10 copies at once at 12x.

"We have some people in our traffic department who are very savvy," said Davis. "A lot of the ad agencies use MP3 files for commercials. That used to be a big pain, but now we have the right software, Internet Explorer and Winamp. Agencies make the spots available on an FTP site where they can be downloaded by the station."

For the AM big-band format, the station began with a 9 GB hard drive, but now has upgraded to a 160 GB model.

"The former WRMR had a Scott Studios system (for music storage)," said Davis. "We brought it over and ran

system runs the AM station from 7 p.m. to 6 a.m. The FM primarily runs unattended between midnight and 6 a.m. with "Beethoven Satellite Network," which originates in Chicago. This program airs in Cleveland on a system designed by Goforth using 25-Hz tones and a relay panel. One of the final steps in the conversion of the stations will be to turn control of that programming over to the DADpro32 system.

## IT and IBOC

WCLV recently hired an IT director, Lloyd LiBengood, who had worked there previously on a consulting basis. Goforth had been doing the bulk of the IT work.

With respect to IBOC, Davis said the FM is ready to go.

"But we may need a new AM transmitter," he said. "The scary part about that is the most recent IBOC AM studies, which show that the service is not recommended for nighttime use. With our nighttime pattern, we lose a few listeners after sundown, but with IBOC it could be a lot worse, in my opinion."

Asked what he would have done differently in the conversion to digital, Davis had specific ideas.

"I'd start from scratch while keeping the analog systems in place," he said. "I would rather have done a fresh build."

Conrad said the team was forced to convert one studio at a time because the decision not to simulcast the classical format on the new AM station came just five weeks before the deal was to be consummated.

Conrad's radio career spans 55 years with stints in several cities including Chicago, Detroit and Honolulu. But he is most proud of his job at WCLV.

"We could have sold the FM for \$40 million and walked away, but we engineered a deal to give the FM to a non-profit foundation. It's been a great 40 years."



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## FEED LINE

# Antenna Gain vs. Transmitter Power

by W.C. Alexander

*This is the second in a series of articles about FM transmission systems. The first appeared Oct. 9.*

How many bays do I need in my antenna and how much transmitter power do I need? These questions often do not have hard and fast answers. Rather, the engineer designing an FM transmission system must look at many factors to come up with the best possible combination of antenna gain and transmitter power for a given situation.

For a given value of effective radiated power (ERP) we have a choice of between one and 12 antenna bays. If we are dealing with a Class A or other relatively low-power station, we can narrow the choice down to a fewer number of bays. One would not use a 10-bay antenna, which is more than 100 feet in length, for a 6 kW ERP station. Any savings in transmitter cost would be consumed many times over by the added antenna cost and additional tower height needed to achieve the required height above average terrain (HAAT) with such a large antenna.

On the other end of the spectrum, a 100 kW station would likely not utilize a one- or two-bay antenna. Any savings in tower height and antenna cost would be more than offset by the cost of the large combined-amplifier transmitter necessary to achieve the required ERP with a low-gain antenna.

## Economics

With the choices narrowed a bit, we still have a fairly wide range of choices for antenna gain and transmitter power output (TPO) to achieve the required ERP. It is at this point that other factors come into consideration.

Economics probably is the biggest factor with most stations. Without an unlimited budget, a careful analysis of the total

cost of each possible TPO/gain combination must be made.

Factors that enter into this equation include the cost of the antenna, transmission line and transmitter, tower cost (keep in mind that larger antennas require taller towers to achieve a given HAAT) and long-term operating cost. Operating cost should be factored in over a period of time, usually the useful life of the transmitter (say, 15 years), and added into the cost equation.

For example, a high-gain antenna/low TPO transmitter combination for a Class B or C station often will result in considerable up-front costs because of added tower height and the cost of a larger antenna, but the power cost savings from the lower-power transmitter will offset this over a period of time. The converse also is true. The best starting point is that range of gain/TPO values that fits the budget.

**Without an unlimited budget, a careful analysis of the total cost of each possible TPO/gain combination must be made.**

Once we get past what we can and cannot afford, there are as many answers to what is the "best" gain/TPO combination as there are engineers.

Most any broadcast engineer who has been in the business a while has an opinion on the topic. Most of these are strong opinions, usually based on personal experience in one or more situations. As such, there is a degree of validity to most such views. How, after all, can one argue with empirical data?

The underlying truth, however, is that each situation is unique, with a whole set

of variables that may or may not bear any similarity to experiences elsewhere. To get to the right answer for a given situation, one must examine each of these variables.

## Terrain

The first of these, and perhaps the one that has the biggest effect on performance, is the lay of the land.

What is the terrain like? The ideal situation is flat, unbroken terrain in all directions from the transmitter site. In that case, the equation becomes one of simple line-of-sight. Unless there is significant population close to the tower site, there is virtually no performance difference between a high-gain/low TPO and a low-gain/high TPO. In such cases, the best combination is the most economical. Find the combination that produces the desired ERP at the desired HAAT for the lowest cost.

Add to the equation terrain features such as hills or mountains and the picture changes. One of the most severe cases is one in which the transmitter site is located atop a high terrain feature with the populated area to be served at significant depression angles below. In that case, the vertical plane radiation pattern of the antenna comes into play. The object is no longer one of producing the maximum amount of signal on the horizon but also (and often more importantly) includes producing good field strengths much closer in.

Manufacturers provide graphs and tabulations of the vertical plane radiation patterns of their antennas. This data can be used to locate the first and second vertical plane nulls as well as the relative field at any angle below the horizon.

With this data in hand, one can use the free-space loss formula along with the ERP to calculate the expected best-case field strength at any given point. The performance of one antenna can be compared to another to find that combination that will best serve the desired areas.

## Multiple paths

So far, we have discussed the two extremes, flat terrain and mountaintop transmitter site. Reality is usually somewhere in between. In these cases, where the populated area is far enough away from the transmitter site to be situated well within the main vertical plane lobe of most any antenna, are we back to a simple economic decision? Usually not.

Multipath often exists within the coverage area of an FM station. Multipath is, as its name implies, the result of the signal arriving at the receiving antenna by disparate paths.

There is (usually) the direct, or line-of-sight path, and then there is any number of other paths resulting from reflections and refractions. Instantaneous phase cancella-

tions occur at many points, producing the familiar fuzz and choppiness of multipath. Site selection is the single most important factor in preventing objectionable multipath, but antenna selection has something to do with it as well.

Consider the case in which a transmitting antenna is located just outside of a metropolitan area. The tall buildings downtown are usually pretty good reflectors of RF and their tops tend to be close to the same elevation as the transmitting antenna, thus putting them in the strongest part of the vertical plane pattern. Receivers located in vehicles and homes below are at a disadvantage because they are in a weaker part of the vertical plane pattern and they are in an area where shadowing and attenuation from trees, buildings and terrain features further weakens the direct-path signal.

Now factor in the relatively strong reflected signal from the downtown buildings and you have a recipe for lousy reception in the very heart of the desired coverage area.

One way to combat this is by increasing the amount of direct-path signal by employing a much broader main vertical plane lobe.

This is done by using a lower-gain antenna. The vertical plane main lobe from a lower-gain antenna is much broader, producing stronger signals at lower depression angles, which often will overcome the reflected signals so that complete cancellation does not occur.

I mentioned that every engineer has his own opinion, usually based on some specific experience, as to the "best" TPO/gain combination to produce a given ERP. In my opinion, higher TPO/lower gain combinations produce the most consistent reception. More signal at lower depression angles where the receivers live is almost always a good thing.

As we continue this series, we will look at the options of beam tilt and null fill, both useful tools to help us achieve our objective, which is to put the signal where it needs to go.

*Cris Alexander is director of engineering for Crawford Broadcasting. He welcomes questions and ideas for this series via e-mail to [crisa@crawfordbroadcasting.com](mailto:crisa@crawfordbroadcasting.com).*

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"Rumors that American Radio Systems was in play finally quieted with the September announcement that Westinghouse/CBS signed an agreement to buy ARS for \$2.6 billion.

"If the marriage of Westinghouse/CBS and ARS, the fifth-largest radio group, receives federal approval, Westinghouse/CBS would have a total of 177 stations ... (and widen) its lead ... as the largest radio group based on BIA's estimate of gross revenues, about \$1.4 billion per year. This would move ... Chancellor Broadcasting to number two and Capstar Broadcasting to number three."

*"CBS Buys ARS in \$2.6 Billion Deal" Oct. 15, 1997*



*Scotty,  
we'll all miss you.*





## How the Net Hurts Radio and TV

by Craig Johnston

Continued growth of Internet usage continues to squeeze out the traditional media of radio, television and newspapers, according to the latest Arbitron Inc. and Edison Media Research findings.

pers at 11 percent. Radio bested other media when the question was turned around, with only 14 percent saying it was the least essential.

When the study looked at younger consumers, TV took another shot. TV and the Internet were nearly tied as the

four years ago.

The study also showed Internet access and usage continued to grow; seven out of 10 Americans now have access to the Internet, up from 31 percent four years ago. Internet access growth is slowing, however, as it gets closer to 100 percent.

"It is clear that access to the Internet has leveled out over time," said Bill Rose, Arbitron vice president of Webcast Services. "However, the time consumers spent online each day continues to grow." In the past year, online time has reached nearly an hour a day.

That hour doubles among consumers with broadband access, to the point where it nearly rivals the time spent with radio and TV among that group. "People with broadband are much more likely to say the Internet is the most essential medium," said Rosen.

The study showed 28 percent of those with Internet access already have broadband in the home, twice as many as 18 months ago. Another 13 percent plan to get it in the next year.

### Streamie stats

Arbitron and Edison use the nickname "streamies" to describe consumers who watch and listen to media streams over the Internet. Eighty-three million Americans have tried streaming audio or video at one time or another.

"Streaming is not just a youth phenomenon," said Rose. He said that while 19 percent of active streamies were ages 12 to 17, the other 80+ percent were adults, and nearly half of them over the age of 35. Streamies were found to be more affluent and more educated. Streamies also were far more likely to make purchases over the Internet.

For Internet radio and other Internet audio sites, the study found that unique content is important to listeners. And despite the falling number of Internet radio

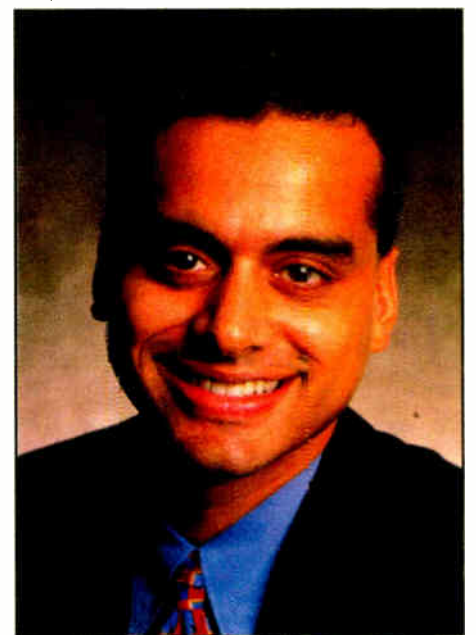
See INTERNET STUDY, page 36 ▶

### NEWS MAKER

## Disney's Colaco Knows What Kids Want

Radio Disney's listeners primarily are young, Internet-savvy and spending all of their pocket money — and much of Mom and Dad's, too. Reaching those listeners and keeping their interest are not easy tasks.

Radio Disney's president and general manager, Jean-Paul Colaco, is suited to the job.



Jean-Paul Colaco

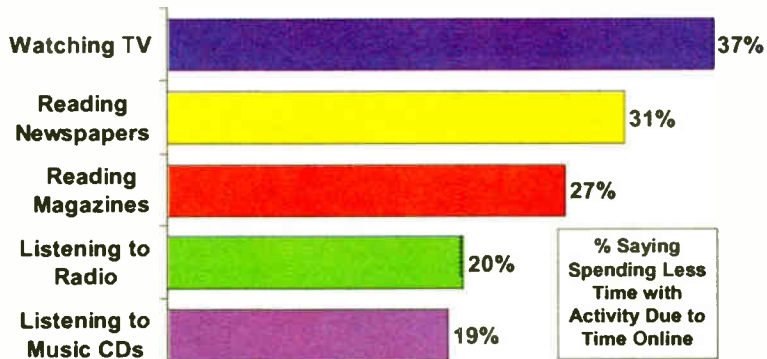
Radio Disney is a branch of the ABC Radio Network, operating approximately 50 stations for the parent network, with original programming and content created in studios in Dallas. ABC operates under the umbrella of the Walt Disney Co.

Radio World's Lyssa Graham talked by telephone with Colaco from his Burbank,

See COLACO, page 34 ▶

### Americans Are Spending Less Time with Traditional Media Due to Time Online

"Are you spending less time with each activity due to the time you spend online?"



Base: Total Population 12+



The good news for radio, according to the Internet 9 study: It's not getting hurt the worst.

"The medium getting hit the most by the Internet is television," said Larry Rosen, president of Edison Media Research. As a result of spending more time online, 37 percent of people said they're spending less time watching TV. Only 20 percent said they've reduced their radio listening.

### Essential medium

Asked which medium was most essential to their lives, TV did better, with 39 percent saying it was the most essential. Radio was second at 26 percent, followed by the Internet at 20 percent and newspa-

"most cool and exciting" medium among persons 12 and older, but when the sample looked just at persons 12 to 34 years of age, the Internet shot ahead. While radio was in third place in both groups, it maintained its 21 percent score regardless of the age range sampled.

A presentation about the study at the NAB Radio Show in September was tailored to include radio-specific findings. By margins of around three to one, consumers said they felt radio was doing a good job of playing the kind of music and the kind of news and information they wanted. However, in both music as well as news and information, a small but measurable number said they didn't think radio was doing as good a job as it did

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# Colaco

► Continued from page 31

Calif., office. He was promoted to his position in June after more than four years with Radio Disney. ABC Radio Vice President of Engineering Clay Stely joined the telephone conversation from offices in Dallas to discuss technical areas.

**RW:** Radio Disney has a lot of affiliate stations under its umbrella. Are there plans to move toward more direct ownership of stations? Are you moving into bigger markets now?

**Colaco:** We're in 18 of the top 20 markets already and the majority of, in terms of the top markets, they're owned stations. In the past, we've been using a combination of owned stations and affiliates. We continue to have affiliates but we're adding a number of owned stations.



Radio Disney jock B.B. Good broadcasts live from Walt Disney World.

Our goal is to own in the top 70 markets in the country over the long term. Basically we're trying to get up to 75 percent DMA coverage of the United States in the next three to five years.

**RW:** That's going to take a lot of cash flow.

**Colaco:** Yes, there is a significant investment on behalf of the Walt Disney Co. doing this, but it is based on the success and overall potential for Radio Disney.

**RW:** Radio Disney has an amazing market. You're really the only stations reaching "tweens" — kids between six and 11 years old — and pre-teens with significant success and consistency. Do you have a background in programming for youngsters?

**Colaco:** No, I don't. I actually used to work with Disney about 10 years ago. I worked on the startup of the Disney Store retail chain in Canada and then went to business school, left the company, worked for another company and then came back to work on Radio Disney.

My expertise is, I would say, more from a business standpoint. However, Robin Jones, who's our senior director of operations and does all of our programming, has a substantial background in radio and also is the mother of a seven-year-old daughter. So that combination, and her expertise in that area, has been very valuable to building a quality format for kids and moms.

**RW:** Some say Radio Disney is a CHR station programmed slightly younger.

**Colaco:** I think that it's not really a CHR

station. We definitely play some of the CHR types of songs and the pop music, however, we do more of an eclectic format, similar to the old top 40 style. We have a combination of pop songs, movie and TV soundtrack songs, kids songs as well as oldies that appeal to the kids as well as the parents — the moms who are listening in the car.

We actually are now reaching about 2.7 million kids 6 to 14 each week, and 1.5 million moms of kids. It's a pretty good mix in terms of the kids and the moms.

**RW:** What about satellite radio?

**Colaco:** We are already involved both on XM and Sirius and we think that satellite radio offers significant promise for us as a long-term distribution platform. It's been very expensive to put this together, but as long as those guys can keep the cash flow going, or have enough funds to keep it growing, then I think it will be successful.

been able to give kids a voice. We have kids on the air basically every 10 minutes. They're allowed to shout a song request to their friends, they're allowed to tell us what's going on in their lives, they're allowed to request a song, they're allowed to enter contests.

It's a place where they can feel a sense of ownership or empowerment in terms of the radio world. In other radio stations, probably, if a kid calls in they wouldn't be put on the air and the DJ would hang up on the kid.

**RW:** Do you use local talent in the affiliate markets?

**Colaco:** We don't program in terms of a typical radio format because we are a 24-hour feed, however we are very promotional on a local basis. We have a team of vans that go around the country and go to kid-oriented events — state fairs, those types of opportunities. Also in conjunction with local opportunities, whether it's a shopping mall or any other location.

We have local promotional talent who actually set up and do an event — some music and interaction with the kids, playing games and giving out prizes, creating a fun, Disney-esque atmosphere with the kids and families at these specific local events. We feel that is an opportunity to build talent. It's a different type of talent, not necessarily an on-air talent, but more of a promotional talent. It's an important piece of our grassroots marketing of the format.

These vans are driving around all across the country doing these events, allowing kids to touch and feel Radio Disney live in conjunction with listening to the radio on a daily basis.

**RW:** Turning to the hardware side, who buys the equipment for Radio Disney stations?

**Stely:** At the corporate level, we try to go with a standardization model for all of the radio stations so that we know out there in the field that they have the same digital audio system, the same console, the same editing equipment, that sort of thing. There are some exceptions to that rule but, for the most part, it's a standard package that we've designed and ordered here on the corporate level.

It's the same with facility design. When we buy a station, every station is different, so I can't promise you that when you walk into one they're going to all look that way but they're fairly close. We know what works, what's been really successful, and we try to stay as close to the model as we can.

**RW:** Tell me about the voice tracking systems you use within the stations.

**Stely:** We use AudioVault by Broadcast Electronics. The bulk of the programming is distributed over the ABC Radio network facilities by satellite.

The really cool or interesting thing about Radio Disney is that there is a lot of localization in terms of liners. Each market has a very customized sound and that's done by a lot of intensive production work that's done primarily here in Dallas and then sent out individually to each of the stations.

So, yes it is a syndicated format delivered by satellite, but there's a lot of local flavor injected into it.

**Colaco:** We have basically six minutes per hour of local promotional time. In that time they run local promos. They've developed local talent who broadcast in those time periods as well as doing public service announcements and things of

## Radio Disney

Radio Disney is part of the second-largest media conglomerate in the world; its parent company ranks just behind AOL Time Warner.

The Walt Disney Co. is parent to the ABC television network, the famous theme parks and Walt Disney Studios. It holds a stake in ESPN and A&E television networks and it operates ABC's radio and television networks.



The company in its entirety owns and operates approximately 70 radio stations under the ABC Radio division, including 34 within Radio Disney. Radio Disney's youth format is heard on 52 stations: its own plus 18 non-ABC affiliates.

Radio Disney operates independently of ABC Radio Networks although there is some crossover with personnel.

ABC Radio Networks has 4,500 affiliate stations broadcasting five full-service news networks in addition to ESPN Radio, "Paul Harvey News and Comment" and ABC News Radio. The company reaches 147 million listeners weekly through its programming.

Radio Disney is broadcasting in 50 cities and hopes to add more markets. The bulk of its programming is relayed to affiliate and owned stations via a 24-hour satellite feed.

According to the Walt Disney Co.'s third-quarter filing with the SEC, the company posted third-quarter revenues of nearly \$6 billion, with \$2.1 billion of that income attributed to company-owned media networks, including Radio Disney. Jean-Paul Colaco declined to say how much income was derived by Radio Disney.

The Walt Disney Co. and AOL Time Warner reportedly have been engaged in talk of merging the two media giants' news organizations — ABC News and CNN — creating a solitary news mega-company. The companies have acknowledged talks but maintained that no deal has been reached.

— Lyssa Graham

local community interest to create that local flavor that Clay mentioned.

**RW:** Do you have a system for bringing up local engineering talent — a way to groom talent from within Radio Disney and ABC Radio?

**Stely:** Most of our Radio Disney stations use consulting engineers in our local markets. We obviously do groom engineers from within for our major owned cluster stations in the major markets. For the Radio Disneys we typically are using contract engineers.

**RW:** Who is the top tech guy for Radio Disney?

**Colaco:** Clay is the top tech person for all of ABC Radio.

**Stely:** At the current time we don't have someone specifically for Radio Disney.

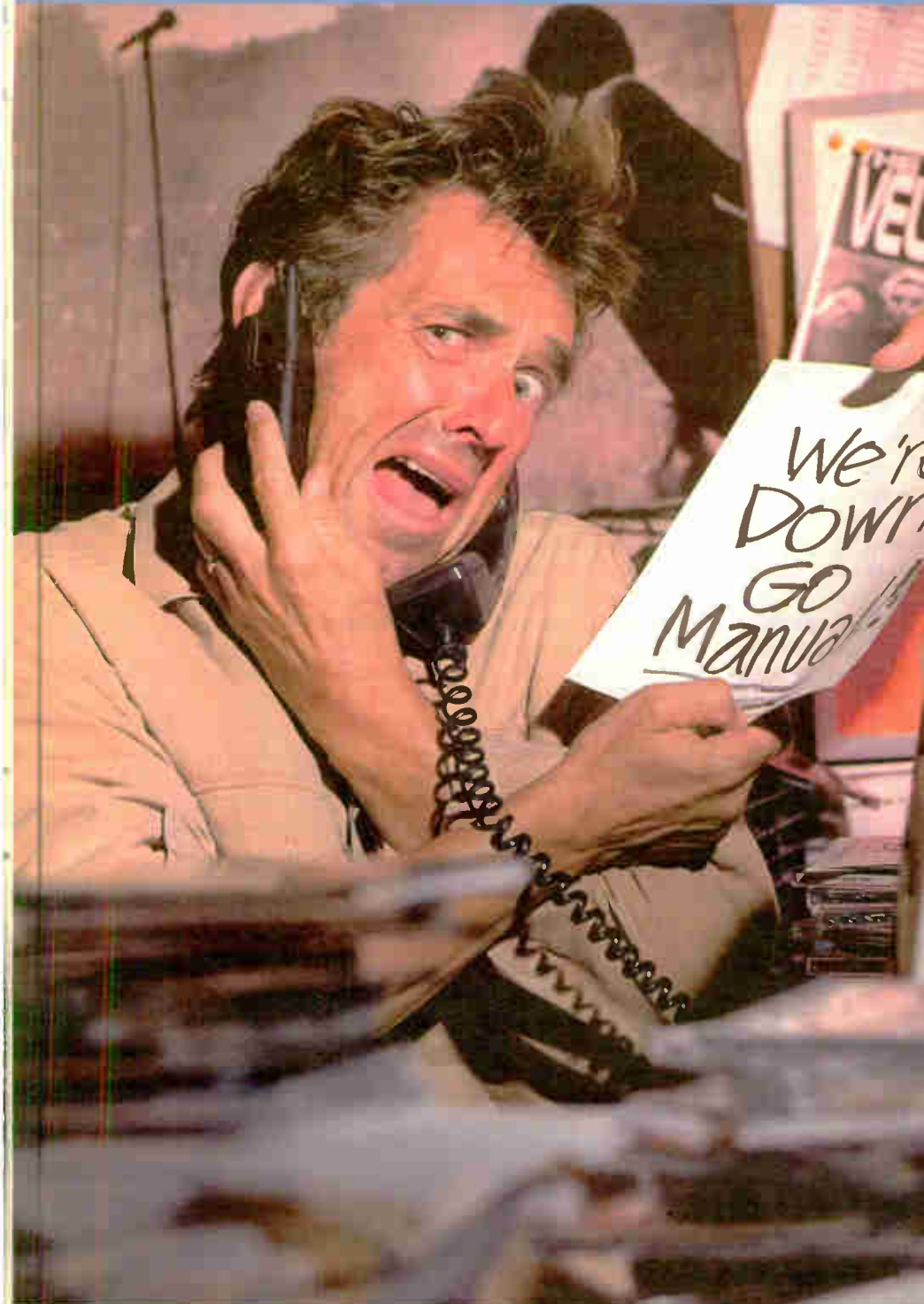
**Colaco:** We will probably be adding somebody in the near future to specialize

See COLACO, page 40 ►



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PRODUCT EVALUATION

# Digital Jukebox Helps Power Online Radio

by Bill DeFelice

When I first got the idea for starting my Internet radio station, "Capital Radio.us," I pretty much had everything planned in my mind's eye.

My format of deep oldies would be based loosely on the now-defunct AM daytimer that I once had fun engineering.

required manual creation of playlists and could not be left unattended for extended periods of time, not to mention they were difficult to use in a "live-assist" mode.

**A solution**

I decided to call upon Dennis Jackson, a consummate broadcaster who owns a group of four FM stations here in the Northeast.

Among the program's many features is the multiple cut recording capability. With more than 300 CDs in my music library, I needed an easy way to get them into the system. This task was accomplished with nothing more than my 100-disk carousel player and an audio interconnect cable.

Once the multi-cut settings were adjusted, I left this system alone until the carousel had finished playing the disks. The system detects the silence between tracks and automatically creates each new audio file. This is performed unattended.

You can enter the basic artist/title information while in the multi-cut record mode. Once you transfer your audio to the main audio cuts database, you can

enter in details such as category, tempo and daypart preferences as well as set the intro and segue times.

The multi-cut cart system allows the operator to select 40 audio cuts to appear on a virtual cart. These cuts rotate automatically and each can have its own expiration date.

There is no need to reprogram the cart, as expired cuts drop out automatically. This gives greater flexibility than any cart machine could offer.

I really appreciate having a built-in music scheduler in an automation system.

Features include support for daylight savings time ("spring ahead/fall back"), 26 music categories, artist and gender protection and the ability to import data from a variety of traffic systems.

One keystroke toggles the system between automated and jock-assist modes.

See DIGITAL JUKEBOX, page 38 ▶



The Author in His Studio

The one thing I was determined to do was to create a studio more along the lines of a traditional broadcast facility instead of a sterile computer data center environment. I came across the majority of my studio gear from the liquidations of several failed dot-coms, close friends and chance eBay purchases.

When we first met in the mid-'70s, I was student chief engineer of community broadcaster WMNR(FM) in Monroe, Conn., while Dennis was on-air talent for the local easy-listening FM outlet.

After I explained my situation he offered a solution, the same one he uses to keep his stations running smoothly: a versatile broadcast automation system called the Digital Jukebox.

The software runs on standard Windows-compatible hardware. Dennis operates his systems under MS-DOS for increased reliability, while operating under Windows 98 affords one such convenience of built-in networking and the ability to use large hard disks.

**The man behind the box**

The Digital Jukebox uses the Antex audio cards commonly found in other automation systems. This ensures compatibility as well as outstanding audio quality.

The software allows you to select audio compression settings to accommodate any particular situation. With the addition of an optional relay card, satellite-delivered programming can be accommodated through a variety of commercial receivers.

Dennis introduced me to Jim Barcus, the man behind the Digital Jukebox. Barcus was helpful in setting me up with the automation system.

**I was determined to create a studio more along the lines of a traditional broadcast facility instead of a sterile computer data center environment.**

Things were beginning to fall into place until I came across one major stumbling block. Because my station would be unmanned the majority of the time, I needed a way to have the programming run without my intervention.

I could have considered consumer solutions such as MP3 playback software, but they had their drawbacks. Most

## Internet Study

▶ Continued from page 31

stations to listen to, Internet listening itself has remained stable over the past year.

The Arbitron/Edison studies have been tracking the contest between advertiser-supported and subscriber Internet radio stations. On the advertiser-supported side, a significant number of streamies said they preferred audio commercials over banner ads as a fair price to pay for free Web audio content.

In the past six months, the number of streamies who said they would be willing to pay a small fee to listen to streams grew from 14 percent to 22 percent. As to

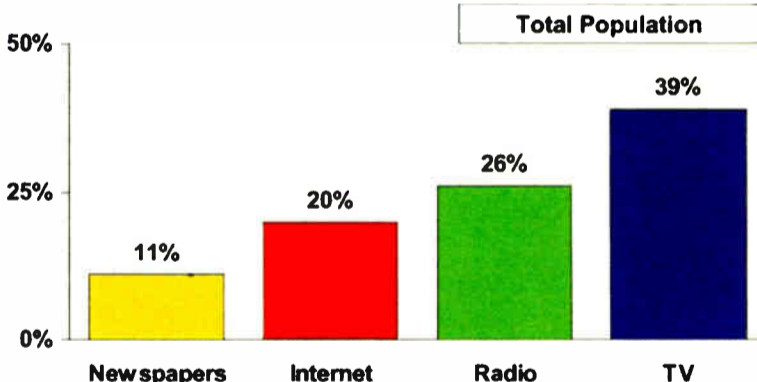
whether they would prefer to pay a monthly subscription or incrementally as a pay per view or pay per listen, the consumers were roughly split.

Among the challenges the study identified for radio is that it ranks behind newspapers and television stations at converting Internet surfers who made a trial visit to their Web sites into regular visitors. And the study found that more than half of Internet users have never visited their P1 station's Web site.

The presenters also suggested that because streamies are well-educated and affluent, and more likely to shop and buy online, "The streaming media advertising community needs to develop methods to reach a significant portion of its valuable audience easily and effectively."

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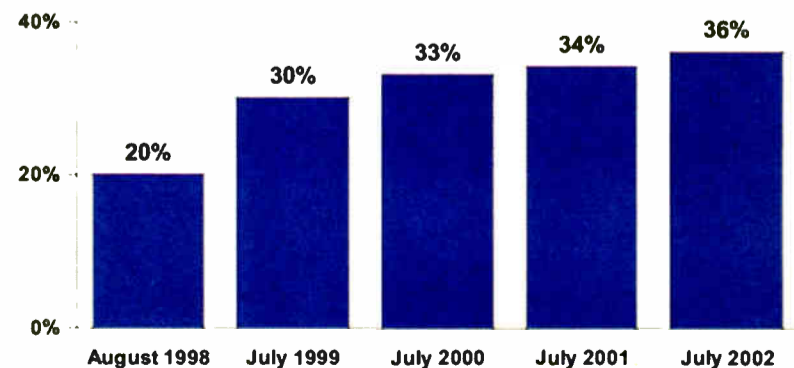
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World Radio History





# Digital Jukebox

► Continued from page 36

The on-air screen is informative and laid out clearly. The current on-air event as well as the upcoming event appear in a colored info box which details intro and segue times, song year and notes added to the "memo" field in the audio cuts database.

You can view the last relay command issued by the system — indispensable when troubleshooting difficulties with satellite programming.

### More features

Browsing the log can be performed with the page up/page down keys while a tap of the space bar brings the system back to the next event. Last-minute changes and song requests are easy to do

regardless of operating mode.

Using the Digital Jukebox with networked computers will allow you to perform production tasks, such as voice tracking or music scheduling, without being in the on-air studio. A separate production system gives you the added benefit of providing you with an automatic backup of your on-air system.

Should you have a hard-drive failure in the on-air system it's a simple matter of bringing the production system online to stay on the air. Once the drive is replaced in the on-air computer, one command is all it takes to restore the data from the production system.

My systems have been reliable, having only suffered from problems unrelated to the Digital Jukebox software: a defective hard drive and a faulty cooling fan in a mobile hard drive rack. Even



The Digital Jukebox powers Capital Radio.us.

when a power failure occurs, the system resumes operation at the point where it

left off once power is restored and the computer reboots.

I initially had a small problem when I started testing my system. While the program has certain safeguards to prevent tight overlapping of songs that start off "cold," I wanted some segues to be much tighter than the internal logic would allow. I called Barcus regarding my issue and in less than two days he had revised the program to allow the internal segue logic to be defeated. He told me that many of the improvements in the Digital Jukebox have been the result of user requests.

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**Digital Jukebox**  
**Broadcast Automation**

**Thumbs Up**

- ✓ Satellite/live assist/fully automated operation
- ✓ Built-in music scheduler
- ✓ Automatic backup of audio files
- ✓ Multi-cut record and timed recording for unattended recording

**Thumbs Down**

- ✓ Requires Antex audio hardware
- ✓ Current version still DOS based

Price: Software only option: \$1,299, two-machine turnkey system: \$5,999

For more information contact Digital Jukebox in Ohio at (740) 316-0303, e-mail [sales@digitaljukebox.com](mailto:sales@digitaljukebox.com) or visit [www.digitaljukebox.com](http://www.digitaljukebox.com)

My wish list of improvements includes the ability to use standard sound hardware, longer database field lengths and a panic stop command while in the on-air mode. Barcus is working on a true 32-bit Windows version for release late this year.

The great thing is you never reach a salesperson when you call for support. You reach the person most knowledgeable about the program — the programmer.

There are many more features I haven't touched upon that make this system unique. I have to say that the software has done a remarkable job for my station. I have received many compliments on how consistent my sound is. For this I have the Digital Jukebox to thank.

*Bill DeFelice was chief engineer of the now-defunct WMMM(AM) in Westport, Conn. He is Webmaster for the History of Westport Connecticut — WMMM Radio Web site at <http://wmmradio.tripod.com> and a former secretary and newsletter coordinator for New York Chapter 15 of the SBE. Reach him via e-mail to [engineering@capitalradio.us](mailto:engineering@capitalradio.us).*

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**STATION SERVICES**

**Group to Help Fund Sales Research**

How credible is radio to its clients? Hoping to make advertisers more confident, an industry group has begun an effort to fund research into radio's effectiveness. The Radio Ad Effectiveness Lab revealed a cooperative program involving real-world ad testing.

"In partnership with major national advertisers, RAEL will help fund the research and execute the analytical portions of in-market tests of radio advertising," stated the group. It said advertisers would be involved in developing the test scenarios.

"The goal of the research program is to elevate the credibility of radio advertising across a variety of account categories," stated Owen Charlebois, the president of Arbitron U.S. Media Services and co-chair of RAEL.

The RAEL Research Committee is chaired by Jerry Lee of WBEB and includes members from radio, research and advertiser organizations. For more information visit [www.radioadlab.org](http://www.radioadlab.org).

**dMarc Offers Tools for Broadcasters**

dMarc for Broadcasters is a system that promises to turn subcarrier spectrum into data distribution profit centers. The company is marketing its software and service solutions to manage a station's subcarrier systems.



Content includes weather, sports, news and song play information, along with a national representation service to participate in selling a station's subcarrier space.

At the recent NAB Radio Show in Seattle, dMarc also showed off a patent-pending dRDS system, providing packet-based centralized Radio Data Service (RDS) and content management. The system allows FM broadcasters and marketers to schedule, target, deliver and report on RDS text broadcasts across one or multiple stations through dMarc WebMager 1.0.

The company says RDS-enabled car receivers now come standard in more than 75 percent of new automobile models.

For more information call (949) 791-1200 ext. 13 in California or visit [www.dmarcnetworks.com](http://www.dmarcnetworks.com).

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**Radio Enters the Twilight Zone**

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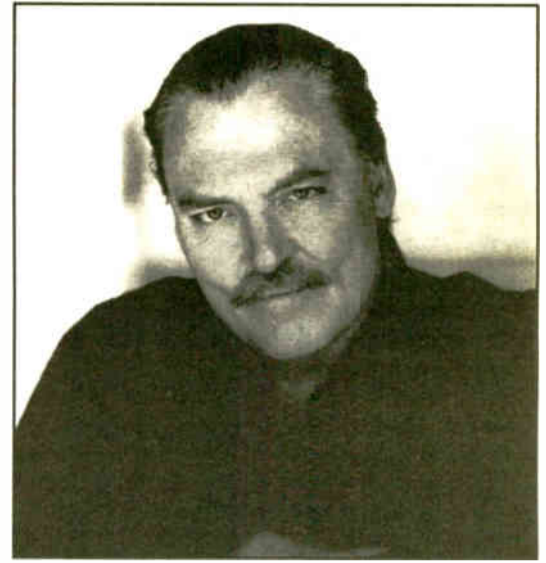
A new radio series based on the classic television program "The Twilight Zone" is in the works. Actor Stacy Keach will host the series, produced by Falcon Picture Group LLC, which penned a licensing deal with CBS Enterprises.

A host of TV and film stars have signed on to feature in each drama. Falcon has hired science-fiction author Dennis Etchison to adapt Rod Serling's 23-minute "Twilight Zone" TV scripts into radio format.

One hundred fifty "Twilight Zone" radio dramas are in production, and will be made available for consumer sales in cassette and CD collections. The programs are scheduled for syndication by Dick Brescia Associates to hundreds of commercial radio stations and The American Forces Radio & Television Service.

Original "Twilight Zone" scores will serve as the theme and background music for the series. The Hollywood Edge will supply sound effects. Executive producer is Carl Amari; Richard Wolski is series producer.

For more information call Dick Brescia at (212) 370-1130, ext. 212.



Host Stacy Keach

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**BUILT FOR BROADCAST**



# Colaco

► Continued from page 34 in Radio Disney. We have been adding a number of radio stations.

**RW:** Do you anticipate any other changes in the near future?

**Colaco:** I think our changes are more structural than in how we program the format. The format is very strong and we'll continue to monitor it and make improvements there but our big changes are more from a growth perspective.

First, we're acquiring stations and adding those to fill out our coverage of the United States. Secondly, what we feel we're developing is a very strong music brand for kids and tweens. We are looking at expanding that brand.

We've launched a line of compilation CDs called Radio Disney Jams that has been very successful. Radio Disney Jams 2 went gold in 2000. That was very exciting for us considering that at that point in time we were in less than half the country.

We're looking at merchandise. We're looking at more consumer products and electronics. We are looking at launching a concert series that could be exciting. We're looking at brand extensions and we think that sometime down the road we could possibly do a TV show.

**'We actually are now reaching about 2.7 million kids 6 to 14 each week, and 1.5 million moms of kids.'**

**RW:** You're able to cross-promote through the Disney Stores and ABC so that's got to be very helpful.

**Colaco:** Yes, we do a lot of cross-promotion with the Disney Channel, with ABC Family, with the studios and the movie releases. Basically, anything Disney we try to take advantage of —

we're all part of the same family.

**RW:** Given the current economic outlook, what are you looking at for Radio Disney? Things are changing every day.

**Colaco:** First of all, we're attempting to purchase radio stations so what is negative for the economy and advertising in general hopefully will open up the supply of radio stations to make it easier for us to acquire stations.

Secondly, the effect on the economy has not had a major effect on Radio Disney at this point because we're still in growth mode. We're also trying to get small pieces of large markets of advertising dollars.

**RW:** So what's your top priority this year other than buying stations?

**Colaco:** I think our top priority is to develop more relationships with top advertisers and get them to understand what a great marketing medium to kids radio is. A lot of advertisers in the past have had the mindset that kids means television and we've been working over the last five and a half years to change that mindset and have radio become an important part of their marketing strategy.

We've been very successful with top advertisers including the likes of Proctor and Gamble, Toys"R"Us etc. but there's still a lot more work to do.

Secondarily, aside from purchasing radio stations, is to continue to build the awareness with folks that Radio Disney is out there. The more people that we can get to sample the product, we think that they will become long-term believers.

We don't have direct competition, but the traditional CHR stations are definitely

competition for us, because they play the same type of music and they're on FM and we're on AM. Although kids don't care about fidelity, it's just a different alternative particularly for parents. Our major competition is trying to get a piece of a kid's day.

research over the Internet in terms of testing music. We enable them to send e-mails and questions to DJs. They're able to request songs and they can learn about the newest, greatest music and promotions that we're doing. It's a way to generate loyalty to the radio

**'Our goal was to develop programming that kids enjoy and that kids could call their own.'**

Kids' days now are so complicated, particularly from a media perspective, because they'll be surfing the Internet, they're watching TV, they're listening to CDs and MP3s and they have to go to school and they have to do their homework and they have to eat ...

**RW:** Soccer practice?

**Colaco:** Activities and all of those types of things take a piece out a kid's day. What we've been very excited to see is that kids who listen to Radio Disney, on average, listen two hours per day.

That's a big chunk. Over 50 percent of their listening is in the car so it's moms and kids together — on the way to school, on their way to soccer practice, on their way back from soccer practice. They're listening to us while they do other things — which is something you can do with radio, while kids are doing their homework for example.

**RW:** How important is the Internet to Radio Disney?

**Colaco:** The Internet has become very important to our strategy because, first, the number of kids surfing the Internet on a daily basis has increased rapidly so we're looking at another way to market and get our message across. We get over 2 million telephone calls each month from kids to our network and we can't feasibly answer all of those calls.

The Internet becomes another way for kids to interact with us. We do

station beyond the traditional airwaves. We love it.

**RW:** What's Radio Disney philosophy that sets you apart from other stations?

**Colaco:** I think our philosophy is to focus on generating quality family radio, primarily focused on kids, that allows them to have an ability to impact what is programmed to them.

In conjunction with that, it's something that parents can feel good about their kids listening to. As long as we focus on the kids as the star of the show and program to them, we think that we will have a consistent and long-term listener base.

The other part of our philosophy is to leverage the core equities and content of the Walt Disney Co. to make the format even more exciting for kids and families ...

The most interesting thing about radio for kids is that, if you look at the other opportunities for media for kids, they're very one-way in a sense. Here's a TV show and you watch it. Radio, they're such a part of the programming, like I said, they're on the air every 10 minutes.

There's a two-way interaction between the radio network and the kids that creates an important information base for us and gives them an outlet to express their thoughts and views. It allows us to develop with them a community on the radio.

*Lyssa Graham is a free-lance journalist based in the Virgin Islands. Contact her at lyssagraham@msn.com.*

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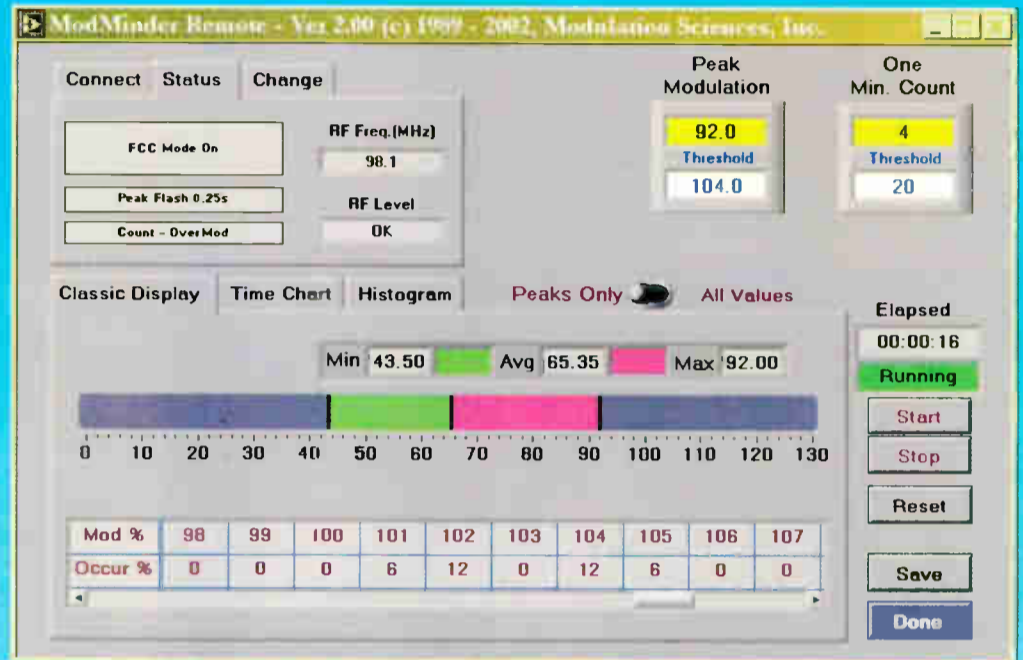


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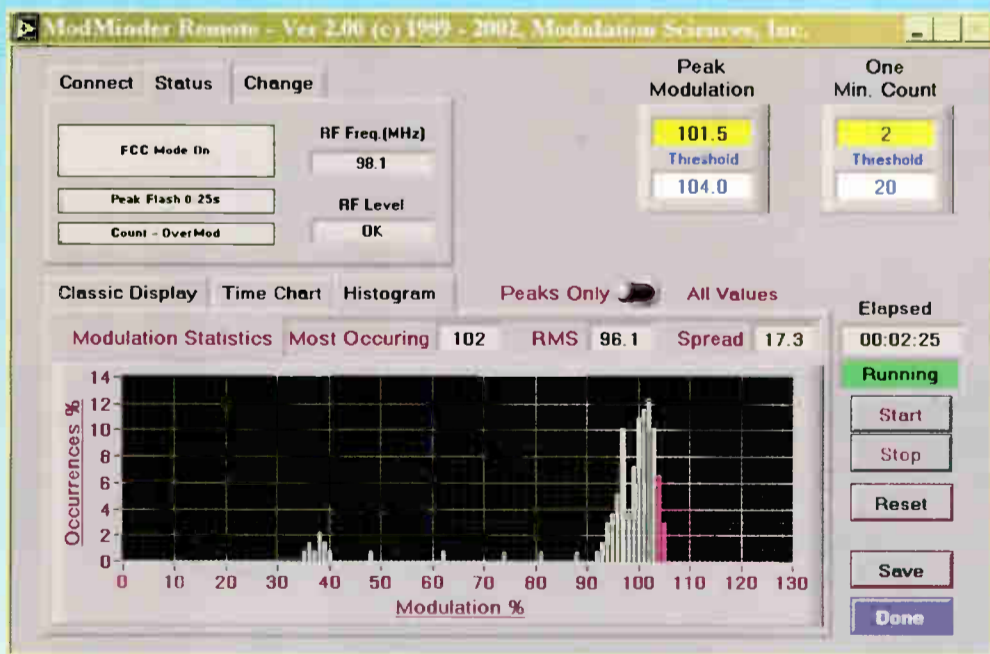
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## Ortolano Puts Fun in Radio Show

by Ken R.

Let's see. This national contemporary hit radio show is broadcast from any one of three studios which are hours away from each other, but all in the basements of houses owned by the host, a pilot who owns 14 airplanes and who lists his job title as "Director of Fun."

charging up the studio audience and maintaining the flow of the show is Mike Ortolano.

From the sound of things, he is more of a ringmaster than a producer.

"I book the guests, make sure we get the right music, balance the politics of airplay with the record labels, obtain the videos by the artists so our guests can

from the many choices in front of him. He really flies by the seat of his pants and lets the requests from listeners dictate what's going to happen next."

To allow host Garabedian that flexibility, a lot of prep work has to occur. While the show is on the air, two or three phone operators screen calls from listeners of the 155 stations that air "Open House Party." The most interesting are passed along to the host while songs play. The conversations are recorded, edited and played back at the right moment in the evening. Voiced promos from recording artists are available through the custom-designed software.

In order to give listeners the feeling that the show is originating in a basement in a suburb of their own city, Garabedian records local IDs for each affiliate in various lengths. In the studio, he presses a button that triggers these short identifications to run at the local stations, and the result is effective.

Lewis told Radio World that this "local" concept can almost work too well.

"When New Kids on the Block were a popular act, they were coming on our show live and we were hyping this in a big way. Meanwhile at our affiliate in Hartford, Conn., there were 200 mothers with their daughters hanging out in the parking lot storming their station van," he said. "It was amazing."

Ortolano does everything he can to foster that "live in a basement near you" party feeling. He played some show promos cut by recording artists to demonstrate. He explained that the first attempt usually is pretty boring.

"Then I tell them 'that was fine, but now do one like you were shouting at me across a noisy room,'" said Ortolano.

Ortolano doesn't tackle a complicated show like this alone. Line Producer Jeff Paris gathers artist information, Joe Dunn

See ORTOLANO, page 48 ▶

### LINE OUT

## Improve Your Interview Recordings

by Bruce Bartlett

An important segment of electronic newsgathering work and talk shows is interviews. Here are a few effective tips to record interviews on location and in the studio.

On the street, a handheld omnidirectional dynamic microphone with a windscreen is recommended. Omni microphones pick up much less wind and handling noise than cardioid mics and have no proximity effect (up-close bass boost).

The venerable Electro-Voice 635A is one popular choice, as is EV's RE50. The latter is a mic within a mic. The inner microphone is isolated from the outer housing, preventing handling noise. The RE50 also includes a large multistage windscreen.

Another omni dynamic for on-location interviews and ENG is the Shure VP64A. It has a water-resistant mesh screen and a tailored response for clarity. The VP64AL is the same with a longer handle.

I list these models not as an endorsement but because they are a few of the models that you'll most likely come across. Your favorite mic manufacturer probably has a model in this class.

Interview microphones often are seen with small boxes mounted on them showing the station logo. This box, called a mic flag, should not cover the microphone's grille area because doing so degrades the microphone's response and affects the polar pattern.

Keep the flag below the grille, attached to the handle with foam between the flag and mic handle. The foam prevents sound reflections that can cause comb-filtering in the mic's response.

See RECORDING, page 46 ▶



Tori Amos hangs with 'Open House Party.' From left: Will Nadeau, Joe Bermudez, Sal Mirabella, Amos, Mike Ortolano and David Cox.

Sounds like Open House Party, syndicated by Southborough, Mass.-based Superadio.

The colorful host, John Garabedian, is a 30-year veteran of Boston radio. The engineer charged with bringing off this anything-can-happen fandango disguised as a radio show is Reed Lewis, vice president of technology for RadioCraft.

The man responsible for putting the show together, greeting recording stars, assisting the host, feeding the studio guests, coordinating phone requests,

view them in the studio and have a ball every week," said Ortolano. "We give away a lot of stuff and just try to let the party happen."

The show airs live every Saturday and Sunday night; Ortolano has been involved for eight years. He likens it to a high-wire act.

### Organized insanity

"It's like totally crazy," he said. "There can be 10 seconds to air and John is still making decisions about what to play

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## PRODUCT EVALUATION

# Promusic: Collection Offers Style Variety

by Ty Ford

Ten years ago there were fewer than a dozen production music library companies. Five years ago there were more than two dozen. Today it seems that number has doubled or tripled. The "choice stress" of just dealing with that many sources can keep you from buying any of them.

Commercial beds are a constantly evolving art form, partially based on popular music trends. A radio station, group or production house needs a good library to keep its spot breaks sounding fresh.

Good beds have openings, middles and endings. Others open hard and full-tilt boogie all the way to the end. The best ones usually evoke mental images. The worst typically are excruciatingly mediocre MIDI compositions.

Bells" to "Hava Nagila" and several CDs of off-the-wall music and novelty effects.

Most compositions have 60- and 30-second spot length versions. Some offer only theme-length compositions and underscores and stingers for those who like to cut their own beds.

Some offer both theme and spot lengths. For the most part, the spot length versions are completely gone by 29.5 or 59.5. A few of the 30-second versions sound strangely edited to me, but on the whole, and with more than 2,500 themes, it is a minor problem.

The Audio Express package works well in any radio station group or TV/cable audio production department. It is probably too wide for a one-format station; that said, even a pop station may need a bluegrass, blues or comedy cut. One of the truisms of music production libraries is that having a wider collection



**'Roobarb and Custard,' a bizarre CD of comedy tracks, is my favorite; the composers must have been dropped on their heads as children.**

MIDI itself is not the culprit. The art and science of sampled and synthesized sounds have improved a lot in the last five years; I have been fooled more than once by gifted musicians with good compositional skills and good chops. But in the wrong hands, the results are underwhelming.

MIDI is used on some cuts of the new Promusic Audio Express package, but the composers know its limitations. Alain Leroux, Promusic's president, executive producer, composer and musician, is one of few people in the production music industry who has both the chops and ears to tell good from bad.

### Competent composers

Composer diversity also is important. Obviously, all composer are not equally good at all genres of music; I am not certain exactly how many composers and musicians are on this collection. I ran out of fingers and toes trying to keep track.

The initial Audio Express package contains 50 CDs — 4,026 total tracks with more than 2,500 different themes, cherry-picked from Abaco, Cavendish, Focus, Parry and Soundtrax libraries in a nifty and convenient satchel with a category breakdown catalog.

The collection includes stingers, spot beds, news sounders and beds, big sports themes, country, punk, hard rock, soft rock, swing, cool jazz, hot funk, atmospherics, atmospherics over dance beats, techno/cyber beats, world beat, "Jingle

than you think you need is cheap insurance and can help your creativity.

As a production director at almost every radio station at which I worked, I would often look to the music library for the inspiration of a spot concept. That is where the diversity of the Promusic Audio Express package shines. With its sweeping panorama of orchestral music straight from the western plains and Civil

See PROMUSIC, page 47 ▶

### Product Capsule:

#### Promusic Audio Express CD Collection

#### Thumbs Up

- ✓Excellent variety of music styles
- ✓Themes and nicely edited :30 and :60 lengths

#### Thumbs Down

- ✓Some compositions have the theme on one CD and spot lengths on another
- ✓A good searchable computer database would be helpful

Price: Contact company for pricing structure.

For more information, contact Promusic in Florida at (800) 322-7879 or in California at (888) 600-8988, or visit [www.promusic-inc.com](http://www.promusic-inc.com)



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# Recording

► Continued from page 43

If you are facing the person you are going to interview, hold the microphone vertically about four inches below chin height, midway between you and the person being interviewed.

Holding the microphone steady results in a more consistent sound than moving the mic back and forth between talkers. You will not miss any speech by holding the microphone steady. Also, be careful not to rub the microphone handle when you are holding it.

If it is a windy day, put a foam pop filter windscreen on the mic. Distant pickups can be handled by a shotgun microphone covered with a "blimp," a silk or fur covered windscreen.

Once you have the miking covered, you'll need a portable field recorder to plug the mic into. Media come in the form of traditional cassette, DAT, MiniDisc or integrated circuit. No matter what type of recorder you use, it should have XLR microphone inputs and automatic level control, a compressor with a slow release time.

## Field recorders

How do the types of recorders compare? DAT recorders offer the best sound quality but may malfunction in dirty or humid environments. MiniDisc uses ATRAC data reduction at a 5:1

ratio. Its sound quality is nearly as good as DAT and better than cassette. Also, the MiniDisc format is more robust than DAT.

Several companies now offer IC recorders, including Denon, Marantz, Mayah, Maycom, Nagra and Sonifex. Most of these units store data to CompactFlash cards or similar removable media and include at least rudimentary editing capabilities. Some include USB or FireWire connectors to transfer audio to a digital audio workstation for editing and/or ISDN or telco connections to file stories from the field.

## Studio interviews

Interviews in the studio have their own considerations.

If you chose to record and broadcast a studio interview in stereo, it is easier for the listener to tell who is speaking when the voices are heard in different locations.

To record an interview in stereo, place a stereo pair of microphones (or an M-S microphone) over the center of a tabletop, and arrange the participants in a semicircle.

Remove the table (or use a boundary microphone) if you hear phasing from table reflections. Alternatively, give each participant his or her own close-up microphone and pan each mic to the desired location.

If you want to use directional microphones to reduce room ambience, it might be difficult to maintain a consis-

tent tone quality when using one microphone per person. Here's why:

Many directional microphones are of single-D construction; the rear sound entry or port is at a single distance behind the diaphragm.

When you talk close to such a microphone, you hear a bass boost, called proximity effect. The closer you speak to the mic, the more the bass boost. So if an announcer moves as he or she speaks, the voice will get more or less bassy. That inconsistent effect is undesirable.

A solution is a Variable-D or multiple-D microphone. Variable-D is a trademark of Electro-Voice.

This type of microphone has sound entries or ports at several distances behind the diaphragm. Because of this construction, the microphone greatly reduces proximity effect.

Some popular Variable-D mics are the Electro-Voice RE20, RE15 and RE18. Multiple-D types include AKG D 202 and D 200 E, and Shure SM53 and SM54.

While some of these models have been discontinued, one often comes

across these older microphones floating around radio stations.

Why not use a single-D mic and rolloff the bass on your mixer? You could, and this will make the tone quality more natural; but the bass will still vary when the announcer moves toward and away from the microphone.

Another way to avoid proximity effect is to use an omni microphone, which has no proximity effect. It picks up more room ambience than a directional mic, but you might be able to place it closer to the announcer to pick up less of the room.

Because you might combine takes from different sessions and you want them to sound the same, the participants should try to keep the same distance from the microphone at each recording session. (A hand-span or a spacer can be used for this purpose.)

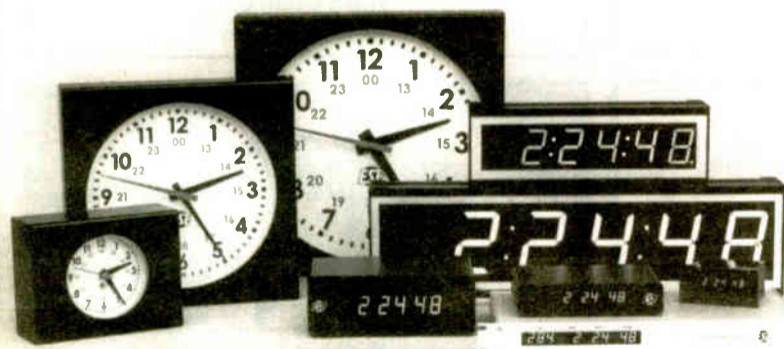
What are your field-tested tips for getting the most out of your interview setup? Share your ideas with readers via e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com).

Bruce Bartlett is a microphone engineer, technical writer, recording engineer and audio journalist. 



Shure VP64A  
(Long-Handle  
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## PRODUCT EVALUATION

# MediaForm, With Room to Grow

by Carl Lindemann

Radio producers often find themselves stuck in the middle when it comes to getting discs replicated. They need more copies than can be handled easily in one-off CD-R burners and less than the 1,000+ runs needed to make commercial replication cost-effective.

The MediaForm Scribe replicator is easy to use and its flexible configuration can handle mid-sized jobs. It is open for upgrades to suit future needs including DVD recording.

## Bundle

The Scribe essentially is a bundle of technologies — a robotic arm combined with a high-speed CD burner — that runs in conjunction with a basic PC. The design is laid out to integrate with a variety of printers to do labels directly on disc.

A range of configurations is available to satisfy do-it-yourselfers as well as those looking for turnkey packages. The setup tested was the 24x CD-R version packaged with a Primera Signature IV inkjet printer (a 40x version also has been introduced).

Constructing the system is simple for anyone with moderate computer skills. The printer fit well onto the platform and required simple fine-tuning once the software was running. This package occupied a small tabletop and connected to the PC via SCSI cable. For the host computer I resurrected my last-generation production computer — a Pentium II 400 running Windows NT, 128 MB RAM and a 9-GB SCSI hard drive (Windows 98/ME and Win2k will run the software, too).

There were a few tricks in the NT setup. The toughest was tossing in a few lines of code to the *boot.ini* file. The instructions were comprehensive. Windows 2000/XP users sidestep this. Once the system was up, loading the MediaForm software was easy.

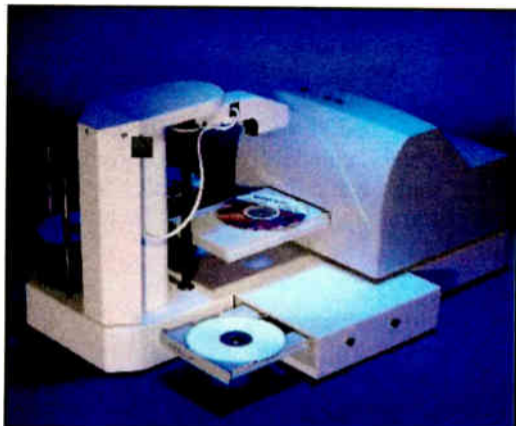
**There were a few tricks in the NT setup. The toughest was tossing in a few lines of code to the *boot.ini* file.**

Booting up the system is the same as with any PC. As the application software loads, the robotic arm goes through a calibration/self-test.

A utility in the program assures the arm and printer are aligned properly. The arm rises and lowers so you can eyeball the exact spot to position the printer and secure it in place. No further adjustments were necessary over a run of a few hundred discs. This was a relief. Some systems that I have tested had to be tended constantly.

The remaining setup chore was assigning the directories for temp files, CD images (the data used for copies), and

picture files for disc labels. A settings folder handled this simply. The printer also needed a software driver installed as well as some image-editing package. Again, nothing went beyond basic PC competency.



The MediaForm Scribe, Left, and Spectrum Printer

Running the Scribe application is a matter of picking through a few menu choices. There are four basic options: Archive Only, Print Only, Copy and/or Verify and Relay-Mode.

The Archive Only mode strips data off of CDs and stores it on the hard drive. Print Only labels blank discs by operating the printer apart from the replication. Copy and/or Verify creates discs with data either drawn from the data archive or from the first disc fed into the system.

The Verify function compares the finished discs against the master and,

as yet, only works with data discs. A future revision will do the same for audio discs.

After choosing print or copy options, enter how many copies and the system goes to work. The Relay-Mode allows multiple projects to be run simultaneously. Put a master at the top of the pile with as many copies as you want of it. It will simply work through the lot.

Different masters can be tossed in, too. When it hits a master instead of a blank, the system draws off the new data and starts copying that. Multiple jobs can be queued as well from the archive through the

Copy and/or Verify mode.

The real test came in seeing how well the Scribe operated unattended over long runs. The blank spindle holds 75 discs, so runs of more than that would require refilling it.

One problem came in the setup of the

print jobs. The Scribe does not simply print image files straight to disc; instead, a special file encoded with the print driver instructions is loaded.

This file is created by hitting the

“print” command in an image editing program (I tested with Photoshop but any editing program will do) with the “save to file” option.

What I missed in this added step was

## Promusic

► Continued from page 44

War, the “American Journey” CD would have allowed me to create great period parodies. “Wildville” takes you to another reality with high-energy house/dance/funk/rock grooves.

On the “Britpop, Rock, Thrash” CD with its alphabetically cryptic title, Chris Blackwell’s Led Zeppelin-inspired “Heavy Mother” makes even those who do not have big hair want to shake it. On Steve Sidwell’s “Feel Good Factor” CD the cuts are bright and airy without being sappy.

“Spots & Promos” offers 60-, 30-, 20- and 10-second versions of theme-length cuts that appear in their long form on other CDs. While that sounds a bit disorganized, the Category Breakdown Catalog accompanying the CDs lists all cuts by genre and within a genre by CD and track number.

“Roobarb and Custard,” a bizarre CD of comedy tracks, is my favorite; composers Cassman and Hope-Scott were obviously dropped on their heads as children.

### Product Capsule: MediaForm Scribe CD replicator

#### Thumbs Up

- ✓Flexible, upgradable platform
- ✓Simple operation
- ✓Easy to assemble

#### Thumbs Down

- ✓PC-Only
- ✓Only holds 75 discs

Price: System as tested: \$4,898.

For more information including price breakdowns, contact the company in Pennsylvania at (610) 453-9200 or visit [www.mediaform.com](http://www.mediaform.com).

setting the spool options properly; the sequence of operation was thrown off. A call to tech support sorted this out and the system ran effortlessly.

The speed of operation for copying a full disc (60+ minutes of audio material) was about 16 discs an hour with the 24x burner. The new 40x should improve on that.

### Flexible

The Scribe delivers what it promises. It also has great flexibility compared to some standalone units. Because it is a PC-based unit, a simple software upgrade can enhance functionality. Also, swapping the CD-R for a Pioneer DVD-R or opting for the thermal printer instead of an ink jet is also simple.

The robotic arm serves whatever peripheral components are set around it. This forward-compatibility protects the initial investment. Again, for those frustrated by being caught in the mid-market under what is served by commercial replicators, the Scribe is a great way to save enormous effort cranking out one-offs from a CD-R. ●

Not every cut was produced for use as a voiceover bed. Arrangements of some tunes with sax, flügelhorn or other instruments that occupy the same frequency range as the human voice are problematic.

Many of the Audio Express compositions offer backing track or minus-solo versions, however. If you find a track with a prominent solo and no backing track, try notch EQing the track between 800 Hz and 3 kHz, to reduce the energy of the instruments. Sometimes that works, sometimes it does not.

This is a pleasantly schizo collection of fresh-sounding tracks that create mental images and provide broad-spectrum scoring for the modern broadcast facility. Fifty CDs can take up a lot of storage space, but the custom satchel takes up less space than a large pizza box.

Although the catalog is thorough, having some sort of computerized database for searching by key words would be a distinct advantage. Don't have time to take a vacation? Pop one of the 50 CDs in and take a mini-vacation without leaving the studio.

Ty Ford can be reached at [www.jagunet.com/~tford](http://www.jagunet.com/~tford). ●



# Ortolano

► Continued from page 43

oversees the toll-free phones and caller database and William Nadeau screens calls.

A sense of perverse fun pervades the operation. When a story of Siamese twins being surgically separated was in the news recently, a "secret sound" contest was devised in which listeners were encouraged to call in and guess what this startling tearing sound was. (The sound of this "medical procedure" was actually created by Ortolano ripping a T-shirt.)

Recording artists Cher and Seal once arrived at one of Garabedian's homes to do the show, in time only to watch the

peripatetic host take off in one of his many airplanes.

Ortolano jumped into action.

"I welcomed these stars in, let them use the bathroom, then went running out to the hangar and yelled for the mechanic to radio John to come back in right away!"

The show is syndicated by Superadio and produced by RadioCraft. New York-based MediaAmerica sells national advertising.

## Putting it together

Everything played on "Open House Party" is contained on hard drive, including the music and accompanying videos, spots, promos and features. Garabedian and Lewis wrote the software.

"We can type in a title, an artist

name, the beats per minute or length or year of a song and a list pops up immediately," said Ortolano. "John can select any song and play it instantly."

Lewis described the equipment used to make it all seem effortless on the air.

"The audio chain starts in proprietary Windows software that uses apt-X audio cards which, unlike MP3, have very little loss," he said. "There are studios in each of Garabedian's houses, plus we have a remote setup. The houses are all within New England, but they run from the Canadian border to Cape Cod. John decides where the show will originate each week."

Lewis said one of the locations houses the Novell server and everything is slaved off that studio while the satellite sites are updated through the Internet. No CDs are

ever played.

"Audio goes through the mixing consoles through some MPEG encoders for the satellite and is received by the stations that have ComStream receivers," he said. "When stations need local IDs recorded, we send them over a closed satellite feed during the week."

Is the show streamed on the Internet? No. It used to be, but Lewis is concerned about legal issues.

"We don't think we want to try to figure all that out right now, and bandwidth is a problem as well," he said.

Ortolano uses an iMac running Audion Labs' VoxPro software to edit interviews. The studio uses Sennheiser MKE4032P3 condenser mics, and Ortolano uses a plain old telephone to beseech recording artists to visit the show.

**It's like five hours  
of landing an airplane.  
You have to be on  
your toes every  
second.**

— Mike Ortolano

"I offer them steak or vegetables, whatever it takes."

Ortolano also makes use of the Internet, sometimes responding to 100 e-mails a day from listeners, record promoters, recording artists and their managers.

## Keeping it real

Lewis said the entire show is driven by listener requests.

"Most syndicated shows are entirely pre-programmed and sanitized for your protection," he said. "At 9:37 John (Garabedian) is thinking about what's going to happen at 9:39."

Ortolano describe it even more simply.

"It's like five hours of landing an airplane. You have to be on your toes every second."

The program Web site is [www.openhouseparty.com](http://www.openhouseparty.com). One of the show's biggest fans has created what Ortolano refers to as "an even better site," at [www.musicohp.com](http://www.musicohp.com). Ortolano can be reached at [mike@openhouseparty.com](mailto:mike@openhouseparty.com).

Ken R. is a former broadcaster whose only experience with hard drives was getting to his radio station in a snowstorm. ☺

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# Buyer's Guide



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October 23, 2002

USER REPORT

## EMF Runs Scott Studios Automation

by Dan Stromme  
Engineer  
EMF Broadcasting

**ROCKLIN, Calif.** EMF Broadcasting is a Christian radio network composed of three contemporary Christian formats. All three networks broadcast to affiliate stations across the United States and around the world via the Internet.



EMF's Dan Stromme works with Scott Studios' SS32 Digital Audio System.

K-LOVE Radio Network broadcasts music 24 hours a day, seven days a week in 34 states. Sister network Air 1 Radio delivers Christian hit radio to young adults ages 18-34 in 20 states.

EMF's newest addition, World Wide Worship, offers reflective music from cutting-edge artists such as Sonicflood, Matt Redman and Third Day.

### Invincible

EMF uses Scott Studios exclusively at its headquarters and has begun to integrate the Scott affiliate systems at the network's remote locations. I am excited to be using Scott's Invincible system in each of our air studios.

The Invincible is a mirrored pair of Scott's SS32 digital audio systems and uses a USB connection to keep both machines in sync. If one machine fails, the backup unit automatically kicks in where the other one left off. The SS32 is Scott's top-end digital audio delivery system.

In each of our air studios we have a display for the operator as well as the co-host. From either co-host position or from the operator's position, we can set up an SS32 to fire from a remote start. Our news staff also is able to load actualities quickly from the news center, giving us the ability to have up-

to-the-minute newscasts in any of the control rooms.

Using the I/O interface provided by Scott, we are able to send momentary closures to our remote affiliate sites, providing them with seamless audio transitions between network and local content. This is done in the background, without the operator having to worry about firing a precise closure at a specific time.

Talking with other engineers and operators around the country, I have found they are in agreement with me that Scott traditionally has the best user

interface in the industry. Needless to say, our air staff loves using Scott.

EMF presented Scott with a bit of a challenge. A unique facet of the K-LOVE morning show is that its hosts, Jon and Sherry Rivers, broadcast live from their sprawling ranch in Forestburg, Texas.

Using Scott's RRR program, EMF engineers are able to send audio files easily between California and Texas or to any one of its affiliates with two quick clicks of a mouse. RRR is a file transfer program that works with a WAN, the Internet or an FTP site. We happen to be using the FTP

method, and it works great.

In addition, K-LOVE's morning show team has the capability of immediately adding a musical or production element with the SS32. Not only can the Rivers add an interesting ingredient to their show, but they are able to see the last time it was played, and when it's scheduled to play next.

Having worked with Scott Studios in the past, I continue to be impressed with their ability to exceed each challenge our networks present them. The EMF staff is excited to have Scott as the supplier for the networks' digital system.

For more information, including pricing, contact Scott Studios in Texas at (888) GET-SCOTT or visit [www.scottstudios.com](http://www.scottstudios.com).

USER REPORT

## BSI Makes Advances With Simian

by Lawrence Galkoff  
Managing Director  
Lawrence Galkoff Associates

**LONDON, U.K.** A decade has passed since we acquired our first digital playout system from Broadcast Software International, its simple but efficient and cost-effective WaveCart. Its latest offering, Simian, the company's replacement for the popular WaveStation radio automation system, is proving to be a winner too.

Here in the United Kingdom, WaveStation was adopted by numerous hospital radio stations and temporary broadcasters because of its ease of use and relatively low cost. It enables us to keep a system "in stock" for immediate hire, and we can even program a station remotely in advance.

Simian is a more advanced product that has benefited from feedback of BSI's large customer base and advances in computer and programming technology. With a price tag under \$1,500, Simian competes favorably with some of the other key players in the automation market.

We couldn't buy another system that would do so much at such a good price and be reliable enough to hire out to broadcasters, some of whom have no experience with automation playout systems.

How does this new technology benefit me and my customers? First, one of the drawbacks of previous systems has been overcome; the product now is touchscreen-compatible. The second change is that the program now requires a hardware "dongle" to operate correctly. Any engineer who's had a machine failure and needed to substitute machines quickly will appreciate not having the program locked to a specific machine.

But the array of new features is more extensive than that. Evidence of this is in

the fact that the original program options are split into two separate multitabbed dialog boxes neatly dividing hardware and software settings.

Simian has capitalized this time around on advances in professional audio card technology. Simian comes into its own here, providing automated voice-ducking and voice-track placement and preventing that automation nightmare where 30 seconds of a song plays before it's faded out to go into a news sequence. Simian dynamically "back-times" by subtly shifting the pitch of the audio to ensure that each of the preceding songs will last that little bit longer to "fill" that 30-second under-run (or speed them up to prevent an over-run).

These sound cards are worth a user report in their own right, and Audio Science ([www.audioscience.com](http://www.audioscience.com)) should be applauded for its attention to detail when it comes to the needs of broadcasters, providing us with a four-

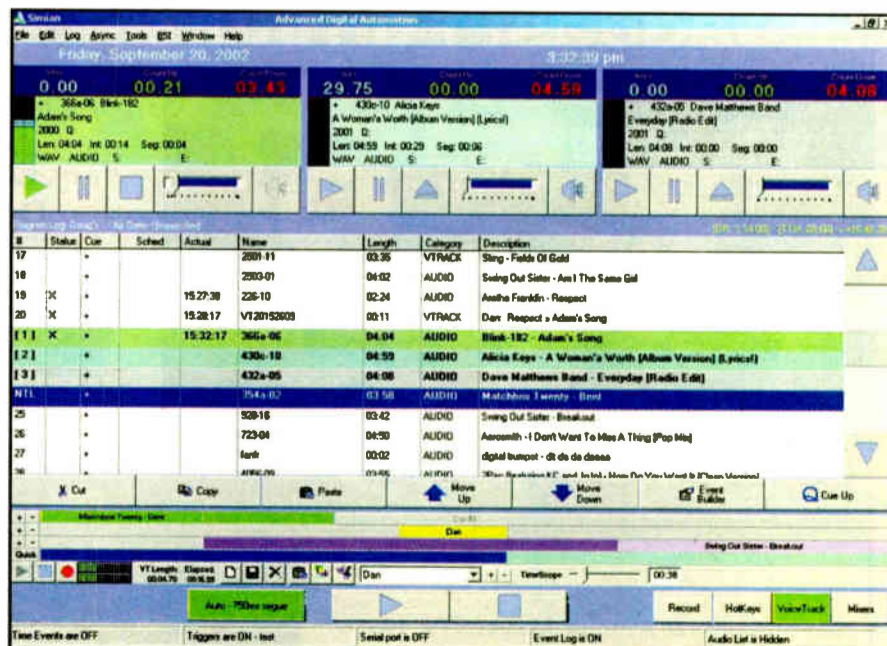
out balanced stereo sound card that will decode MPEG audio (Layer II, or MP3) on the card itself (thus removing the strain from the PC), and even furnishing us with the optoisolated switching outputs and trigger inputs provided to integrate with a satellite or other remote network.

This means that, for live work, I can have one channel on my mixing board for each of the three on-screen decks Simian provides, plus one for my HotKey liners and drop-ins and pre-fade.

Windows 2000 provides a stable platform for Simian, with virtually no configuration needed. And I do mean stable. How many other Windows-based systems will continue for nearly three months without any maintenance, errors or reboots?

Installation of the software is a breeze, and Simian's new installer gives me the option to keep existing settings or repair

See BSI, page 53 ▶



BSI's Simian Automation Software



USER REPORT

# VaultXpress Goes to the Ball Game

by Don Free  
Field Engineer  
Royals Radio Network  
Entercom Broadcasting

**KANSAS CITY, Mo.** Few baseball fans would guess that the notebook computer tugging at my side as I make my way across a ballpark is an entire remote studio for managing the play-by-play of a game.

It looks like any standard-issue computer. Yet, this ordinary-looking Dell notebook is loaded with Broadcast Electronics' VaultXpress digital on-air system, including commercial logs, spots, liners and jingles.

My trusty notebook has everything I need to manage a Kansas City Royals game for Entercom Broadcasting's

Royals Radio Network, heard on flagship station KMBZ(AM) and more than 100

ly on an operator back at the studio to count down the seconds to a spot break

**Entercom Broadcasting acquired the VaultXpress system so we could coordinate last-minute spot breaks in the field and add liners on the fly.**

other affiliate stations across the nation.

It was a different ballgame two seasons ago, when I relied almost exclusive-

and manage the unpredictable.

Entercom Broadcasting acquired the VaultXpress system so we could coordi-

nate last-minute spot breaks in the field and add liners on the fly. Not since the hybrid phone patch has one product made such a difference in the way I work.

**Field work**

The notebook is the last thing I grab on my way out the door to a Royals spring training game, and it's the first thing I set up when I get to the field. While players are on the field doing warmup exercises, I'm at the announcer's booth also running through a few routine exercises before the game. I crack open my notebook, plug it into a portable Mackie mixer board feeding an ISDN line and log into Entercom's studio.

The network studio is 500 or more miles down the line in Kansas City; not coincidentally, it has Broadcast Electronics' AudioVault storage and on-air management system running throughout.

With a few taps on the laptop keyboard,

See BE, page 51 ▶

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USER REPORT

# JT Communications Automates LPFM

by Kurt Kniffin  
Manager  
WGGP(FM)

**BIG PINE KEY, Fla.** WGGP(FM) is the first station in the Florida Keys to be issued an LPFM license. We have been in operation since June, and operate 24 hours a day with a Christian contemporary format, serving up to 20,000 potential listeners. Most of our programming is provided by Automatronix, a PC-based music automation system by JT Communications of Ocala, Fla.

Our experience with radio station operation and computer use was limited when we started building our station. With much help from JT Communications President Jim Trapani, both issues were addressed with minimal trouble.

After Jim assisted with the installation, placement and wiring of transmission and studio equipment, the time to install the automation software was approaching.

### Attention to automation

For the automation, we used a 1.2-GHz Pentium 4 computer with 128 MB RAM, and a 40-GB hard drive for data storage. The computer sound card was wired into the audio mixer, and we were ready to install the software.

The CD Ripper program supplied with Automatronix allowed the process of transferring music from our CD library to MP3 files to take place with minimal difficulty. Initially, we didn't have an Internet connection to the

computer, but a connection would have sped up naming each title, artist, etc. of each song because the ripper program utilizes a Cddb search feature, which searches the Internet for the CD label and collects the important information on it. This information can be transferred to the naming process for each CD.

where you want to identify where the music starts on a song, and the end button where you want the next song to segue at. After some trial and error, we were able to tag about four to five songs per minute.

By this time we were ready to try out the automation. Automatronix operates in several modes: manual, automatic,

We also created customized playlists for special events, days and programs. We can schedule the playlists to load automatically at precise times or manually change them.

We installed a clone of the first computer for production work. Because the license agreement for Automatronix allowed for unlimited installs per owner, we also installed it onto our production computer. This also provided a backup when servicing our main computer.

In order to retransmit broadcasts of some of our programming, we purchased a satellite receiving system. We connected the satellite receiver through the production computer. Although Automatronix handled the on-air activity well, we were not physically in the studio during the times some of the satellite programming was sent. A Timed Recorder program, which allows the user to preprogram remote feeds to be recorded at preset times, provided the solution to our problem.

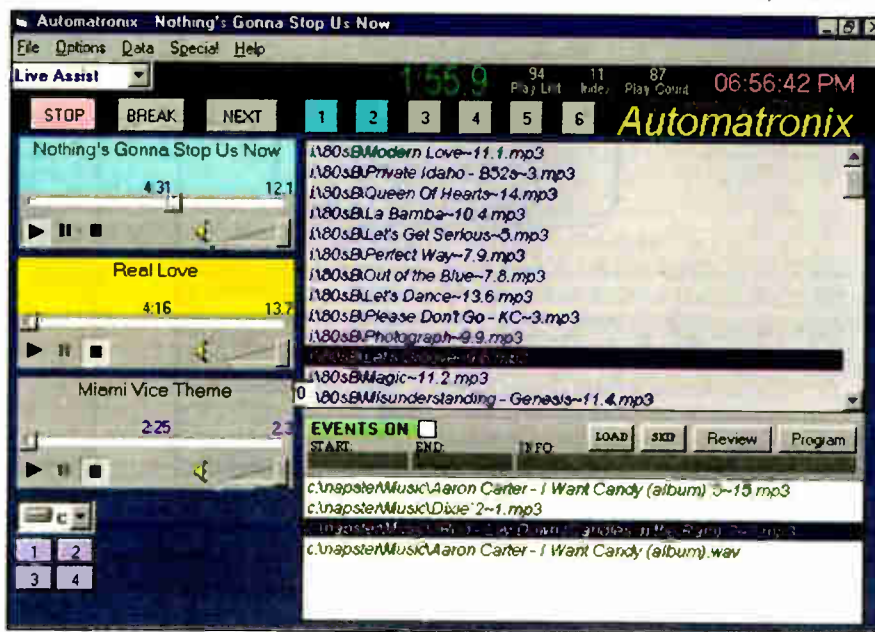
We're still experimenting with Automatronix features. It has six programmable hotkeys, a voice-insert feature that makes a voice file fit in between two songs, random play files for selecting a song at random from a specific playlist, the ability to program changes in playlists from a scheduled event and subplaylists for when we want to play specific files in a particular order.

As I mentioned earlier, we are not computer-literate. Fortunately, Jim is. We lost track of all the numerous calls made to JT Communications, and without hesitation, our questions were answered in a professional, explainable manner. To say the company went out of its way to assist us would be putting it mildly. Without this assistance, we would still be staring at a screen, scratching our heads.

We are now running smoothly. Once we got beyond our shyness of basic computer operation, we discovered Automatronix was literally written for the computer-illiterate. Anyone with the least amount of computer experience will not have any problems operating Automatronix. It has been a versatile, stable program, and will serve our needs well.

The system is available for \$399.95. Downloadable demos can be found at [www.automatronix.com](http://www.automatronix.com).

For more information contact JT Communications in Florida at (352) 236-0744 or visit [www.jtcomms.com](http://www.jtcomms.com).



Main Screen of Automatronix Automation Software

Afterward we used the supplied File Tagger program to tag each song with playlist information for smooth transitions. With the Tagger program, you click on the song to load, press the start button, and click on the intro button

repeat and random. We chose the random option, in which the songs shuffle after playing through the playlist. It was amazing to see Automatronix in action; the segues occurred exactly as if someone were playing them live.

We wanted to play IDs on the top of each hour and promos each quarter-hour. Once into the Events section of Automatronix, the Event screen required dates, times, days and file names to select to. The system caught us making mistakes such as forgetting to include a date or time, and helped us make the proper corrections as needed.

Each event can store 15 separate files to play. Each event can be programmed to run *Immediately*, in which the music fades and the event plays at the exact time scheduled, or *Approximately*, in which the event loads itself into the player 30 seconds prior to actual start time.

to die in the middle of the game, the notebook can take control of the broadcast at a moment's notice.

The VaultXpress has the same management and editing tools as the AudioVault automation system back at the studio, so it didn't take long for me to learn the ropes. The primary difference between the two is that the VaultXpress can fit into the laptop footprint because it has the underlying software to operate with a PCMCIA sound card. (The AudioVault requires the ISA-based AV100 sound card.) I'm using a Digigram VXpocket 440 sound card in my Dell notebook, but you can also plug in a Sound Blaster or other PCMCIA card.

Under VaultXpress' local management at the stadium and the AudioVault's system management at the network studio, every second of the remote broadcast is accounted for, right down to the additional 15-second promo that occasionally runs on KMBZ but not the national affiliate stations.

The laptop's sound card has two channels, and the VaultXpress has separate event files set up for national and local coverage.

Before I started using VaultXpress, I would spend anxious minutes trying to coordinate live game coverage for two separate audiences.

Today, I leave all that to my laptop and VaultXpress, and I feel fairly confident that it can handle whatever fastball is thrown my way.

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

## BE

Continued from page 50

I can download the game's commercial log, do a quick check of commercials against the log, and pull missing spots off the network servers, along with any jingles or liners I might need during the game. I dial into the network using the remote browser utility PC Anywhere and do audio file transfers in WAV format.

Then I'm usually off to explore the stadium or grab a hotdog before the game.

I'm back in front of the laptop before the first crack of the bat. As sportscasters call out the strikes, I'm monitoring the game, the breaks and the liners from a small computer screen. While I'm managing commercials, the game is recording to the notebook's hard drive. I usually set it up to record for four hours and forget about it. This comes in handy if I need to pull up a highlight after the game, or if I need a few liners for a commercial being recorded on-site.

Being able to call the shots from my perch in the announcer's booth several feet above the action rather than from a proxy studio located miles away means a much tighter, more coordinated broadcast.

I can plug into the automation system back at the network studio as easily as if I were just down the hall — even usurp control of the studio from my notebook if need be. VaultXpress can integrate with the AudioVault at the network studio or act as the sole program manager during live broadcasts for the network and its affiliates. If something happens to the ISDN link or a server computer happens

### TECH UPDATES

## Pristine Delivers Multiple Content

CDS<sup>32</sup> is Pristine Systems' new "Content Delivery System" for Windows 2000 or XP platforms. It allows live-assist, satellite automation, music-on-hard-drive, remote control access and unlimited walk-away time. The system supports traffic and music scheduling software, and includes a Spot Set Editor and Quick Music Scheduler.

A CDS<sup>32</sup> Live-Assist system is an alternative for stations that don't need automation or satellite features. It operates manually or uses Script Automation for additional live-assist features.

CDS<sup>32</sup> Satellite Automation systems include operations necessary for live and recorded satellite operation. The systems also have the capability to automate multiple satellite networks.

Music-on-Hard-Drive systems through CDS<sup>32</sup> operate live or automated. Automatic Web site content generation gives a live feel to station sites. These systems feature in-context voice tracking for a live sound.

A professional digital audio card, capable of simultaneous four plays and one record, plays uncompressed WAV, MPEG Layer II or III and other formats. The Cart Chunk standard is supported for integration or file sharing with other systems. Audio from home computers, other DAWs, the Internet and other sources can be played without time-consuming conversion. The system also can play files with different formats or sampling rates simultaneously.

For more information including pricing, contact Pristine in California at (310) 831-2234 or visit [www.pristinesys.com](http://www.pristinesys.com).



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**DSC-32/64 Satellite Channel Controller**  
The DSC-32/64 allows complete remote control of two StarGuide II/III, Wegener Unity 4000 or ComStream receivers. An encoder control with a 16 x 7 LCD display provides local control and program descriptions, while external control may be in the form of serial or 64 contact closures. Custom programming is accomplished with a non-dedicated computer.

**SDD-8 Serial Data Director**  
The SDD-8 is a Serial Data Director, with one master RS232 port, and 8 - RS232 target ports that can be selected under software control, from a host computer, or other serial device. The function of the unit is very similar to a mechanical port selection switch (A, B, C, etc.)

**DSC-20 Dual Satellite Controller**  
The DSC-20 adds remote control capability to two StarGuide II/III, Wegener Unity 4000 or ComStream receivers, allowing complete control of receiver functions by serial or contact closures. Customized programming is accomplished with a non-dedicated computer.

**COA-37 Connect O' Adapter 37**  
The Connect O' Adapter 37 provides an effective way to convert the DB-37 connector to removable screw terminals. The COA 37 is designed to plug into the male 37-pin D-Sub connector on any StarGuide II or III Relay Module.

**COA-15 Connect O' Adapter 15**  
The Connect O' Adapter 15 provides an effective way to convert the DB-15 connector to removable screw terminals. The COA 15 is designed to plug into the male 15-pin D-Sub connector on any StarGuide II or III Audio Module.

**COP Connect O' Pad**  
The Connect O' Pad (COP) provides an effective way to connect and adjust the audio outputs on your StarGuide II and III receiver. The COP is equipped with an eight position removable screw terminal for connection to the balanced left, right, monoaural outputs, audio and chassis ground.

**USC-16/SG Upgrade**  
The USC-16/SG is a firmware upgrade for the USC-16 Universal Satellite Channel Controller. The USC-16/SG is field programmable to switch all functions on StarGuide II/III or other satellite receivers.



PSC-II



DSC-32/64



SDD-8



DSC-20



COA Connect O' Adapter 37



COA Connect O' Adapter 15



COP Connect O' Pad

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USER REPORT

# ENCO Runs Susquehanna Stations

by Chris Lawton  
Senior Systems Engineering  
Susquehanna Radio Corp.

**ATLANTA** Susquehanna Radio Corp. was one of ENCO Systems' first customers and has had a great partnership for the past nine years. Susquehanna uses DADpro32 automation software in all its owned-and-operated stations in eight markets.

The DADpro32 runs on a Windows NT or 2000 Pro workstation. The audio is stored on a Windows 2000 server using a RAID5 drive subsystem, but can be replicated to local drives for playback or use as a fail-safe.

This is all connected via a 100BaseTX switched network running TCP/IP. It supports professional audio cards from major manufacturers and also can run on a Sound Blaster or equivalent.

The system uses onboard GPI/GPO that provides contact closure to consoles, audio switchers such as Broadcast Tools, satellite receivers and other devices that may need to be controlled. The GPI/GPO cards support 8 I/Os, 16 I/Os or custom configurations to 192 I/Os with optoisolators for input and relays for dry contact.

In addition, DADpro32 supports serial and XML data output to control devices or send data to the Internet, etc.

It can be configured for any size of station. The full system includes four record decks, four playback decks, two miniarrays, one large array, a quad player, Masterlog, script machine and two-track editor and the new Airplay module designed for major-market live-assist.

If your facility doesn't need all these, you can purchase the equivalent EZ-Modules and choose only the items you need. In addition, ENCO has applications to support merging traffic and music, distributing audio cuts between systems and local workstations, integration with NewsBoss and integration with multi-track editing software.

I could spend hours talking about how we use DADpro32. But in brief:

We play and record linear audio to get the best possible sound. Several of our AM operations record satellite feeds and play them later without the

intervention of a board operator. Stations control and automate a complete satellite system during the hours of 9 p.m. to 5 a.m.

dors are not problems with DADpro32. These include, but are not limited to, integration with consoles, audio switchers, the Internet, data services and others.



ENCO Systems' DADpro32 automation software is shown at work at Susquehanna's KMMR(FM) in Dallas.

We send data to our Internet sites and streaming partners on "Now Playing" features. We have stations that program everything to prevent the station from having any dead air to stations that let jocks control their shows. And we are in the process of placing workstations at our transmitter sites in the event of a disaster at our studios.

One of the things you get with DADpro32 is flexibility. From their new Airplay product to running a station with only commercials, you get to choose how you want the system to operate and look.

This flexibility is wonderful for those who have different needs within the same facility. In one of our markets, we have two FMs and two AMs. The two FMs have chosen to run different playback screens based on how they program the station.

As an example of flexibility, when I was speaking to vendors who integrate their products with digital audio storage systems at the NAB Radio Show, it became apparent that some of the integration issues their products run into with other storage ven-

opment team will appear and assist. Additional features appear in new releases as a result of forum feedback. Now that's what I call support.

So, will I be putting Simian into my next studio build at the Royal National Institute for the Blind? You bet.

Admittedly, we still have to overcome a couple of hurdles, like how the "talking" software will integrate with Simian and ensure that there are key presses available for every automation function; but we've already worked out that we can have Simian switch studios automatically at the allotted times, and it'll now take a "trigger" input from the fire alarm or telephone system to provide an additional warning on-screen and audibly through the headphones. That's the sort of flexibility Simian has, and I'm only part way through the manual.

For more information contact BSI in Oregon at (888) BSI-USA1 or visit [www.bsiusa.com](http://www.bsiusa.com).

to trigger sweepers, jingles and legal IDs for the two markets. The production team ensures the sweepers are the same length so rejoins are not a problem. To the listener and jock, it's a seamless transition.

Our next step is to continue to look at Airplay. This module provides some of the flexibility and changes our program directors, air talent and business managers have asked for. Items that have missed being aired can easily be seen and made good that day or even hour, potentially preventing revenue loss.

The screen can also be customized based on the number of audio sources available to the talent. For example, when using a Digigram 822 card with four outputs, one can have three automated machines and one independent. This would be similar to a triple-deck cart machine that is configured to load elements automatically or manually.

ENCO provides solutions for stations using one or two workstations to ones with 30+ in one facility. It provides solutions to link and integrate with multitrack editor software such as CoolEdit and ENCO's Strata. It provides tools for programming and controlling the DADpro32 with API and DCL commands.

When users request features or functionality that are needed and will provide benefit to other clients, the ENCO team answers. ENCO's support team is terrific and knowledgeable. Again, they provide solutions.

For more information, including pricing, contact ENCO in Michigan at (248) 827-4440 or visit [www.enco.com](http://www.enco.com).

## TECH UPDATE

## UltraTrak Provides Data Storage

**Promise Technology's** UltraTrak RM8000 is an external storage subsystem designed to provide Ultra ATA storage capacities, data protection and reliability for radio stations.

The company says its UltraTrak series of SCSI-to-ATA RAID subsystems lets broadcasters build large, scalable storage capacities with eight standard Ultra ATA drives. According to the company, the systems are "essentially translating ATA to SCSI for significantly lower costs than a traditional SCSI RAID subsystem."

Appearing to the system as a single, large SCSI drive, UltraTrak is designed to fill



performance, capacity and data redundancy needs of always-operating station environments by protecting data and keeping it accessible in the event of a drive failure.

The system delivers fault-tolerant RAID protection and hot-swap drive replacement. A platform-independent interface allows users to add drives or convert RAID levels without shutting down the server.

UltraTrak uses a standard SCSI 160 adapter to attach to the PC or server and is suited for broadcast professionals who need standalone or rackmount servers that can handle terabytes of data.

UltraTrak RM8000 is available for \$2,999 MSRP. Others in the product series include UltraTrak SX4000 (four-drive tower version) for \$1,499 and UltraTrak SX8000 (eight-drive tower version) for \$2,799.

For more information contact Promise in California at (800) 888-0245 or visit [www.promise.com](http://www.promise.com).

## BSI

► Continued from page 49  
an installation in case I goofed up and deleted something.

There's a minimal amount of configuration to move on from here, and I'm lucky in that I already have a digitally labeled music library, but operation thereafter is a breeze. Simply pressing the space bar on the PC keyboard will start the next audio and fade the one playing, or wait until the "segue" marker and it'll do the crossfade itself. That's a real bonus for training (especially as the automatic Web page is updated, together with the "as played" log for my copyright returns, without user intervention).

BSI maintains an online support forum that pools the resources of users. When users can't find solutions, or discover wacky behavior, one of the devel-



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USER REPORT

# Raduga Serves in Chalk Hill

by **Chuck Conrad**  
General Manager  
KZQX(FM)

**CHALK HILL, Texas** It doesn't take long to see that daily operations at a community radio station are best handled by something more reliable than a volunteer who may or may not show up.

This means most LPFMs will need some kind of automation system. There are a variety of systems available, ranging in price from free to the cost of a luxury car.

Like most LPFMs, KZQX has a limited budget, so we searched for software packages less than \$2,000. The Raduga Automation Software, distributed by **Spry Group Multimedia**, was our choice because it has a great set of features and it's easy to use.

In our situation, it's not going to be operated by people who have a lot of broadcast experience, so simple and straightforward is good. At \$649 for the full version, the price wasn't bad either.

## Learning curve

Anyone familiar with Windows will adapt to Raduga quickly. After loading the software, it was up and running using our existing music files in five minutes. For almost a year, it's been playing 24/7 through our office paging system with no problems. KZQX is now on the air, using Raduga as the backbone of our programming.

Making a playlist is as simple as dragging and dropping from Windows

Explorer. For time-sensitive applications, such as legal IDs, jingles, liners or even full programs, the "Events" scheduler box allows you to easily set up any sequence you wish. You can do rotations within the events schedule, which is helpful if you want to do something like play a different Sinatra song at 20 minutes past every hour.



Chuck Conrad and the Raduga Automation Software at KZQX(FM)

By synchronizing your computer's clock to an external source, Raduga will meet a network feed with no problem. It will stop and start at whatever times you set.

Manual operation for live-assist applications also is easy. The program can be started and stopped using a mouse and keyboard, or you can control it using

external buttons, which can be mounted on your console for DJ use.

Using an external decoder, you can also trigger the start-stop feature via external cue tones. Depending on the equipment used, it's possible to remote control Raduga from your phone.

You don't have to spend a fortune on

hardware. Raduga runs on regular computers equipped with Windows 98 SE, ME, 2000 and XP. A Pentium II with a 400-MHz or faster processor and 128 K of memory is recommended. A Sound Blaster audio card works fine, but you can always upgrade if you desire.

It is important that the computer runs on a high-quality, uninterruptible power supply. Power glitches will cause the computer to crash. You should dedicate the "on air" computer to running nothing but Raduga.

Raduga doesn't provide a way to capture audio files. Most CD-ROMs come with software to rip CDs into MP3s. If yours doesn't, Audiograbber works well. Cool Edit and Sound Forge make excellent choices for more elaborate productions.

We store our music files as 128-kbps

MP3s. While this may not satisfy every audio purist, it is a great equalizer for our format, which is big-band jazz. By slightly limiting fidelity, a 1936 Benny Goodman recording doesn't sound as dreadful when it's segued with a 1996 digital recording of the Glenn Miller Orchestra. Our nonmusic audio files are WAVs, mainly because they are quick and easy to edit and hard drive space is cheap.

KZQX's installation uses three computers networked together using common, off-the-shelf Ethernet hardware. One computer is the primary "on-air" source; the second is a back-up unit for "on-air" in case of a hard drive failure. Its music files are identical to the "on-air" unit. Using an external silence sensor, the program output will switch automatically to the secondary computer if the first one fails.

A third machine resides in our production room. With this setup, we can rip music files or produce programs in the studio and send them via Ethernet to the "on-air" computer. One endearing feature is you can open and operate more than one instance of the program simultaneously. This allows you to build new playlists or edit the one you are running while Raduga is still playing on the air.

By adding Symantec's "PC Anywhere" to all the computers, we remotely control the "on-air" computer from the production room, allowing live inserts at any time. PC Anywhere and Raduga make a powerful combination. Using them with a laptop allows us to remote control the station from anywhere with a telephone connection. This opens up a new world of remote broadcast possibilities.

Raduga is available in several versions at prices starting at \$149. The user can start at an affordable level and work upward. A variety of Direct X plug-ins and third-party accessories are available. My favorite is Raduga AGC. It is the next best thing to an Optimod for only \$79. Raduga also has excellent customer support and a lively Internet-based users' forum. I give it two thumbs up.

For more information contact the Spry Group Multimedia in Ohio at (513) 887-0714 or visit [www.raduga.net](http://www.raduga.net).

## TECH UPDATE

### Progressive Updates Virtual DJ Pro

Progressive Concepts' Virtual DJ Pro is an integrated automation system suitable for small-market or special-event radio stations. Released in 1997, it was updated recently to include a configurable overlapped audio feature used to fade from one song or selection to the next. A new fast fade-out feature is designed for users who desire a "tight" sound.

Virtual DJ consists of three software programs. The first, the playlist creator, generates playlists for one week. The program works by setting up categories (folders on the hard drive) that contain similar material. The playlists are based on a clock, which lists the categories in the order they will be played. A single clock or special clocks can be used for any or all hours in a day.

The program can be configured to run automatically and has features to prevent the excessive repetition of artists and songs. Special settings are available for liners and commercials.

The second program, the playlist editor, is used to fine-tune the playlists. The user can delete, substitute and add material. Selections can also be previewed.

The third program, the player, reads the playlists and produces the output through the sound card. The player has buttons to stop, pause or pause/stop at the end of the current selection to allow for use with a mixed automated/live setup.

The player also has a configurable overlapped audio feature, with different settings for short selections (such as liners and commercials) and long selections such as songs.

The software is available on CD ROM at a list price is \$199.95 plus shipping.

For more information contact Progressive Concepts in Illinois at (630) 736-9822 or visit [www.progressive-concepts.com](http://www.progressive-concepts.com).



## TECH UPDATE

### Netia Adds Archiving and Storage

Netia's Radio-Assist 7 line of digital audio products now includes broadcasting software with an interface for archiving and automation systems.

Radio-Assist can interface with the DIVA archive management system from MSI and provides two software stages in the process of transferring files from a current database to storage.

The first stage, the Media Management Service, handles the flow of data (meta-data and sound data) within the digital audio or video system. It monitors and transfers data automatically from one domain to another and ensures that the domains remain independent. When an item is marked RTB (Ready-to-Broadcast), the audio file is automatically copied on the broadcast server. When an item is marked RTA (Ready-to-Archive), it is automatically copied on the archive server. Operation is transparent and provides access to the files wherever they are located.

Media Management also allows users to create specific domains for each activity (Production, Broadcast, Archiving, etc.). According to the company, this separation of activities generates independent subsystems and guarantees greater security.

The second stage, the Archive Service, creates an audio file or XML file containing information about the archived sound file. The double archiving from the two services provides flexibility at the database level and is particularly suited to research and restoration. When an operator wants to restore a sound file to the on-air system, the task can be performed manually if the user wants something specific, or automatically, when the program schedule needs a file.

Netia's DBShare Automation software works with the other software programs to centralize communications within the Radio-Assist database, providing synchronicity and redundancy between the sound files and the system. This also ensures constant operation in the event of problems.

For more information, including pricing, contact Netia in New Jersey at (973) 575-9909 or visit [www.netia.fr](http://www.netia.fr).



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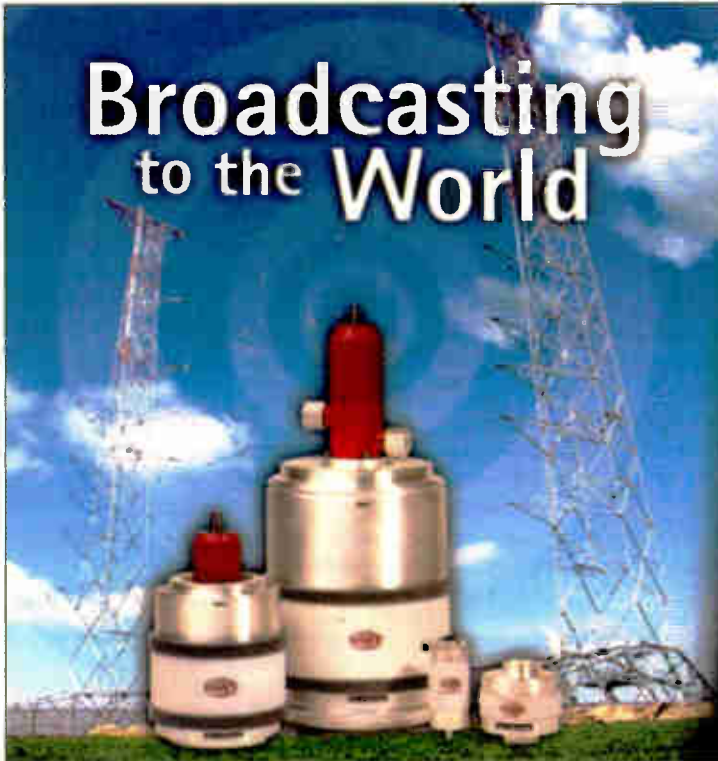
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TECH UPDATES

### Encoda Manages Multiple Channels

Encoda Systems' Radio Channel Manager products are designed to automate playout and live ingest for multichannel radio networks.

The systems are based on a redundant architecture and can be scaled to support tens or hundreds of radio channels. They can be upgraded, reconfigured or expanded while the radio network remains live and on-air.

Radio Channel Manager combines automated playout from digital audio storage systems and discrete audio devices with automated switching to live studios and remote feeds. The systems can play thousands of individual program elements and advertising spots to air per day or can recall and play complete shows as a single item.

When a playout channel is in show mode, the program director or editor can predefine the program format and content using a music scheduling system or planning tools within the digital audio storage environment. Radio Channel Manager will load these predefined shows, ready for live-assist playback at the required time. When the show runs, the system will dynamically track, warn and optionally correct for significant changes made by the DJ or talk show host.

For more information, including pricing, contact Encoda in Colorado at (303) 237-4000 or visit [www.encodasystems.com](http://www.encodasystems.com).

### OMT Adds Control to iMediaTouch

OMT has introduced the iMedia Access Server and Client, a LAN/WAN add-on module, for its iMediaTouch product line.

Designed for station clusters, iMediaAccess gives iMediaTouch system users control of audio assets anywhere in their environment. Using a drag-and-drop interface, operators can copy audio (voice tracks, songs, commercials, IDs, etc.) to and from locations in a network for use in on-air or different production studios.

iMedia Access gives users the ability to create and view on-air schedules, monitor the on-air status of a remote location and view current TTA information via HTML.

For more information including pricing, contact OMT in Winnipeg, Manitoba, Canada at (888) 665-0501 or visit [www.omt.net](http://www.omt.net).

### Mediatron Makes Modular System

Mediatron makes AirControl NT modular automation software for radio use.

Music, jingles, news, commercials and other elements come from fault-redundant RAID5 hard-disk arrays. Each user on the network has simultaneous access to audio. Talent can pre-listen to the end of a title while it is being played on air. Shifting and inserting elements and reacting to special events are improved by the system's flexibility and zero loading time, which assists in last-second changes. The system covers the WAV, BWF and MPEG Layers I, II and III formats.

AirControl NT runs on Windows NT 2000 or XP. It is a 32-bit application and is the foundation of an expandable software sequence that can add functionality through Mediatron's plug-in technology.

For more information including pricing, contact Mediatron in Germany at 011-49-8131-83050 or visit [www.mediatron.com](http://www.mediatron.com).

### Dalet Automates Audio 'Ingest'

Dalet Digital Media Systems' ActiveLog system is designed to record, catalog, archive and distribute large quantities of audio. Radio stations also can use the system for legal and proof-of-performance logging, media monitoring, courts and government and asset management.

The recording system is built on a new broadcast server architecture that can distribute playout and ingest activities over standard IT infrastructure and servers. It allows simultaneous recording of multiple audio sources on a manual or automated basis. The distributed n-tier architecture allows for critical processes to be redundant, so there is no single point of failure. While recording, audio material can be accessed simultaneously by multiple users over the network for annotation, transcription or production.

The ActiveLog user interface includes previewing, browsing, marking and annotation functions; all can be performed while recording. An SQL database provides customizable metadata forms, allowing for rich content description or associated data such as album art, liner notes and Web site material. Several searching and indexing engines, including Fast-Talk phonetic searching, can be added for rapid clip retrieval.

System prices vary depending on capacity and number of channels.

For more information contact Dalet in New York at (212) 825-3322 or visit [www.dalet.com](http://www.dalet.com).



### Prophet Builds Automation Station

The new NexGen Digital NS on-air workstation from Prophet Systems contains a digital automation workstation that can handle overnights, satellite programming and live assist for a single station, plus expansion options.

The complete system, including software and hardware, starts at \$9,995. NS provides professional features such as balanced analog and digital audio inputs and outputs, audio source routing and serial and parallel GPIO.

New options such as No-Server WANcasting and a streaming data interface have improved NS connectivity. The WANcasting module allows NS to integrate into an existing array of sites or to create a network of linked stations using standard availability data links.

This is the same technology once reserved to server-based architecture, but modified to operate on a workstation without losing functionality. The streaming data interface allows the distribution of on-air and upcoming event metadata to digital delivery systems such as RDBS, IBOC systems and Internet Webcasting Web sites or audio streams.

Prophet Systems also offers a host of tweaks to its server-based NexGen Digital Broadcast line. Red Hat Linux is a new configuration offering that provides increased database performance, reliability and redundancy.

For more information contact Prophet Systems in Nebraska at (877) 774-1010 or visit [www.prophetsys.com](http://www.prophetsys.com).





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Jampro 8 bay, 97.3, \$2000. Ken Lane, KVRP, Box 1118, Haskell TX 79521. 940-864-8505.

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Mackie CR1604 16 channel mixer, like new, \$450. Danny Brou, KJMJ, 212 Wainwright Rd, Pineville LA 71360. 318-445-4843.

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## Want to Buy

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Radio World, October 23, 2002

GUEST COMMENTARY

## New Concepts in Shortwave Power

by Jack Quinn

**R**adio World readers may be interested in today's international broadcasting shortwave power levels and the considerations involved in present transmitter designs.

A friend recently reminded me that Russia and China are reported to have 1,000-kW or perhaps 2,000-kW shortwave transmitters. This certainly can be done with today's and even yesterday's technology. But it involves major compromises like lower overall efficiencies plus other limitations. The Western nations have chosen to go for smaller operating costs instead — that plus the judicious use of frequency and time-period management, to maximized signal strengths.

**The new individual station concept provides the ultimate in directional flexibility, uses less real estate and is far less costly.**

The largest single-tube RF power source I know of uses a super power triode developed by EIMAC. It produced 2,000 kW of continuous RF output at 13 MHz, and was used in a wood pulp processing plant at Holly Hill, S.C. But, of course, it was not modulated and it operated only on one relatively low fixed frequency.

Because of the high cost of primary electrical power, the demand today is for high-efficiency transmitters. The current industry line of high-power tetrode vacuum tubes was designed to meet this requirement.

(EIMAC introduced the first high-power, high efficiency tetrodes in the 1960s. These replaced the old, inefficient triodes-type vacuum tubes. The world's other tube manufacturers quickly jumped on board.)

### Compromises

The design of high-power, high-frequency amplifiers involves a series of compromises, however. At this power level, all modern power tubes and other amplifier components, such as vacuum capacitors, are operated at or near their maximum ratings. By adhering to these maximum efficiency standards, we have reached a power ceiling from a single-stage amplifier.

But if these standards were relaxed, there are two other choices for developing higher output powers.

One choice is combining at the antenna paired outputs of two transmit-

ters to produce 1 MW. Then the limiting factor becomes the combining L/C networks and the antennas themselves. You can get an extra 3 dB gain by dividing a single curtain antenna into two separately panels, fed from two phased transmitters. Or you can feed two adjacent identical full curtains, each with the phased outputs from two transmitters and pick up 6 dB.

Second, it also is possible to produce higher-power outputs by using older tetrode types of the previous generation. These have wider internal spacings and higher filament powers, but are therefore somewhat less efficient. Their higher internal capacity and inductance parameters limit the maximum frequency at which full power output can be generated. The advantage, however, is

that they are more tolerant of higher voltages, overloads and filament management, and are capable of much longer filament life. However, full power in the upper international bands of 17 MHz, 21 MHz and 26 MHz are somewhat compromised.

### New approaches

Another weak link in the chain is fixed and variable vacuum capacitors.

In 500-kW applications we have literally run out of peak voltage and current safety margins, plus the ability to dissipate more internally generated heat. To go higher in power, new techniques must be found to simulate the circuit requirements for capacity and inductance. But whatever new methods are discovered probably will inhibit transmitter operational flexibility such as automatic tuning and rapid frequency changes.

There is good news, however. Two HF transmitters are being produced in the western world that will develop a full 500 kW consistently and efficiently by Continental Electronics and Thales Electron Devices (ex-Thomcast, ABB, BBC and Thomson-CSF).

There are also two manufacturers that market a remarkable new concept. They constructed a concrete bunker that houses a 500-kW transmitter, with a massive 15-foot diameter 360-degree rotating mast protruding through the ceiling. This mast supports a broadband colinear array curtain antenna, which uses a common reflector in the center with a low- and high-frequency panel on either side. This provides a total frequency range of 7 to 26 MHz, all for approximately \$7 million each, installed "schlüssel fertig" (turnkey).

This concept is competitive with

existing multiple transmitters housed in a single building, especially when you consider the elimination of miles of expensive high-power pressurized coax lines, complex coax antenna switching systems and the requirement for a field of multiple fixed antenna arrays.

The big advantage is that each installation has its own 360-degree directional antenna, not limited to one target like conventional installations. Further, this new concept can be installed on far less real estate. The present installation of 10 transmitters typically requires one square mile, or 640 acres of land, to accommodate the buildings and antennas. These single transmitter/antenna combination would require only a tenth as much land.

Ten of these individual units can be installed for a total of about \$70 million. This compares with approximately \$250 million for the 10 500-kW transmitters recently installed by the VOA in Morocco.

Admittedly, this was the most unfor-

tunate example in their history. However, even under perfect conditions, this type of construction would still have run in the range of \$150 million when purchased under government FAR regulations and other federal restrictions. A private company could have probably accomplished it for slightly more than one-half the latter dollar figure.

In summary, under today's energy requirements, 500-kW shortwave transmitter powers are as high as it is practical to achieve. The new individual station concept provides the ultimate in directional flexibility, uses less real estate and is far less costly. These semi-unmanned transmitters can be operated remotely and programmed via satellite from anywhere in the world.

Future installations should adopt this concept. Too bad we don't have several of these installed in Kuwait and/or Israel to cover recent conditions in the Middle East.

*Jack Quinn is former manager of technical operations, RFE, Munich, and former director of marketing for EIMAC/Varian. He is a Fellow in the Radio Club of America.*

## Bluegrass Memories

Thanks to Ken R. for bringing us up to date on WAMU(FM) and Ray Davis in the Aug. 1 article "Bluegrass Finds a Life Online." Just last week I had the pleasure of working with Davis as he emceed the Delaware Valley Bluegrass Festival in Woodstown, N.J. He hasn't slowed down very much.

Ray, in his late teens, was an emcee at New River Ranch in Rising Sun, Md. In the early 1950s Ralph "Bud" Reed and his brother-in-law Alex Campbell tried to work out a deal with "Uncle" Roy Waltman to operate the already established Sunset Park in nearby Jennersville, Pa. They could not reach an agreement, so they built their own outdoor country music park that featured big-name stars throughout their summer season, including the incomparable Lester Flatt and Earl Scruggs.

Alex Campbell was a performer along with his sister Ola Belle Reed in a band called the New River Boys, which played professionally throughout the mid-Atlantic states.

Alex was also the operator of an unusual general store in Oxford, Pa. As a youngster, Alex and his family had moved north during the worst of the Depression from Ashe County, N.C. They were not alone; hundreds of farmers had left that area during the 1930s, many of them settling in northeastern Maryland and southeastern Pennsylvania. The Campbell family had been storekeepers in North Carolina and continued that after they moved. Their store specialized in bringing up products from North Carolina that these transplanted farmers were used to buying. It was a huge success.

Alex Campbell also supplied the music that they were used to hearing. He built a studio in the back of his store ("Campbell's Corner") and did remote radio broadcasts on several stations over the years.

After Uncle Roy passed on, Alex worked out a deal with his son, Lawrence Waltman. In the summer on Sundays, Alex would do remote broadcasts of bluegrass and country music from Sunset Park as well as performing there with his band. Throughout the rest of the year his broadcasts would come directly from the store, sometimes with live guests.

Alex Campbell eventually moved the program (also called "Campbell's Corner") to 1420 WCOJ, Coatesville, where it remained until Alex's retirement from broadcasting in the mid-1980s. He continues to live in Rising Sun. His sister and musical partner, Ola Belle, passed away on Aug. 16 of this year. Bud Reed also lives in Rising Sun. New River Ranch closed in the late 1950s. Sunset Park continued operating through 1995.

In January 2000, I launched "Country Corner" on WCOJ, a program of bluegrass, old-time and western swing music. Our studios are new and now located in West Chester, Pa. But we still bring in live music every chance we get. And, of course, we play 50-year-old recordings of a bluegrass band called "The New River Boys."

*Bill Moffett  
Program Host, Country Corner  
1420 WCOJ(AM)  
West Chester, Pa.*

### Write to Us

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## ◆ READER'S FORUM ◆

## Bill Suffa

Thanks for publishing the interview with Bill Suffa of Clear Channel in the Aug. 1 edition. Bill's a smart, seasoned guy, and Clear Channel is lucky to have him.

Unfortunately, Bill's take on IBOC is dangerously wrong. I'm reminded of the decision by somebody at IBM, during the negotiations with Bill Gates and Paul Allen, to allow little Microsoft to license their operating system to others. I'm sure IBM saw little value in having control of the DOS operating system. After all, without a machine to run it on, DOS is worthless, isn't it?

We know how that decision worked out for the respective companies. Similarly, imagine another several thousand real-time wireless audio delivery entities across America. This is the likely outcome if existing broadcasters fail to implement IBOC or something similar. These new voices might be digital or they might be the plain old analog we already know.

Pandora's box was opened when Glynn Walden and his team, bless 'em, proved (with the support of broadcasters) that their product could be deployed asynchronously without interference to the existing analog baseband FM signal. And broadcasters, through our lobby organization, the NAB, used IBOC as cover to defuse the FCC's desire to eliminate the third-adjacent and possibly the second-adjacent FM transmitter site separation requirements.

No IBOC implementation? Hello, new competition. The math is easy. If third-adjacent separation requirements are eliminated, another 1,500 or so stations will appear in the Arbitron markets now dominated by consolidated broadcast companies. These will migrate from outlying areas and begin operating within two to three years.

If the second-adjacent spacing requirements are eliminated, the number of new stations goes to 5,000 or more. These won't be "trim shots" with marginal market coverage. They'll be downtown or high-dollar suburban signals just like the legacy major-market properties bought for hundreds of millions of dollars during consolidation.

These new voices will be feeding at the same revenue trough, but at a fraction of the capital invested by the consolidators. Sounds a bit like the category-killing PC "clones" of the past, huh?

So, to the extent the business model of the large consolidators is dependent upon a limited (and largely known) quantity of competitors in each market, IBOC must

be implemented without regard to internal rate of return on equity, to protect existing shareholder value.

Frank McCoy  
Vice President  
American Media Services  
Chicago

I was flabbergasted at the gall and blatant sexism of Bill Suffa in his Aug. 1 interview. The quote that offends me is:

"In some sense, it (voice tracking) helps us to reduce the safety risks. If you've got a station where the studio's in a bad neighborhood, we can effectively run that programming remotely and you don't have to have a female worried about walking to her car across the parking lot at night when she leaves the station. She can lay down those voice tracks while it's still light and leave the station."

I was under the impression that if your station is in a lousy neighborhood and your employees are at risk of attack, you take some security measures to help prevent that, but — oh gee — that might cost money. God forbid Clear Channel actually care enough about their employees to spend money on them. I don't care if the above quote is true or not, it's utterly irrelevant to the issue of voice tracking and shows what a low regard Suffa holds for Radio World readers, and for women in general.

Aaron "Bishop" Read  
Owner/Managing Director  
FriedBagels.com  
Brighton, Mass.

## The sniglet 'beatzhaf'

I have a sniglet I have used for over 30 years and, if they still exist, it is written in the maintenance records of a number of stations (Aug. 14, "There Has to Be a Word for It").

However, in order to fully understand the significance of this sniglet, setting the stage is required.

The joke calls back to your office behind the bathroom and broom closet to inform you there apparently has been a power blip on the mountain and the transmitter won't come back up. In the control room the remote control shows everything to be normal. However, "raise" will not bring the transmitter to life.

You drive up there and try simply pushing the "go" button on the transmitter. It comes right up. Then you try using the remote control in the "local" mode and, sure enough, you can turn the transmitter on and off. So you call the studio and have them try it. The remote control works per-

Scott Beeler  
Mourned

The broadcast supply community mourned the death this month of Scott Beeler, director of worldwide sales for Electronics Research Inc. He was found dead after a car accident near his home in Morrow, Ohio, a Cincinnati suburb. He had been returning from a Harris Broadcast vendors' meeting in nearby Mason.

Beeler's wrecked vehicle was found early on Oct. 3, his 38th birthday, after his wife alerted police he had not returned. Police said Beeler had lost control of his SUV, hit a guardrail, gone airborne and slammed into an abutment. The vehicle landed in a creek.

Beeler was the kind of employee the supply industry never seems to have enough of. He joined ERI in 2001 after many years at Harris, where he rose to the position of director of North American radio sales. He began his career as a teenager in the stockroom of Allied Broadcast Equipment prior to its acquisition by Harris. Numerous co-workers from both ERI and Harris called Radio World on the day of his death.

"Scott worked in our 'fire department,'" recalled Dave Burns, a co-worker at Allied. "He was what we called a fireman. Their job was to be the eyes, ears and legs of salesmen on our outside offices, to give them an internal presence at Allied. Scott excelled at that job, like he did at every job he ever had. He had earned the respect and affection of an entire industry."

Young Beeler was hired at Allied by Roy Ridge, a neighbor of Beeler's parents.

"I asked him what he wanted to do in the company and he told me he wanted my chair," Ridge recalled after Beeler's death. "He wanted to run the company. That kind of took me by surprise, but we joked a lot about it later on. But the way he was working his way up the company at the time I sold it, he was on his way to accomplishing that goal."

Jim Meleski, COO of ERI, temporarily assumed Beeler's duties.

"Scott came to help me to create a direct sales force to reach out to the industry," Meleski said. He cited Beeler's work serving customers, taking calls at all hours to solve customer problems. "You can't replace a person like that."

Though ERI is located in Chandler, Ind., Beeler maintained his office in his home in Morrow. "Clear Channel (was) based there, and so is Harris, and we were looking to continue to build relationships with those companies and others," said Meleski. He was to have met with Beeler the morning after he died.

Jeff Littlejohn, senior vice president of engineering services at Clear Channel Radio, said because of Beeler's proximity, he worked closely with him at Harris and ERI. "I bought XLR connectors from Scott, and I bought million-dollar packages of equipment from Scott. He was one of these rare individual whom you brought a problem to, and his only response was 'I'll get it taken care of.' ... If he told you he was going to do something, he did it."

At Radio World, we remember Beeler's presence at trade shows, his responsiveness to his clients and his sense of humor. We recall that Harris Allied published advertisements featuring Scott Beeler in full golfing regalia. In addition to being a consummate professional, he clearly was not afraid to poke fun at himself.

Scott Beeler is survived by his wife Kim, who is pregnant, and two children. Contributions to the family can be made through ERI to Kim Beeler, c/o ERI Attn: Diana Combs, 7777 Gardner Rd., Chandler, IN 47610.

Our thoughts are with his family and co-workers.



— RW

fectly and everything is exactly as it should be. The very act of doing the normal tests seems to have made the problem go away.

Now the sniglet comes into play. In your maintenance record you write up the details as they occurred and then add, "Apparent cause was the beatzhaf."

Then, when you return to the studio, the boss asks the usual, "What happened?" You reply, "Trouble with the beatzhaf (pronounced 'beets-el'). But, it's OK now." This satisfies him, and you go back to your cubbyhole with the stored paper towels and toilet paper.

Now, the true meaning of *beatzhaf* is,

of course, *beats the hell out of me.*

Then, there is always "HOOGAS!" which must be used loudly and with considerable emphasis. However, I can't get into this one without changing the rating of this epistle from PG to R.

George Whitaker  
Owner

Practical Radio Communications  
Arlington, Texas

More Opinion  
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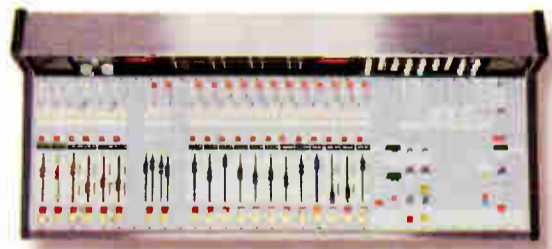
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