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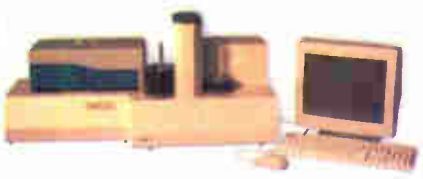

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IBiquity Garners Licensing Deals

Details Emerge About IBOC Conversion Costs, Fees; Proponent Achieves First RF and Receiver Deals

by Leslie Stimson

LAS VEGAS IBiquity Digital Corp. has cracked the licensing deal barrier, an important step toward what it hopes is commercialization of its in-band, on-channel digital audio broadcasting system. The company also confirmed it is planning to charge stations licensing fees for the use of its software.

Broadcasters would choose to pay the roughly $10,000 to $12,000 fee for an average station at once or spread it out over time. The fee structure would be based on the FCC's annual regulatory fees for broadcasters, which are based on station class.

"We're a software company," said iBiquity President and Chief Executive Officer Robert Struble. "If you buy a transmitter, you'll need new software from us."

Many broadcasters have told the company they'd rather pay annually, which would amount to roughly $1,000 per station, said Struble.

The company used the NAB2001 convention in Las Vegas to update radio broadcasters on the status of its system.

In a critical step towards its quest for commercialization, iBiquity moved beyond technology development agreements to formal licensing commitments from manufacturers on both the RF and receiver sides of the business, with Harris Corp. and the Harman Consumer Group respectively.

Harris agreed to license iBiquity technology to make IBOC DAB-compatible transmission equipment. The company will integrate the technology into a new line of IBOC transmitters and

See IBIQUITY, page 21 ▶

CPs in Hand, LPFMs Take Next Step

by Randy J. Stine

WASHINGTON The first LPFM construction permits have been issued by the FCC, bringing the controversial low-power FM service a step closer to reality. The reaction from existing broadcasters was muted, compared to the outcry over LPFM when first proposed.

Organizations in California, Maryland, Georgia, Louisiana, Maine, Oklahoma and Indiana won 25 CPs, issued by the FCC without ceremony in mid-April. They include churches, schools and gov-

See LPFM, page 21 ▶

◆ NEWSWATCH ◆

Commission Nominees Under Consideration

WASHINGTON Three FCC nominees await Senate confirmation. President George W. Bush tapped two Republicans and one Democrat for seats as commissioners. No serious opposition is expected, according to The Wall Street Journal.

Since President Bush took office in January, a vacancy created when former Chairman Bill Kennard resigned left the agency evenly split 2-2 between Democrats and Republicans. If confirmed, the additions would give the commission a 3-2 Republican majority and better enable Powell to implement a deregulatory agenda.

Nominated are Republicans Kathleen Abernathy and Kevin Martin, and Democrat Michael Copps.

Abernathy served as a legal advisor to former Commissioner James Quello and is now a vice president at Broadband Office Communications.

Martin served on the staff of Commissioner Harold Furchtgott-Roth and then joined the president's election campaign. He led the Bush transition team on telecom issues and is a special assistant to the president.

Copps was chief of staff for Sen. Ernest Hollings, D-S.C., and served as assistant commerce secretary for trade development in the Clinton administration.

Commissioners Democrat Susan Ness and Republican Furchtgott-Roth, whose terms are up, have said they would leave when convenient for the new administration. The third vacancy was created by the departure of former Chairman Kennard.

The only remaining commissioner besides Michael Powell, Democrat Gloria Tristani, is said to be leaving by the end of the year to run for public office in her native New Mexico.

LPFM Apps Accepted in June

WASHINGTON The next window to file applications for low-power FM construction permits is June 11-15.

This will be a combined window to speed up the application process for the last groups filing for LP100 stations.

See NEWSWATCH, page 5 ▶

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SPECIAL REPORT

Arbitron's PPM Tests Progressing

Long-Awaited Portable People Meter Is Out of the Laboratory and in Radio Stations for Trials

by Ken R.

PHILADELPHIA A very little box could cause some very big changes in the broadcast and cable industries.

At this moment, Arbitron's long-promised, pager-sized Portable People Meter is clipped to the belts of about 300 people in the Philadelphia area.

British citizens began participating in PPM trials in 1998. Americans now are getting that chance.

Philly

While citizens of the City of Brotherly Love work, eat and drive, the PPM silently hears everything they are listening to and stores the data.

"Close to 70 radio, television and cable stations in the Philadelphia/Wilmington (Del.) metropolitan area are each broadcasting a unique inaudible signal which the PPM picks up," said Thom Mocarsky, vice president, communications for Arbitron.

"We can even assign a different frequency to a station's various analog, digital and Internet streams."

The PPM is designed to make life simpler for the "panel" or group of selected participants in each rated market because it relieves them of the tedious chore of writing down station names and exact time spent listening.

"With the older methodology, diary keepers do not always take the time and effort to notate every listening occasion," Mocarsky said. "We just ask our PPM ratings reporters to plug the meter into the charger at night and carry it with them during the day so the device can do all the work."

When the user plugs the unit in at night, it automatically downloads the data for that day to Arbitron and recharges at the same time.

Mocarsky has high expectations for this new method of rating tabulation. If successful, the technology could eliminate human error due to faulty memory or lack of time and effort. It also would, according to Mocarsky, help eliminate interpretation problems of the data by Arbitron caused by poor handwriting or incomplete or erroneous call-letter notation.

Mocarsky believes the old paper diary method needs to be replaced. "The radio model isn't as broken as the TV model," said Mocarsky. "The task of keeping track of three or four favorite radio stations is easier than keeping track of hundreds of TV channels."

Photo copyright 2001 Arbitron Inc.

Jim Jensen, senior staff consultant at Arbitron's Research and Technology Center in Columbia, Md., conducts tests to ensure that codes placed in the audio stream of broadcasts cannot be heard by the human ear but can be detected by the PPM.

No cost

Out of an unreleased number of stations asked to participate in the trials, 38 radio stations are using an Arbitron-supplied encoder, as are eight television stations and 17 advertising-supported cable networks/outlets.

Three hundred people are wearing the pager-sized PPMs. Arbitron plans to expand the test, but declined comment on how many people would be involved in the larger sample.

As Arbitron moves from the testing phase into full use of the technology, broadcasters will want to know the costs and technical issues involved in complying with the new measurement methods.

"There's no additional cost to the station," said Mocarsky. "We give our subscribers the equipment which encodes the inaudible tone and we show their engineer how to insert it into the audio chain."

See PPM, page 6 ▶

NRSC Finalizes AM IBOC Test Criteria

by Leslie Stimson

LAS VEGAS "IBiquity has everything they need to test," said Milford Smith, DAB subcommittee chairman of the standards-setting body, the National Radio Systems Committee.

Lab test facilities being used are the Advanced Television Test Center in the Washington area and DynaStat in Austin, Texas.

These tests are different from earlier tests in that now there is just one company developing IBOC technology. Smith said with the test data, the body will be able to draw some definite conclusions about the viability of IBOC.

When the NRSC reviewed earlier data from USA Digital Radio and Lucent Digital Radio, it concluded there "was a reasonable probability" of NAB2001.

NRSC members unanimously passed criteria for AM lab and field test procedures in April at a meeting during the NAB2001 convention.

The group had previously given iBiquity the FM test procedures and the company says those tests are nearly complete. IBiquity planned to begin AM testing right after the completion

See NRSC, page 21 ▶

Photo by Leslie Stimson

Keith Larson and Milford Smith

Don't Block Up This Stream

The hasty action by radio groups that yanked their streamed programming recently strikes me as short-sighted. Yes, costs of producing commercials and other content have escalated as talent and artists demand a cut of the pie. But to expect otherwise is to engage in a dreamy idealism that marked earlier forays onto the Internet — idealism of a Net with free products, no competition, unlimited access and unlimited use of content. At the very least, radio comes off looking woefully unprepared.

When potential advertisers see us pulling our programming in apparent surprise because costs begin to escalate, it sends a powerful and dangerous message: our online commitment may not be as serious as we said it was.

Online ventures are a business. The product we put on the Internet carries costs, just like any other. If you believe in the new media, then invest in it, and expect that others will charge you for use of their music or their talents. Pay them what they deserve, and you will be richly rewarded by staying in the game even when the going got a bit bumpy.

I see these problems as symptomatic of an industry undergoing growing pains. The online medium is beyond infancy and now in its adolescent years. Radio should stay involved in the parenting process, to reap maximum benefit once our teenager turns into a muscular grownup.

★ ★ ★

IBiquity Digital Corp. said the ITU has approved its IBOC DAB system as a standard for digital broadcasting in the radio bands below 30 MHz.

It's a big step for acceptance of iBiquity's in-band, on-channel system for countries that hope to go digital in the AM band and other parts of the spectrum below 30 MHz. There are bigger steps ahead. IBiquity expects the ITU to recommend its FM system soon, and is hoping for FCC approval of IBOC later this year or early next.

Is your organization even thinking about implementation? I sense that many in radio are still waiting to see what happens, at least until the FCC acts. Caution is fine, but don't overlook the importance of budgeting and planning.

Learn what IBOC will cost; ask hard questions of the folks at iBiquity. Educate yourself about what it might cost you. We'll have more on this important topic next issue.

★ ★ ★

I have a strong interest in the health of the supplier marketplace. It matters keenly that this arena remain vibrant and diverse. Our recent articles about the future of broadcast dealers and the role of e-commerce generated comments.

Several companies contacted me to point out their e-commerce services, including the folks at Richardson Electronics at *www.catalog.rell.com* and Multidyne at *www.multidyne.com/buyonline.html*

I also enjoyed a lengthy chat with Bob Cauthen, president of S.C.M.S., a dealer that started in 1976 in a two-bedroom apartment. The company now occupies 12,000 square feet in its own building in North Carolina. Like IMAS Publishing, it is celebrating 25 years.

E-commerce has its place in the supply business, Bob told me, but it will never replace the fundamentals of a value-added company with full service and installation expertise.

"The smart dealers, the financially strong dealers are going to do extremely well," he said, but companies that sell on very low margins and have cash flow problems are indeed going to have trouble. Cauthen's thoughts on the role of dealers appear on page 17.

Another industry participant, who asked not to be named, thinks radio has a problem with "unethical suppliers who undercut their dealers by setting up anyone who calls."

In this person's view, the callers are simply engineers who want better prices. These pseudo-dealers carry no inventory, publish no line card, provide no customer support and only plan to buy a handful of big-ticket items. Manufacturers, he believes, should say no to such "sweetheart deals" and support their existing distributors, even if it means risking losing a sale.

He also called on groups large and small to "spread their moneys out and stop these master purchase agreements." In his view, special blanket deals with one supplier undercut a healthy industry dealer network.

Finally, one long-time dealer salesperson shared the frustration that can come with their job in the form of a mock memo, which reads in part:

"Beloved customer:

"Yes, it's 3:30 and time for you to place your *just-remembered-this-must-ship-today* rush order. It's absolutely no problem, but a few things must occur first:

1) I will drop everything to enter your order. My other customers who were ahead of you in line can wait because I believe in punishing those who plan ahead. ...

2) Your order will now go to the credit manager. If she is at her desk, I am sure that she will be glad to *drop everything* to approve your important order. If not, I will track her down on her break or in the bathroom. She loves it when I bang on the door and holler, "Rush!" And since you don't pay your bills in a timely manner, I will have to grovel and plead with her.

3) Now I will walk the order into the purchasing manager's office. He used to be a close friend, but after too many rush orders at 3:45, he realized that I care more for last-minute knuckleheads than for his sanity. He will be expected to *drop everything* he is doing and rearrange his work schedule to accommodate your "urgent" need. ...

4) Now is the tricky part, handing the ball off to the manufacturer. I walk up and fax it myself, because what if I follow procedure and put it in the receptionist's tray? She might not *drop everything* ... Hmmm, I wonder how often do they check their fax machine? I should probably waste some more time, and call them. They'll be as excited as I was to get an order for three goosenecks.

5) It next goes to *their* credit manager for approval, who will *drop everything* ...

6) Finally! Only an hour or so after your eureka moment, the final order goes from their credit manager to the shipping department! ... Oh, the shipping clerk has 35 orders ahead of you, and has just received three other "must-ship" orders after 4:30. He expects UPS to arrive within minutes, and they do not like to wait. ... But your (3) goosenecks will be packed with loving care while the UPS driver thinks, "Jerk. I'm going to start picking up at 2 p.m. just to teach him a lesson."

7) And the next morning, when you receive your goosenecks and realize you should have specified black instead of chrome, just call our customer service department. I'm sure they'll be happy to *drop everything* and take care of the RA, credit memo and replacement order! Better yet, wait until 3:30 ..."

From the Editor

Paul J. McLane

The latest prize in our Silver Sweepstakes is a credit for Scott Studios Do It Yourself software worth $1,499. DIY allows the user to configure the software that they need, for use on their own computers. For $1,499 the winner can get a Music on Hard Drive package, including the automation software, recording and editing programs, voice tracking and traffic and music scheduling programs. The complete line of DIY products is visible at *www.btsg.com*

The winner is Don Melnyk, director of engineering for Beasley Broadcasting's Philadelphia stations, which include WXTU(FM), WPTP(FM), WWDB(AM) and WTMR(AM). If you haven't signed up yet, it's not too late; we'll give prizes all year long.

Visit *www.rwonline.com*

GUEST COMMENTARY

Quello on the Net, Digital Radio

by James Quello

Broadcasters should prepare for the future with the fascinating potential of datacasting and other non-program related services. However, for the present, sell the vital local services and universal effectiveness of radio.

The slogan "Wherever You Go, There's Radio" is as applicable today as when my cohorts and I originated it in Detroit in 1951 when radio was considered threatened by the oncoming of television.

Radio is the most universally available, accepted and utilized of all media. Today, radio is reaching more people, more often and in more places than any other means of commercial communications.

Wherever people are, on foot, in cars, in ships and boats, at the beach, in the backyard, in about every room in the home, radio is there.

Car radios have the advantage of being a "point-of-purchase" advertiser — hearing a sales message while driving on the way to any store or automobile dealership. Also, battery-operated radios are the ultimate in emergency communications.

Another measure of radio's impressive impact is the rapid growth in the number of radio stations in the past 20 years. It has demonstrated an amazing capability of surviving and even benefiting from all challenges through the years.

One of the challenges or opportunities facing radio will be digitalization. Many believe the future of radio is digital technology.

However, it is, at present, difficult to prognosticate how digital will change and impact radio listenership and industry planning — essentially how much digital will change the basics of radio business as we know it today. Actually, digital technology has already affected radio studio operations significantly. Many studios operate with digital facilities or are planning digital operations.

Radio's future points to more digitalization and Web convergence.

Eddie Fritts, the progressive NAB president, is urging the development of digital terrestrial radio. New digital satellite audio services are coming online this year and existing radio broadcasters are anxious to enter the digital age. Technology exists to offer digital radio signals within the same frequencies on which analog is delivered.

A major digital technological development that will affect the future environment of radio somewhat is Satellite Digital Audio Radio Services. However, SDARS advertising will be nationally based, and thus, not a source of local advertising revenue. Satellite-delivered audio services via cable have been around for years but receivable only in homes, not by portable or car radios.

Digital also offers the prospect of data-casting program- or non-program-related ancillary data and text to radio audiences or to completely different business clients. Most of these Web-based services eventually are very likely to be delivered via new in-band, on-channel digital audio broadcasting.

All the future digital and Web-based possibilities are fascinating and worth exploring, an intriguing but evolutionary process that requires more space than allotted here.

In the meantime, broadcasting today still benefits by the difference between the universal distribution of over-the-air signals of broadcast radio and TV, compared to the point-to-point connections of Internet. Radio and TV today reach many simultaneously as opposed to the Internet's uni-casting method of transmitting from one single point to another.

For example, on TV, the Net still takes time to send full-motion video while broadcast TV signals, like radio signals, can be received by millions immediately. Today, advanced technology is outstripping consumer affordability or acceptance. However, the Net is becoming less complicated and will be an important complementary service.

Radio's future points to more digitalization and Web convergence. However, for the present and for the immediate future, there are a growing millions of sets in use, more vital and diversified news, information, and programming for listeners and universal circulation and effectiveness for advertisers.

In simple, terse terms, prepare for the digital future, but today sell the universal appeal, vital local services and effectiveness of radio.

Former FCC Chairman and Commissioner James Quello

Quello served for more 23 years as an FCC commissioner and was acting chairman for nine months of that time. He works out of an office at the law firm Wiley, Rein & Fielding in Washington.

The former commissioner is a frequent speaker on communications issues, often at Michigan State University's Quello Center for Telecommunication Management and Law in Lansing, Mich. Before NAB 2001, he anticipated the publication of his new book, "My Wars," which chronicles a lifetime of careers — military, radio broadcasting and the FCC. Reach him through his assistant Lisa Henry via e-mail at lhenry@wrf.com

NEWSWATCH

▶ NEWSWATCH, continued from page 2

groups 4 and 5.

Eligible nonprofit applicants from the following areas may apply: Alabama, Arizona, Arkansas, Florida, Guam, Iowa, Kentucky, Massachusetts, Montana, Nebraska, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Tennessee, Texas, U.S. Virgin Islands, Vermont, Washington, and West Virginia.

There have been three other LPFM application windows; a further filing time period for applications from windows 1 and 2 that violate 3rd-adjacent channel protection requirements will be announced in the future.

Applicants must file Form 318 electronically. To get an application and find an available LPFM location, go to *www.fcc.gov/mmb/asd/lpfm/*

FCC Budget Proposed

WASHINGTON Of the $1.96 trillion budget for Fiscal 2002 proposed by President Bush and submitted to Congress in April, $248.5 million is earmarked for the FCC.

That's an 8-percent increase over the FY 2001 appropriation level of $230 million.

Nearly 40 percent of the requested increase will cover mandatory salary and benefits increases and inflationary increases for contract services. The balance of the increase would go to replacing outmoded computer equipment and maintaining electronic filing systems.

The package, to be resolved in conference committee between the House and Senate, proposes a staffing level of 1,975 full-time FCC employees.

FM Auction Delayed

WASHINGTON The FCC has again postponed the auction of more than 350 new FM construction permits due to "administrative convenience." These are vacant, non-reserved channels. The auction, which was to begin May 9, is now set to start Dec. 5.

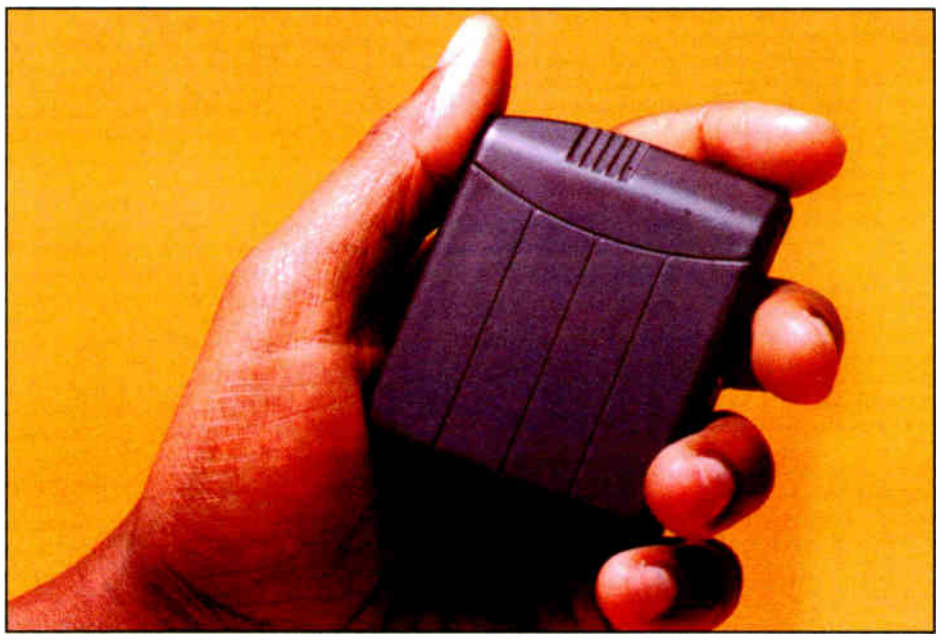
Upfront payments are due Nov. 5. The commission also lifted a freeze on minor FM facility modification applications, which had been in place to avoid conflicts with auction participants.

PPM

▶ Continued from page 3

If a station wants a backup unit, he said, there may be some expense involved, but the units are built to perform reliably. The audio encoding is not used just during specific ratings periods; it remains active all the time.

Stations not subscribing to Arbitron can only be measured in PPM ratings if they obtain the correct equipment from Arbitron. One station in the Philadelphia market that is not a subscriber has obtained the equipment and is participating in the test.



Participants carry the PPM ...

The encoder uses a sophisticated signal that is masked psychoacoustically. Early reports show some stations are having more success at this than others (see story, at right.)

While new technologies for measuring ratings have been in discussion since the early 1990s, the tests that began last fall mark the first time U.S. listeners have had a chance to try PPMs.

"We have researched this method for about eight years," said Mocarsky. "We saw that people were getting busier and busier and less likely to want to take the time to manually fill out those diaries."

Each PPM contains a motion detector so that if a panel member removes the unit and leaves it on a table near a radio, Arbitron will know the meter is not attached to the person.

The motion detector is rather sensitive. If a respondent is merely sitting in a chair working while listening to the radio, some motion will be detected and time spent listening will be logged.

"It would be almost impossible to sit still enough to fool it," said Mocarsky.

To encourage full cooperation from PPM holders, Arbitron offers "carry points" and a smaller incentive, on the order of tens of dollars, for agreeing to participate in the study. Participants who wear the unit every waking hour will earn additional dollars, according to Arbitron.

After initial tests in Manchester, England, beginning in 1998, Arbitron recruited about 300 consumers in the Philadelphia/Wilmington market. According to Marshall Snyder, executive vice president, PPM development, these participants said they found the PPM easy to install and operate.

The company has several goals in the current round of tests. It wants to learn about the performance of the PPM and at what level the respondents are willing to cooperate with the new technology.

Specific technical questions being studied include whether the encoded stations are being accurately detected and how reliably the daily data is transmitted to Arbitron.

Vital to a successful ratings test are answers to the following questions:

- Is the panel selected representative of the marketplace?
- Is everyone carrying the meter?
- When are the meters being removed from and returned to the base station?
- How many hours a day do the motion sensors indicate use of the PPMs?
- Are there any critical differences in cooperation based on age or gender?
- Are the participants cooperating well enough for Arbitron to begin tabulating measures of total media behavior?

The data, when compiled, will be broken down by average-quarter-hour persons, cume persons, time spent listening or viewing, demographics and dayparts.

While the PPM seems to solve a lot of problems inherent in the diary system, the new method has several minor drawbacks.

... and dock it here each night.

"The stations do have to encode their signal," said Mocarsky. "It just won't work if they don't do that, and that never mattered with diaries."

Another possible glitch would occur if a station's encoder failed in the middle of a rating period.

"If it breaks you get no ratings at all," said Mocarsky. "But we are building in a system that immediately warns the chief engineer if the encoder goes out of service."

Another potential problem would be caused if a respondent failed to carry the PPM or keep it properly charged.

"If they leave it in the dock all day, nothing happens," said Mocarsky.

Engineers Live With PPM

The station ID information that Arbitron is encoding into test stations' air signals aren't always inaudible, engineers say. This is one of the bugs that need to be worked out during the Portable People Meter's test phase. In general, however, engineers are pleased with what they're seeing during the tests.

Sources involved in the Philadelphia testing say some air talent can detect whether the encoder is active under certain conditions, such as a quiet passage of audio, while others can't hear the process at all, and in a few cases the jocks can hear it constantly.

Some jocks are describing a delay in the audio they find distracting, others describe what they're hearing as a high-pitched whine.

In this test, stations can decide when to turn off the encoders. Arbitron provided engineers testing the PPM with a key that can be used to put the unit into bypass mode, so the encoding process stops. Arbitron personnel then come to the station and upload new software onto the encoder from an Arbitron PC.

Most stations contacted by RW have been through several encoder software upgrades. One engineer said of the upgrades, "Each time they've made the detrimental effects a little less. I wish they would give us two years of R&D."

One station had a jock who was extremely sensitive to the encoding process, and who could hear it switching on and off even when she wasn't speaking during the air shift. In that case, the station turned off the encoder for several weeks.

Photo by Rhian Black

CE Mark Humphrey is shown with the WPLY(FM) Arbitron encoder.

"Ratings don't depend on this now. We couldn't see why we should annoy someone who's trying to do a good job," said the chief engineer of this facility, who said Arbitron has been easy to work with and willing to adapt to his station's timetable.

Of its patented encoding process, Arbitron officials stated, "The encoder can use more than 10 frequencies, and they are confined to a range between 1 to 3 kHz. The encoder performs a real-time analysis of the spectral and energy content of the audio (using DSP technology) and decides where to place the code tones based on the 'masking curve' that is generated as a function of this analysis. The level at which the code tones are inserted is very low."

Arbitron declined to be specific about the encode level relative to program audio. One source said the injection level is too high, while others didn't seem to feel strongly it was a problem.

The Arbitron encoder typically is used near the end of the audio chain, just before the processor. To differentiate each facility, each encoder transmits a unique code that is programmed into the device before it is delivered to the station.

Arbitron has provided one encoder to each participating test station, which means if the facility switched to a back-up air chain, say for the studio or as a back-up link to the transmitter site, or even for a remote broadcast, that audio might not contain the embedded station codes. This would have ramifications if the technology is implemented for real.

Everyone who spoke to Radio World for this story was pleased to take part in the PPM testing. One item engineers say they want from Arbitron is a decoder to be able to really tell if the encoding process is working. Now, they need to rely on Arbitron to tell them if it isn't working. In one case, the green light was still "on" for the unit, but the encoder had stopped working. The station didn't know that until Arbitron told the CE about it.

— *Leslie Stimson*

Ad Buyers on PPM Hopes, Pitfalls

The PPM Will Get Data to Them Faster, but Will Different Research Methodology Affect Results?

by Ken R.

What will radio ad buyers think of the Portable People Meter's potential?

The measuring system is expected to provide faster results and show different, useful listener behavior information than is economically possible now.

Assuming the PPM works as promised, the time it takes Arbitron to receive and tally results following a rating period — now about three weeks — may be collapsed to about 24 hours.

"But can the industry do something with these overnight results?" asked Thom Mocarsky, vice president of communications for Arbitron. "Probably not, but we don't know that yet."

Program directors and managers also want to know which competitor a listener goes to when he or she tunes away. While diary respondents may not always provide clear answers, the PPM is expected to track these actions.

Media buyer savvy

The Portable People Meter can record accurate station data whether the participant is listening to radio, watching TV or cable. This ability to determine where the audio originates may prove even more useful in the future as media buyers become savvier in their planning.

"The advertising community wants to reach people using the right mix of media," said Mocarsky. "It's now possible to track this more accurately because no one *just* watches TV or *just* listens to the radio," said Mocarsky.

"Yes, advertisers are interested in that mix," said Gerry Boehme, senior vice president, strategic planning at Katz Media Group. "PPM technology is a great idea because it's now possible to measure people more passively, which is better than demanding they fill out the forms."

Seeing how listeners use different media would be desirable, experts say, because radio stations that advertise on television would be able to determine if their spots are driving listeners to their frequency or Internet site.

Arbitron believes in-office listening would be more accurately quantified because stations would not automatically get credit for eight hours when the respondent is involved with other activities such as meetings and lunch.

In-car listening has always been tricky to quantify because diary respondents are unable to log information on paper while they're behind the wheel.

"As long as the driver listens to a station for a minimum of 30 seconds, we're able to capture those habits with PPM," said Mocarsky.

"One number we know is going to go up is the multi-week cumes," said Mocarsky. "Because we are able to measure over several weeks, these numbers are bound to be higher, which stations suspected all along."

Arbitron defines cume as the total number of people listening in one week.

But what could happen to the data if the gathering methodology is changed?

Boehme believes every time the instrument of measurement is changed, the results may change as well.

"When Birch (a former audience research firm) was measuring by phone, they got different numbers from Arbitron, which used diaries. But Arbitron is handling this well and asking the right questions."

"Overall, we believe advertisers will think the PPM system is superior to the diary method," said Mocarsky. "Advertisers prefer electronic measurement, and with the PPM they will be more willing to invest in radio."

Allen Banks, North American media director at agency Saatchi & Saatchi, said PPM could be a very good way to measure multimedia ratings.

"But where are the warts and the problems?" said Banks. "No product is perfect."

Anthony Torrieri, director of communications, resources and insights at Saatchi & Saatchi, looks forward to seeing PPMs use extended. "It can probably be used to measure in-store radio, airport radio, Channel One in schools and much more," said Torrieri. "Questions we have include how well the inaudible signals survive compression and how those signals really change the audio."

While Arbitron states that the encoding of the broadcast signal does not change the audio, Torrieri said, "It may be too early to tell."

Arbitron has an agreement with Nielsen Media Research to work together on the development of the PPM, which Mocarsky believes will allow it to gain wider acceptance more quickly. Arbitron has spent about $20 million to develop the PPM, but would not divulge how much Nielsen was contributing.

Arbitron executives feel the PPM will become more cost-effective as other partners join in. A Nielsen spokesman said the company may fund and/or participate in the PPM project in the future.

"Our method needs to be supported by cable, TV and radio to make it more affordable. Now the same sample of consumers can measure all three media at once," said Mocarsky.

DIGITAL NEWS

Sirius Signals Caution to Analysts

NEW YORK Sirius Satellite Radio has not yet secured deals for automakers to include satellite-ready radios as standard equipment. Meanwhile, it's possible the digital audio broadcasting service may slip beyond a hoped-for September start.

Rival XM Satellite Radio still plans a summer service launch.

Automakers tightened production plans for the end of last year and first quarter of this year in reaction to the tighter economy. Sirius had been hoping to secure a deal with its developments partners Ford, DaimlerChrysler and BMW to include its radios as standard equipment, rather than optional, for 2002 models.

"This is a very bureaucratic long haul," said Sirius Chairman and Chief Executive Officer David Margolese in an April press briefing. He said the company needs to step back and say, "The aftermarket is where we are at this point."

Now the company isn't saying when it will launch its service. It expects receivers to become available in the retail market in the fourth quarter.

Sirius believes its automaker partners will begin sales of Sirius receivers in the second quarter of 2002, said Margolese.

Margolese cautioned Wall Street analysts in April that although nationwide service could still begin in September, projected subscription numbers, based on aftermarket sales, could fall below expectations if it doesn't.

Earlier, analysts projected that if service began in September, the market would see sufficient receivers for Sirius to sign 100,000 customers by the end of the year.

Sirius has revised that projection to approximately 20,000 for this year.

XM has a deal with General Motors, an XM investor, to provide XM radios as an option on two Cadillac models in late September.

Securing OEM deals remains the "long pole in the tent" to commence service, said Margolese. Sirius and automakers are still negotiating specific agreements to provide the three-band radios as standard equipment in cars.

Automakers can introduce the Sirius product at any time in their product cycle, said Margolese.

Margolese said Sirius and XM are working together to get the remaining uncommitted automakers such as VW, Nissan and Honda, to offer customers the satellite radios.

Margolese said Sirius has "no clarity" yet on which cities will see the most aggressive service rollouts, depending on receiver availability.

On the question of receiver production, XM has delivered the final version of its two custom receiver chipsets to its manufacturing partners and says there will be product on store shelves this summer.

Sirius Satellite Radio partner Agere Systems, formerly Lucent's Microelectronics Group, has begun shipping receiver chipset samples to receiver manufacturers. Commercial quantities of the eight Sirius chipsets are expected to ship in the third quarter.

One area in which Sirius retains a clear lead over XM is satellite deployment. Sirius has all three of its satellites in the air and is testing them. XM, after delays, had launched one satellite as of April. It planned to send its second geostationary satellite into space May 7.

Neither company has finished deployment of its terrestrial repeater network.

Sirius says 73 terrestrial repeater sites are completed and 23 are pending. Of XM's planned 1,200 repeaters, all the sites have been identified and the construction process has begun, but XM would not release a percentage of how many are complete.

— Leslie Stimson

FCC Radio Station Regulatory Fees to Rise

Radio station regulatory fees paid to the FCC for fiscal 2001 would increase 4 to 25 percent, under the fee plan the FCC has proposed.

Congress requires the commission to collect the payments annually from the industries the FCC regulates. The money is used to offset the costs of competition, enforcement, spectrum management and consumer-information activities.

Population Served	AM Class A	AM Class B	AM Class C	AM Class D	FM Classes A, B1 & C3	FM Classes B, C, C1 & C2
Less than	$ 450	350	250	300	350	450
20,000	850	675	350	475	675	850
20,001-50,000	1,375	900	475	700	900	1,375
50,001-125,000	2,050	1,450	725	875	1,450	2,050
125,001-400,000	2,850	2.300	1,300	1,550	2,300	2,850
400,001-1 million	4,550	3,750	1,900	2,400	3,750	4,550
More than 1 million						

Regulatory Fee Group or Category	Regulatory Fee
Broadcast auxiliary station license	$ 10
Construction permit for new AM station	280
Construction permit for new FM station	925

Source: FCC

The commission uses a variety of sources to determine the fees, including licensee databases, actual prior-year payment records, and industry and trade group projections. The fees apply to all commercial broadcasters.

Public comments on the fee proposal (MD Docket # 01-76) were due May 7 and the fall due date will be announced later this year.

XM Gets Power Boost

WASHINGTON The FCC has granted XM Satellite Radio a power increase for its satellites.

The commission stated in its order that XM's requested modifications will provide an improved satellite DARS system that offers more capacity within the existing spectrum allocation.

XM had asked to modify its system in three respects: to increase the maximum equivalent isotropically radiated power of its satellites from 62 dBW to 68.5 dBW; to increase the number of downlink channels from five to six, including four carrier frequencies (two per satellite) of 1.84 MHz each and two frequencies for terrestrial repeaters of 2.53 MHz each; and to increase the transmission rate of each of its satellite carriers to 3.28 Mbps.

The satellite EIRP is 62 dBW in XM's current authorization. XM applied for a 6.5 dB EIRP increase to 68.5 dBW. This increase in radiated power will provide a stronger signal to the receivers on the earth's surface, which will improve reception and increase service availability, the commission stated.

A stronger satellite signal may reduce the number of terrestrial repeaters needed and reduce XM's costs.

The new channelization plan and the increase in the transmission rate will provide more information in the authorized bandwidth than that available in the current authorization.

The data rate increase may be used to provide additional programming channels and/or provide existing channels with a higher level of audio quality.

Japan Pubcaster Backs DRM

TOKYO World Radio Japan, the foreign service of Japanese pubcaster Nippon Hoso Kyokai, has boosted the global development of digital AM broadcasting by joining the Digital Radio Mondiale consortium.

The NHK decision follows the first DRM Japan Symposium, held in Tokyo in December. Approximately 200 participants from the Japanese broadcasting, manufacturing and regulatory sectors attended the meeting on the strategic and technical challenges facing DRM.

Live transmissions took place during the two days from transmitters in Irkutsk, Russia, and from Tinian and Saipan, Northern Mariana Islands.

"DRM is very proud to have the international service of NHK as a new member in the consortium," stated DRM Chairman Peter Senger.

"We are sure NHK's endorsement will positively impact on the adoption of digital AM broadcasting not only in the Far East but worldwide. It is our hope that NHK will set the pace for Japanese manufacturers to follow."

ITU Endorses IBOC for AM

The International Telecommunication Union, a global standards-setting body, has approved iBiquity Digital's IBOC DAB system as an ITU standard for digital broadcasting in the radio bands below 30 MHz.

The ITU's approval is the organization's formal adoption of a draft recommendation it issued in October 2000, which endorsed iBiquity Digital's IBOC system for countries considering implementation of a digital broadcasting system in the AM band and other bands below 30 MHz.

"Broadcasters in the United States and abroad look to the ITU for guidance and the organization's endorsement of our technology establishes IBOC as a viable option for digital broadcasting, particularly in those countries where spectrum is scarce," said iBiquity President/CEO Robert Struble.

"The ITU has approved our AM system and is expected to recommend our FM system later this year. The test program we are conducting based on criteria set by the NRSC, an independent test body for the radio broadcast and consumer electronics' industries, is well underway, and we expect the results to be submitted to the FCC this fall," said Al Shuldiner, iBiquity VP/General Counsel, and the company's representative at ITU meetings.

"With these developments, we are now well poised for approval of our IBOC technology by the FCC later this year or early next year."

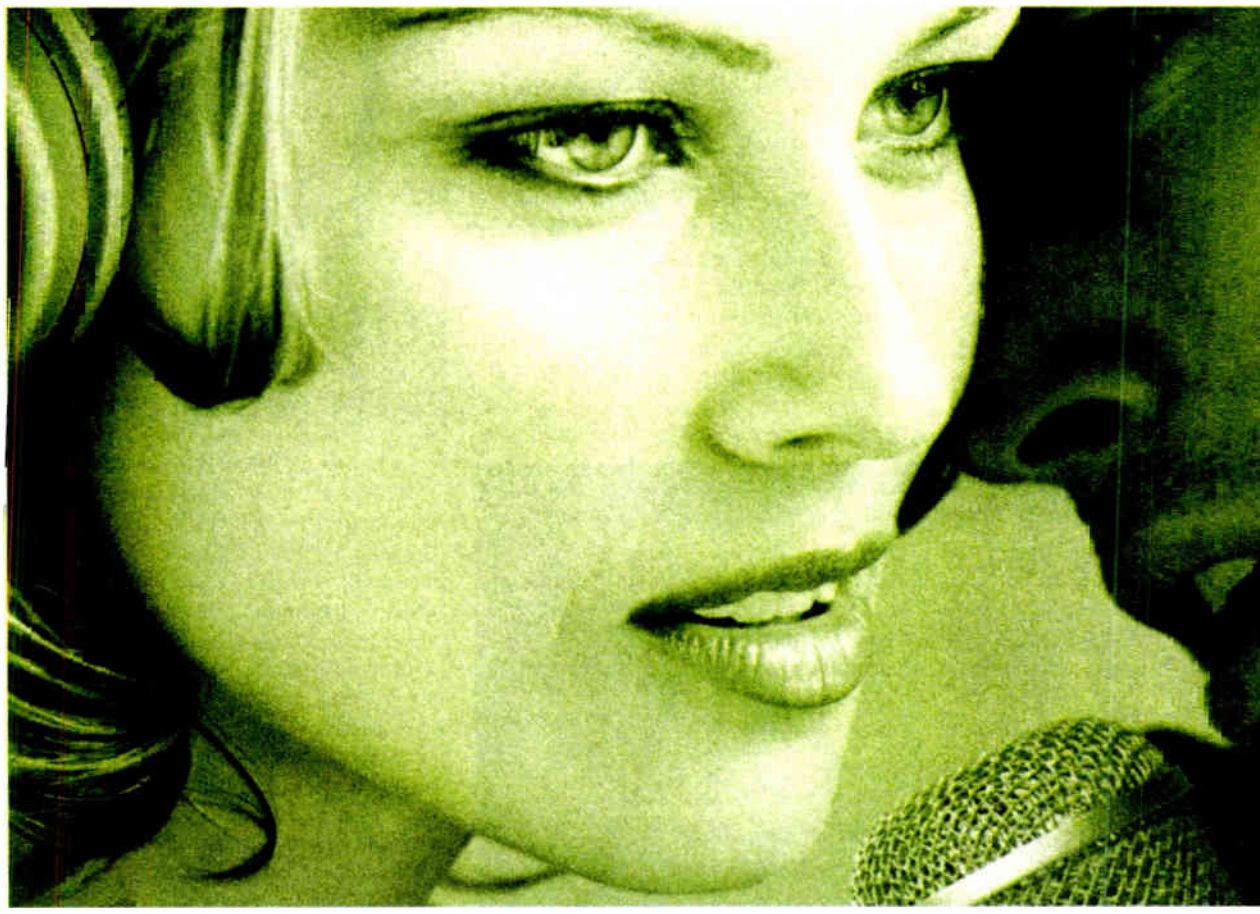
Europe to Get More DAB Spectrum?

GENEVA Terrestrial digital radio broadcasters in Europe await the release of additional spectrum space for the launch of new, localized digital audio broadcasting services.

Representatives from the digital radio sector met in January with regulators and frequency planners in Geneva to discuss reallocating some of the L-band frequency space currently earmarked for satellite-based services to terrestrial DAB.

"In terms of investment, technology and support, the success of the Eureka-147 DAB system is obvious," stated WorldDAB President Michael McEwen. "There are 450 different DAB services now available across 20 different countries, reaching a potential 300 million people."

The WorldDAB Forum represents more than 100 companies and organizations from various sectors of the broadcasting industry in 25 countries. It includes public and private broadcasters, equipment manufacturers, transmission providers and governmental bodies.



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Telos Digital Talkshow Systems

It takes you by surprise: the occasional phone call so clear and clean, you'd swear your caller was in the very next room. What if your callers could always sound this close and personal? Introducing the new generation of digital talk show systems from Telos. With intuitive, easy-to-use controls that help make your talk segments smooth and error free (whether you're juggling a few calls or a few dozen) and the latest advances in digital phone hybrids from the company that invented them. Never have your callers sounded so consistently loud and crystal clear – it's the next best thing to having them there. Don't just talk to your audience... get intimate.

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GUEST COMMENTARY

The Future of Bitcasting

A Broadcast Technology Consultant Envisions a New And Profitable World for Broadcasters Thanks to DAB

David Maxson

"Someday we'll be broadcasters of bits."

Glynn Walden, then of USA Digital Radio, said this to me in 1995. But over the past decade we have seen a lot of "datacasting" ideas come and go with little success, and they have given us a healthy suspicion of every datacasting fad that comes along.

Gosh, even the word "datacasting" has a 1980s feel to it! How can we get out of the rut that keeps real bitcasting only a pipe dream in radio broadcasting — and what's missing in the digital broadcasting arena that keeps profitable bitcasting tantalizingly out of our reach?

In a word, it's infrastructure. We lack the infrastructure needed to make our broadcasting of bits compelling and profitable from the start.

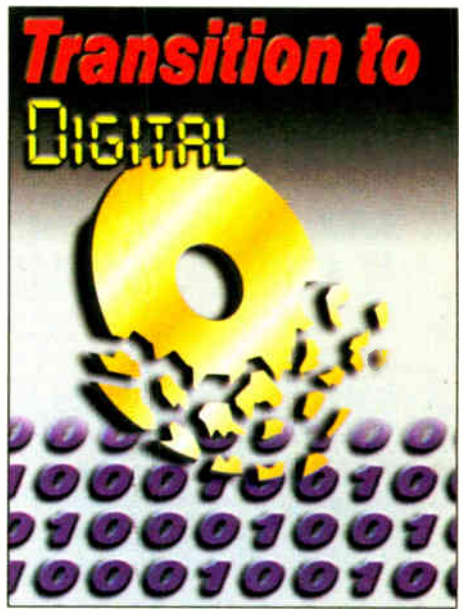
A company called Impulse Radio has the way to do this. I am a partner in a firm that advises the company.

Its mission is simple: to provide the industry with a business reason to be digital. Impulse Radio will provide the content and the tools to make radio bitcasting as addictive and compelling and profitable as your station's audio programming is.

New thinking

Impulse Radio will change our thinking about how to use data on a radio station.

Start with the most apparent bitcasting tool available to us today, RBDS. Too many RBDS boxes are plugged into FM transmitters that are doing nothing but transmitting station IDs. Those of us who have more information available in digital form at the studio may have gone one step further — by posting song titles and artist names as the music plays.



Yet, there is no industry-wide way to make money with our RDBS streams. The lion's share of the income on RBDS is not related to the station's programming, but from side deals that use RBDS capacity as a private subscription service offering things from GPS corrections to nearly-real-time stock data. This is not broadcasting.

So if there is no money in program-related data on RBDS, surely there should have been audience relationship building potential in it. However, it is hard to imagine that displaying song titles and station IDs is enough to drive people to upgrade to the latest RBDS radio.

Based on our experience with RBDS, it sure looks like data is a dead end, but it's just the victim of a self-fulfilling prophecy. Consumers don't seem to want it. Broadcasters wait for more radios to be sold before being sold on it. Consumer electronics manufacturers wait for broadcasters to put in some excitement that drives consumers to the stores. Each stakeholder in RBDS waits for someone else to make the concept useful, and nothing happens.

Impulse Radio knows that we can use our expertise as broadcasters to make digital content work. After all, broadcasters know how to create an audio "stream" that is compelling and addictive. We know how to sell our P-1s to one kind of advertiser and our cumes to another. We know how to do it so revenue exceeds expenses and our stations can thrive.

Stick with strengths

Impulse Radio says to make bitcasting successful we have to look at the bitcasting stream the way we look at the audio stream on our stations. We need lots of content produced elsewhere that we assemble locally and transmit to ubiquitous receivers. To make our audio program today, we get music from record companies, programs from syndicators, news from news services, weather, facts, information, you name it, from outside sources.

We assign avails within the format of the audio schedule and fill them with spots either made in-house, or sent to us from the advertisers' agencies. Then we glue it all together with local voices and production to give our stations a local personality.

The data stream should be modeled after our audio stream. Why stray from our strengths? All we need is the infrastructure to make data content a compelling and addictive adjunct to the audio program. Fill the datastream with entertaining content and paid spots the way we know how to do with audio. Then use

See BITCASTING, page 17 ▶

GUEST COMMENTARY

Visit to a High-School Station

Peter Hunn

Meagan Killian finishes her math homework in study hall, then asks the teacher for a pass.

"Where to?" the instructor queries while signing a slip of yellow paper. "WBXL," Killian says.

on the air, reading a weather forecast that, in addition to being heard by local parents and some under-the-weather kids excused from class that day, reaches motorists heading into downtown Syracuse, N.Y.

Killian is one of about 50 Baldwinsville Central School District students who staff WBXL(FM), C.W. Baker High School's 175-watt FM station, where I am an electronic media teacher and station advisor. Broadcasting there often gets underway school mornings at 7 a.m. and runs through 11 p.m.

The station's signal, with a radius of approximately 15 miles, originates from a hilltop transmitter site about a 10-minute drive from the school-based studio. Prior to "soloing" in the broadcast booth, students must pass an operator exam based on FCC guidelines, equipment function and programming directives covered in the school's year-long Electronic Media class.

Teen-operated facilities like WBXL demonstrate the good things kids can do via radio when they're given a pass for FCC-sized broadcast responsibility.

A headphone-bedecked kid in the back row holds up a Walkman and, in an animated whisper begs, "Hey, *pullll-eeeez* play something radical for me, OK?" Smiling, Killian shakes her head, thanks the teacher for the pass and heads up the stairs to the school's FM broadcast studio.

Three minutes later, the 15-year-old is

Humphrey's effort

WBXL was conceived in the early 1970s by Mark Humphrey, today the chief engineer of Radio One's highly-rated WPLY(FM) in Philadelphia, but at the time a student. The ambitious young man approached administrators about setting up a radio club and small station.

graduated several months later, but Jenner decided to keep the radio project going via an extracurricular radio club.

Reagan-era deregulation coupled with National Public Radio protests against independent 10-watters necessitated WBXL's attempt to jump its effective radiated power at least tenfold. The station's initial try for Class A territory failed and it looked like the micro-broadcast instructional tool would soon be history.

Washington communications lawyers approached the FCC on the school's behalf, resulting in an eleventh-hour grant of a CP allowing WBXL to stay licensed, boost output and replace its modest roof-mounted, homebrew antenna with a better-positioned, commercially produced unit.

Money for new studio gear made its way from the district budget, and a full-credit radio broadcasting class was added

U.S. Rep. Rick Lazio answers a WBXL journalist's question on education last year. The interview was summarized by Syracuse newspapers and Clear Channel station WSYR(AM).

Officials were concerned with issues ranging from operating cost and student commitment to FCC rule enforcement and possible lawsuits resulting from kids creating on-air controversy.

Humphrey had acceptable answers to these questions. He also had a faculty advisor in science teacher and local WSEN personality Al Jenner.

They won the nod from district officials and, with a few other radio enthusiasts, filed for a Class D FM construction permit from the FCC.

Lots of hard work, scrounging up old equipment — including parts from several junk TV sets left on the curb — and an eventual 10-watt authorization at 90.5 MHz put the fledgling facility on the air just prior to Christmas 1974. Humphrey

to the daily school schedule.

In 2000, students past and present marked WBXL's 25-plus years of service. Humphrey and Jenner, who retired in 1999, were honored as founders. Many of the 'BXL alumni, including Rick Deyulio of classic rock stations WTKW(FM) and WTKV(FM) in Syracuse, credited the small FM with sparking their professional broadcasting careers.

Contemporary students in the radio class, which I now oversee, laughed at veterans' description of life in the original WBXL studio. It was right above the auditorium and visibly vibrated when the school band practiced marching music almost every afternoon.

"We had to put spare change on the

See HUNN, page 28 ▶

Encore!

The Telos Zephyr is one tough act to follow. It revolutionized point-to-point audio by combining ISDN with MPEG coding, and quickly became the #1 selling codec worldwide — perhaps the most successful digital broadcast product ever. So what will we do for an encore?

Presenting Zephyr Xstream, with innovations like AAC (Advanced Audio Coding) for superior fidelity, a special low-delay mode, and an Ethernet port for IP audio streaming, remote control and easy software updates. There's also a rugged portable version with full-featured digital mixing.

And of course Zephyr Xstream includes everything else you'd expect from a Zephyr, like Layer-II and Layer-III coding, ISDN connectivity, a simple, friendly user interface, and bulletproof reliability.

Zephyr Xstream. Sometimes the sequel is even better than the original.

Telos

www.zephyr.com

FIRST PERSON

S.F. Broadcast Legends Invade L.A.

Kelly Quinn

When the organ filled the ballroom with the familiar "I Love a Mystery" theme "Valse Triste," 300 radio buffs from across the nation were right back in the good old days of live radio drama.

Some of them out there in the audience closed their eyes to ignore the actors on stage so they could rekindle how it was when they huddled around the old Philco for an evening's entertainment.

Some of us Bay Area Broadcast Legends were lucky enough to participate in this "love fest," and this piece is about how that happened.

Radio preservationists

Apparently, the word got to an organization in Los Angeles called SPERDVAC — The Society to Preserve and Encourage Radio Drama, Variety, and Comedy — that we were doing a great job of re-creating some of the old-time radio dramas as programs for our organization, with permission, of course, from whoever controls the use of scripts.

So, last fall, Frank Knight, a retired anchor and reporter, received an invitation from Dan Haefele of SPERDVAC to bring a cast of Bay Area radio actors to Los Angeles to perform at the organization's convention.

SPERDVAC requested we do three one-hour segments from "I Love a Mystery" during their three-day convention. (The popular serial, written by the late Carlton E. Morse, ran five days a week between 1939 and the 1950s. If you're old enough, you'll surely remember it. He was also writing and directing "One Man's Family" at the same time.) Sound effects and an organist would be provided to give authenticity to our performances.

Del Boubel, Kelly Quinn and Ben Williams (From Left)

Seven Broadcast Legends were cast in "Murder in Turquoise Pass" from Carlton E. Morse's serial "I Love a Mystery": Ben Williams, Bob Lazich, Diane Smithem, Ed Vasgersian, Del Boubel, myself and Frank Knight — who would direct as well as play three different characters. (Ah, the magic of radio.) Dick Landis, who traveled from Arizona, and Jim Harmon from the L.A. area, joined us to fill out the cast.

We were in special company. A group of L.A. area radio actors who were big in The Golden Days of Radio presented some re-creations of old shows that were too wonderful for words.

Norman Corwin, the icon of radio script writing, was there to direct his cast in "My Client Curley," that delicious little fantasy of his about a very talented caterpillar. The mighty Mr. Corwin is 90 years old; spry, sharp as can be, and beloved by all. It was a great thrill to meet him, as he has been my hero since 1938 when I studied his works in college. Hard to believe, but he still teaches writing at the University of Southern California.

The Late Carlton E. Morse

Such well-known radio actors as Janet Waldo, Elliott Reid, Alice Backes, Cliff Norton, Marvin Kaplan, Herb Ellis and Hal Stone were among those present to play the characters in this charming story. The famous tall and handsome Art Gilmore was the announcer, and a talented 11-year-old, Bob Graham Heacock, did a wonderful portrayal of Stinky, the boy in the story who owns the caterpillar.

Recreations

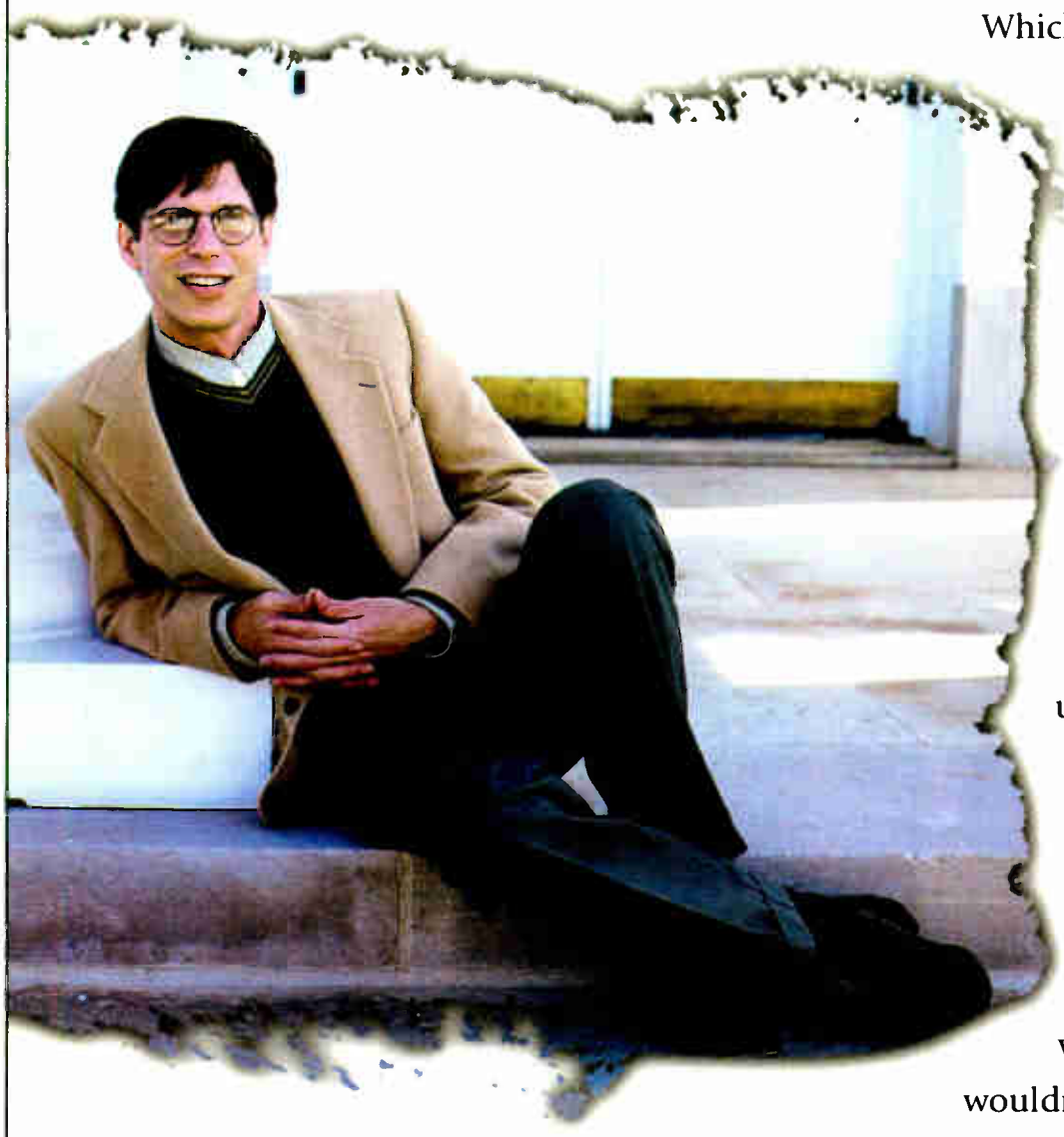
Another talented group of L.A. area actors from "the olden days" did a bang-up job of recreating a Jack Benny script. Eddie Carroll, who impersonated Benny, was so terrific it seemed as though Jack had sneaked back through The Pearly Gates to do just one more show.

Also featured in the Benny show were Shirley Mitchell (an original cast member), Chuck McCann, Larry Dobkin and Tyler McVey.

I would be remiss not to mention the most notable sound-effects technician

See SPERDVAC, page 42 ▶

Experience. Stability. Vision.
And Jim Dougherty.



Jim Dougherty
Director of Internet Initiatives
WNNX-FM/WWWQ-FM
Atlanta

Jim Dougherty is a computer guy who loves radio. Which makes him a perfect fit for his job. From his webmaster chair, Jim has directed live webcast events for 99X. He's worked with the station's sales team to uncover new revenue. And he's continued to help link his station's listeners to its website, increasing time spent with both. As a result, 99X was honored as the Web Marketing Association's "Best Radio Station Website" two years in a row.

Naturally, we're proud to have people with Jim's talents working with us as we continue to evolve radio's unique relationship with the internet. It's fun making the future come to life. As Jim adds, "If I didn't have fun with what I do I wouldn't be doing it. At Susquehanna, you work with the best in the industry!"

Make a Sound Career Choice!

With operations in major markets across the USA, Susquehanna offers a number of employment options. For more information about radio career opportunities, call our Human Resources Department at (717) 852-2132.

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Protect Your Online Rights.

There's been quite a stir over online rights issues lately. Here's how to protect yourself.

What's The Issue? The latest American Federation of Television and Radio Artists (AFTRA) contract provided for an extra talent fee to be paid for any commercial produced for broadcast but aired both terrestrially and on the web. AFTRA is seeking a 300% penalty if the additional talent fee is not paid. Therefore, stations have been pressured to either cover AFTRA spots or take down their internet streams completely.

What's The Solution? iMediaAdCast is uniquely qualified to solve the AFTRA issue for stations through Content Substitution. Unlike ad insertion systems which try to cover commercials from the server side, iMediaAdCast interacts with your station's programming as it encodes your web stream in either Real Audio or Microsoft Windows Media formats. Web-only content is seamlessly placed over anything that you'd like to broadcast but not webcast. iMediaAdCast also will send full titling information to your listeners, ensuring compliance with the Digital Millenium Copyright Act.

What About My Existing Equipment? iMediaAdCast is compatible with most automation systems. iMediaAdCast software is economically priced at $995 per station.

What's On The Horizon? More online rights issues are certain to pop up in the future. Today commercials are the issue, tomorrow may be music. iMediaAdCast's Content Substitution System is designed to substitute anything in the web stream, so the next time there is a crisis, you'll already be covered.

iMediaAdCast is available from

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GUEST COMMENTARY

Cauthen: Relationships Still Key

Bob Cauthen

There have been several articles written

and sell unique products and services; however, I do not feel it will ever replace relationships and value-added selling.

communication and the advertisement of products and services. The key is to use this medium to build a positive relation-

shrinkage of their traditional customer base. E-commerce has helped generate needed leads and expand the customer base to make up this differential. In years past with the networks stations, the purchasing trend was to remove the buying decision from the local engineer. It went full circle and they found it was not more

r, the local personnel
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f S.C.M.S., respectively.

is strong and I compare
years of FM. There is an
rtunity before us with
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logies on the horizon.
is president and founder
h him at (800) 438-6040
nsinc.com
other points of view.

Radio Faces Its Digital Destiny

By Ivan Berger

When I was a young kid, radio was king. Only a few city dwellers had TV, and many homes lacked phonographs. But we all had radio, and we all listened.

Then, we got TV. Even down in the valley, where we got just one channel, it cut into our radio listening. So did the phonograph we got when I was 12.

Yet when I grew up and started writing about home electronics, a decent amount of what I wrote concerned radio: hi-fi tuners, FM stereo, portable radios, adding FM to cars, even rigging a radio onto my motorcycle. Radio was still the only entertainment medium available in cars, and the only small portable music source. At home, radio remained a strong alternative to expensive, easily-scratched LPs.

Lately, I've been writing a lot less about radio, more about the devices (mostly digital) that compete for the listener's attention. The portables kids carry now play CDs, or digital music downloaded from the Internet. (Ever notice how few of those portables also play AM or FM?) My TV lets me watch about 75 TV channels (I could get double that, if I had the time to watch), shows I've taped when I'm not home, or my favorite movies on DVD. I spend hours at my computer, accompanied by music from radio stations that reach me via Internet from around the country (not that their local advertisers care) and around the world. My recorded music is mostly on durable, noise-free CDs. Except for TV and those rare occasions when I dust off my turntable, the only analog medium that gets my attention now is radio. And though I have FM and AM on tap in every room, about the only place I listen to it is in the car.

None of that's atypical. The electronic competition for everyone's leisure time is fierce, and only in the car does radio come close to dominating it. Radio stations are still in clover, especially as increasing traffic and suburban sprawl lengthen the average commute.

But there's crabgrass in the clover. For one thing, more and more minivans and SUVs have VCRs or DVD players to keep the kids in the back seat amused – even a few luxury sedans will have video this year as standard equipment.

For another, recorded sound has become a more formidable competitor since 8-track days. Now we have CDs, that don't warp in the sun or dry out and jam as tapes did, and offer digital sound that puts even FM's best in the shade. Just as with tape, though, travelers still have to pack their recordings with them, and listening to the same few over and over on a long trip can grow boring.

With radio, a listener potentially has a lot more sound to choose from. And only radio can surprise a listener with music he's never heard – maybe never even heard *of* – before. Sure, FM's analog sound can't quite match CD's digital sonics, and AM isn't even up to FM standards. But radio can still bring listeners content no digital medium can match – until the digital satellites kick in.

Then, listeners (almost all in cars) will be able to get 100 channels of near CD-quality music and high-fidelity talk from either of two companies, and cross the country without having to retune. That's good news for *me* – it's another topic to write articles about. It's probably not good news for AM and FM stations, though. Radio has survived all its competition so far, because it had virtues only radio could offer. But its latest digital competitor is another form of radio – radio with superior sound and the ability to feed listeners text information such as CD and song titles.

There's still clover in the crabgrass. Not everyone will want to pay the $9.95 a month the satellite services charge; terrestrial radio is free. Local stations have a monopoly on local weather, sports,

(Continued on page 2)

About The Author

The article "Radio Faces Its Digital Destiny" resulted from iBiquity Digital's invitation to Ivan Berger, a long-time consumer electronics journalist, to write an article for *SoundBytes* about events taking place in the consumer electronics world that will influence broadcasters' conversion to digital. Ivan has been covering consumer electronics since the time FM went stereo. He's been an editor at *Popular Mechanics*, *Popular Electronics*, and *Audio*, and has written for (among others), *Stereo Review*, *Car Stereo Review's Mobile Entertainment*, *Road & Track*, *Sound & Vision*, *The New York Times*, *Popular Science*, *Wired*, and *Esquire*. He has authored three books on home and car audio. He has also spent time behind the mike and behind the board at three radio stations.

In This Issue

- **The Conversion to Digital – What broadcasters should be thinking about**
- **Two Analysts' Views of Radio's Digital Future**

closely with manufacturers to work out the hardware details both on transmission and reception.

Enter Impulse Radio, iBiquity's latest alliance partner.

This company started with a simple

David Maxson is a partner at Broadcast Signal Lab, LLP, a broadcast technology consulting firm which has been advising Impulse Radio. He also is a member of the NRSC DAB Subcommittee.

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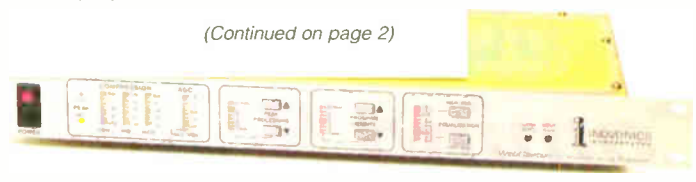

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Radio Faces Its Digital Destiny

(Continued from page 1)

news, popular local personalities, and regionally tailored programming.

What's more, digital sound is almost within local stations' reach. And that's important, because consumers know "digital is better," even when they're not sure why. With IBOC digital transmission, AM stations will be able to broadcast sound as clear as FM offers now, while FM stations will be able to broadcast with CD-like quality. And they'll be able to feed not only the titles of the music they're playing but information about *where to buy it locally.* (Whaddya know – a new revenue stream.) Link it to telematics systems like GM's OnStar or Ford's Wingcast, and listeners will even be able to purchase CDs or concert tickets with the touch of a button, or reply to that pizzeria commercial by ordering one to pick up on the way home. Stations could sell information services such as on-demand weather and traffic alerts. Digital program-ID tags might alert future radios to record favorite programs when there's no one in the car, or help them record the end of a program that's still in progress when the car reaches its destination.

There's still clover aplenty. As long as radio stations cultivate it to keep it green and growing.

The Conversion to Digital – What broadcasters should be thinking about

There is no generic answer to the question, "What will it take to convert my station to digital broadcasting?" Each AM and FM radio station offers a unique combination of power level, products and performance that will impact the station's conversion to digital broadcasting and the resulting costs. In light of this, iBiquity Digital is offering EASE members customized station assessments, *free of charge*, that outline their stations' status with regard to IBOC.

iBiquity Digital broadcast engineers prepare a unique assessment for each station using information provided by the station on an assessment form. The assessment includes an evaluation of the compatibility of the station's existing equipment with iBiquity Digital's iDAB™ technology, as well as general recommendations for converting a station to IBOC. The station characteristics assessed in the report include studio equipment, STLs, audio processors, transmitters, subcarrier usage and the transmitter site environment. As an example of the types of customized information broadcasters can expect to receive, below are several excerpts from station assessments.

The following excerpts, from two different station assessments, describe the compatibility of each station's existing STL with iBiquity Digital's iDAB technology.

> The assessment form indicates that the station is using a T1 as an STL. The AES/EBU digital STL presently in use is one of the preferred choices as an IBOC STL. No modification is required for IBOC installation
>
> The assessment form indicates that the station is using an RF STL. The linear, discrete digital STL presently used will work with IBOC with one of the following additions: 1.) an external analog-to-digital (A/D) converter to feed the audio from the STL to the digital input of a digital audio processor; or 2.) a digital audio processor with analog audio input and AES/EBU digital audio output.

Below is an excerpt from the customized audio processor section of an assessment prepared for a station using an audio processor that is located at the transmitter, and has analog input and analog output.

> In an IBOC system, processing of the analog and digital components of the hybrid signal must be performed independently. For optimal performance, it is recommended that the processor outputs are digital.
>
> The IBOC digital component of the signal will require a digital (most likely AES/EBU) output on the audio processor to feed the IBOC digital input of the exciter. Units with AES/EBU input and output are recommended.

In addition to broadcasters planning to implement IBOC once the technology is commercially available, broadcasters that are purchasing transmission equipment now or in the near future have also requested station assessments. Their goal is to purchase equipment that they can continue to use once they choose to convert to digital (even if their planned implementation is several years away). Stations preparing budgets for commercial IBOC introduction have also found the assessments useful.

John Kiernan, General Manager of KRMN-FM had this to say about the station assessment they received: "We were in the process of evaluating new transmission equipment for purchase when we received the assessment from iBiquity Digital. The assessment was invaluable in helping us ensure that the equipment we purchase today can also be used once we implement IBOC DAB."

Jason Mielke, Chief Engineer of Bliss Communications, who received station assessments for all eight of the company's AM and FM stations, also found the information useful. "The station assessments were extremely valuable in validating our capital expenditures budget for IBOC compatible transmission and processing equipment," said Jason.

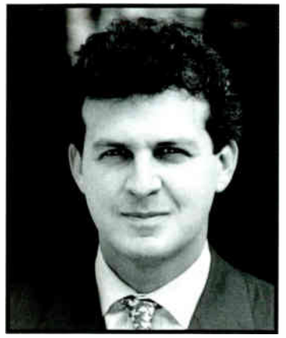
We encourage all radio broadcasters to join the EASE Program, free of charge, to obtain their customized station assessments. To join the EASE Program, visit the iBiquity website at www.ibiquity.com, send an email to ease@ibiquity.com or call 1-877-501-EASE (3273). Additional information on the program can also be obtained by contacting iBiquity through one of these methods. Once a station joins the EASE program, the station will receive an EASE membership package containing an EASE Assessment Form that it should complete and return to iBiquity Digital. If you are already an EASE member and need an Assessment Form, send an email to ease@ibiquity.com or call 1-877-501-EASE (3273).

"The assessment was invaluable in helping us ensure that the equipment we purchase today can also be used once we implement IBOC DAB."

John Kiernan,
General Manager, KRMN-FM

Two Analysts' Views of Radio's Digital Future

Drew Marcus of Deutsche Banc Alex. Brown and Tim Wallace of Banc of America Securities Speak with iBiquity Digital About IBOC Digital Broadcasting



Drew Marcus
Deutsche Banc Alex. Brown

As Managing Director and Global Co-Head of Media Research at Deutsche Banc Alex. Brown, Drew covers broadcasting, outdoor and entertainment stocks and publishes strategic overviews on the Media/Internet group. He has ranked as the number one Broadcasting Analyst in surveys conducted by *Institutional Investor, Greenwich Associates, Reuters* and *Red Herring Magazine*. In addition, he is a five-time *Wall Street Journal* "All-Star Analyst" and is an *Institutional Investor* "Home Run Hitter."

Tim Wallace
Banc of America Securities LLC.

As Managing Director and a Senior Research Analyst in the Media and Entertainment Group of Banc of America Securities LLC, Tim covers broadcast radio and television stocks. For the past two years, Tim has been a member of the *Wall Street Journal's* "All-Star Analyst" team. In the 1999 *Wall Street Journal* survey published in June 2000, Tim was recognized for both the accuracy of his earnings estimates and for his stock-picking skills in the Broadcasting category.

Why is your firm tracking the developments of In-Band On-Channel (IBOC) AM and FM digital broadcasting?

Drew: Our job, at Deutsche Banc Alex Brown Global Media Research, is to predict the future. We are very focused on the transition to digital for all forms of media. We are studying the impact of digital on consumer demand, audience fragmentation and new ancillary revenue streams.

Tim: At Bank of America Securities, we believe IBOC will significantly enhance radio's competitive position against satellite radio as well as create new revenue opportunities through the technology's datacasting capabilities. We think radio stocks may soon reflect the powerful potential of this technology and we have been actively helping investors better understand iBiquity.

How do you view the future of AM and FM radio, and in particular what is IBOC digital broadcasting's role in that future?

Drew: We believe that radio has a bright future as a well positioned out-of-home media. In general we see relatively less competition and less audience fragmentation of out-of-home media compared to in-home media. In-home media is being fragmented by more TV channels, rising Internet usage and higher quality video games. As a result, viewing per channel and newspaper readership are declining. We thus see a trend of advertisers shifting dollars to radio. Radio has increased its share of the ad pie to 8.5% in 2000 from 6.6% in 1992. We believe that radio will continue to gain share. We view IBOC as a graceful transition to digital with minimal consumer dislocation.

Tim: We believe conventional radio is here to stay but believe it will need the digital upgrade to remain competitive with satellite. It would be unfortunate if satellite becomes the only digital radio service in the U.S. since it will be a subscription model perhaps not affordable to all listeners.

IBOC digital broadcasting will enable broadcasters to transmit wireless data in addition to high quality digital audio. Do you view these potential datacasting opportunities as important to broadcasters?

Drew: Yes. Broadcasters tend to be an entrepreneur group. We believe that the business opportunities that will become available in a digital world will be quite valuable. The FM band in particular is quite powerful in its ability to penetrate buildings and travel long distances. The potential data casting revenues will help justify the capital expenditures required for the transition to digital.

Tim: We believe datacasting could be an enormous growth driver for broadcasters. We think there are a wide variety of valuable services that could generate significant new revenue streams for broadcasters.

In your conversations with broadcasters, in what ways are they preparing to transition to digital broadcasting?

Drew: The most important event with regard to the digital future of radio is the leading group of broadcasters' support of iBiquity. The consortium in favor of IBOC should help preserve the high value of the FM and AM licenses. In addition, radio broadcasters are also getting involved with the satellite radio broadcasters by providing programming.

Tim: Many broadcasters we speak with are very enthusiastic about IBOC and hope the FCC will quickly designate iBiquity's technology as the standard so the industry can move forward. Broadcasters have told us that this technology will enable them to provide a wider variety of programming services including niche music formats, customized traffic reports, financial data, etc. We believe broadcasters' creative juices are just beginning to flow and we look forward to the new digital world of radio.

SoundBytes wishes to express its appreciation to Drew Marcus & Tim Wallace for this interview.

Digital Profiles: Pat Walsh, Vice President, Wireless Data Business Development

Pat Walsh,
Vice President,
Wireless Data Business
Development

Pat Walsh is leading efforts to commercialize the datacasting capabilities of iBiquity Digital's iDAB™ technology. In this capacity, Walsh has developed iBiquity's wireless data strategy and is working with a team of iBiquity data engineers to develop iDAB technology's data protocols. Walsh will head up the soon to be announced "iDAB" Wireless Data Forum," which will bring together broadcasters, manufacturers, content and applications developers to define how best to use the data "pipe."

Since joining iBiquity last year, Walsh has been working with receiver manufacturers, automobile OEMs, broadcasters, and applications developers to outline the benefits of iDAB technology's wireless data capabilities. According to Walsh, "The message is starting to get out that AM and FM radio is about to undergo a digital revolution. Carmakers, in particular, are beginning to recognize that iDAB is another viable mobile data transmission network with substantial economic advantages. With the limited amount of available mobile bandwidth for transmitting data, AM and FM broadcasters have a core strategic asset that will increase in value with their adoption of iDAB technology."

Walsh is working with content providers, including AP, Accuweather and SmartRoute, to test the transmission of digitized content to receivers containing iDAB technology. Walsh also has driven the development of datacasting demonstrations that enable broadcasters to see the iDAB systems' potential to enhance the core audio programming with additional data that interests and excites listeners.

Prior to joining iBiquity Digital, Walsh was a management consultant with McKinsey & Company. Walsh earned a BBA degree from the University of Michigan, and a MBA from Harvard Business School.

Kenwood Prototype Car Radio Showcased in iBiquity's and Harris' Booths at NAB 2001

At NAB 2001, iBiquity Digital and Harris Corporation displayed a Kenwood prototype car radio that used iBiquity's iDAB™ technology to receive live digital signals from local Las Vegas station KWNR-FM. In iBiquity's booth, the radio was mounted in a 2001 Dodge Caravan, owned by M&L Automotive. When the Kenwood prototype car radio was tuned to KWNR-FM, the station call letters and tag line appeared on the screen. A small lighted "iD™" logo on the screen indicated that the unit was receiving a digital signal.

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iBIQUITY DIGITAL

The Latest News From iBIQUITY DIGITAL

SOUND BYTES

April 2001

Radio Faces Its Digital Destiny

By Ivan Berger

When I was a young kid, radio was king. Only a few city dwellers had TV, and many homes lacked phonographs. But we all had radio, and we all listened.

Then, we got TV. Even down in the valley, where we got just one channel, it cut into our radio listening. So did the phonograph we got when I was 12.

Yet when I grew up and started writing about home electronics, a decent amount of what I wrote concerned radio: hi-fi tuners, FM stereo, portable radios, adding FM to cars, even rigging a radio onto my motorcycle. Radio was still the only entertainment medium available in cars, and the only small portable music source. At home, radio remained a strong alternative to expensive, easily-scratched LPs.

Lately, I've been writing a lot less about radio, more about the devices (mostly digital) that compete for the listener's attention. The portables kids carry now play CDs, or digital music downloaded from the Internet. (Ever notice how few of those portables also play AM or FM?) My TV lets me watch about 75 TV channels (I could get double that, if I had the time to watch), shows I've taped when I'm not home, or my favorite movies on DVD. I spend hours at my computer, accompanied by music from radio stations that reach me via Internet from around the country (not that their local advertisers care) and around the world. My recorded music is mostly on durable, noise-free CDs. Except for TV and those rare occasions when I dust off my turntable, the only analog medium that gets my attention now is radio. And though I have FM and AM on tap in every room, about the only place I listen to it is in the car.

None of that's atypical. The electronic competition for everyone's leisure time is fierce, and only in the car does radio come close to dominating it. Radio stations are still in clover, especially as increasing traffic and suburban sprawl lengthen the average commute.

But there's crabgrass in the clover. For one thing, more and more minivans and SUVs have VCRs or DVD players to keep the kids in the back seat amused – even a few luxury sedans will have video this year as standard equipment.

For another, recorded sound has become a more formidable competitor since 8-track days. Now we have CDs, that don't warp in the sun or dry out and jam as tapes did, and offer digital sound that puts even FM's best in the shade. Just as with tape, though, travelers still have to pack their recordings with them, and listening to the same few over and over on a long trip can grow boring.

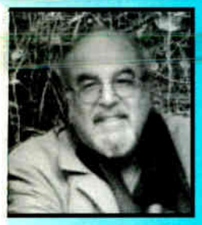
With radio, a listener potentially has a lot more sound to choose from. And only radio can surprise a listener with music he's never heard – maybe never even heard *of* – before. Sure, FM's analog sound can't quite match CD's digital sonics, and AM isn't even up to FM standards. But radio can still bring listeners content no digital medium can match – until the digital satellites kick in.

Then, listeners (almost all in cars) will be able to get 100 channels of near CD-quality music and high-fidelity talk from either of two companies, and cross the country without having to retune. That's good news for *me* – it's another topic to write articles about. It's probably not good news for AM and FM stations, though. Radio has survived all its competition so far, because it had virtues only radio could offer. But its latest digital competitor is another form of radio – radio with superior sound and the ability to feed listeners text information such as CD and song titles.

There's still clover in the crabgrass. Not everyone will want to pay the $9.95 a month the satellite services charge; terrestrial radio is free. Local stations have a monopoly on local weather, sports,

(Continued on page 2)

About The Author



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GUEST COMMENTARY

Cauthen: Relationships Still Key

Bob Cauthen

There have been several articles written lately discussing the changes in the distribution of broadcast equipment as a result of radio ownership consolidation and e-com-

Specifically, questions were raised how these changes affect the tradi- broadcast equipment dealer.

the past 25 years, S.C.M.S. has a reseller to this industry, and I like to lend some additional into these changes.

nge is good if it is viewed in a pos- manner and as an opportunity. cast has certainly experienced a lot nge over the last five years, but it is ferent from most other industries. olidation and e-commerce have a major role in the majority of sses throughout the United States orldwide.

s my opinion that e-commerce gives opportunity to expand our client base and sell unique products and services; however, I do not feel it will ever replace relationships and value-added selling.

Any company can sell for less, but that is not the way to build a long-term profitable company. Low-margin Internet sales in high volume are still low-margin. With that in mind, I do not think any company that feels they will contribute to their bottom line significantly with e-commerce sales of standard product will be with us very long.

Role of e-commerce

This is evidenced quite clearly with the demise of many dot-com companies. I believe dealers that are financially strong and offer their customer base products along with knowledge and value-added services will survive and grow during this time of change.

E-commerce will never replace personal service and knowledgeable salespeople, but it is invaluable as a tool for communication and the advertisement of products and services. The key is to use this medium to build a positive relationship with the customer, not sell them electronically without talking to them.

Most manufacturers have always depended on dealers for help in selling their products. Many use a combination of dealers, reps and direct sales, and that will probably continue. The problem of commission splits is not new, and there has always been an equation that works. Their need for dealers will not stop, as many of them do not have the resources and contacts to sell all of their products directly.

A key reason many companies sell through dealers is to limit their accounts to a manageable level and reduce credit risks. Also, they are not equipped to install or put many products together in a package.

Consolidation has forced many dealers to develop new clients to offset the shrinkage of their traditional customer base. E-commerce has helped generate needed leads and expand the customer base to make up this differential. In years past with the networks stations, the purchasing trend was to remove the buying decision from the local engineer. It went full circle and they found it was not more efficient; further, the local personnel were disgruntled. With the mass exodus of engineers from the business, I suspect it will revert back again as the consolidation process matures.

There is no question that the groups have to be addressed directly in addition to the local personnel, and that process is different with each group and continues to change rapidly.

Gloria and Bob Cauthen are vice president and president of S.C.M.S., respectively.

The industry is strong and I compare today to the first years of FM. There is an abundant opportunity before us with Internet radio, in-band digital and all the other new technologies on the horizon.

Bob Cauthen is president and founder of S.C.M.S. Reach him at (800) 438-6040 or visit www.scmsinc.com

RW welcomes other points of view.

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ata content to engage the listener way we use the audio to grab the ier.

tations can't do this on their own, cially when stations are running er and meaner than ever before. No has time to create a data broadcast scratch, with content that doesn't , for play on receivers that don't . We need the infrastructure to be to captivate, ready to sell.

ere are the pieces of the digital le that have to be assembled:

st, we need a dynamic digital plat- that can handle the transmission of in a flexible and standardized way. OC is in a testing phase with the C now, and it looks like digital may indeed prove to be more able to the consumer than analog . This is the platform for "broadng bits" to consumers that we have waiting a long time for.

xt, we need a standardized way to mit a variety of data objects over adio that the consumer can — and s to — receive.

e need to figure out how to make ata work in a low-capacity display, as in a car where you can't have much going on. At the same time, need to be able to wow our audis with more sophisticated presentaon other kinds of radios. None of can happen unless the broadcasters the manufacturers work out the ls together, based on consumer ack.

ally, we need a way to start from the very first day you turn on your first IBOC transmitter.

This is where the infrastructure comes in. IBiquity has been working closely with manufacturers to work out the hardware details both on transmission and reception.

Enter Impulse Radio, iBiquity's latest alliance partner.

This company started with a simple premise: if you are going to transmit a profitable datastream you need compelling and addictive content. It needs to be running from day one. It needs to be easy for the station to plug in and administer. It needs to be able to support itself while there are few digital radios in the marketplace, yet be able to grow into a local revenue generator when there are enough digital radios in your listeners' hands.

Impulse Radio is building the infrastructure necessary to get real public bitcasting off the ground. They are building the relationships our industry needs with advertisers, content providers, record companies and the like. They are building the connections to make the content manageable and fresh.

The result will be a steady flow of new and compelling data content that you can easily customize to your station's liking. Content formats will be based on open standards so you can produce your own material as needed.

Impulse Radio and iBiquity have joined forces to chart the course toward profitable bitcasting to the masses. IBiquity's relationships with receiver manufacturers will guide the development of new radios with hot new features. Impulse Radio's relationships with content providers will create the library necessary to deliver good content nationwide from the start.

With iBiquity's hardware and Impulse Radio's content resources and management tools, we'll have the infrastructure in place to make mass bitcasting a profitable reality. By becoming "broadcasters of bits," our radio stations will shed the stodgy image of old technologies and keep us ahead of competing media. With a bitcasting infrastructure in place, we'll take full advantage of the benefits of going digital, and we'll create new features that will sell radios and bring us closer to our audience.

David Maxson is a partner at Broadcast Signal Lab, LLP, a broadcast technology consulting firm which has been advising Impulse Radio. He also is a member of the NRSC DAB Subcommittee.

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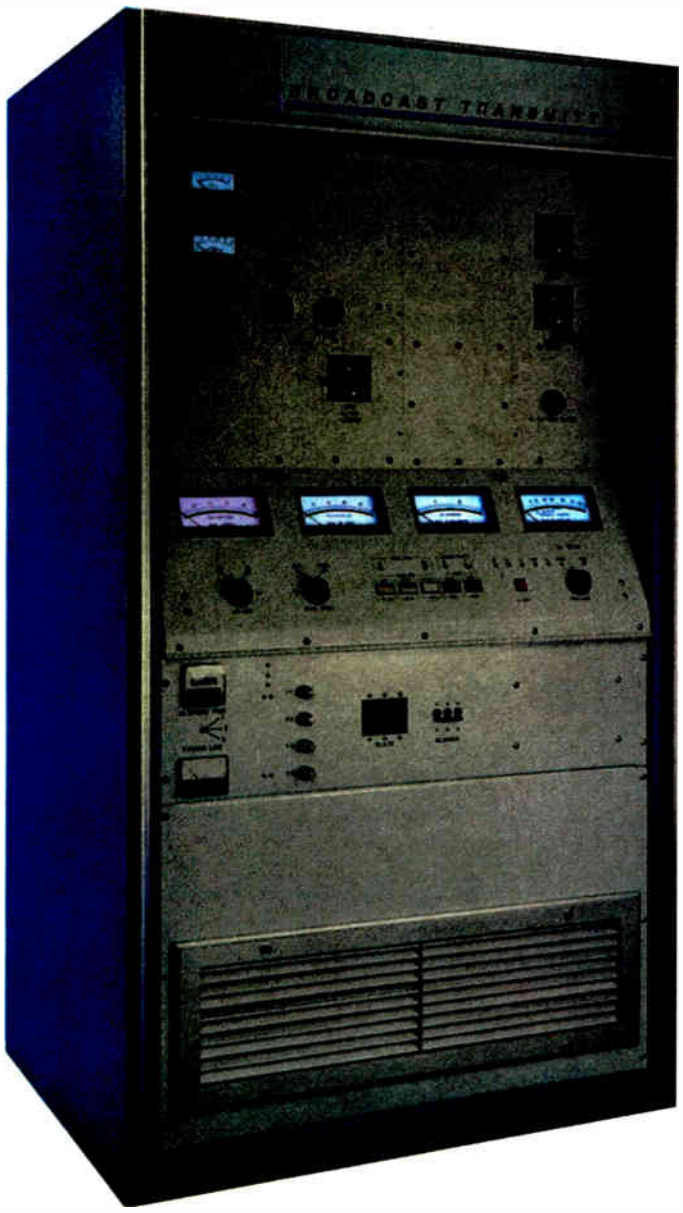

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FM2500G	Solid State / Tube	2500 watts	87.5-108.1 MHz	FM100GS	3CX3000A7	$ 22,995.00
FM4000G1	Grounded Grid Tube	4 kW	87.5-108.1 MHz	3CX800A7	3CX3000A7	$ 24,995.00
FM4000G3	Grounded Grid Tube	4 kW	87.5-108.1 MHz	3CX800A7	3CX3000A7	$ 24,795.00
FM4000GS1	Solid State / Tube	4 kW	87.5-108.1 MHz	FM700SS	3CX3000A7	$ 25,995.00
FM4000GS3	Solid State / Tube	4 kW	87.5-108.1 MHz	FM700SS	3CX3000A7	$ 25,795.00
FM5000G1	Grounded Grid Tube	5 kW	87.5-108.1 MHz	3CX800A7	3CX3000A7	$ 25,995.00
FM5000G3	Grounded Grid Tube	5 kW	87.5-108.1 MHz	3CX800A7	3CX3000A7	$ 25,795.00
FM5000GS1	Solid State / Tube	5 kW	87.5-108.1 MHz	FM700SS	3CX3000A7	$ 26,995.00
FM5000GS3	Solid State / Tube	5 kW	87.5-108.1 MHz	FM700SS	3CX3000A7	$ 26,795.00
FM8000GZ1	Grounded Grid Tube	8 kW	87.5-108.1 MHz	3CX800A7	3CX6000A7	$ 26,995.00
FM8000GZ3	Grounded Grid Tube	8 kW	87.5-108.1 MHz	3CX800A7	3CX6000A7	$ 26,795.00
FM8000GS1	Solid State / Tube	8 kW	87.5-108.1 MHz	FM700SS	3CX6000A7	$ 27,995.00
FM8000GS3	Solid State / Tube	8 kW	87.5-108.1 MHz	FM700SS	3CX6000A7	$ 27,795.00
FM10000G1	Grounded Grid Tube	10-12 kW	87.5-108.1 MHz	3CX800A7	3CX10000A7	$ 27,995.00
FM10000G3	Grounded Grid Tube	10-12 kW	87.5-108.1 MHz	3CX800A7	3CX10000A7	$ 27,795.00
FM10000GS1	Solid State / Tube	10-12 kW	87.5-108.1 MHz	FM700SS	3CX10000A7	$ 28,995.00
FM10000GS3	Solid State / Tube	10-12 kW	87.5-108.1 MHz	FM700SS	3CX10000A7	$ 28,795.00
FM15000G1	Grounded Grid Tube	12-15 kW	87.5-108.1 MHz	5CX1500B	3CX10000A7	$ 28,995.00
FM15000G3	Grounded Grid Tube	12-15 kW	87.5-108.1 MHz	5CX1500B	3CX10000A7	$ 28,795.00
FM20000G1	Grounded Grid Tube	20 kW	87.5-108.1 MHz	5CX1500B	3CX15000A7	$ 54,995.00
FM20000G3	Grounded Grid Tube	20 kW	87.5-108.1 MHz	5CX1500B	3CX15000A7	$ 43,995.00
FM25000G1	Grounded Grid Tube	25 kW	87.5-108.1 MHz	5CX1500B	3CX15000A7	$ 56,995.00
FM25000G3	Grounded Grid Tube	25 kW	87.5-108.1 MHz	5CX1500B	3CX15000A7	$ 44,995.00
FM30000G3	Grounded Grid Tube	30 kW	87.5-108.1 MHz	5CX1500B	3CX20000A7	$ 49,995.00
FM45000G3	Grounded Grid Tube	45kW	87.5-108.1 MHz	FM8000GZ3	YU1195	$ 64,995.00
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AM10KWFHF	Plate Modulated Short Wave	10 kW	2-22 MHz	4-400	4CX15000A	(2) 4CX5000A	Call
AM15KW	Plate Modulated AM	15 kW	500 KHz-2 MHz	4-400	4CX15000A	(2) 4CX5000A	$ 64,995.00
AM15KWFHF	Plate Modulated Short Wave	15 kW	2-22 MHz	4-400	4CX15000A	(2) 4CX5000A	Call
AM25KW	Plate Modulated AM	25 kW	500 KHz-2 MHz	4-400	4CX20000B	(2) 4CX15000A	$ 119,995.00
AM25KWFHF	Plate Modulated Short Wave	25 kW	2-22 MHz	4-400	4CX20000B	(2) 4CX15000A	Call
AM50KWF	Plate Modulated AM	50 kW	500 KHz-2 MHz	4-100	4CX35000C	(2) 4CX15000A	$ 209,995.00
AM50KWFHF	Plate Modulated Short Wave	50 kW	2-22 MHz	5CX1500B	4CX35000C	(2) 4CX15000A	Call

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AM1000SSi	Solid State AM	1 kW	535-1710 KHz	Solid State	Digital PDM	$ 8,800.00
AM1000SSA	Solid State AM	1 kW	535-1710 KHz	Solid State	Digital PDM	$ 16,495.00
AM2500SSA	Solid State AM	2.5 kW	535-1710 KHz	Solid State	Digital PDM	$ 23,495.00
AM5000SSA	Solid State AM	5 kW	535-1710 KHz	Solid State	Digital PDM	$ 41,495.00
AM10000SSA	Solid State AM	10 kW	535-1710 KHz	Solid State	Digital PDM	$ 62,995.00
AM25000SSA	Solid State AM	25 kW	535-1710 KHz	Solid State	Digital PDM	$ 131,995.00
AM50000SSA	Solid State AM	50 kW	535-1710 KHz	Solid State	Digital PDM	$ 194,995.00
AM100000SSA	Solid State AM	100 kW	535-1710 KHz	Solid State	Digital PDM	Call
SW1000SSi	Solid State Short Wave	1 kW	3-7 MHz	Solid State	Digital PDM	$ 11,495.00
SW1000SS	Solid State Short Wave	1 kW	3-7 MHz	Solid State	Digital PDM	$ 20,495.00
SW2500SS	Solid State Short Wave	2.5 kW	3-7 MHz	Solid State	Digital PDM	$ 27,995.00
SW5000SS	Solid State Short Wave	5 kW	3-7 MHz	Solid State	Digital PDM	$ 48,995.00
SW10000SS	Solid State Short Wave	10 kW	3-7 MHz	Solid State	Digital PDM	$ 72,995.00

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FIRST PERSON

Loneliness and the Overnight DJ

Carl Lindemann

While out covering the New Hampshire primary last year, I got to talking with another radio reporter while waiting for the candidate to take the podium. The conversation turned to changes in the business — how computer automation and consolidation had all but eliminated the traditional bottom-of-the-barrel, entry-level radio jobs.

"There's no good place to sound bad anymore," my comrade declared. And we remembered the places where we'd had the good luck to sound bad. For me, it was as a weekend overnight guy.

In the summer of 1980, I had just finished my freshman year in college. I worked days in a mom-and-pop market on an island off the coast of Maine. I'd had a fair amount of airtime on school stations and had my third-class radiotelephone operator's license in hand. But I'd never had a professional gig.

On a lark, I called a local station to see if they needed any part-timers. I was invited in for an audition at WLOB(FM), a.k.a. "FM 101 — Portland's Best Rock."

The program director, Danny Schuster, tossed me into the production studio. As I discovered later, "Schuster" was a stage name. Danny's previous employer was a shoe store. "Schuster" was the phonetic spelling of "Shoe Store" in Down East dialect. Danny told me that, however far I went in the business, it was important to remember my roots.

During my audition, I successfully segued from a cut by Traffic to one from Led Zeppelin and managed to say a little something about each. I even slip-cued the discs. Schuster hired me on the spot for the midnight-to-6a.m. shift on early Sunday mornings.

"You've got a 'radio' voice," he told me. My compensation for such natural talent was $5 an hour plus the pride of being a "pro." It took a *lot* of pride to make this worthwhile. Like the old ad campaign for the Army put it, this was "More than a job — an adventure!"

Actually, "adventure" really didn't describe this; it was an ordeal.

One if by land

Getting to the station was a land and sea challenge. My folk's summer home on Chebeague Island was about two miles off the coast. There was no bridge. The station was a 20-mile ride from the nearest landfall. I didn't have a car.

My pre-show ritual was loading my moped onto a small boat to cross over to the landing on the other side. Next, the hour-long moped ride took every bit of gas in the tank. I was running on fumes by the time I hit an all-night gas station near the studios to refuel for the ride home.

Compensation
for such natural talent was $5 an hour plus the pride of being a 'pro.'

The station itself was in a perpetually fog-shrouded stretch. Unfortunately, this wasn't part of Maine's natural beauty. It was the result of foul-smelling exhaust from the paper mill down the road. The station was sealed as best they could to keep the wretched reek out, but it had pretty much seeped into everything over time.

I took to the airwaves after an announcer named "Tuna" had revved the weekend revelers. Tuna came to WLOB after being tossed from a soft rock station. Some mother had protested about a comment he made on air. As "The Right Time of the Night (For Making Love)" finished, he had observed that though it might be "the right time of the night," it was "the wrong time of the month."

WLOB, he assured me, would not be so sensitive, with its pioneering heavy metal format.

While you were sleeping

The overnight was more of a board-op job. I'd get to spin discs till 1 a.m., then roll "Dr. Demento" on the reel-to-reel. After that came a few "Classic Albums" played in their entirety. My time to shine was 4 to 6 a.m.

The challenge was managing these tasks despite rowdy visitors and faulty equipment. Also, tossing an all-nighter into my sleep schedule changed the tempo of my circadian rhythms into something like the cacophony of an AC/DC tune.

The worst was the night when Tuna

See OVERNIGHTS, page 34 ▶

IBiquity

▶ Continued from page 1

exciters, scheduled for launch at the NAB convention next spring.

The receiver agreement is a multi-year deal, covering how much and when Harman will pay iBiquity for its technology relevant to receivers.

Harman plans to put iBiquity technology into home receivers set for release in 2003. It makes receivers under the Harman Kardon brand.

"We've announced a host of development deals to share technology and help get our intellectual property into their boxes," said iBiquity President and CEO Robert Struble. "Now, we're transitioning to more of a business arrangement. They pay us for IP to make equipment."

Visteon is targeting mid-2003 for release of OEM iBiquity receivers, in time for the 2004 model year.

Aftermarket receivers would make their debut at next year's Consumer Electronics Show, if iBiquity keeps to its timeline. Six markets have been targeted for aggressive receiver roll-outs: Los Angeles, New York, San Francisco, Chicago, Seattle and Miami.

For broadcasters looking at planning expenditures, iBiquity extimates the cost of conversion for AMs at $27,000 to $187,000 depending on factors including the age of a station's current equipment.

For FM, estimated costs range from $68,000 to $118,000 using a low-level combining approach, and $94,000 to $215,000 with high-level combining.

IBiquity had already finalized the FM IBOC waveform, and finalized the AM version just before the show; RF manufacturers now know what it will take to pass the iBiquity waveform.

The company's Glynn Walden said the FM data throughput ranges from 51 to 150 kbps in the hybrid mode and up to a possible 300 kbps in the all-digital mode.

Due to the limited bandwidth for the AM band, the maximum data rate is 56 kbps.

Analog AM stereo is not compatible with AM IBOC, so those AM stations will need to make a choice on whether to make the digital transition.

The company offered van rides showing both AM and FM IBOC as aired on Las Vegas radio stations. It also told about the results of its own FM tests at KLCC(FM) in the difficult San Francisco radio market; it has given that data to the FCC and NRSC.

And iBiquity touted the news that the International Telecommunications Union had approved its IBOC system as a standard for digital broadcast in the radio bands below 30 MHz.

NRSC

▶ Continued from page 3

that IBOC would be a significant improvement over analog, one of the goals of the NRSC in evaluating this technology. USADR and Lucent have since merged.

Unlike earlier tests, conducted and supervised by the proponents, these tests are conducted by iBiquity and monitored by NRSC test observers, including Stan Salek of Hammett and Edison, Alan Rosner of Denny and Associates and consultant Tom Keller.

Summer data

IBiquity anticipates delivering FM data in June and July, and hopes AM test submissions will be complete by the end of summer.

Once the data is turned over to the NRSC, Smith estimated a 60- to 90-day evaluation period.

IBiquity is still integrating the Perceptual Audio Coder into its system, so initial tests are being done with AAC. Some tests relating to audio performance would likely need to be redone with PAC.

Smith estimated the NRSC could issue a final report and possible recommendation of the system by mid-2002 and believes the FCC would move expeditiously on IBOC station authorization.

Associate Mass Media Bureau Chief Keith Larson said the FCC looks forward to seeing results. "There's a lot at stake here. The commission really wants you to succeed in DAB."

The FCC is going to be under tremendous pressure to move the digital transition forward, he said. The FCC "will do what we can to make that happen while compiling a complete record," he said, adding that the system must prove technically viable.

Larson spoke at a panel sponsored by National Public Radio that preceded NAB2001.

He said the only option for new spectrum for radio is TV Channel 6 (82 to 88 MHz) when those broadcasters vacate their channels to go digital.

Several noncommercial broadcasters favor this spectrum being re-allocated to radio.

The test procedures working group, headed by Journal Broadcast's Andy Laird, was heavily involved in developing the test criteria.

At the next DAB subcommittee meeting, planned for May 8, the group planned a so-called "hand-off" to the test evaluation group, headed by VOA's Dr. Don Messer.

LPFM

▶ Continued from page 1

ernment organizations.

These are the first among 225 applicants the FCC has said are eligible to receive licenses so far. More are expected soon.

The FCC under former Chairman Bill Kennard originally estimated that there could be 1,000 new LPFM licenses. However, the number of possible LPFM broadcasters was reduced dramatically late last year when Congress decreed cutbacks in the service and ordered the FCC to conduct tests to determine the impact it would have on third-adjacent channels of existing stations. The commission plans interference tests in nine markets.

New Chairman Michael Powell has said he expects the process to take more than a year.

Timetables

"We are very excited by the opportunity to serve our local area," said Dave Vise, youth ministry director for First Baptist Church of Mansfield in Mansfield, La. "Our first move has been to form a committee to devise a plan to get the station built, then (to decide) what it will sound like."

Mansfield has a population of 5,300 and is about 30 miles south of Shreveport. The town has no local radio service, he said, and fits the criteria as an area undeserved by broadcasters. Vise said the church has space in its media suite, which houses a TV ministry, to build an on-air studio for KEPT-LP. The station will air music, news and religious programming, Vise said.

"We want to share the gospel, but realize for us to survive we'll need the support of the entire community,"

The sense of serving community is what makes LPFM exciting, said Joe Steinberger, director of Penobscot School in Rockland, Maine. The nonprofit school, founded in 1985, teaches foreign languages to adults. WRFR-LP could be on the air by the end of this year, Steinberger said.

"Our focus will be on live programming that reaches not only those who want to learn a foreign language, but even more important, the people of Rockland who are within our listening area."

Steinberger, who will serve as station manager, said the town of 8,500 has one AM and two FM radio stations. "But they try to appeal to a state-wide audience. We'll fill the local niche and make it a local station," he said.

So far the station has acquired a McMartin B-501 console online, but needs to convert a garage at the school into studio space, Steinberger said. "We found the console on eBay and got it for $91. What a deal."

The station will need computers, automation software, studio gear and a small transmitter. Steinberger said the station will broadcast via a whip antenna on top of a pole at the school.

Ten of the first 25 low-power FM entries will be in California. The nonprofit economic development agency Hmong American Community Inc. of Fresno will serve a growing population of immigrants from Southeast Asia in the San Joaquin Valley with its LPFM.

"The station will really be a community outreach and information center," said Executive Director Chukou Thao. "There will be a mix of music and cultural flavor to represent the agricultural community."

Formed in 1994, the group works with poor Hmong farmers. Thao said broadcasts will be in English and Hmong. "We also have large Mingh, Laotian and Cambodian populations in the area we hope we'll appeal to," he said.

Fresno, market No. 67, has no shortage of radio stations, but Thao said it lacks a station that can super-serve a small segment of the population. Arbitron ranked more than 30 stations in the market last fall.

One of the more ambitious low-power projects may be the one planned by the Georgia Department of Transportation. The state filed applications for 10 low-power licenses and was granted three CPs, in Louise, Tallapoosa and Lavonia. In the works is a statewide traveler's advisory network, according to officials with GDOT's Transportation Management Office.

Travel advisory

"We are at a very preliminary point in our planning," said spokeswoman Kim Law. "We will have to wait to find out the status of our other filings before we proceed."

Law said the stations would carry traffic, road construction and weather information. "We could even team up with local Chambers of Commerce and offer tourist information," she said.

GDOT would need more than 10 LPFMs to cover the state, but Law said if placed near traffic corridors, the stations could help commuters.

"It is still experimental at this point, but we are optimistic, and thankful for the chance to get these low-power stations on the air," she said.

A low-power service was a priority for former FCC Chairman Bill Kennard, a Democrat. New Chairman Michael Powell, a Republican, voted in support of LPFM in 2000, but said at the time he had concerns regarding interference.

LPFM advocates said they were not surprised by the FCC's lack of publicity for the construction permits.

"They want to make it look like business as usual," said Cheryl Leanza, deputy director of the Media Access Project.

At the NAB2001 convention a few days later, Powell downplayed that angle. "Generally, we don't make a big deal out of routine work," he said.

Leanza said she was not surprised by the groups represented. She said a 50-50 mix of religious and non-religious groups seemed appropriate.

"However, the first 25 might not be an indication of what the final universe of low-power FM might look like. These groups were just the ones who got through the FCC pipeline first.

"The FCC is processing the paperwork for the 225 approved applicants and I would expect it to dole out similarly sized handfuls of permits every month or so," she said.

Leanza expects the FCC to accept additional applications beginning this summer. The combined fourth and fifth filing windows are in June.

A list of the organizations, including city and frequency, is available online at www.rwonline.com

LPFM Coming Near Me?

At NAB2001 in Las Vegas, broadcaster reaction to the first LPFM CPs was muted.

Here's a sampling of reaction from commercial and non commercial station engineers, managers and attorneys:

- "It's always nice to hear about more RF in the area."
- "That's cool, but don't interfere with me."
- "If a station complies with mileage separation requirements, I have no problem with it. Most (of them) will be non-viable operations."
- "My concern is enforcement. I don't think the FCC can enforce this. ... It's ridiculous. I've got guys in my area over-modulating now."
- "We'll have to see how this shakes out. The LPFM rules protect applications on file as of the date of the LPFM filing windows, but it does not protect pending rule makings."

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Workbench

Radio World, May 9, 2001

I Ain't Climbin' That Thing!

John Bisset

A tower owner calls in a rigger to climb his tower. Before he even sets foot on the structure, the rigger makes a visual inspection.

Sorry, there will be no climbing today.

Figure 1 shows why: the hollow legs of the tower have split. Clogged weep holes have allowed water to build up inside the legs. When the water freezes, the legs split. Clamshell supports, seen at the top and the bottom of the closest leg, were added, but the split between the two supports clearly is visible as a gray vertical line between the clamps.

Fig. 1: Hollow tower legs can split.

Figure 2 shows a mounting flange that has completely cracked off. These problems didn't happen overnight but resulted from years of neglect. They are a reminder that it is easy to succumb to "out of sight, out of mind."

Fig. 2: The arrow indicates a cracked bracket

Inspect your tower bases. Check that grounds are secure — they should not be loose, but firmly connected. Cadwelding is the most secure. As for the weep holes, make sure they are not clogged with rust or paint.

★ ★ ★

Jeff Johnson of WVXU(FM) in Cincinnati offers a suggestion to engineers fighting the thermal paper battle with their EAS boxes.

Try "EAS Watch." It's a free download from Dave Biondi's *Broadcast.Net*. The system requirements aren't elaborate: a stripped-down 486 and a hundred-dollar printer, which Jeff points out will cost only $50 or $60 after the rebate. You'll never have to worry about thermal rolls again.

In Jeff's case, the station use Panasonic KXP-3200 dot-matrix tractor-feed printers, connected to the serial input port, with excellent results.

★ ★ ★

Today's "consolidated" engineer learns quickly the importance of time management. An organized department is a must. This includes coordination of technical manuals.

Figure 3, on page 26, shows how WWZZ(FM) in Washington keeps its manuals organized. You'll find magazine holders at office supply stores. They keep the manuals on the same shelves as transmitter or console binder-type manuals.

See WORKBENCH, page 26 ▶

ROOTS OF RADIO

What Did Marconi Hear?

Canadian Scientist Calls Into Question Veracity Of December 1901 Transatlantic Radio Experiment

James Careless

On Dec. 12, 1901, Guglielmo Marconi grabbed the imagination of the world with the first transatlantic transmission sent from Poldhu, Cornwall in England and Signal Hill, near St. John's, Newfoundland.

As a result of Marconi's experiment — in which the faint "dot-dot-dot" of the Morse code letter S were sent repeatedly across the Atlantic Ocean — modern radio was recognized as possible, and a new industry born.

But did Marconi actually hear those Morse dots among the static? Or did he and his assistant simply hear what they wanted to hear?

That is a point being questioned by John Belrose, a scientist emeritus with the Communications Research Centre of Canada.

In fact, Belrose argues that Guglielmo Marconi could not have heard those fateful signals on Dec. 12, simply because Marconi had neither the equipment nor the right atmospheric conditions for the job.

Marconi is shown in his Signal Hill test site.

"He had put such a tremendous effort into this transatlantic experiment, he simply had to hear signals," said Belrose. "In my view, he misled himself and the world into believing that atmospheric noise cracking was in fact the Morse letter 'S'."

The facts

Here are the documented facts of Marconi's transatlantic experiment, facts that Belrose does not dispute.

The transmitting station was based at Poldhu on the Cornwall peninsula, which juts out from the southwest Atlantic coast of England.

A two-stage spark transmitter — one suited for Morse code, rather than the continuous-wave model now used for AM transmission — was fed into a temporary fan-shaped wire aerial strung between two 150-foot masts. Based on 54 wires spaced about a yard apart, this antenna was a replacement for the 20-mast conical array that had collapsed in a storm a few months earlier.

The signals themselves were sent from Poldhu continuously between 3 to 6 p.m. GMT; 11:30 a.m. to 2:30 p.m., St. John's time. The distance was either 1,800 miles, according to Marconi Communications Ltd., or 2,175 miles, according to Belrose.

On the wind-blown seaside cliffs of Signal Hill, Marconi used a 500-foot wire attached to a kite to receive the Poldhu transmissions.

The kite antenna was connected to an untuned receiver and one of three "coherers."

A telephone was tapped into this circuit, and it was through its earpiece that Marconi and his assistant, George Kemp, reported hearing the fateful "dot-dot-dot" at 12:30, 1:10 and 2:20 p.m.

Marconi wrote in his diary: "Unmistakably, the three sharp little clicks corresponding to three dots, sounded several times in my ear, but I would not be satisfied without corroboration.

"'Can you hear anything, Mr. Kemp?' I said, handing the telephone to my assistant.

"Kemp heard the same thing as I and I knew then that I had been absolutely right in my calculations. The electric waves which were being sent out from Poldhu had traversed the Atlantic, serenely ignoring the curvature of the earth which so many doubters considered would be a fatal obstacle, and they were now affecting my receiver in Newfoundland."

It is understandable that John Belrose, an accredited CRC radio scientist, would take a close look at Marconi's transatlantic experiment. But as a result of that inspection, he has raised some questions about the Signal Hill trial.

For instance, there is the question of the experiment's frequency. As astounding as it may seem, it is uncertain which

See MARCONI, page 38 ▶

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Workbench

▶ Continued from page 23

At my last chief's job, the engineering office had no shelves. Manuals were kept in a file cabinet, and many of the binders just didn't fit.

Keeping everything on the shelf has another benefit. In the case of the binder-type manual, if one is missing, you see a big hole in the bookshelf.

Fig. 3: Organize those manuals!

★ ★ ★

Figure 4 will bring back memories for some; for others, perhaps some nightmares!

Shared with *Workbench* readers by Rick King and Don Culp at ABC/Disney station WMAL in Washington, the photo shows the old WMAL(FM) automation system in the 1970s. The engineer adjusting the reel-to-reel is unknown. Readers, can you tell us?

Seasoned engineers will remember the Carousel cart machines, the Instacart on the far right and the push-pin programming matrix in the center cabinet between the Instacart and the Carousels.

The "55" held 55 carts. A movable deck rode up and down a shaft, like an elevator, sucking a cart into the playback deck — replacing it in its slot after each play. How does that slogan go? "You've come a long way, baby!"

Send us your legacy photographs and we'll share them with readers.

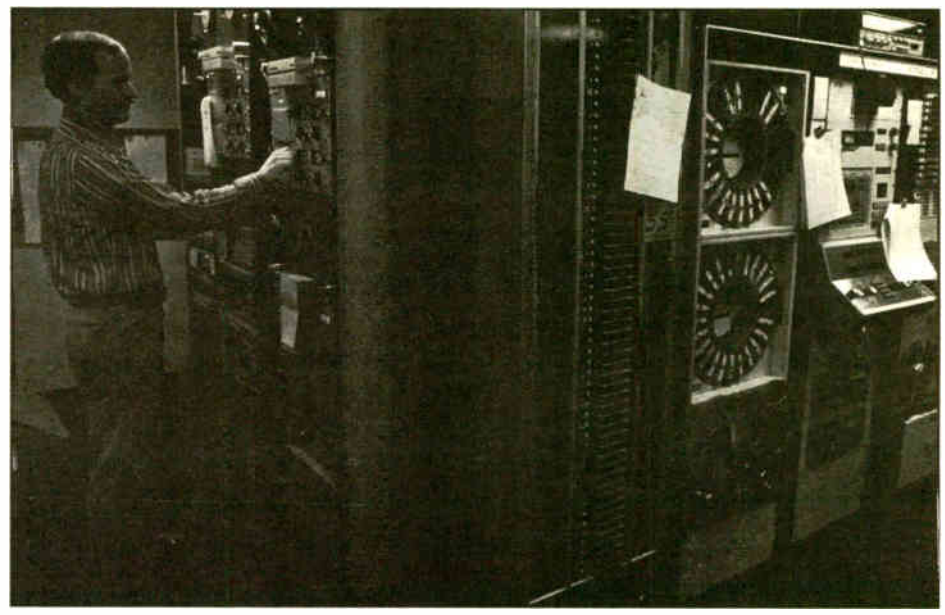

Fig. 4: 1970s Automation at WMAL(FM)

★ ★ ★

If an inexpensive call-screening system is in your future, you might want to consider these ideas.

Tom McGinley, Infinity Seattle market chief and RW technical adviser, has used two dumb terminals connected back to back in null modem mode, to echo text from one room to the other. I used Tom's method for several clients when I did contract work. The system is simple and inexpensive — two words that will make the GM happy!

Aaron Read works for ITWorld.com, an IDG company. His call-screening suggestion is to download AOL Instant Messager (*www.aol.com/aim*). Use the chat room to send instant messages between the studio and the screener. What station doesn't have Internet access in their studios these days? And you save on another monitor to place in front of the board op or talent.

★ ★ ★

Let's wrap up with another contact for your Rolodex of critical names and phone numbers.

Famous Telephone Supply is a good source for telephone systems and supplies. It also offers accessories like cable-pulling lubricants, cleaners and Plenum-Gard, a quality nonmetallic corrugated flexible raceway.

Its catalog also includes floor boxes and single-gang zip boxes. Got a conduit full of wires and need to add one more? A metal fishtape can gouge or snag on existing wires. Instead, select the Nylo-Flex, a nonconductive nylon fishtape with a 300-pound tensile strength. Nylo-Flex is light and flexible, and glides through 1/2-inch to 4-inch conduit. Famous Telephone Supply can be reached at (800) 321-9122. Its Web address *is www.famcomm.com*, where you can order a free catalog.

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 e-mail to jbisset@harris.com

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Broadcast Software International

Hunn

▶ Continued from page 12

turntable tonearms to keep the records from skipping," an old-timer recalled. "And sometimes none of the kids had any money, or a thoughtless newcomer spent our official supply of station nickels on soda!"

Announcing during those rumbling sessions had to be done quickly whenever the band director halted play for several seconds of tempo instruction.

Today, 'BXL DJs enjoy a soundproof studio void of music on vinyl or tape, or the sound of overzealous sophomore tuba players. A rugged, mid-1980s LPB board has survived many a teen-aged DJ. Most of the hits from the 1970s through current songs are called up from a computer hard drive. A 360 Systems Instant Replay unit alleviated the age-old problem of poor tape-head alignment, muddy-sounding carts and mysteriously missing or jumpy, scratchy records. This digital device holds 25 hours' worth of songs, jingles, sound effects and station IDs.

External ZIP drive disks deliver another 15 hours of programming apiece. A 25-position CD player is enlisted for additional music rotation flexibility.

Is it for me?

Some WBXL people, like Killian, volunteer five to 10 hours per week on the air. Most who spend lots of time at the station typically develop a highly identifiable and potentially marketable air personality. Others might only want to see what it's like behind the microphone, then realize radio isn't their cup of tea.

From this studio next to a 10th-grade English classroom, Meagan Killian and other young broadcasters can be heard throughout much of suburban Syracuse.

In today's unforgiving, competitive corporate climate, the opportunity to experiment on the air — and maybe, at first, not sound so hot — with relative impunity is extremely rare. Most of the school's broadcasting students are satisfied devoting one free period weekly to "playing the hits." This lets them add "radio announcer" to their fledgling resumes, then assign the experience to a list of fond high school memories.

Radio, doing good

Last year's marathon fundraiser ranks near the top of many WBXL students' great recollections. During a weekend-long broadcast, kids used the station's airwaves creatively to coax listeners into donating well over $1,000 for the Red Cross. Several clever radio class members used a cell phone, for example, to interview teens suffering Saturday morning detention.

After being asked what they were in for, nearly every contrite individual welcomed the chance to "tell all" on WBXL and contribute a few bucks to the cause.

Of course, a consistent funding commitment is necessary for the operation of any size of radio station. The Baldwinsville Central School District has devoted resources to WBXL because, from its first day on the air, the small FM started earning a reputation as a unique learning experience. Some families have moved to the Baldwinsville area in order to give their kids a chance to gain the confidence and speaking opportunities that such an on-air curriculum offers.

No doubt parents see how this communication classroom helps prepare young people to be confidently immersed in an increasingly information-oriented society.

It's likely that America's new low-power FM service will open the ether (primarily in rural markets) for more high-school radio. The commission has begun accepting LPFM applications scattered throughout the 88 to 108 MHz FM band. Meanwhile, the relatively few teenager-operated facilities like WBXL continue demonstrating the good things kids can do via radio when they're given a pass for FCC-sized broadcast responsibility.

Former station owner Peter Hunn splits his days between teaching electronic media topics at the Oswego campus of the State University of New York and Baldwinsville's high school. He is preparing a revised version of his 1988 book, "Starting and Operating Your Own FM Radio Station." Reach him via e-mail to melodyfm@dreamscape.com

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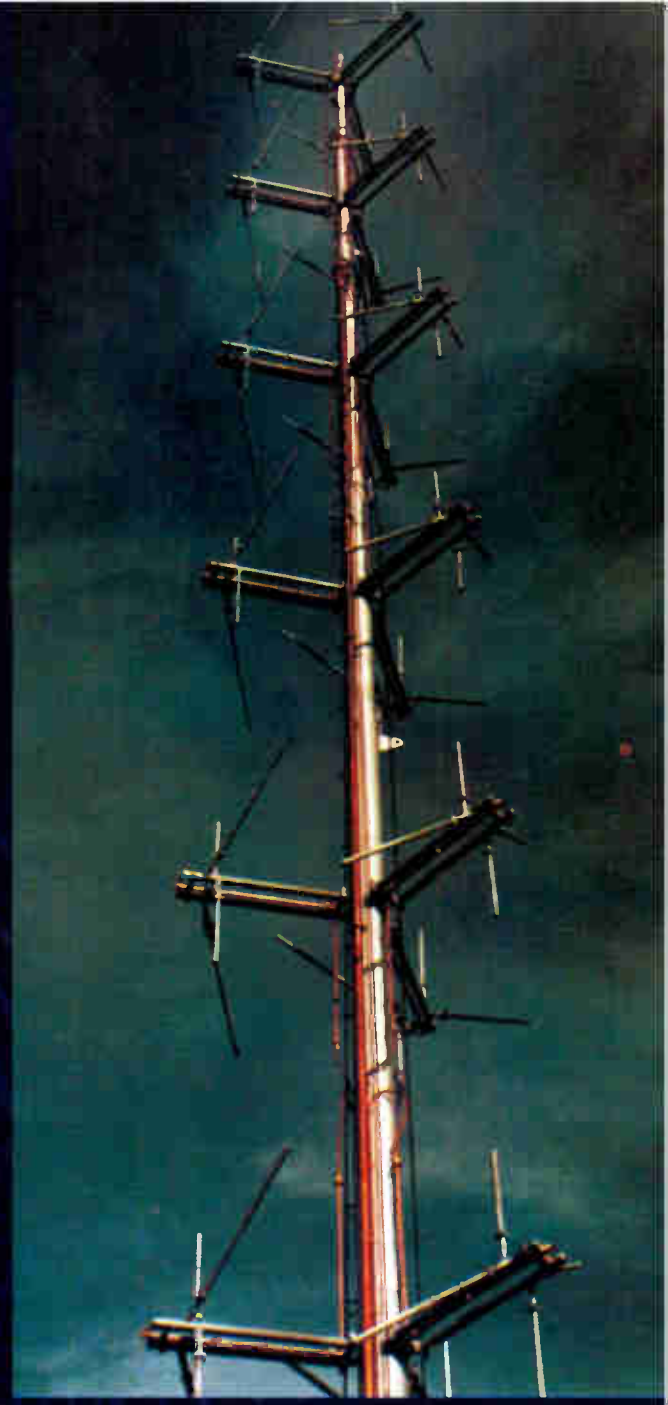

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Encoda Systems Inc. was selected by **XM Satellite Radio Inc.** to supply systems to automate XM's broadcast of up to 100 channels. The company calls it the largest radio automation installation in North America.

Encoda, created by integrating the operations of Columbine JDS Systems, DAL/Drake Automation and Enterprise Software, will supply XM with its DMAS digital automation system and Paradigm management system. The DMAS automation will control a routing switcher along with a number of audio servers and digital encoders, as well as XM's uplink management system. ...

Omnia said the three highest-billing FM radio stations in the United States use its audio processors.

The manufacturer cited data from Duncan's American Radio, which listed the top three FM stations in America, ranked by 2000 gross revenue, as Clear Channel's **KIIS(FM)** in Los Angeles and **WLTW(FM)** in New York, and CBS/Infinity's **WXRK(FM)** in New York.

Sister company **Telos Systems**, meanwhile, announced that **C-SPAN** purchased a Telos Series 2101 Multi-Studio Talkshow System for use at its Capitol Hill studio complex to air calls from viewers. ...

RDA Systems completed a fast-track studio installation project for **Waitt Radio** in Omaha, Neb. The project, completed in three months, involved consolidating six stations, with 11 studios and a Master Control room, into one building.

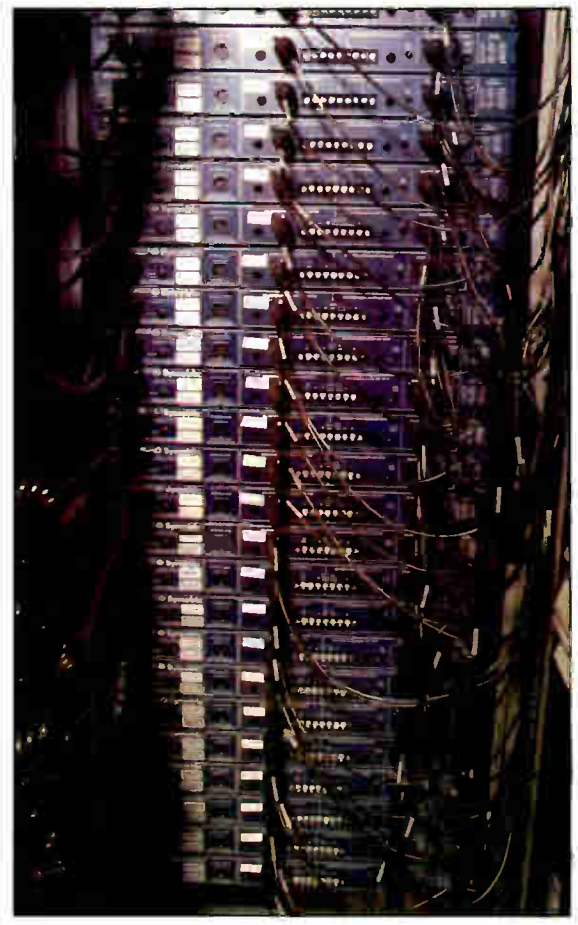
Mike Hendrickson, director of engineering for Waitt, said the goal was to install and cut over six radio stations by Thanksgiving 2000. He said the cutover was completed with a few days to spare.

Mager Systems provided 11 custom-built studios with solid surfaces. The facility also features a **Broadcast Electronics** AudioVault system, **SAS** routing, **Audioarts** consoles and **Symetrix** mic processors. ...

Real Broadcast Network installed approximately 100 **Symetrix** 421m and 422 AGC/Levelers at its new Internet Broadcast Operations Center. RBN is the hosting solutions division of RealNetworks Inc. and was responsible for the 60-day construction of the facility in Seattle.

Digital Systems Technology performed the task of specifying and installing the Operations Center's equipment.

RealNetworks brings inputs together, digitally manipulates them to Internet specifications and sends them to various Web sites for public consumption. DST also specified a **Philips** routing system, **CircuitWerkes** phone couplers and **Snell and Wilcox** Kudos Series A/D converters. ...



Symetrix Automatic Gain Controllers provide uniform signal strength for RealNetworks Live Internet streams. This is a rear view of the 421m AGC Levelers.

Last winter's Super Bowl XXXV at Tampa's Raymond James Stadium was a wireless mic whirlwind.

ATK Audio, the overall sound company, and **Professional Wireless Systems**, the RF specialists, went live for the pregame, national anthem and halftime shows using **Sennheiser** wireless systems.

James Stoffo, who directed the Professional Wireless team, and four technicians arrived in Tampa 10 days before the contest with 12 Sennheiser SKM5000 handheld transmitters, six SK250 tunable body packs, a Professional Wireless rack of six EM1046 six-channel receivers, and Audio Teks' rack of six 3000 six-channel receivers. The NFL maintained a master list of every microphone on the field and gave Stoffo 75 frequencies for the halftime show.

Sennheiser wireless gear also found action at **XFL** football games, as specified by Audio Coordinator Jeff Cohen of JPC Systems. **Scharff Weisberg** rents and maintains Sennheiser RF equipment for **NBC Sports**. ...

CBS selected **Broadcast Software International** to furnish digital audio systems for its TV entertainment programming, including the daytime drama "The Young and the Restless."

CBS will use BSI Series 200 automation systems for the show. The Series 200 system includes two rack-mount Pentium-class PCs and flat-screen monitors. BSI is providing broadcast and production software as well as Cool Edit Pro from Syntrillium. The system also includes dual ASI 4113 audio cards from **AudioScience**. ...

Sennheiser and the XFL: Jose Perez of Scharff Weisberg was RF engineer for the new league's primary NBC games, seen here with wireless racks.

SiteShell Corp. said its BlueDot WebSite NetWork is hosting more than 100 NetWork WebSites for affiliated radio stations.

SiteShell launched its affiliation

See WBW, page 34 ▶

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INTERNATIONAL UPDATE

Radiocentrum Builds Future

Swedish Training Institute Combines Staff Training With Research, Collaboration and New Technologies

Keith Spencer-Allen

Swedish commercial radio sector boomed during the mid-1990s, it quickly became apparent that there was a shortage of experienced staff members for public and private broadcasters alike.

The Alice Studio. The journalist area (right) features a repositionable Seector console.

Public-service broadcaster Sveriges Radio, or SR, had always trained its own staff, but it stopped most of its internal training programs in the 1980s, preferring instead to rely on external resources.

Mattias Gustavsson

"That is the reason why we started the first school for broadcasters here in Piteå," said Lars Hallberg, director of studies at the recently opened Radio Center at the Music School in Piteå.

The new radio-training institute is based at the Luleå Technical University school of music campus in Piteå, just south of Luleå itself.

Hallberg had been part of the SR training program, leaving in 1988 to set up a sound recording department at the Music School.

"The training was very similar to that of SR in the beginning — all the tutors came from the industry, so we had good connections with broadcasters," he said.

In 1999, the school decided to expand the broadcast side of its operations dramatically, launching a commercial radio station and opening detailed discussions with public and commercial broadcasters to see if there was common ground on what skills graduates would need.

Mattias Gustavsson, the project leader, had experienced college radio in the United States, but wanted to adapt and to develop the idea to meet local needs.

Government backing

Broadcasters responded positively to the proposals and in September 2000, with backing from national and local governments, the first course in radio journalism and production at the Musikhögskolan started with 20 students in purpose-built facilities.

The radio station, Alice 92.8 MHz, broadcasts 24 hours a day, has five full-time staff and is funded by commercials. Clear lines exist between the commercial and the state-funded sides of the project, and the station provides an outlet for student-generated programming and on-air talent during off-peak times.

Alice launched its on-air and online — *www.aliceonair.com* — signals simultaneous. About 6,500 listeners, half of whom are outside Sweden, tune into the Webcasts and/or the over-the-air signals in Luleå and Piteå.

The course developers made every effort to create a realistic radio environment.

A large airy newsroom has 21 workstations that function either as self-contained PCs or access one of the central servers to run The Associated Press Electronic News Production System (ENPS) or Jutel RadioMan software, allowing students to compile news stories or general radio programming.

Three self-operated on-air studios, identical in terms of equipment, sit at one end, with additional production facilities to support output from any of the studios placed centrally between them.

"Another role of this facility is to be close to the forefront of radio technology," said Gustavsson. "Commercial radio in Sweden frequently does not have the money to keep up with the latest equipment, and so it is important that we get our students out there with this experience."

Despite this approach, older techniques are not forgotten.

Tape editing forms a sizable part of early training and there is a belief that editing with the hands reinforces what students will later do visually.

Hallberg noted, "You must know the history to learn the future."

Radiocentrum vid Musikhögskolan i Piteå worked with the SR digital project in nearby Göteborg but decided to go a step further and be totally digital.

Routing matrix

The heart of the installation is a network of Seem Seector digital consoles and an NTP 625 matrix, all from TeleCast Norge. Every source, CDs, microphones and so forth, goes through the routing matrix and is accessible from anywhere in the facility.

The system is supported by subracks equipped with a small matrix in the studios for local sources.

Routing is controlled centrally and is flexible enough to allow the facilities to be designated control rooms or studios as is needed to handle larger broadcast needs.

The Seector mixers in the studios are designed as separate sections rather than a single frame, allowing for easier configuration of the worksurface for different styles of working — it is possible to position the two free-standing six-fader panels wherever convenient.

A further two consoles can be used almost anywhere in the facility — an intranet system allows the mixer to be plugged in and recognized by its IP address.

Clear lines exist between the commercial and the state-funded sides of the project.

See SWEDEN, page 33 ▶

Sweden

▶ Continued from page 32

Each studio has four TFT screens. One is for the TeleCast system, two for the Jutel RadioMan radio management system and one for the AP ENPS.

The heights of most worksurfaces are hydraulically adjustable by means of a single button, allowing for standing operation. The layout allows for visual contact throughout most of the facility, including the central machine area — a feature that is considered important.

"In every radio station I have seen, the equipment room is locked away in a basement," said Gustavsson. "If we were to do that here, the students would never see it — they must be familiar with the technology and be able to follow the signal chain."

Research topics

Most of the station output comes off the servers, but the operator has the ability to select a local source or any source in the whole facility if needed, depending upon the user setup.

The equipment room also houses the transmission processing systems — IDT Digital Virtual Processor, Omnia and CRL — as well as transmitter links, the main servers, encoding processors for the Web output, file servers, database servers, Web servers and links to the Alice radio car.

The Alice Journalist Area

Students will spend two years at Piteå; the first year focuses on 10 basic radio courses and the second allows for greater specialization and the chance to select from any of the 500 university courses.

Aside from the training aspects of the facility, the Radio Center at the Music School in Piteå is designed to conduct programming and technical research.

Piteå is ideal for such research because there is a sizable population (about 100,000 people) with a relatively isolated local community with several hundred identified "test persons," enough to obtain good statistical reactions to station output.

Particularly interesting has been the research into broadcast output processors and the uses of Webcasting by local broadcasters. Other projects include listening research on digital encoded sound and the effects of different processors for Webcasting.

There are also plans to work locally with Teracom, the broadcast distribution company, on interactivity in digital audio broadcasting.

The facility offers opportunities for both students and the Swedish radio industry — a commercial station working within and in partnership with a university to further common aims.

According to Gustavsson, "the first six months of the station were strange, with everyone wondering what was going on and who these people were, but now everybody can see how it works and how effective it has been."

Keith Spencer-Allen is a free-lance consultant, writer and recording engineer, based near London.

Tomas Ostros, Swedish Minister of Education (left), speaks with Niclas Nordstrom, head of Acusticum.

WBW

▶ Continued from page 30

campaign at last fall's NAB Radio Show; it has agreements to host NetWork WebSites for more than 200 radio stations. The company has added approximately 70 new WebSites to the NetWork since January. ...

Nassau Broadcasting Partners, L.P., a radio group that focuses on mid-sized stations in the Northeast, signed an annual contract with **Ticketmaster** to provide concert and event schedules on PATHVision, the information services system that feeds transmission to the PATH transit system's 275 monitors. Nassau is the exclusive content and advertising sales manager of PATHVision.

The agreement also authorizes Ticketmaster to provide promotions and discounts that will be offered exclusively for PATH Quick Card ticket holders.

Joan E. Gerberding, president of Nassau Radio Network, oversees Nassau's PATHVision project. ...

AP Radio announced content agreements with the **Cumulus** group of stations and with the **Nebraska Radio Network**. ...

Netia, which makes radio management software, and **iNews**, a provider of newscasting services for TV and Webcast, announced their first customer since aligning in early 2000.

Special Broadcasting Services signed a contract for the installation of approximately 250 digital audio workstations. SBS is an Australian radio and television station, broadcasting in 68 languages. Sydney and Melbourne radio stations will be equipped with Radio-Assist acquisition-to-broadcast systems. The sites are networked (8 x 64 kbps dedicated link) to exchange sound programs. ...

Andrew and its distributor **Multiradio S.A.** secured a $2 million contract with NEC Argentina for the supply of 82 Synchronous Digital Hierarchy backbone links. They will be used in the construction of a telecommunications microwave network. ...

AccessMyInternet.com is partnering with Christian station **WVFJ(FM)** in Atlanta to develop a privately branded ISP for the station.

WVFJ is the first station to use the AccessMyInternet.com program, which is focused on marketing and branding programs for radio stations.

A key component of the program allows radio stations to become private-label Internet service providers to their listeners.

"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 send information and photos to Radio World Managing Editor, P.O. Box 1214, Falls Church, VA 22041.

Overnights

▶ Continued from page 20

came back to the station with a borrowed car full of crazed friends. Some yahoo in the crew took exception to a sacrificial copy of "Saturday Night Fever" up on the wall. He swung at it full-force with a clenched fist. He connected with the nail holding the LP up.

Blood and howls poured forth. Fortunately, the mic was off. I managed to keep the music going till "Dr. Demento" came on. At that point, the visitors had patched their buddy and come up with something else fun to do.

We were all invited to take "free swings" and full-body kicks at the borrowed wheels. The only restriction: don't break any glass. After innumerable dents and scratches marred the car, dozens of station bumper stickers were applied like band-aids to "heal" the damage.

God knows what the owner had to say when it was returned.

Demented and slow

After this crew departed, I received a call informing me that "Dr. Demento" was running at about half speed. The listener said that, at first, he thought it was part of the act. But now he was quite certain it was a mechanical issue.

A few moments with the reel-to-reel confirmed this. It was stuck at a slow speed. First, I tried to manually roll the reels a bit faster. This was not a practical solution. It was too late to call the PD for direction, so I made an executive decision: I hit the record library to create a "humor" show.

I was relieved when it was time to end my short-lived comedy career and toss on the Classic Albums. At 4, when my turn at bat came, I turned the lights low and the volume high.

Aside from giving a training ground for new talent, the overnight shift served as solace for insomniacs. Sometimes, they'd call to confirm they weren't all alone in the world. Now, on nights when I can't sleep, I feel something missing. The voices are all prerecorded with not a soul behind the signal. There's no sense of shared solitude.

Sitting in the dark listening to the radio, we really are all alone.

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.

On the other hand, maybe you are the sort who can run a fast machine. Who loves the thrill of smooth power. Who revels in the admiration of others.

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WIRED FOR SOUND

Who Put the Gory in Category?

Steve Lampen

I've spend more than a few columns in the past extolling the virtues of Category 5 premise/data cables. And more than a few readers have taken the plunge and are using it not just as data cable but also for things like RS-422 and RS-485 machine control, digital audio or even analog audio.

This last application, analog audio, is probably the most controversial. After all, I am advocating the use of unshielded cables ("UTP") to run signals that have always been shielded, right?

Well, the phone company has run audio signals on unshielded cable for years. Of course, their cable is not data cable; it's POTS, plain old telephone service, cable. And it works up to a high frequency of 3500 Hz. So let's ignore it for now.

Analog and CAT-5

We've done some testing at the Belden Engineering Center running analog audio down UTP, just to see how good it is, especially in crosstalk. Part of the problem is that, for data, the specs don't start until 772 kHz, long after analog audio.

So I told the engineer in charge of the testing, Dave DeSmidt at e-mail address *dave.desmidt@belden.com*, to test the most generic Category 5 UTP he could find.

He ended up using Belden 1752A, which is a stranded Category 5 patch cable. Stranding makes any cable seriously worse at high frequencies. However, at analog audio frequencies, solid vs. stranded doesn't make much of a difference. The only bell or whistle this cable has is that the conductors are bonded together. This improves impedance at the data frequencies, but, as you should know by now, impedance at analog audio frequencies is not important. (A quarter wavelength at 20 kHz is more than 2 miles.)

The bonded pairs do improve twist consistency and therefore probably improve crosstalk down at those low analog audio frequencies (20 Hz to 20 kHz) since the pair remains more "balanced." So 1752A was probably was a good choice for all the testing.

So what did we find?

Maybe I forgot to tell Dave just where to stop testing, because he came back to say that he had tested all the different pair iterations. There are six combinations in a four-pair cable. You know, Pair 1 to Pair 2, Pair 1 to Pair 3, Pair 1 to Pair 4, Pair 2 to Pair 3, Pair 2 to Pair 4, Pair 3 to Pair 4.) He then averaged the crosstalk between all of them.

The *worst case* was a crosstalk of -95 dB *at 50 kHz!* Below 20 kHz, average crosstalk was around -100 dB or even lower. This was done with cables of 100 meters, or 328 feet, in length, which is the maximum cable length in the standard data specs. So what's the problem?

Even generic Category 5 cable will do just fine running analog audio. The only caution flag I would put up is to say that the balance of the source and destination devices also influences these crosstalk numbers. The better the balance, the lower the crosstalk will be.

There are many people out there who still don't understand what this means. If you need CD-quality noise-floor, generally around -90 dB, you can get this kind of performance, and better, from an *unshielded* generic Category 5. And, if you need better than -95 dB ...

We also tested our top-of-the-line cable, Belden 1872A ("MediaTwist"). The problem was, at analog audio frequencies, we couldn't read the crosstalk! Now our Network Analyzer has a crosstalk "floor" of -110 dB, so the crosstalk at all audio frequencies was below -110 dB.

I hear some of you old-timers say, "Well then, why did we fool with those shields for all those years if we didn't need them?"

Why, indeed? Most shields in install cable are foil shields. They don't even begin to have any shield effectiveness until well into the Megahertz. In other words, they are RF shields. If you put in a heavy-duty high-coverage braid shield, you can get that effective shielding down to 100 kHz. Below 100 kHz, there is no standard shield that has an effect at all!

In other words, down at the audio frequencies themselves, especially if we're comparing shielded and unshielded cables, those foil shields are doing absolutely nothing.

Therefore, if you have poorly designed and poorly twisted pairs, you'll get crosstalk. And this is where the advantage of Category 5 data cable comes in, because those pairs are precisely twisted, sometimes even bonded, so their crosstalk performance for analog audio is amazing.

A more weighty issue

I used to weigh a lot more than I do now. In fact, I have lost over 100 pounds in the last three years. So, you'll understand why I used to be called "Lumpy" by a lot of my friends at Belden. I often play "Stump the Lump" when I give a question-and-answer session at one of the talks I give to broadcast engineers.

Well, I did get stumped with a comment made by Dave Obergoenner, who works for the Zimmer Radio Group. I was giving a presentation to the St. Louis section of the SBE, and we were in a free-ranging discussion of Category 5 and its enhanced

See LAMPEN, page 42 ▶

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▶ Continued from page 24

frequency Marconi used.

According to Belrose, in 1908 Marconi said it was 820 kHz, while in the early 1930s he said it was 166 kHz. Meanwhile, based on Belrose's experimental modeling of the Poldhu transmitter — based on contradictory historical reports, as the original no longer exists — the Canadian scientist thinks it was more likely to have been around 500 kHz.

Then there is the all-critical question of signal path: to travel from Cornwall to Newfoundland, the transmission must have been bounced off the ionosphere.

Otherwise the signal would have not "serenely" ignored the curvature of the Earth. Instead, like any line-of-sight signal, it would have shot straight into space somewhere over the Atlantic.

The trouble is, Belrose said, "Signals in the 166 kHz-to-820 kHz range are reflected from the ionosphere during daytime — but only weakly — because the absorption of ionospherically reflected signals in this frequency band is very strong during daytime.

"In order for the waves to reach the daytime reflection height (E region) and to be received, the waves have to traverse twice (pass through) the underlying D region.

"In so doing, the waves suffer strong absorption during daytime. For signals to reach Signal Hill, the waves would have traveled four times through the D region," he said.

Finally, there are questions about the receiving equipment Marconi used. Belrose claimed that none of the three coherers Marconi had with him were up to the job and, more suspiciously, nowhere in Marconi's notes does he specify which coherer he used.

Dots and static

Putting all these concerns together with the fact that the dots from Poldhu were heard amidst background static, John Belrose said he cannot see how Marconi could have succeeded.

From his standpoint, the technical facts simply do not add up.

Marconi Communications is not fazed by Belrose's doubts.

After all, the company has been fielding such questions since the Signal Hill experiment was staged 100 years ago.

"The fact is that the signal reception was witnessed by Marconi's assistant, George Kemp," said John Hooley, director of corporate communications for Marconi.

In addition, "Kemp's diary, which we possess, clearly states the coherer type as an Italian Navy mercury coherer," said Hooley. "It is incorrect to say that we do not know what kind of coherer was used."

This said, how could Marconi pick up signals from at least 1,800 miles away, when the frequency range he used does not bounce off the ionosphere in daytime?

According to Hooley — who accepts the frequency range specified by Belrose — "Poldhu was transmitting with huge power (it was 100 times more powerful than anything used previously), but the power was spiky. It is probable that a lot of harmonics were transmitted as well, and it may be that Marconi did not pick up the basic frequency, but a harmonic instead. A harmonic could have arrived with a single hop."

In addition, "There was no radio interference at the time and almost no electrical interference," said Hooley. "Therefore, conditions then were much better than they would be today."

Answer the critics

Marconi certainly expected scrutiny of the Signal Hill results, according to the book "Marconi's Atlantic Leap," written by Gordon Bussey and published by Marconi Communications.

In the book, Bussey recounts a move calculated to silence any doubts — the transmission of signals from Poldhu to the SS Philadelphia as it traveled between Southampton, England, and New York in February 1902.

Picked up using a 150-foot mast-mounted aerial, distinct Morse transmissions were heard up to 1,551 miles away and the letter S up to 2,099 miles, according to logs certified by Captain Miles of the SS Philadelphia.

The signals were also recorded using "Morse inker tape," a device that printed the Morse Code dots-and-dashes to a moving strip of paper.

However, John Belrose disputes the distances mentioned in "Marconi's Atlantic Leap."

Instead, he said, the signals heard on the SS Philadelphia were at distances 696 miles by day; 1,553 miles by night. "The daytime signals to the ship traveled via groundwave; i.e., the signal traveled over the sea. The nighttime signals reached the ship via one-hop skywave, reflecting off the ionosphere only once."

As for the notion that the SS Philadelphia trial validates Marconi's Signal Hill results?

"For signals to reach Signal Hill, we have to invoke a two-hop skywave," said Belrose. That is "reflection two times from the ionosphere. During daytime, because of strong daytime ionospheric absorption, there is no hope for a two-hop skywave to be heard on Signal Hill at 500 kHz. In fact, it would be difficult to achieve such signal reception nowadays, using

See MARCONI, page 39 ▶

CORRECTION

Dalet Reaches For the Stars

A recent special supplement about XM Satellite Radio should have included the following text about the role of Dalet Digital Media Systems. An earlier version of the text was used.

When you have 100 program channels, more than 80 studios, 2 million titles, 320 workstations and 25 Terabytes of audio, your digital audio broadcast system exists on a whole different level than what most radio facilities will ever experience.

To handle acquisition, editing, scheduling and playback for XM Satellite Radio, Dalet Digital Media Systems designed one of the largest digital audio broadcast systems ever created.

"NPR, the VOA and CBC exemplify our long history of large-scale systems," said Dalet Project Manager Bill Wheeler.

"XM's project is unique because it is all digital."

The keystone of the Dalet solution is a Windows NT-based 22 Terabyte system, which IBM claims is the largest it has ever built. XM's music library is stored in CD-quality MPEG 2 using a 4:1 compression ratio.

News producers, programmers, promotional staff and on-air talent can retrieve, at any time, any title in XM's library that they have access rights to. Different levels of accessibility are assigned based upon critical needs.

"Somebody on-air, for example, will have instantaneous access while somebody in promotion might have to wait a few micro-seconds more — but not enough to notice the difference," Wheeler explained.

With so many users and all that content, management could become a nightmare. Not so, Wheeler explained. "Content management is simplified because the users just drag and drop titles from a screen with easy-to-identify categories. The system keeps track of all the details."

For performance and reliability, fiber optics and state-of-the art technology have been employed. Redundant fiber optics offer high throughputs. Hard-drive failures can even be predicted, automatically taken offline and replaced before anyone notices.

Tony Masiello noted that experience was one criterion he considered when choosing a digital audio solution. "Dalet has world-wide experience implementing very large systems and they were capable of integrating to our automation system with their existing interfaces. Very few companies can successfully manage and implement such a large system," Masiello said.

The XM installation was "a lot of fun for Dalet," Wheeler noted. "Every company here was chosen because they are the best at what they do and this was an honor and a challenge we enjoyed meeting."

Marconi

▶ Continued from page 38

modern equipment, because of noise and interference."

To bolster his argument, Belrose cited a 1996 paper by R.W. Simon of the Marconi Research Centre entitled "Guglielmo Marconi and Early Wireless Communication, GEC Review" in which Simon wrote:

"I am intrigued that the certified tapes of the messages we (at the Marconi Research Centre) have do not contain any recognizable plain language, or code, unlike the records of the earlier experiments."

In response to this criticism, Hooley said, "I think the R.W. Simon quote is out of context. ... I have not spoken to him, but I believe he is simply saying that we do not have a complete collection of certified messages.

"Over time, it is inevitable that things get lost or mislaid ... (However) We have the signed chart from the SS Philadelphia, confirming the signals that were received on board," Hooley said.

In a final riposte, Hooley concluded, "A lot of John Belrose's comments are based on theory, and we all know that given certain atmospheric conditions theory is simply shown to be wrong.... What is beyond dispute is that by December 1902 a limited transatlantic service was in place with virtually the same equipment."

As with any historical controversy, it is impossible to say with 100-percent certainty who is right.

Moreover, because some key technical details of the Signal Hill experiment are unknown and because overall usage of the airwaves has changed significantly, it is impossible to replicate the experiment.

But does it matter if Marconi actually heard signals from Poldhu? From a strictly engineering standpoint, of course it does. But from an overall historical perspective, maybe not.

The reason?

As John Belrose noted, it was the "well-publicized efforts of Marconi that convinced people that radio was possible and worth pursuing."

So even if Marconi did not succeed in receiving signals on that December afternoon, he did succeed in bringing radio itself to life.

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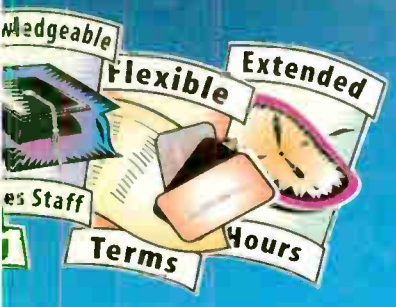

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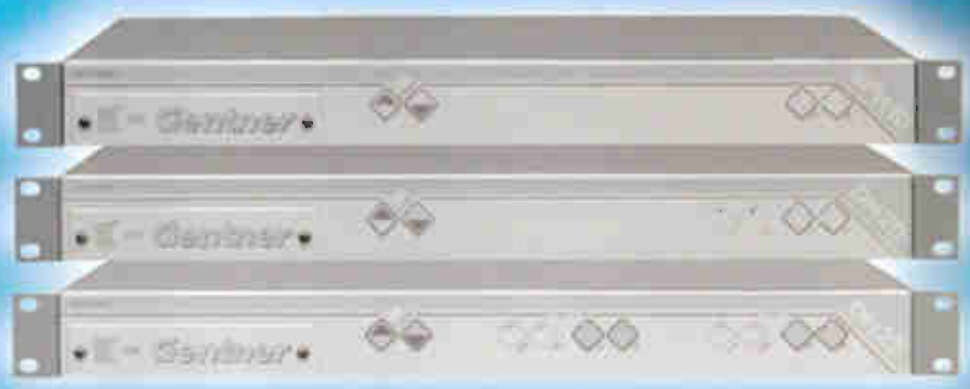

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Gentner DH22	(Dual Digital Hybrid)	List	$1,595.00	ONLY	$1,502.00

SPERDVAC

▶ Continued from page 14

known to man, Ray Erlenborn.

In 1937, when New York radio shows began to migrate to Southern California, CBS Hollywood opened a new broadcast facility, Columbia Square, to serve the avalanche of programs that would emanate from the West Coast. Ray, a dashing young man hoping to become an actor, was hired at CBS-KNX to be a soundman.

Hey, he was offered $25 per week. That sounded pretty darned good. So, in no time at all, he was working a slew of programs such as "Lum and Abner," "Blondie," "Suspense" and "Calling All Cars." He spent 18 to 19 hours a day doing it. When TV came along, he made sound magic for such top-drawer talent as Red Skelton and Jack Benny at CBS Television City.

Norman Corwin

Erlenborn retired from CBS after 62 years. Then he went into the branch of show biz he'd wanted in the first place: acting. He has played many featured roles in Dinner Theatres and Civic Light Opera productions.

Ray, now 85, created all the sound effects for the programs at the convention. What a pleasure to know him and to perform with him.

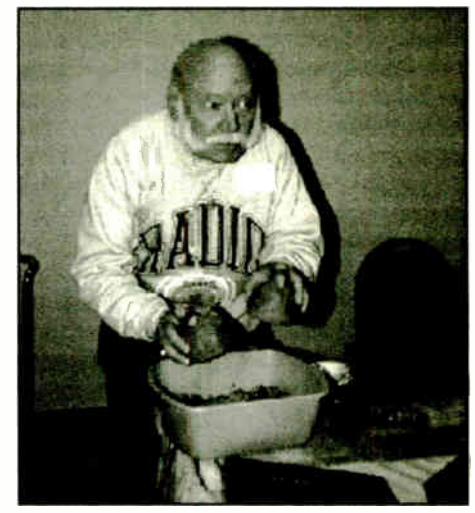
Besides the radio productions, there were workshops on comedy, singing and directing, which helped to fill the three-day convention with fun and laughter. A presentation by Bob Dwan on directing Groucho Marx in "You Bet Your Life" was especially amusing.

Old-fashioned radio drama is truly theater of the mind. The voices, the organ segues and sound effects combine to produce transitions from one part to another, and the imagination forms pictures for the listener that are his alone — which leads me to mention that there were quite a few visually impaired people in the audience. It was wonderful to watch their faces during dramatic moments.

In fact, two young men, John and Larry Gassman, blind identical twins, co-chaired the SPERDVAC Convention along with Dan Haefele. They own an FM station in Los Angeles, and if we had any questions to do with the convention and its myriad complications, we were directed to find the brothers and they would straighten us out.

And who are the Broadcast Legends? We are an organization of 235 members who have at least 20 years of professional experience in some phase of broadcasting. Quite a few of us are retired; many others are still working. We meet quarterly for lunch and a program at the top of the 14-story Holiday Inn in Emeryville, Calif., with a view across the bay to San Francisco.

Some of the luminaries who have entertained us include Shirley Temple, June Lockhart, Willard Waterman, Al "Jazzbo" Collins and Art Gilmore, the first network announcer hired by CBS who went on to do announcer duties for many top-notch radio shows in the Golden Days of Radio.



Sound effects wizard Ray Erlenborn works his magic.

Local radio and TV personalities provide the program for our group from time to time, and several of the entertainments have featured talented Legend actors in "old-time" radio productions presented exactly as they were broadcast in the 1930s, '40s and '50s, with sound effects, an organist and the whole nine yards. Our producer, Ken Ackerman, who was a staff announcer at KCBS in San Francisco for more than 53 years, takes care of all the technicalities with perfection.

Our troupe of Legends enjoyed the SPERDVAC experience thoroughly, and we were rewarded by the enthusiastic response from the audience.

Another talented group of L.A. area actors from 'the olden days' did a bang-up job of recreating a Jack Benny script.

More Info

SPERDVAC is a national organization in Los Angeles. Founded in 1974, its membership now consists of 1,600 radio buffs. It is a preservation society that has transferred 10,000 hours of old-time radio shows from 16-inch acetate discs to cassettes and CDs.

If you are interested in joining this society or in obtaining copies of your favorite shows from the Archive Library, contact SPERDVAC, Box 7177, Van Nuys, CA 91409-7177, send e-mal to SPERDVAC@aol.com *or call (310) 219-0053.*

Lampen

▶ Continued from page 36

versions. Dave said there was one problem with Category 5 UTP, which could only be solved by shielded Category 5. You can tell from my diatribe above that I was ready with a dozen answers why the unshielded version was better.

"Oh, yeah," I said, "What is it?"

"Lightning!" said Dave.

That's right, lightning! Seems Dave was working at a station that was struck by lightning. The equipment attached was ruined; at least 80 percent of the equipment was damaged or destroyed. The stuff with shielded cable gave the lightning something to conduct down, and a greater percentage survived. Dave said only 20 percent of that equipment got fried.

So I can't honestly say UTP is the answer to *every* problem. And there is a lesson here, if you do use shielded cable. I'm not so sure the "telescopic" grounds you often use would help with lightning. You know, I'm talking about connecting the ground at one end to prevent group loops.

That's one of the great advantages of UTP: no shield, no drain wire, no ground, no ground loops. In fact, go to your computer/data manager and ask, "What is a ground loop?" I'll just bet they can't tell you. Wouldn't that be a wonderful world to be in?

Unless, of course, you want to be lightning-safe. In which case, you might want to use shielded cable. Then you have to make sure you have a very good ground. To avoid ground loops, you should really put in a star ground system, so that you can ground both ends of the cable.

Dave says that lightning exhibits a frequency range between 2 kHz and 2 MHz. You have to present a low-impedance (R-C-L) path for these frequencies. That would also mean the Neil Muncy "Pin 1" problems comes in and you'd better hope that Pin 1 is grounded to the chassis, and not to something on the circuit board inside.

I'd bet that those devices that have a ground trade or bus bar inside the chassis are among the 20 percent that were fried by lightning, even with a good ground connection.

I'm no meteorologist, and would be delighted to hear from anyone with more information on lightning.

Steve Lampen is technology specialist, multimedia products for Belden Electronics Division in San Francisco. His book "Wire, Cable, and Fiber Optics for Video and Audio Engineers" is published by McGraw-Hill.

Reach him via e-mail at shlampen@aol.com

GM Journal

Radio World — Resource for Business, Programming & Sales — May 9, 2001

Page 50

Tips for Disaster Management

Ken R.

Hurricane Andrew struck suddenly in the summer of 1992. Its 300-mile-per-hour winds caught a guy wire and brought down the 1,800-foot tower of WCIX(TV), Miami.

Clay Freinwald

If this happened to your station, how long would it take you to get back on the air?

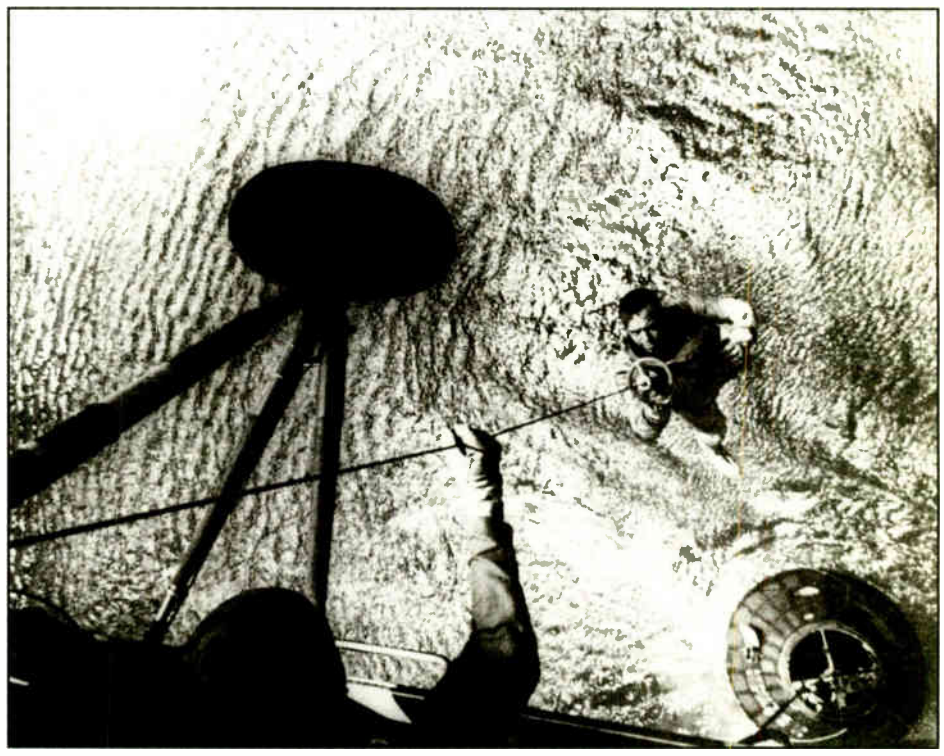
In the Northeast, blizzards are the threat. In the Midwest, it is the devastating tornadoes that plow through the countryside every summer. In California, earthquakes have buckled bridges and toppled buildings.

See DISASTER, page 44 ▶

Reporters Recall Shepard Coverage

Peter King

Forty years have passed since Alan Shepard became the first American in space, riding his tiny Mercury spacecraft, "Freedom 7," on a 15-minute sub-orbital flight. More than 1,000 reporters told the story of Shepard's flight from Cape Canaveral, Fla., on May 5, 1961, many of them on the radio.



A U.S. Marine helicopter recovery team hoists Alan Shepard aboard following his first Project Mercury sub-orbital space flight. The capsule is visible at lower right.

The streak

Forget Cal Ripkin Jr.

NBC News correspondent Jay Barbree owns perhaps the most incredible streak alive: He's covered every U.S. manned space launch, now numbering more than 130, starting with Alan Shepard's flight.

"I may be uglier than hell, I may not sound great on the air," he said, "but I'm the most experienced!"

Almost as remarkable, he's worked for NBC the whole time, first on NBC Radio, later on NBC-TV and these days on MSNBC.

On May 5, 1961, Barbree was No. 2 man to veteran Merrill Mueller on NBC Radio, thrilled to be working with him and next door to people like CBS's Robert Trout and Walter Cronkite.

"They were my heroes," he said.

These days, most radio reporters go it alone, but Barbree said, "that day, we had six or seven engineers ... you had to order an equalized line from the phone company in those days — there were no satellites or ISDN and you had to have the proper equipment on both ends. It was quite expensive. We had big consoles and big recorders and big studios."

It was a long day, too, with the first newscast at 5 a.m., the final one at 2 a.m. the next morning and of course, the long-form launch broadcast.

Barbree and Mueller went through more than two hours of weather and technical delays. Barbree remembered at one point, his partner "had said almost everything you could say about this launch."

About 5 or 6 seconds of silence went by. Then Merrill said of Shepard, "He looks so lonely up there."

The author

When Martin Caidin died four years ago, obituaries cited the dozens of books he wrote, including "Marooned," later an Oscar-winning motion picture and "Cyborg," which became TV's "Six Million Dollar Man."

Very few mentioned his career as a reporter for Metromedia Radio and WNEW(AM), New York City, for whom he broadcast the Mercury launches, including the Shepard flight 40 years ago.

In a 1996 interview, Caidin recalled broadcasting from the roof of a VW Microbus at the launch site with partner Ike Pappas.

"Ike was so excited, he'd bring his fist down on top of the bus and the metal would come back again and you'd hear the twanging boom of the roof caving in, the roof coming out!"

Former CBS Radio and CNN

See SHEPARD, page 48 ▶

Disaster

▶ Continued from page 43

Citizens count on radio for information and news, but if a broadcaster doesn't have a plan in place and redundant equipment on standby, those listeners go elsewhere.

Redundancy redundancy

Unfortunately, some stations don't prepare fully.

"I think it's just complacency," said Clay Freinwald, member of the Society of Broadcast Engineers board of directors.

"The first byword should be redundancy. A lot of stations in smaller markets will spend money on backup studios and backups for the hard-drive audio system but the outside plant does not get addressed because it isn't seen by the general manager."

We dream up the most insane scenarios that could possibly happen and plan what we would do.

— Rob Caskey

In Seattle, where Freinwald is senior facilities engineer for Entercom's eight-station cluster, a recent earthquake registering 6.8 on the Richter scale toppled the tower of KJR(AM), but an auxiliary transmitting site which was in the testing process was put into service and it worked.

Freinwald believes the most vulnerable area at many stations is its power supply.

"You go off the air unless you have an auxiliary generator," said Freinwald. "And power doesn't go off just during an energy crisis, it fails often." He advocates diesel-fueled generators and suggests testing them frequently under load.

"The other issue is fuel supply," said Freinwald. "A week or two supply is needed at minimum." He related the story of a Seattle station that didn't have enough fuel to keep its generator running during a recent ice storm.

"The fuel delivery people couldn't get to the generator because the roads were treacherous," said Freinwald. "Now that station, owned by a major company, has a new generator and 2,000 gallons of diesel on standby."

Some municipalities forbid any entity to stockpile more than 500 gallons of fuel in one location.

"In those cases, you better have plans for a bucket brigade, because Murphy's Law says it will happen at 3 a.m. on a Sunday when the supplier is closed," said Freinwald.

He also recommended having a detailed plan written down in the studio for the person at the station who will be the first to be aware of any problem.

Anything can happen

"We have contingency plans and our transmitters are spread over two counties," said Craig Maudlin, chief engineer for the Entercom properties in Wichita, Kan. "If a tornado came through and leveled us, we have two old transmitter facilities with studios."

Maudlin said two of his FM properties have separate and redundant backup studios, miles from the main stations.

Like the third of the fabled "Three Little Pigs," Entercom built its house out of bricks.

"The newer transmitter towers are overbuilt, so back in 1991 during strong winds we didn't lose them, but the utility company lost 40 miles of line. We had a deal so they could back-feed us from another generating station as long as those lines stayed up," said Maudlin. "We also have a 700-watt generator on standby and on a moment's notice we can get back on the air."

Trees can fall, fly or be flung onto your station, tower or car.

What if the phone lines go down as well?

"We would have some remote control problems but we can kick the whole thing over to a cell phone," said Maudlin.

earthquake territory.

"But our corporate management is just not that interested in spending money to develop a plan so we could stay on the air through one of those," said Irwin. "One thing that's helpful is that we have employees living on both sides of the Bay Bridge in case it's not possible to cross for any reason."

Irwin said that all the Clear Channel properties in his market are housed in one building. "This building is built really well, but if anything happened to it we would be in trouble," said Irwin.

Freinwald recommends amateur radio as an alternative when all other options are exhausted or ruined.

"Any emergency management person will tell you that 'ham' systems always work."

The Entercom properties in Wichita maintain a mirrored server that constantly backs up important station data.

Backups

"I can kill the main system and the backup will be able to run anywhere from 24 to 36 hours of programming ahead of where we are at the current time," said Maudlin. "We do optical backups of our music and in the worst case we might miss some billing, but we would be on the air."

Because computers are the repositories for much station programming, billing, commercial content and other vital data, a Marlborough, Mass., company called LiveVault Corp. has developed a way to back up data online in real time and is just starting to approach radio stations with the technology.

Control Center at LiveVault in Massachusetts

Chris Midgeley, LiveVault's chief technical officer, said that by keeping station data online, in the event of an emergency, clients can restore it instantly. Or if the network is lost, data will arrive on a hard disk or CD ROM the next day.

"The No. 1 cause of lost data is the station sprinkler system being triggered by fire," said Midgeley. "Our online system is located off-site and keeps your data current even as you update it."

"Data is like a newspaper ... yesterday's is old news," said Midgeley.

Freinwald advises stations not only

See DISASTER, page 54 ▶

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COLE'S LAW

Indecency Complaints Draw Notice

Harry Cole

The following column discusses indecency complaints against certain broadcasters, and includes explicit language that may offend some readers.

Just last fall, then-merely-retired-General Colin Powell, now Mr. Secretary of State, deposited an unpleasantness in the punch bowl at the National Association of Broadcasters' radio conference by chiding members about the broadcast of "rough, crude, dirty and filthy" material.

Now FCC Commissioner Gloria Tristani has taken up the same call, but in an unusual way that seems designed to attract media attention.

In February, Commissioner Tristani issued three separate "press statements" that criticize actions taken by Charles "Chuck" Kelley, chief of the investigations and hearings division of the commission's Enforcement Bureau.

Mind you, the actions addressed in those press statements were not technically before Commissioner Tristani for her consideration. But that didn't stop her.

For those unfamiliar with the routine processing of routine complaints, including complaints about alleged indecent broadcasts, here is some quick background.

What happens

In the ordinary case, the complainant hears something on the radio and is outraged. He or she writes a letter of complaint to the FCC. The letter finds its way to the IHD. There a staff person reviews the complaint to determine whether there is sufficient information to justify any commission action.

Information is generally deemed "sufficient" if it includes the call sign of the station, the date and approximate time of the broadcast(s) and a description of what was said with enough detail to permit the commission's staff to determine whether the material may have been "indecent."

Again, for those who may have momentarily misplaced their copies of the Team Cole's Law multi-volume "Guide to Talking Dirty on the Radio," let us remind you that the FCC defines "indecency" as "language or material that, in context, depicts or describes, in terms patently offensive as measured by contemporary community standards for the broadcast medium, sexual or excretory activities or organs."

If the IHD decides that there isn't enough information to justify further inquiry, it so advises the complainant and dismisses the complaint. That normally is the end of the matter. The complainant might seek review by the full commission of the IHD decision, but that does not happen often.

In other words, the FCC generally handles indecency complaints down at the staff level, without substantial involvement by any of the commissioners themselves.

But sometimes

Apparently, though, the commissioners find out about those complaints from time to time. And that's where Commissioner Tristani comes in.

She checked into the files and was disturbed at what she found. Commissioner Tristani learned of three decisions in which the IHD washed out, without further consideration, three separate indecency complaints.

And so, exercising her authority as a commissioner to issue "press statements," she issued personal statements to express her disagreement with the IHD's actions.

The commissioner's concern was understandable. One complaint from a KLOU(FM) listener in St. Louis involved the broadcast of a joke that included the line, "The wallet was found stuffed up the a** of a dead guy."

A second complaint from a WRLR(FM) listener in Homewood, Ala., involved not only the broadcast of a synonym for a pet cat; additionally, the complaint alleged that when the complainant called the station to object, she was referred to as a "bitch" and was told that she needed a "stick up her a**." The announcers also were alleged to have stated on the air that they hoped that the complainant would have "a wreck and get killed on the way to work."

And the third complaint described a campaign staged by a "morning sports talk" show on WGR(AM) in Buffalo, N.Y., in which the station supposedly purchased urinal splashguards with NHL hockey team logos on them for distribution to local bars and restaurants.

The show's hosts spoke, with themselves and with listeners, about which teams they would like to "piss on." The announcers also allegedly used an impolite term for penis on occasion.

In dismissing the first of these complaints (about the wallet "joke"), the IHD stated that "a reference to excretory organs alone is not sufficient to find material indecent, nor is it sufficient that some, or even most, people would find the material offensive."

With respect to the second complaint — which included not only the alleged indecency but also the unpleasant wish

See COLE'S LAW, page 47 ▶

Cole's Law

▶ Continued from page 46

that the complainant would be seriously injured or killed — the IHD acknowledged that the remarks were "certainly offensive," but "not indecent because they are not patently offensive as measured by contemporary community standards for the broadcast medium."

And with respect to the third complaint, the IHD concluded that the repeated references to "pissing on" certain NHL hockey teams did not "describe sexual or excretory activities or organs in a patently offensive manner" and, thus, weren't indecent.

Dissent

Commissioner Tristani took serious and detailed exception to these decisions. Her statements are not merely single-paragraph platitudinous expressions of general hand-wringing concern. Rather, they read more like detailed briefs filed on behalf of the complainants that argue strenuously that dismissal in each case was inappropriate and that instead the IHD should have at least sent the stations in question letters of inquiry.

The commissioner's arguments are not without some force. After all, each of the three complaints indicated the broadcast of words that did involve "sexual or excretory activities or organs." And the complaints themselves were at least a preliminary indication that the use of those terms might be patently offensive for the broadcast medium.

All of which highlights both the good news and the bad news here. The good news is that, from the broadcasters' point of view, the IHD was inclined to read the term "patently offensive" in each case narrowly, refusing to accept the notion that one complaint alone would determine that language was "patently offensive."

For now, the IHD appears to be inclined to resolve this problem in favor of the broadcaster.

Broadcasters who routinely utilize this type of language may take some comfort in that they are likely to survive the next round of complaints. Another potential glimmer of good news is that the full commission did not join Commissioner Tristani in her press statements, which at least suggests that a majority of the commission is currently content with the way the IHD is doing business.

But the bad news is that reasonable minds can differ over what is "patently offensive," as we clearly see in the disagreement between Commissioner Tristani and the IHD.

And that is the fundamental problem with the commission's indecency regulation. Where reasonable minds may differ on the meaning of a term that is essential to the agency's enforcement activities, (in this case, for example, the term "patently offensive"), those who are regulated by the agency and therefore supposed to comply with the agency's standards have no solid regulatory guidelines to follow.

How, after all, are broadcasters supposed to know from one incident to the next whether indecency will be defined by Chuck Kelley or Gloria Tristani, or someone else entirely?

For now, the IHD appears to be inclined to resolve this problem in favor of the broadcaster. But that situation is not guaranteed to be permanent.

To the contrary, we suspect that one purpose of Commissioner Tristani's press statements was to attract the attention of folks in general agreement with her position, the ultimate goal being to bring the pressure of public scrutiny to bear on the IHD in this area. Time will tell whether that result will be realized, but already the Washington Post has run an article focusing on her position. Her word is getting out.

And that word might eventually be persuasive, particularly when licensees continue to push the envelope of what can be said on the air.

In March, for example, the Enforcement Bureau upheld a $7,000 fine against Station WLLD(FM), an Infinity station in Holmes Beach, Fla.

Not offensive?

The language at issue included a slang reference to female sex organs, a racial epithet for African Americans and a common four-letter scatalogical word. Infinity claimed the language was "consistent with contemporary community standards" and was only "fleeting."

Think what you may about that language, or the licensee's defense of it, perhaps the most interesting aspect is that the commission's definition of "indecency" would not in any event reach arguably the most "patently offensive" language used there, the highly inflammatory "n" word.

If you have any questions concerning the commission's indecency policies, you should be sure to consult with your communications counsel.

Harry Cole is a principal in the Washington-based law firm of Bechtel & Cole, Chartered. Contact him at (202)833-4190 or send e-mail to hfcole@coleslaw.com

Radio World welcomes other points of view.

Shepard

▶ Continued from page 43

correspondent Reid Collins was Caidin's partner for many space launch broadcasts.

Collins said the competition was tough in those days.

"We were excited, we were proud to have been included ... (the reporters) were all like kids, they were excited — and they showed it. There wasn't a dry eye among all the newsmen ... it wasn't something very many of them reported ... they suddenly realized their souls were bared. You didn't hear any cynicism on the Cape that day!"

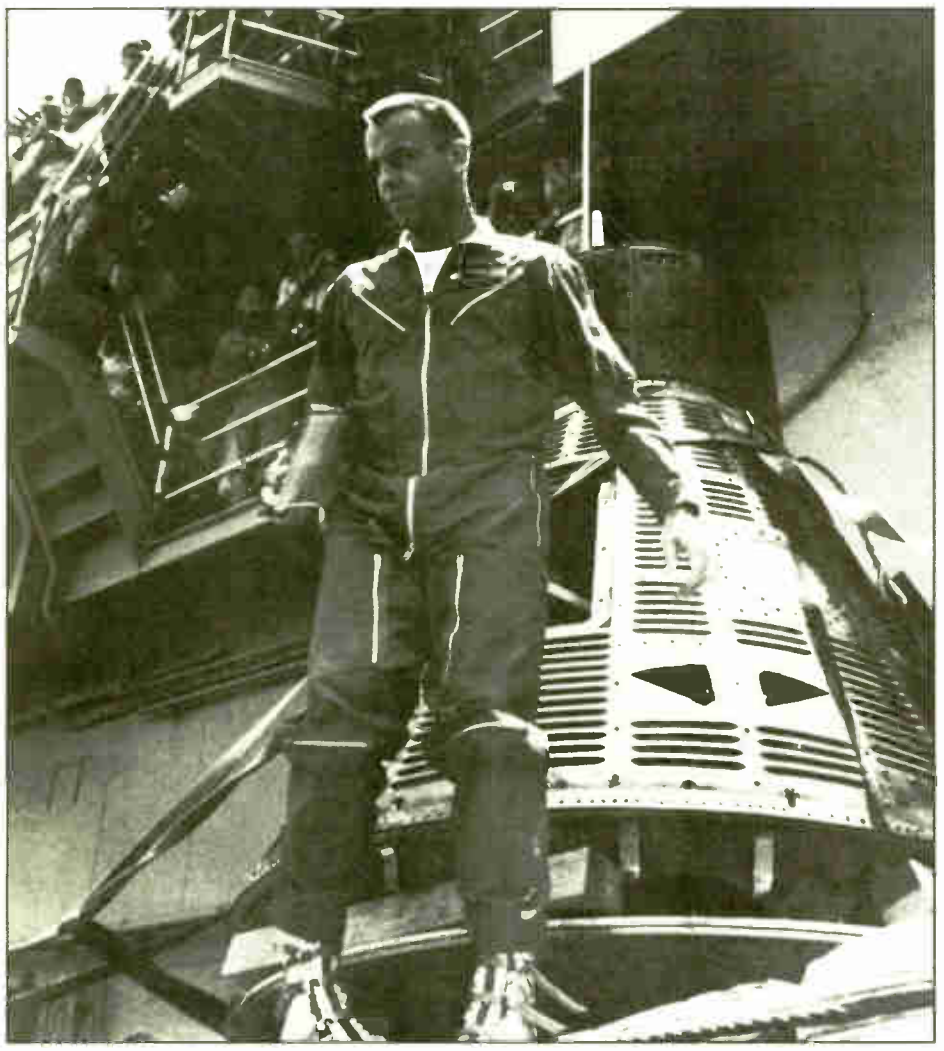
ABC Radio correspondent Jim Slade has covered the manned space program from the beginning, for Westinghouse, Mutual, NBC and ABC Radio. He recalls that working conditions were a bit more Spartan then.

"We were in what was a jungle surrounding a mound area ... if you'd have stuck your arm into the bushes around there, something would have eaten it off!

"In those days, it was nothing to do an hour show before liftoff," Slade said.

Slade wasn't at the Shepard flight, but when he arrived at the Cape to cover Scott Carpenter's "Aurora 7" flight in 1962, broadcast equipment was still as primitive as it was during Shepard's flight the year before.

"It was a great sense of adventure. We



Moments after his recovery from the Atlantic Ocean in May 1961, Shepard inspects his spacecraft on board the U.S. Navy carrier Champlain.

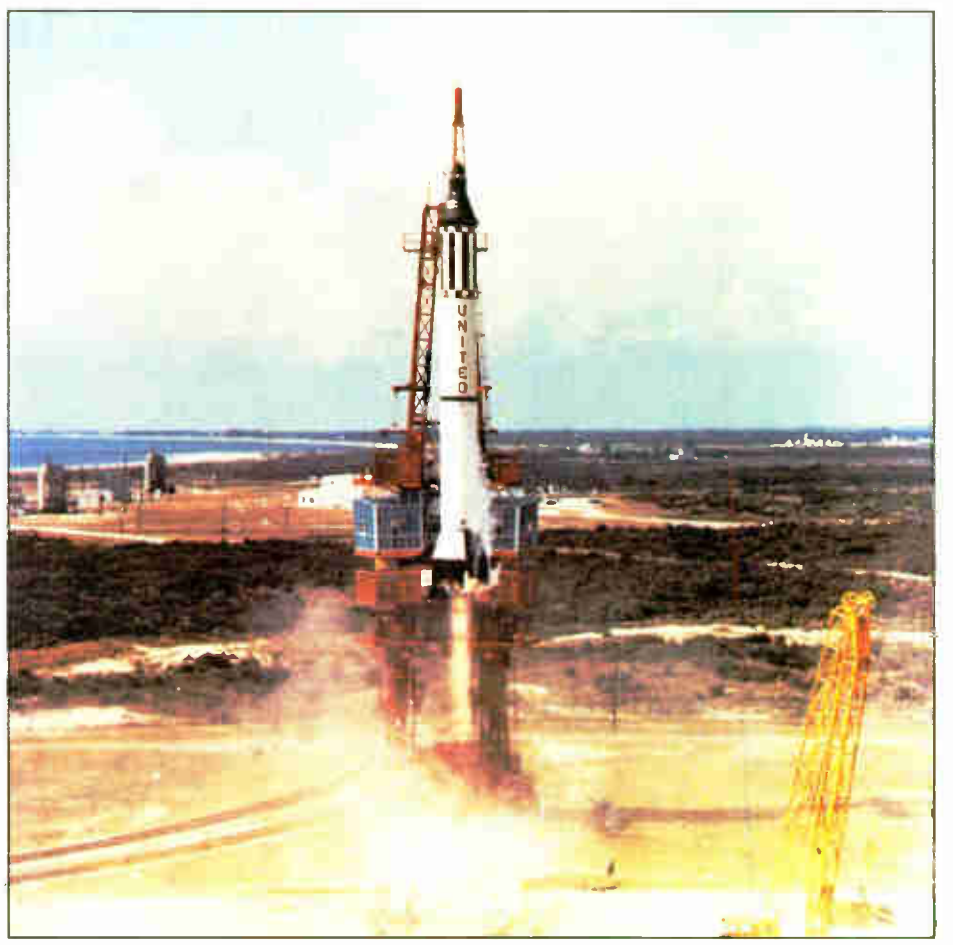
"The print media was very jealous of radio and television. I remember a reporter for the New York Times began hollering an obscenity in the midst of a group of us because we had our tape recorders out ... he thought that by saying an unmentionable word, he'd be destroying our information. That's how primitive life at the Cape was in those days!"

In the 1996 interview, Caidin stated that the Shepard flight was a rare occasion for the usually cynical media.

NBC space correspondent Jay Barbree, astronaut Alan Shepard and STS-71 mission commander Robert 'Hoot' Gibson admire a picture of Gibson's newborn child at a 1995 Astronaut Hall of Fame ceremony in Titusville, Fla. STS-71 was NASA's 100th flight mission; Shepard's Mercury flight was the first.

Alan Shepard is shown in the Project Mercury spacecraft, moments before it is sealed and his historic flight began.

since the early days. Slade thought the space program was the most exciting story a reporter could ask for.



With Shepard aboard, the first manned sub-orbital space flight is launched in May 1961 from Cape Canaveral in Florida.

In the early days, all the networks brought engineers.

"These guys were going to Radio Shack and lashing lines together to get us on the air, tying us into regular phone lines. They brought along nice control boards and those heavy Ampex reel-to-reel recorders."

Like most reporters who've been there were privileged to be in on it. It was addictive. There was a great sense of being involved in something big," Slade said.

Peter King is an Orlando, Fla.,-based reporter/anchor for CBS News Radio. He's covered the space program for CBS since 1996, fulfilling a lifelong dream.

Reach him at PKingnews@aol.com

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Quetzal Fund Defends Investments

Steve Sullivan

April 1 marked one year since the Quetzal fund made its first investment. The private equity fund, backed by 15 of the nation's biggest media companies, was given a mandate of increasing ethnic and gender diversity among management and ownership of communications companies.

NAB's role

The National Association of Broadcasters was instrumental in bringing together the parties to create the fund. NAB Senior Vice President Dennis Wharton said, "As an industry, we recognize that there are strides to be made in terms of bringing more minorities and women into the ranks of broadcasting. We think diversity is something that's good for the industry and helps us serve local communities better. Thanks in part to the Quetzal Fund, there's been a slight improvement in the last year, which is encouraging."

While Wharton is pleased with the progress made by Quetzal, the fund's performance has not been perfect. One of Quetzal's investment properties has gone out of business, and there have been occasional detractors who question whether those who most need the help of the fund are able to get it.

Viacom President and CEO Mel Karmazin and Clear Channel CEO Lowry Mays announced creation of the fund on Nov. 3, 1999, in Washington. At that time, both companies were awaiting Federal Communications Commission approval on major mergers.

Lowry Mays spoke at the fund announcement, with many competitors and industry colleagues behind him. From Left: Jeff Smulyan, Emmis Communications Corp. President and CEO; Donald Cornwell, Granite Broadcasting Corp. Chairman and CEO; Richard Ferguson, Cox Radio Inc. Vice President and Co-COO; Mike McCarthy, A. H. Belo Corp. Executive Vice President/General Counsel; Peggy Binzel, Fox Broadcasting Co. Executive Senior Vice President; Lowry Mays, Clear Channel Communications Chairman and CEO (at podium); Jimmy Lee, Vice Chairman, J. P. Morgan Chase & Co.

At the press conference announcing the fund, reporters questioned Karmazin whether a possible ulterior motive behind the fund was to buy favor from the FCC's then-Chairman William Kennard, who had made increased minority ownership a priority. Karmazin dismissed the suspicions, saying it was possible to "do the right thing and do good at the same time."

The FCC has indeed had a favorable view of the fund. Kennard was a strong proponent of the fund, as has been new Chairman Michael Powell. Quetzal Managing Member Reginald Hollinger said the fund is supported by all 15 of the limited partners, not just CBS and Clear Channel.

"There aren't a lot of industry initiatives in the private sector where a bunch of competitors get together around a private equity fund to be managed by someone other than themselves. And it's focused on an issue in an industry in which diversity is an issue. You have to applaud those efforts."

Titans

Along with CBS and Clear Channel, 13 other media giants contributed a total of $170 million to create the fund. The other limited partners are ABC/Walt Disney Co., Belo Ventures, Bonneville International, Cox Enterprises, Cumulus Media, Emmis Communications Corp., Entercom Delaware Holding Corp., Fox/News Corp., Granite Broadcasting Corp., Infinity Broadcasting Corp., Radio One, Susquehanna Radio Corp. and Tribune Broadcasting.

The NAB's Wharton said, "Once we raised the money, we didn't want to be involved in picking the prospective investments. We turned that over to the people who know that best, and that's the Wall Street community."

Chase Capital Partners was selected to administer the fund. Hollinger and

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Quetzal

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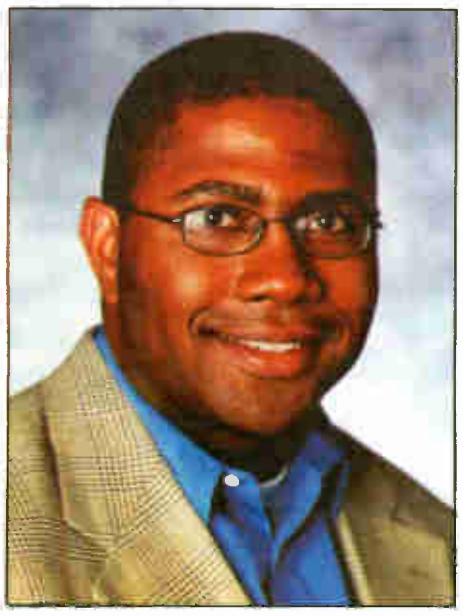
Lauren Tyler were brought in as the managing members. Both earned MBAs from the Harvard Business School and previously held positions with investment firms that concentrated on media and communications companies.

Name change

At first, the fund was dubbed Prism, a name that seemed to fit the mission, but another company already held a copyright for that name. The group settled on the name Quetzal/Chase Capital Partners Fund, which has since been changed to Quetzal/JPMorgan Partners, LLC following the recent merger of Chase with J. P. Morgan Capital.



Reginald Hollinger

As its logo illustrates, a quetzal is a resplendent, multicolored bird native to Central America.

"We thought Prism was a great name, but we didn't think it was worth going through the legal battle, given that we wanted to use our money to do investments, not to pay lawyers," Hollinger said. "And when you look at Quetzal, it's a name that's particularly resonant in the Hispanic and Mexican-American community."

The fund's mission is to use its $170 million to provide up to $1 billion in buying power for companies that are run by, operated by or controlled by women or ethnic individuals. To date, all the companies in which Quetzal has invested also have target audiences that are either ethnic- or gender-specific.

However, the type of audience the companies serve is not a criterion for funding.

"We would clearly look at a business run by an ethnic individual or woman in the general market," said Tyler. "However, we realize the multiples and the interest in the public market is stronger in the ethnic market than in the general market.

"Our goal is to sell our stake or sell the company entirely in a three- to five-year horizon. What we're looking for is a 30-percent internal rate of return on our investment."

Quetzal closed on its $170 million of financing on March 31, 2000, and immediately began to distribute its funds. By the end of May 2000, the fund had invested $43.3 million in four companies.

Cincinnati's Blue Chip Broadcasting, the third-largest African-American-owned radio group in the nation, was beneficiary of a $30 million investment. Hookt.com, a New York City-based company that developed an online community and entertainment portal dedicated to the hip-hop music genre and lifestyle, received $4 million from the fund.

The fund handed out $7.5 million to Urban Box Office Networks, or UBO, a New York Internet media company focused on serving the urban market. Quetzal also made a $1.8 million investment in Obsidiana.com, an online destination for Spanish- and Portuguese-speaking women.

Quetzal's most recent investment came in December 2000, when it led a $55 million round of equity financing for New York's Inner City Broadcasting, the nation's second-largest African-American-owned radio group.

Quetzal/JPMorgan Partners

One of the investments turned sour. Late last year, Urban Box Office had lined up a reported $35 million to $50 million in additional financing from Quetzal and other investors. But one of those other investors, Interfase Capital of Austin, Texas, backed out of a commitment to kick in $20 million.

"The Industry Standard" magazine reported last November that Interfase Chief Executive Officer Adam Kidron claimed that UBO was losing money and had not met its agreement to establish strategic partnerships with other larger companies. Interfase's withdrawal scuttled the financing round and in early November UBO filed for bankruptcy.

Tyler contends that the decision to invest in UBO was sound, but that Interfase's 11th-hour pullout blindsided everyone involved.

"What happened with UBO is that we were in a market which basically began shutting down for fundraising for Internet companies in September and really closed down in October and November. We had a letter of intent with Interfase Capital and they had already put in a bridge loan to the company as part of the financing. Then they pulled out at the last minute. It

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Quetzal

▶ Continued from page 51

was a highly unanticipated event."

Another of Quetzal's companies, Blue Chip Broadcasting, has been sold. In February, Radio One, a Quetzal limited partner, bought Blue Chip for $190 million. Quetzal, with its $30 million investment in Blue Chip, was one of several shareholders benefiting from the sale.

Neither Hollinger nor Tyler would elaborate on the details of the sale, but said Quetzal's profit is undetermined at this point because it included Radio One securities.

Jim Boyle, an analyst with First Union Securities, views Quetzal's performance on the broadcast side to have been well-handled.

"The Blue Chip investment, even without knowing the magnitude of the return, appears to have been very successful in a relatively brief time. And that's what you want these investment groups to do — to help companies within their charter improve, get better, add value and eventually monetize or unlock the value. In the case of Inner City, that potentially should be a larger group than Blue Chip and they have perhaps a chance to have an instant replay."

The Fund Launch. From Left: Jimmy Lee, Vice Chairman, J. P. Morgan Chase & Co.; Dennis Fitzsimons, Tribune Broadcasting President; Mel Karmazin, Viacom President and CEO (at podium); Robert Okun, NBC Vice President; Preston Padden, Disney Executive Vice President/Government Relations; Reginald Hollinger, Managing Member, Quetzal/JPMorgan Partners, LLC

In the case of the Blue Chip/Radio One, the buyer was another African-American-owned company. However, when Quetzal is looking for buyers, it isn't necessarily seeking to sell to either an ethnic individual or a woman.

Targets

Tyler said there are some fine distinctions that are important to consider when evaluating the fund's performance. She said it is not targeted to minorities, but rather to women and ethnic individuals who possibly might be part of a majority population. Another distinction is that it is not exclusively for broadcasters, but for individuals in the communications industry, a broader category that includes Web properties.

"The purpose of the fund is to increase the diversity of ownership of communications assets in the U.S. We believe we will have done that in the first instance," Tyler said.

"In selling the business, if there's another buyer and it fits strategically and the buyer is not ethnic or a woman, we'll still take a look at that buyer on an even basis."

For an initiative that has such a seemingly noble mission, Quetzal has had its share of critics. In addition to the early concerns that CBS and Clear Channel devised the fund to help their mergers slide by the FCC, there have been charges that Quetzal favors new media over traditional media and that those who really need funding — small operators looking to break into media ownership — are overlooked by the fund.

"The challenges are not only about women and minorities, but about small businesses," said Mark Lloyd, executive director of the Washington-based Civil Rights Forum on Communications Policy.

"The concerns about diversity also include people having a particular voice in their community. That voice may be Mormon or Appalachian white. It doesn't have to be part of a racial or ethnic minority group. But they're getting crowded out as well and that's not good for the industry."

Following its flurry of four investments last spring, there was some concern because three were Internet operations. During a July roundtable sponsored by the National Telecommunications and Information Administration, those concerns were voiced.

James Winston, executive director and general counsel for the National Association of Black Owned Broadcasters said, "The impetus for Quetzal was that there was a lack of funding for minority broadcast ventures. They've done four transactions, and three have been Internet deals and only one broadcasting deal. So my concern is that Quetzal is not going to hit the target."

The concerns eased somewhat with the announcement of the Inner City deal, but there are still those who see the score as Internet 3, Radio 2.

"I think some people looked at it as we made five investments and only two are radio. But that's extremely misleading," Hollinger said.

"Eighty percent of the capital we've invested so far has been in the radio sector. We like the radio business and obviously we've voted with our pocketbooks about our liking the prospects for the industry. But going forward, you won't see us investing exclusively in the radio business. We have looked and will be looking beyond broadcasting to telecommunications, the Internet, cable and other types of communications businesses."

While observers like the Civil Rights Forum's Lloyd would like to see the fund

Lauren Tyler

help small-business owners, Tyler concedes that Quetzal is not targeted to entry-level broadcasters or mom-and-pop operations. She and Hollinger are looking for individuals with track records, solid plans and the potential for big returns.

"We're looking for investments that are going to provide a good return for our partners and that have superior management teams. Our investment sizes are between $5 million to $30 million of equity capital."

She cited three key factors she and Hollinger seek when considering who gets money.

"The most important factor is the management team and their experience in the industry in which the company operates. Second is the industry in which they'll operate and that industry's dynamics. Third is a really well-thought-out plan and execution of that plan historically as well as some sort of information that says they'll be able to do this plan prospectively."

Tyler and Hollinger consider the five investments in 2000 in line with their expectations. But they are careful about setting goals for 2001.

"We do have in our minds a plan for the number of investments we want to make," said Tyler. "However, if they're not there, we clearly aren't going to push it."

Hollinger said they will continue to keep close tabs on the radio industry, particularly the urban, Hispanic and Asian components.

"We're using some of these investments as a way of increasing our ownership in what is still a fairly fragmented sector and using that as a basis of growing over time. When you look at urban radio or Hispanic radio vs. mainstream radio, there's still a lot of growth to be done. We like that sector and will continue to be on the prowl for interesting companies to partner with."

Steve Sullivan, co-founder of the Advanced Interactive Media Group LLC, lives near Austin, Texas.

Eighty percent of the capital we've invested so far has been in the radio sector.

— Reginald Hollinger

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Disaster

▶ Continued from page 44

to own back up transmitting equipment, but back up their STLs as well. Entercom has several sites from which it can broadcast in Seattle and it has redundant means of getting the audio to the transmitters, according to Freinwald.

Franklin, Va., September of 1999
After Hurricane Floyd Hit

"The main system is microwave, the backup is a landline."

Caskey said he tries to "have as much stuff as I can. We dream up the most insane scenarios that could possibly happen and plan what we would do."

Caskey has several generators for his main transmitter and studio sites in Charlotte and uninterruptible power supplies.

"One time we had a dump truck driving too fast near our transmitter site and it crashed and took out two power lines," said Caskey. "The local power was out for about seven hours, but we were back on the air after just a 30-second delay."

Rick Edwards is vice president of SBE and president of Coral Springs, Fla.,-based Tower America.

"AM towers are built using standards that are 2.5 times what's needed for safety," said Edwards. "But stations should make sure they don't have any unnecessary equipment up there."

Edwards said the major problem is transmission lines. If not secured properly, they could flap around and cause oscillation, according to Edwards.

"AM stations also must make sure that insulators are properly fixed. I have seen situations where they were on backwards so the porcelain balls were under tension instead of under compression."

Towering concerns

Edwards said FM towers can present their own set of challenges, in that most are tall, so in some cases it might be better to put all phone service and microwave equipment on a separate smaller tower. Edwards also said any elevator cables should be secured before a storm and that transmission lines be tied down tightly.

"Broadcasters have gotten sloppy about their tower lights, too," said Edwards. "In these days of consolidation, you would be surprised at how many people overlook this."

Caskey has some additional tips regarding transmitters.

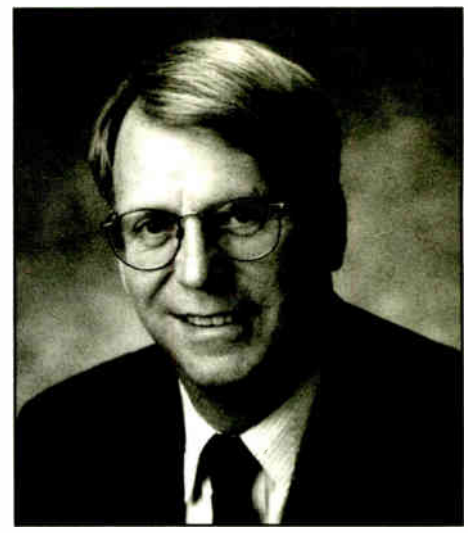
The very design of your facility will help you to avoid problems during storms or other emergencies. For instance, a good ground system is critical.

"My biggest problem here in Charlotte is lightning, and we've learned that instead of burying a ground rod really deep in the soil, it's better to put it 6 inches to a foot underground."

Caskey plants ground radials in the form of straps running out several hundred feet from each tower. He said his towers get hit by lightning often, "and the most you can hear on the air is a little tick."

In the end, staying on the air is just about all that matters. To a broadcast listener, there isn't any difference between being off the air because of component failure and being off the air due to an act of God," said Freinwald. "We will do darn near anything to stay on the air."

Chris Midgeley



Rick Edwards

Ken R. is a former broadcaster who worked two days straight on the air on WOHO(AM) during the blizzard of January 1978 in Toledo, Ohio.

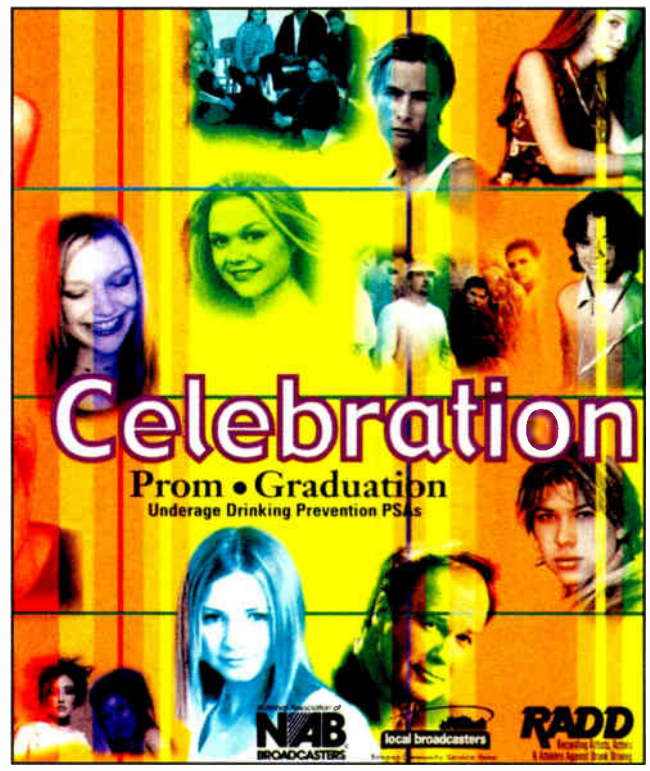
One thing that's helpful is that we have employees living on both sides of the Bay Bridge in case it's not possible to cross for any reason.

— Doug Irwin

STATION SERVICES

NAB, RADD Fight Underage Drinking

May and June — 'tis the season for prom, graduation ... and underage drinking. The Recording Artists, Actors and Athletes Against Drunk Driving (RADD) has joined with NAB to produce public service announcements aimed at curbing underage drinking and promoting safe celebrations.



The PSAs feature sound bites from popular musical artists including 98 Degrees and LeAnn Rimes.

NAB's Celebration Prom/Graduation campaign is now in its 18th year and works to enlist stations in helping parents, teachers and teens understand the dangers of underage drinking during prom and graduation season.

For more information, contact the NAB at (202) 429-5448 or visit the Web site at www.nab.org

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Studio Sessions

MiniDisc Tricks of The Trade
See Page 58

Radio World — Resource for Radio On-Air, Production and Recording — May 9, 2001

PRODUCT EVALUATION

MediaForm: CD Factory in a Box

Ken R.

Now that CD burners are affordable to almost everyone, those shiny little platters have found a great number of uses. They can back up radio production, archive data or preserve original musical compositions with no chance of adding hiss or eating your work.

Burn, baby, burn

CDs have many advantages over other media. DAT tapes are unreliable and the recorders require complicated realignment. MiniDisc is somewhat lossy. The digital cassette was dead on arrival and vinyl is scratch-prone and non-recordable. Besides, the public has embraced CDs. broadcast and recording professionals love them and they sound pretty wonderful.

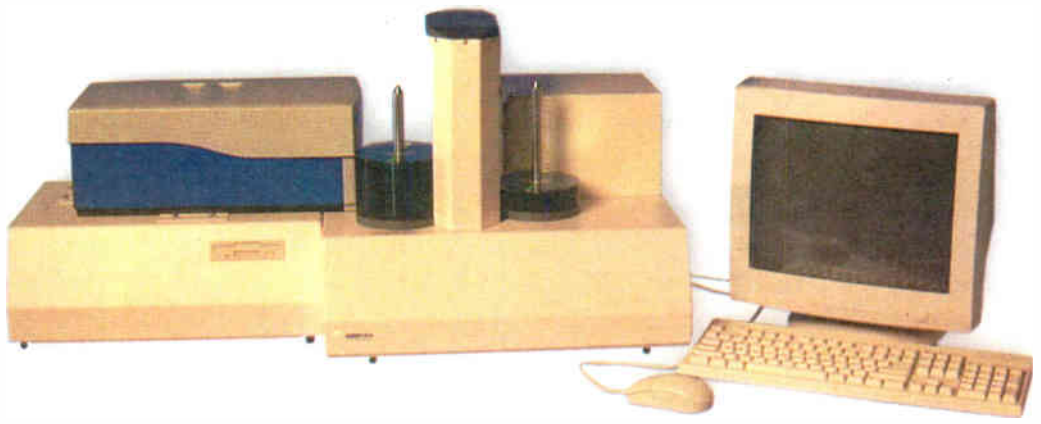
But what if there is a need to make multiple copies of certain CDs? How does one create a number of CD copies without laboriously feeding blanks into a burner one at a time? Can the clones be copy-protected or at least watermarked? And how the heck can produce professional-looking labels be generated?

MediaForm, located in Exton, Pa., may have the answers. In a previous article, I touched on basic CD duplication with the MediaForm 5908 ("To CD or Not to CD," Feb. 1). But I wanted to explore automation of multiple copies at once, which led me to the Axiom.

The Axiom, known in its early stages of development as "Eclipse," is a complex but valuable product. It can handle unattended duplication — even if there are several different masters to copy — CD label printing and those pesky watermarking and copy-protection situations.

Axiom comes in four slightly different flavors.

The CD-3703-T uses a thermal process to print labels on each disk and



the 3703-I uses an ink jet printer. The Dual Axiom TI prints thermally but also can duplicate one DVD and two CDs simultaneously. Its sister, the Dual Axiom 3703-T2, uses thermal printing and can copy two DVDs and a CD simultaneously. All of these machines can make three CD copies at one time.

The Axiom weighs 44 pounds and is 19-by-16-by-15 inches in size. While a computer is not needed to operate Axiom, a monitor, keyboard and mouse must be supplied.

The system runs on Windows NT and has an internal processor. All versions can be networked to accept duplication and printing tasks from around the office. A Web browser scheme allows access from remote locations.

The system reminds me of some of the automated factory robots that auto manufacturers use.

A robotic arm picks up the blank media from a spindle, swings them over and places them in the duplicator. CDs that do not burn properly are shunted off to a "reject" spindle.

When the CDs are successfully duplicated, the arm gently lifts them out of the duplicator mechanism and inserts them into the onboard label printer. CD labels can be printed while CDs are being recorded.

Features and functions

On-screen software keeps track of your projects, making sure the right label design gets onto the right disks. The status of all the various "jobs" is visible at all times.

Did I mention that the system could burn CD dupes at 8X or 12X, depending on the quality of the blanks? Axiom can complete anywhere from 19 to 54 disks per hour, depending on the length of the

See MEDIAFORM, page 62 ▶

LINE OUT

A Little Help On Reading Tech Specs

Bruce Bartlett

I received a provocative letter from reader Marty Elliot. He suspects that tape-recorder manufacturers are trying to fool the public by publishing specs that make their products seem better than they actually perform.

He wrote:

A typical analog tape recorder THD and noise spec might be — Total Harmonic Distortion (THD): 0.8 percent at 1 kHz, 0 VU, 250 nanoWebers per meter (nWb/m). Signal-to-noise ratio (ref. to 3 percent THD): 68 dB, A-weighted.

Here is my interpretation:

- *The tape recorder would have to be driven to 3 percent THD before you could expect to realize 68 dB S/N. But on my scope, the S/N reads about 10 dB less, around 58 dB.*
- *The THD couldn't be 0.8 percent because otherwise the measured S/N comes out to around 46 to 48 dB.*
- *The 68 dB S/N is A-weighted, and I do not know exactly what that is, but I know it is not honest!*
- *If we wanted 3 percent THD, then we could have bought cheap junk to begin with!*
- *All the measurements of performance are at 1 kHz. But on a chart of THD and noise vs. frequency, the THD goes up drastically at the high and low frequencies.*

Are my interpretations correct, or

See LINE OUT, page 60 ▶

TIPS & TRICKS

MiniDisc Tricks of the Trade

Audio Production With Sony MiniDisc Gear, Helpful Hints in Producing Good Audio and Avoiding Potholes and Pitfalls in the Field

Paul Kaminski

With the exception of the occasional dubs on audio cassettes, Motor Sports Radio has been producing both studio and field material for its "Race-Talk" and "Radio-Road-Test" programs in the MiniDisc digital format since June 1998.

What follows is a discussion of some problems and pitfalls users might encounter and how we solved them.

Gear

Our studio MD editing machine is a Sony JE-520, which connects to our Mackie 1202 VLZ control board. We do not use a level-matching box in this installation, but your engineering practices and equipment might dictate otherwise. Our field machines are Sony units as well — an MZR-30 and MZR-37 ("Sony Pops New MD in Your Pocket," RW, Jan. 17).

We use the analog inputs of the JE-520, which are fed from the 1202 VLZ mixer's RCA record bus. If you are using a similar device, be advised that you can set the analog record level on any MD low enough to record hiss if you are not careful.

With any digital recorder, clipping is clipping and your audio — for lack of a better term — will be fried if you set the levels too high.

Sony MZR-37 MiniDisc

In our application, we found that setting the peak on the JE-520 at -4 dB when the mixer indicates 0 dB tends to give us enough headroom and a robust signal. You will need to try different levels before you find one that sounds right.

The analog outputs from the JE-520 are connected directly to the mixer's left- and right-channel inputs.

We found that by setting a proper record level, we can leave the mixer's channel input pot at unity gain and have a robust signal without clipping. The JE-520 has a digital optical TOSLINK output that is active even if the analog output is used.

The MZR-30 and 37 field recorders have -10 dB line outputs and require a little more mixer channel gain for 0 dB on the console. We use a 1/8-inch TRS mini-to-RCA adapter hooked to the input channel.

We could connect the units to the Tape In jacks, but doing that will not allow us to use the equalizers, which come in handy when you have to clean up telephone audio.

If you can use a splicing block and tape, you would have no difficulty getting the hang of editing on a MiniDisc machine. In fact, it would go quicker than you might imagine.

Edit for air

When we assemble the disc for the network feed, we dub our program themes and commercials to the master disc. They are recorded as separate tracks on the disc. Next, we record the actualities we need for "Race-Talk" and edit them for stammers, distractions and time.

To edit on a MiniDisc, you separate tracks and either move, combine or delete them in the order you want.

For example, if a newsmaker pauses for three seconds in an actuality before continuing, that can be shortened to about a half second without compromising the context. With a field machine, you would mark the beginning of the excerpt you want to delete as a new track. On a studio machine, you would access an Edit Menu and select the Divide function.

Once you rehearse the In point, go ahead with the edit and the new track will play. When you get to the Out point, you pause the recorder and select it in the same manner. Once complete, select the track containing the material you want to delete and, after following directions, delete the track.

This closes up all the audio in the same manner the splicing block and tape do.

The actual reality

After we record the actualities — sometimes five in a three-minute show — we record and edit the narration in the same manner.

We use the Move and Combine features on the JE-520 to assemble a continuous master disc from billboard to program end. When we produce a segment with one or more cuts of actuality, we move the actuality next to the appropriate narration and combine those tracks.

Now, sometimes you will not be able to combine tracks — the "Sorry" prompt will appear when you try it and the machine won't let you. All you need to do is leave the tracks in the order you want and they will play continuously. That's a system limitation that you can work around.

The easy way to start this process is to move the tracks you want to the end of the disc. Once you've done that, all the tracks back up and you have a program in its proper order, ready for archiving.

We regularly assemble both "Race-Talk" and "Radio-Road-Test" programs for the network feed in a half-hour after the writing and editorial decisions have been made.

When the process is complete, the disc is ejected from the machine that writes our changes to the table of contents (TOC). Any time you press eject with the red TOC display lit, the disc writes the changes to the table of contents.

You can go back after reinserting and re-edit. MiniDiscs are said to have a life of more than a million record and erase cycles.

We use the TOSLINK digital out of the JE-520 to make a temporary master

See MINIDISC, page 59 ▶

The analog outputs from the JE-520 are connected directly to the mixer's left- and right-channel inputs.

MiniDisc

▶ Continued from page 58

of our programs on either our MZR-30 or 37.

We play the program, jog past the commercials and have a backup, which is 99.875 percent of the original, and can easily be recorded to an archive CD-R for copyright, legal and other production purposes.

Master and source

If you have two studio-style MiniDisc units, you can use one as a master and one as a source — similar to the old-style cart machine. On a JE-520 you can select a mode where the unit will stop and pause at the end of each track.

With this, you can fire in the cuts and use the jog wheel to go back and forth to find the right ones on the source machine. In this mode, some machines will need maintenance more often, so a good practice would be to swap master and source roles to even out the wear and tear.

We could connect the units to the Tape In jacks, but doing that will not allow us to use the equalizers.

We never leave any discs in the machine when they are not in use. A good habit is to write all your changes to a disc by ejecting on a regular basis. If you regularly leave a disc in a machine and the power goes off, your work may be lost — much like a computer crashing in the middle of a project and you did not back up your work.

We can also use the pair of MZR-30 and MZR-37 field recorders to master our programs. We have had to do this in the studio when the JE-520 needed to be retimed and serviced.

This workaround helped us keep our production schedule intact. To perform this task, we assemble a master disc with program themes and commercials as we normally do. We then record the narration and actuality using a patch cord from the source machine to the line inputs of the machine containing the master.

To record a news wrap on one MiniDisc machine, the process is simple. Once the newsmaker has been recorded and an appropriate cut or two have been selected, you then record your billboard and introductions.

You then move the cut of actuality next to the introductions and record the rest of your report and lockout. Pause the machine at the beginning of the billboard, connect it to the equipment — HotLine, RemoteMix Sport or even alligator clips with a mini plug — and you are ready to go.

Keep your cuts fed

Are you feeding cuts of actuality? Pause at the first cut, and then when that ends, stop the machine and move to the next cut, then hit play. With a MiniDisc, you can use the fast forward and reverse button to find the right cuts when you don't have time to move them in order.

We found the MiniDisc format to be reliable. It has saved us money and time and improved the quality of our programs.

A little experimentation, creative thought, input from the field users and quality time with the instruction manuals will help your organization get the most out of the format.

Paul Kaminski is the news director for the Motor Sports Radio Network and is interested in your MD tips. Send e-mail to motorsportsradio@compuserve.com

Nine Tips From the Field

If you are using — or considering the use of — a portable MiniDisc machine, here are some operational considerations:

1. Always hit "END SEARCH" when you insert a MiniDisc in a portable machine. This will keep you from overwriting a recording at the beginning of a disc that you might want. I've been there and done that more times than I care to admit.

2. Don't use the same size mic cord for mini plug connections that you would normally use in the studio. The hang weight of the cord will eventually open the jack inside the machine and it will fail at the wrong time — when you need it the most.

I use Belden 1804 starquad — it's light, strong and flexible. This is one place not to skimp. Do not use the adapters for 1/4-inch to 1/8-inch unless it is an emergency; the same thing will happen.

When you wire up the starquad, split the Pin 2 XLR connection between Tip and Ring — easy to do because there are two connectors, on 1804 they are blue and blue striped. Wire the Pin 3 XLR connection to sleeve and the Pin 1 connection as you normally would for a plug. We get a clear signal that way. We use a good quality dynamic mic — either an omni or cardioid — to get good results.

3. Always carry a male-to-male 1/8-inch TRS patch cord.

If you miss something, you can get a dub quickly by connecting line inputs to another machine. And do yourself a favor by carrying an extra connection cord for the equipment (for a RemoteMix Sport, we use an XLR male to 1/8-inch TRS male again with Starquad 1804 and hook it to the line outputs on the MZR-30 and 37).

4. If you wish to monitor the MiniDisc while recording, you can carry a small set of earphones or earbuds. We don't use them in the field, because we need to hear what's going on around us and would rather not be hit by a racecar in the garage area. We do use them in safer areas.

5. Normally for news work, we leave the machines in automatic level control. Since we can't set levels on the fly while recording, we have had to work around this limitation and have not encountered a problem.

6. MiniDiscs will eat batteries. We can get a full weekend out of a charge of Ray-O-Vac rechargeable alkaline batteries, but we will not hesitate to put a fresh set in, especially in a news conference setting where we pause and start the machine. We spent less than $5 on batteries in 2000 and were in the field 31 weeks.

7. If you have the Sony remote adapter with the unusual earphone plug, there is an adapter that will let you plug up a 1/8-inch normal headphone to the remote. It's worth the $8.

8. We devised a "doomsday" mic that goes along with both units. It is an omni electret condenser mic element shrink-wrapped and connected to a mini-plug and has its own windscreen.

Maybe it isn't a Shure KSM-42, but in a pinch, it makes the difference between getting the story and going back with nothing — and not getting paid.

9. A CD case makes good protection for our two units. Take out the CD sleeves and you have a relatively sturdy case that will travel easily. I learned the importance of this little thing after spending money to replace a cracked display on the MZR-30.

— Paul Kaminski

◆PRODUCT GUIDE◆

Products for Radio Air & Production Studios

Mail info and photos to: RW Product Guide, P.O. Box 1214, Falls Church, VA 22041

Arrakis Links Up — for Free

Arrakis Systems has released Digilink-Free, a free software version of the Digilink automation program for On Air Radio.

Digilink-Free is suited for applications such as live on-air, live assist, full hard-disk automation and remotes.

The software does not time out and it is not a crippled version. The system can use a standard Windows PC with sound capabilities.

The system's screen is a standard cart list and jingle box design, which allows for creation of a cart list or for the ability select from among hundreds of jingles. Carts can be searched for by cart number, title, text field or length.

The hard-disk automation system supports a one-week automation schedule for on-air play and a one-week auto-record schedule for automatically recording news programs. A radio show can be voice-tracked in.

Other features include start and kill dates, cart rotations, WAV, MP2 and MP3 audio file support, import of third-party traffic and music schedules, export of play logs for traffic reconciliation, mixing three audio files to air, mouse-keyboard-touch screen control and network multiple studios and site.

The system includes an e-manual and an on-screen, context sensitive help line for each feature.

Arrakis has a 900 number for customer support.

For more information contact Arrakis Systems in Colorado at (970) 224-2248, fax (970) 493-1076 or visit the company Web site at www.arrakis-systems.com

Digilink Free On-Air Automation Program

ASI, BSI Deliver MP3 Audio Cards

Broadcast Software International and AudioScience Inc. have teamed up to release soundcards that play quadruple MP3 files without a software codec. The two cards, the ASI4344 and the ASI4346, are available exclusively from BSI.

The suppliers called it the first time professional audio companies have created soundcards specifically for the MP3 format.

The cards decompress audio files using the soundcard hardware, freeing the CPU of having to decompress the files. The models are designed to eliminate skipping and slowness that can be problems for broadcasters working with MP3.

MP3 Soundcard ASI4346

The concept of decompressing audio on a hardware device has been used with other formats, however the Fraunhofer Institute has primarily controlled the codecs. Incorporating the MP3 codec on the audio card improves PC performance, BSI said.

This design allows multiple MP3 files to play simultaneously the same way a system can play multiple linear audio files.

BSI signed with AudioScience as the exclusive distributor. The agreement allows the cards to be sold through BSI distributors.

BSI will be the exclusive distributor for upgrades to two other AudioScience audio cards, the ASI4334 and the ASI4336, allowing them to become triple MP3 devices.

For more information contact BSI in Oregon at (541) 338-8588 or visit the Web sites at www.bsiusa.com *or* www.audioscience.com

Line Out

▶ Continued from page 57

have I and millions of others been fooled because the (fine print) 3 percent THD is the reality and the A-weighted business is tacking on an extra 10 dB onto S/N ratios?

My reply

Yes, the standard way to spec an analog tape recorder is: THD of a 1 kHz tone measured at 0 VU and S/N of a 1 kHz tone at 3 percent THD, A-weighted. Those measurements are taken at two different levels, not at the same level.

The S/N of the recorder actually does reach 68 dB even when the VU meter is reading around 0. Here is an explanation.

The 3 percent distortion point typically is 8 dB above 0 VU. When you record music peaking at 0 VU on the meter, the meter does not respond fast enough to show the level of the rapid transient peaks in the music, which often reach up to +8 VU or the 3 percent distortion point.

Because the transient peaks are so short, we do not hear the 3 percent distortion on them. The S/N of those peaks is 68 dB A-weighted, even though the average S/N at 0 VU is more like 60 dB A-weighted.

Anyway, 3 percent THD is not that bad. It is the point where the waveform just starts to look clipped. We have been living with 3 percent THD since the beginning of analog tape recording.

Also, most of that distortion is third harmonic. This low-order harmonic is less offensive to our ears than the edgier 7th or 9th harmonic distortion, which you might get with badly designed transistor equipment.

But what about the A-weighted part? Is that a fudge factor?

The term *A-weighted* means that noise is measured through a filter that approximates the frequency response of the human ear. The filter has maximum output around 2 to 4 kHz, but rolls off on either side of that.

A-weighted measurements correlate more closely with the annoyance value of low-level noise than non-weighted measurements, so A-weighted measurements are more representative of what we actually hear.

Note that A-weighting matches the subjective frequency response of the human ear, but only for very low-level signals, such as tape hiss.

Your scope measurement is not A-weighted, so it is going to look about 10 dB worse than the A-weighted measurement.

So although the unweighted S/N at 0 VU looks bad on paper, it does not sound that bad, because:

1. Our ears do not hear the highs and lows very well in low-level noise.

2. The actual musical signal peaks are reaching +8 VU (the 3 percent THD point where S/N is 68 dB).

Remember that we do not record tones; we record music. Musical signals can be said to have two different levels: average and peak.

The slow-responding VU meter shows approximately the average loudness level, but not the true level of the signal peaks. Also, the meter responds equally to all frequencies, but our ears do not. You might say that the meter is lying — not the specs!

Sound curves

The THD and noise-vs.-frequency curves do not show which part is distortion and which part is noise. In general, the THD of an analog recording does increase at high frequencies. However, the high frequencies in a typical musical spectrum are lower level than the mid frequencies, so the highs do not distort as much as the mids, all else being equal.

We have not talked about how marketing departments might fudge the specs a little. Everyone wants to put their best specs forward, because customers often make buying decisions based on the specs.

The responsibility is up to the manufacturer to publish conservative and accurate specs.

Hope this helps. Thanks for your thought-provoking questions!

A-Weighting

A definition for A-weighting can be found at *www.bandradio.com/glossary/*

"ANSI A-weighting: The A-curve is a wide bandpass filter centered at 2.5 kHz, with ~20 dB attenuation at 100 Hz and ~10 dB attenuation at 20 kHz, therefore it tends to heavily roll off the low end, with a more modest effect on high frequencies. It is basically the inverse of the 30-phon (or 30 dB-SPL) equal-loudness curve of Fletcher-Munson."

(A *phon* is a unit of loudness. A 30-phon tone at any frequency sounds as loud as a 30 dB SPL tone at 1 kHz.)

Low-cost audio equipment often lists an A-weighted noise spec — not because it correlates well with our hearing — but because it helps hide nasty low-frequency hum components that make for bad noise specs. Sometimes A-weighting can improve a noise spec by 10 dB.

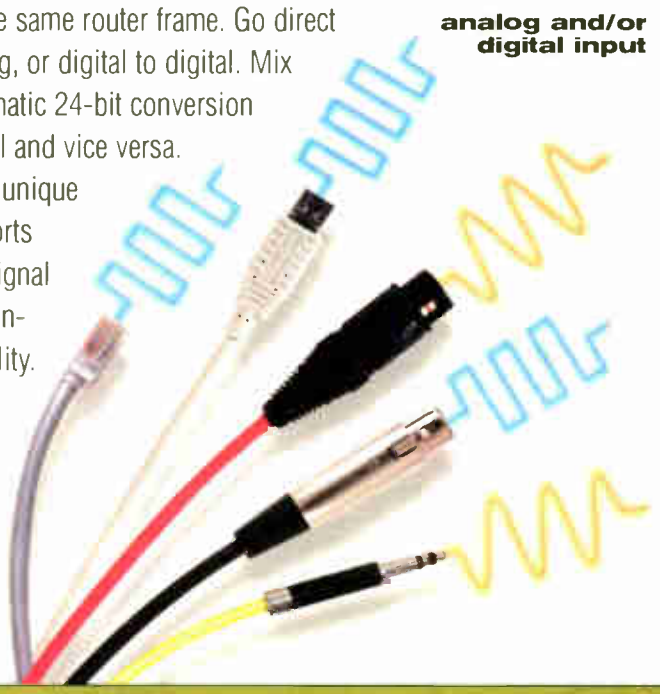
Words to the wise.

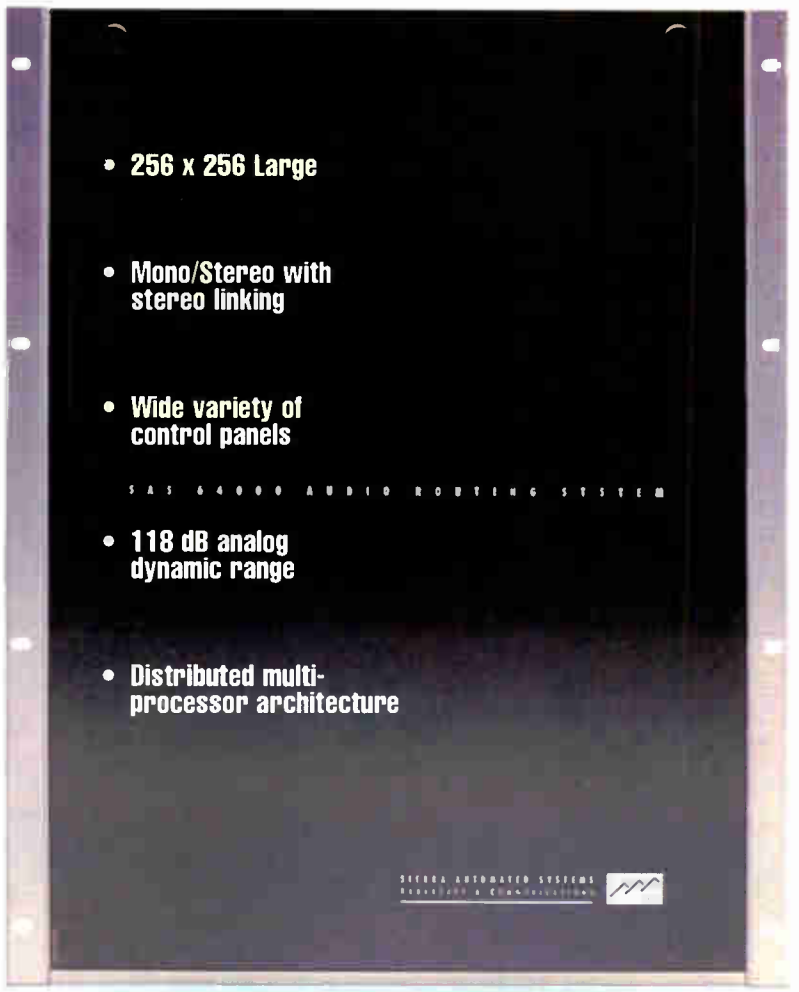
— Bruce Bartlett

ROUTING SYSTEM

IN If the migration to digital is in your future, then this is the route to take. Introducing the large size, big performance analog router that also speaks fluent digital. A true hybrid that allows you to scale the number of analog and digital ports as needed, now and in the future. Best of all, the SAS64000 Audio Routing System creates a path to AES/EBU digital audio without creating analog obsolescence.

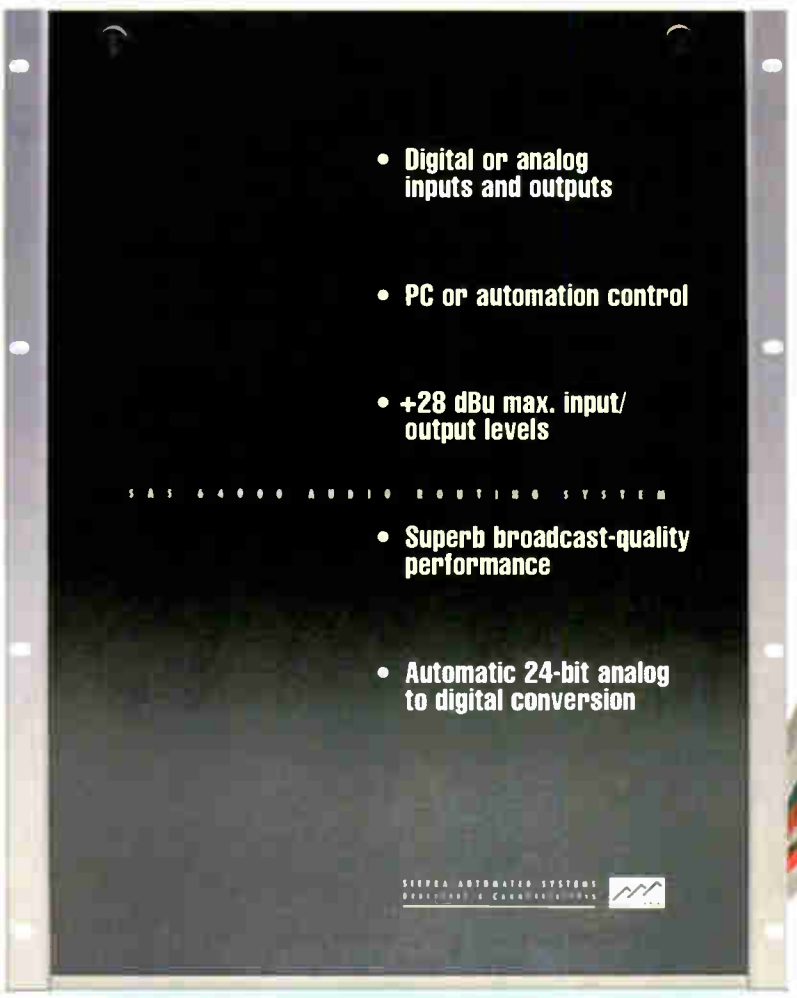
This means you can mix your analog and digital I/O in the same router frame. Go direct analog to analog, or digital to digital. Mix it up with automatic 24-bit conversion analog to digital and vice versa. Either way, this unique architecture sports uninterrupted signal integrity and non-blocking flexibility.





Mix-and-!

SAS64000 AUDIO



OUT And the SAS64000 is wonderfully simple to integrate, upgrade and put into service. Just plug in our new digital port expander and that's it. Welcome to digital!—co-existing flawlessly with analog—and all in the same framework. Interested? There's lots more to tell. Call **818 840 6749**; or e-mail us at sales@sasaudio.com; or check our website at sasaudio.com. If you're moving into digital, then the SAS64000 Audio Routing System is your conduit to the future.

SAS
SIERRA AUTOMATED SYSTEMS

sasaudio.com

MediaForm

▶ Continued from page 57

program material and the number of CD tracks.

A predetermined number of each of several CD masters can be duplicated without human intervention. By describing each project as a "job," loading the masters and loading sufficient blank media, Axiom handles everything automatically.

All versions of the Axiom can be networked to accept duplication and printing tasks from around the office.

Automation

Axiom comes in the largest cardboard box we have ever seen, but that is because it is carefully packaged to prevent road couriers from fine-tuning it. It assembles easily and the software guides the user through an "alignment" procedure that makes sure that the robotic arm does not drop the blank CDs on the floor.

The users' guide baffled me somewhat, as it seemed to leave out a few key steps. Part of the problem was my lack of computer savviness. Another was that MediaForm initially sent a preliminary manual and software. A software upgrade was released on CD-ROM during the trial period, which cleared up a few problems.

The label design function is pretty impressive. It makes it easy to import logos as bitmaps (.BMP) and the selection of installed fonts and graphics is certainly adequate.

This technology opens a world of possibilities.

"A watermark works for both audio and data clones," said Chris Bradlee, vice president of sales and marketing.

"It can't be disabled by anyone except those who are authorized and only MediaForm equipment can read it. The watermark is a way the user can determine on which drive any CD was duplicated, which might be helpful for internal quality-assurance purposes."

Bradlee said that SmartMedia technology allows the user to record a string of numbers and/or letters to the CD to prevent piracy and other unauthorized duplication. The CD is password-protected and will only allow approved equipment to make copies.

Another interesting feature creates a nasty little surprise within the copied CD so that any attempts to duplicate that disk will fail. However, this does not affect the listener's ability to hear the audio. "Windows NT allows MediaForm to use a very sophisticated type of copy protection which makes it more difficult for pirates to defeat," said Bradlee.

There was absolutely nothing in the preliminary manual concerning any of these features, an oversight that will be corrected in future versions.

Conclusions

Once I made it past the software stumbling blocks and the incomplete manual, CD duplication was fun and easy. While the unit is not inexpensive, Axiom is certainly a functional, innovative and useful product.

Unlike cassette or reel-to-reel dubs that may sound different from their masters, CD copies either work or they do not. There is no point in discussing the "quality" of the end product because it is dependent on the quality of the master. Axiom certainly copies quickly and accurately and the label-printing quality is good. The fact that these functions are combined into one box is the reason that this product is unique.

Ken R. is a former broadcaster and studio owner who now writes for Radio World and sells CD compilations of classic PAMS jingles from the 1960s and 70s. Reach him via e-mail at kenr5367aol.com

Product Capsule: MediaForm Axiom

Thumbs Up

- ✓ CD duplication and labeling in one compact package
- ✓ Flexibility in design and archiving label artwork
- ✓ Fast and reliable
- ✓ Simultaneous copies from multiple masters
- ✓ Excellent technical and software support

Thumbs Down

- ✓ Complex for those not familiar with Windows NT
- ✓ Confusing password rules
- ✓ Initial manual release is sketchy at best

For more information contact MediaForm in Pennsylvania at (610) 458-9200, fax (610) 458-9554 or visit the Web site at www.mediaform.com

Buyer's Guide

Inside

USER REPORT

A Grand Destiny for Ole Opry

WSM(AM) Antenna Site

Country Music Pioneer WSM(AM) Continues to Blaze Trails With Harris DX Destiny Transmitter

by W. Watt Hairston
Chief Engineer
WSM-AM-FM, WWTN(FM)

NASHVILLE, Tenn. No radio station in the country has a richer history or deeper roots in country music than WSM(AM) in Nashville, Tenn.

WSM began operations in 1925 as a venture of the National Life and Accident Insurance Co. based in Nashville.

Shortly thereafter, WSM started a live radio program that would later be named "The Grand Ole Opry." The program is still broadcast today each Friday and Saturday night from the Opry and is a cornerstone of what we know as country music.

The program is the longest continually running radio program in the United States, showcasing country greats from Hank Williams Jr. to Faith Hill.

Build up

In 1932, WSM moved its transmitting facilities to a location near Brentwood, Tenn. The new facility featured a 650-kHz, clear-channel frequency, 50,000 watts of power radiated from an 878-foot Blaw-Knox dual-cantilever diamond tower that was the tallest tower in North America when it was built.

The unique design of this structure is a true classic and is still in use today. Some things just cannot be improved upon and this is one of them.

WSM has always been an innovator in

See HARRIS, page 69 ▶

USER REPORT

'The Best Purchase I Ever Made'

The BE AM-1A Transmitter Makes a Christian Connection For Middle Tennessee

by Duane Jeffrey
President
Canaan Communications Inc.
WQSE(AM), WPHC(AM)

WAVERLY, Tenn. My wife and I acquired WQSE(AM), White Bluff, and WPHC(AM), Waverly, in 1973.

With the help of computer technology, she and I run both stations. We cover the middle Tennessee area, playing the top-40 southern gospel hits.

Radio in the blood

I've been in and out of radio ever since I was a kid. I attended the School of Announcing and Speech and got my first job in the 1960s as a DJ in Detroit.

In the early '70s I was cutting wood for a living and suffered a heart attack. Knowing I would have to find another way to make a living, I came back to radio and traded some of my logging equipment for the station.

When we first considered purchasing new transmitters from **Broadcast Electronics**, we were using an old tube-type RCA 1960s transmitter for one station and an SCI tube transmitter that was built in 1982 for the other station.

See AM-1A, page 71 ▶

USER REPORT

WJFK Relies on the Nautel XL12

by Fred Rathert
Engineering Manager
Infinity Broadcasting
WJFK(AM)

BALTIMORE We installed a **Nautel** XL12 last summer at our WJFK(AM) station in Baltimore. The station is 5 kW at 1300 kHz.

We chose Nautel because of the company's reputation for reliable solid-state broadcast transmitters.

Another station in our market had installed a Nautel transmitter back in 1987 and its chief engineer had only good reports about it over the years. I took a closer look and we discussed his experiences with Nautel.

We called other Nautel owners for their experiences. Every one of them had only good things to say. After careful consideration and comparisons with other major transmitter manufacturers, the decision was made to go with the Nautel XL12.

Included with our purchase was the factory-training course. This is an option worth considering if you want to get up to speed on your new transmitter quickly.

The factory-training course is an option worth considering if you want to get up to speed on your transmitter quickly.

The course includes the Nautel theory of operation, troubleshooting procedures and suggested regular maintenance. Although my schedule has been a bit hectic, I know that the course is available to me once things get back to normal. I look forward to taking advantage of the course.

The transmitter arrived by truck equipped with a liftgate. Everything was packaged carefully in wooden crates so there was no damage. The unit was transported easily into our facility.

Nautel's shipping department does an excellent job of packaging their transmitters for transportation.

Some minor problems did occur after the transmitter was placed on-air. However, after discussing them with Nautel, the issues were resolved quickly. Service is available at all hours, seven days a week.

In fact, just to be sure nothing was left to chance, the company sent out a customer service representative. While he was on site, after he had gone over the transmitter with a fine-tooth comb, he suggested we could improve our carrier shift slightly, by making some minor adjustments to our audio processor. The audio processor was adjusted and the carrier shift did improve.

I was happy with the kind of response and effectiveness of Nautel's customer service department. They really are there for you on a moment's notice, and this has been valuable to me. Ever since the customer service rep visit, the XL12 has operated without incident — just cool, efficient and reliable.

The transmitter has eight power modules. Each houses two amplifiers and a modulator in compact black boxes with D-connectors for easy replacement. Each power module has LEDs at the front for quick troubleshooting to identify failed amplifiers or modulators.

The modules are combined in parallel, so I can remove one and replace it without going off air. In fact, plenty of reserve power is available so if one module is being repaired I can still have full output power.

I like this because it means I can service it — should I ever need to — during regular working hours without any changes in our signal coverage.

Effective transmitting

One of the benefits we experience with our Nautel XL12 is cost-efficiency. After the unit was running, our efficiency went up and the cost of operation went down. The unit has redundant fans for cool operation and runs quietly. The fans are located in removable trays below the power modules.

The transmitter has dual exciters with auto changeover. This gives us even more reliability. We have backup RF drive circuitry and modulation encoding circuitry.

I made the right decision to purchase the Nautel XL12 for our station. I expect to get many years of reliable, efficient operation. I would recommend the Nautel XL-12 to anyone.

For more information contact Nautel in Maine at (207) 947-8200, fax (207) 947-3693 or visit www.nautel.com

Nautel 12 kW AM XL Transmitter

TECH UPDATE

Energy-Onix Ups the Wattage

Energy-Onix has added a 5 kW transmitter to its line of Pulsar AM Transmitters.

The unit features three independent 2 kW drawers with integral cooling fans; although rated for 5 kW, it is capable of 6 kW. Power control is automatic through five local or remote selectable levels.

The frequency range is 530 kHz to 1700 kHz; RF output is 50 ohms, 1-5/8-inch EIA; maximum VSWR is 1.5:1.

The transmitter uses a Pulse Duration Modulator. The system has an audio frequency response of +/-0.5 dB at 30-10,000 Hz, THD of less than 2 percent and modulation of 140-percent positive peak.

The carrier shift for the unit is less than 1 percent at 95-percent modulation and the RF harmonic output is rated at -80 dB or more below.

The transmitter has a humidity range of 0 to 95 percent and can be placed at a maximum altitude of 13,000 feet.

Pulsar transmitters use identical broadband power amplifier modules. Amplifiers are interchangeable within any 5 kW Pulsar transmitter. This design permits a standardized spare complement to be located at one flagship station. Each 2 kW drawer contains four 500-watt modules.

For more information contact Energy Onix in New York at (518) 758-1690, fax (518) 758-1476 or visit the Web site at www.energy-onix.com

TECH UPDATE

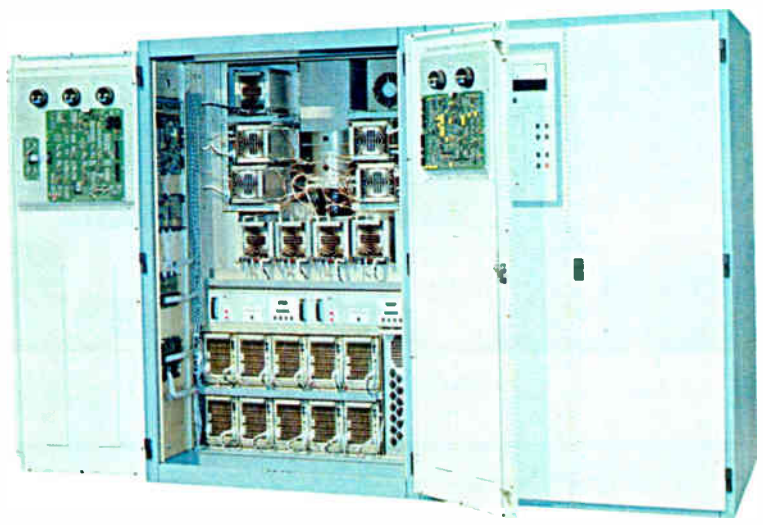
Nautel Powers Solid-State FM

Natuel solid-state technology can address FM transmission power requirements up to 20 kW and 40 kW.

Until recently, the maximum power level available in a single solid-state FM transmitter was 10 kW. The need to combine several transmitters made higher power systems cost-prohibitive.

The **Nautel** Q20 is a single-ended, solid-state 20 kW FM transmitter introduced last year. Sixty-four independent RF amplifiers, mounted four per power module, are combined directly using a single combiner stage to produce a true 20 kW transmitter.

Solid-state reliability is enhanced through redundancy features. Multiple power amplifiers provide modular reserve. Separate power supplies support each RF module.



Nautel Q20/20

The common DC bus is developed from parallel redundant rectifiers. Low-velocity ventilation is distributed over the amplifiers using DC-powered fans operating in parallel.

Single-point failure of critical low-level circuits is avoided through duplication. The transmitter provides facilities for duplication of the digital exciter, IPA and IPA power supply and low-voltage power supplies.

The Q20/20 comprises two 20 kW transmitters integrated to operate as a 40 kW active reserve system. Single or dual digital exciters with coherent drive components are included.

System controls for 40 kW operation are incorporated within the dual Q20 cabinets. Several configurations are available with facilities for automatic transfer of a single transmitter to antenna.

Each 20 kW unit is housed in a compact cabinet requiring 15 square feet of floor space.

For more information contact Nautel in Maine at (207) 947-8200, fax (207) 947-3693 or visit the Web site at www.nautel.com

TECH UPDATES

Omni Covers All of AM, Shortwave

The Omni transmitter line from **LPB** and **Omnitronix** is designed for AM and SW.

The line was designed with the needs of users in developing countries in mind; the transmitters are suitable for high-heat, high-humidity and rugged, remote environments. They comply with FCC rules and regulations as well as those of various international broadcasting authorities.

Lightning protection features include four levels on the power mains, over- and under-voltage protection on the DC supply, individual DC circuit protections, sealed gas discharge tube and an adjustable spark gap.

Units feature power MOSFETs coupled with Pulse Duration Modulation. MOSFET failures result in a degradation of power, not off-air conditions. VSWR protection is afforded through directional couplers and detection circuitry. Operation will continue up to a 1.5:1 load mismatch with a loss in efficiency and performance. Power Amplifier Modules have on-board over-temperature sensors that will remove a module from service only as long as the condition exists. Power cutback is provided from 10 to 110 percent of rated operating power, in five user-set steps.

For information contact LPB Communications Inc. at (610) 644-1123 or visit www.lpbinc.com

LPB Ramps Up FM Line

Four months after acquiring Omnitronix and its line of AM transmitters, **LPB Communications** expanded its product line to include FM stereo broadcast transmitters.

Sky transmitters line initially will be offered in 1-, 20-, 50-, 150- and 300-watt configurations. All include on-board processing and are DSP-based. Stereo generation standard, although the units allow for an external MPX input and loop-through.

Balanced XLR input connections, adjustable levels and front-panel controls are features. On-screen software controls allow for readings and adjustments.

The Sky One, Sky 20 and Sky 50 units are 1RU high and the Sky 150 and Sky 300 are 2 RU high.

For more information contact LPB Communications Inc. at (610) 644-1123 or visit www.lpbinc.com

Crown Manages Digital System

The **Crown** FMX Series Transmitters incorporate the Crown Digital System Management structure.

DSM is a menu-driven digital control system and display that allows the operator to monitor and set parameters from the front panel. Such operating functions as the audio chain can be evaluated from input to output.

The DSM provides password protection of system control and sophisticated fault alerts and logging.

The Remote System Management option allows the DSM structure to be accessed by phone and the system is password protected. The system can evaluated and reset operation parameters via remote and it can alert a remote operator by phone in the event of system faults.

The RMS option delivers a natural voice communication readout, which provides the user with a list of system information and options for control via phone access.

A DSM transmitter can monitor or control other parameters such as tower lights or fire alarms.

Crown FMX Series transmitter models are planned for delivery in the fall and include the FMX 30, FMX 100, FMX 250 and FMX 500. The DSM structure and the RSM option can also be retrofitted to current Crown transmitter models.

For more information contact International Radio and Electronics Corp./Crown Broadcast in Indiana at (219) 262-8900, fax (219) 262-5399 or visit the Web site at www.irec1.com

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USER REPORT

Signal Strong Above Ohio River

From Lightning Strikes to Cliffs and Canyons, 'Froggy' Keeps Transmitting With the FM-2C From Broadcast Electronics

Ken Trimble
General Manager
WKID(FM)

VEVAY, Ind. I came on board as general manager of WKID(FM), K95.9 "Froggy," about a year ago.

This community is located on a hilly, cliffy terrain along the Ohio River. One of the first things I did was to accompany the owner to the transmitter site. The towns are located at about 300-500 feet and our coverage area reaches up to 800 feet.

On top of the world

The transmitter and tower sit on the top of a hill six to eight miles outside of town so it is key that we have a good signal. Upon arriving at the transmission site, I was surprised and impressed with the FM-2C solid state **Broadcast Electronics** transmitter.

We are located about an hour south of Cincinnati and our coverage area extends to 10 counties. Our slogan, "The Hottest New Country and the Most Fun," distinguishes us as a newer, younger country station with a faster format.

The off-site owner didn't have much working knowledge of the operation and when I got here the station wasn't sounding so good. At that time the stereo generator and program lines sounded muggy.

The first thing I did was to buy an Orban Optimod. After pumping audio into the exciter, the transmitter came alive. It sounded so good it was awesome.

It helped to have a good contract engineer, who joined the station shortly after I did. He got everything in line. Obviously, what you put into the transmitter affects what comes out; I wanted to put the best signal in that I could.

The surrounding cliffs can give shadowing and it is possible to lose the signal because of the terrain. The low areas can be spotty and that was a problem for us.

We are in a tight-spaced situation; we cannot move our transmitter and I don't know that I would if I could. As a result, I feel it is important to have a good transmitter.

Electrifying experience

A couple of months ago we took a major lightning hit. Everything around the transmitter was zapped, yet the transmitter was still intact. In fact, the damage was the least of our worries.

The phone, phone lines and residual equipment took a hit. The lightning blew apart a power strip and the phone line was burned to a crisp. The fuses were blown to the box that fed into the tower.

As for the transmitter, a fuse in the exciter blew and the breakers kicked off. All we had to do was replace the fuse and the transmitter came back. It was incredible. I have since come to understand that a good grounding line is important.

We were off the air only as long as it took the phone company to rewire the phone lines, about four hours. We had to put things back together in the rain and the dark.

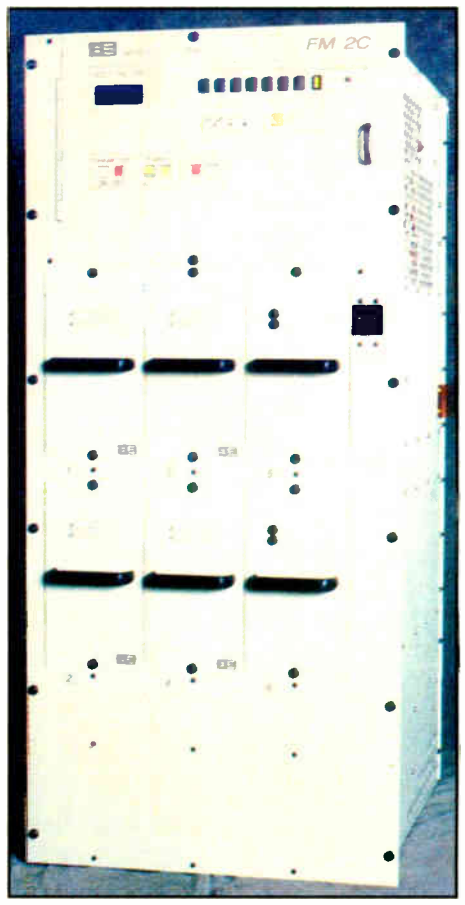
I telephoned BE and was delighted with the support I received.

I have had to deal with everything else in the shed over the last year, except for the transmitter. In a small radio market like ours, the last thing you want is a problem relating to the transmitter.

The BE engineer gave me the time I needed to discuss and understand the product. This service is important for a 3 kW radio station that doesn't have an engineer on the premises.

He have me a better understanding of the transmitter's longevity and how to maintain it. We want the best life out of it and I do all that I can.

I change the filters, keep the area clean and keep dust out of the module. The unit also works better if it stays cool.



BE FM-2C Transmitter

Unlike other transmitters on the market, there are fault lines to give us indications of problems, the read-outs are digital and when we are using a remote system it is easy to see if the readings are in-line. Space wise, it's like a small refrigerator.

The FM-2C is a good, healthy little transmitter. This is our sixth year with it and it shows all the signs of being just as efficient today as the day it was installed. I like Broadcast Electronics because the company makes reliable and efficient products and supports them with excellent service.

For more information contact Broadcast Electronics in Illinois at (217) 224-9600, fax (217) 224-9625 or visit the company Web site at www.bdcast.com

TECH UPDATE

QEI Develops Support for Digital

QEI Corp. has been developing FM transmitters for digital transmission for several years.

The company has developed features into these transmitters including a modular design for easier power upgrades, linearized amplifiers and the use of Automatic Power Control or Regulated Power Supplies for power stability.

QEI designs its FM transmitters in-house and manufactures its own RF amplifiers.

The company says its goal is to produce a reliable transmitter that is operational in today's radio environment but also ready for use when a digital standard is approved and digital exciters are available.

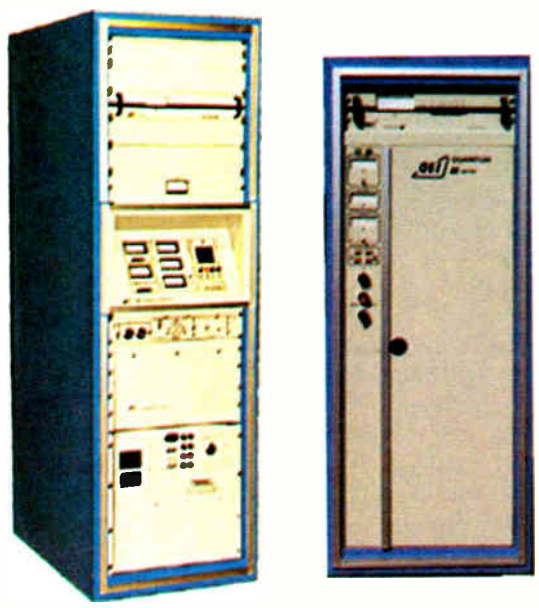
In 1999, the company was contracted by USADR to design and manufacture several 20 W ultra-linear power amplifiers for use with its digital exciter.

A Quantum "M" Series transmitter was then used by the organization to transmit the IBOC signal over the air at the 1999 NAB Radio Show in Orlando, Fla. This signal was received in USADR's mobile van to demonstrate the digital system.

After the NAB2000 convention in Las Vegas, a Quantum "M" Series transmitter was put on the air in San Francisco for formal testing of the iBiquity Digital System. This transmitter is still in use as the digital transmitter for the hybrid system.

Additional costs are involved when moving to a digital transmission system, but the company says its transmitter will not need replacement.

If a station uses high-level combining, an additional transmitter will be necessary to produce the digital signal. If low-level combining is used, a unit may be field-upgraded to handle the increased peak power.


QEI Quantum 'M' Series

For more information contact QEI at (800) 334-9154, fax (609) 629-1751 or visit www.qei-broadcast.com

TECH UPDATE

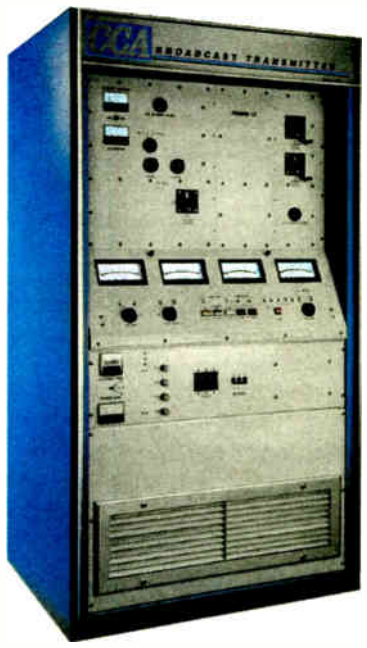
CCA Firmly Grounds FM Transmitter

CCA medium-power FM broadcast transmitters feature Grounded Grid Design for FM broadcasting.

This design eliminates the need for grid bias and screen voltage power supplies. Neutralization is not required.

The transmitters are in one cabinet with an external low-pass filter and directional coupler. Air enters the transmitter through the front and rear air filters and is exhausted through two ducts on the top. The air filters can be removed for cleaning while the transmitter is in operation.

The CCA FM transmitters use a frequency synthesized, direct FM exciter. The model FM60G or FM100GS exciter feature a broadbanded FET 60- or 100-watt power-amplifier.



A grounded-grid 3CX800A7 or 3CX1200Z7 tube IPA is used with a broadband, cathode-driven input. A 700-watt solid-state IPA is available as an option on medium-power transmitters.

Patch-around is possible for the 700-watt IPA in case of IPA or PA problems. The system uses a PA tube — a triode in a DC grounded grid/cathode-driven configuration.

For more information contact CCA in Georgia at (770) 964-3530, fax (770) 964-2222 or visit the Web site at www.cca.ws

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Harris

▶ Continued from page 63

radio engineering and technology. The transmitters used over the years at this location from RCA, GE and Continental are a who's who of broadcast equipment.

All of these units served the station well for many years. But as the station grew from its original 1,000-watt signal to one of the first Class-A, clear-channel, 50 kW broadcast facilities in America, new units would inevitably replace the old standbys.

New transmitter on-site

In 1998, WSM's parent company, Gaylord Entertainment, embarked on a capital project that would result in the replacement of all transmission systems over a two-year period. This included sister radio stations WSM(FM) and WWTN(FM). The criteria for these replacements included reliability, signal quality and improved operating cost over a long period of time with possible digital compatibility.

All of these criteria were met and exceeded by the **Harris** product line, including the model DX-50 AM transmitter.

WSM's first Harris DX-50 went online in the winter of 1998. The resulting quality improvement and drastic reduction of maintenance and associated operating costs were apparent from the beginning.

The Harris DX-50 from design through construction can only be described as superb.

By the start of 2000, it was evident we were spending far more money and resources maintaining our standby transmitter than the Harris DX-50, which required no maintenance or repairs.

We needed to replace the two 4CX-35000 tubes in the standby and had suffered the loss of the expensive plate transformer in addition to a vacuum variable capacitor, all in a transmitter we never used. We were also finding that we had to operate the older tube transmitter more and more just to ensure some degree of reliability.

This added exercise meant higher power bills for the AM transmitter site, so it didn't take much of a selling job to convince Gaylord executives to replace the costly, maintenance-intensive standby transmitter.

We were aware of the new developments in the Harris AM transmitter product line. We had the option of purchasing another DX-50 or waiting a little longer and acquiring the newest Harris technology in the Destiny 3DX-50.

I went to the Harris factory in December of 2000 to review and inspect the new 3DX-50. I was thoroughly impressed by the test results: transient intermodulation distortion of 0.3 percent or less; IQM better than 40 db; THD 0.5 or better; PA efficiency better than 90 percent; and overall AC to RF efficiency approaching 90 percent.

The resulting quality improvement and drastic reduction of maintenance and associated operating costs were apparent from the beginning.

"Can it get much better than this?" I asked. And the answer was yes, with redundant features, ease of service (or lack thereof) and IBOC compatibility. The Harris 3DX-50 is a "no brainer" that is a winner from a business as well as an operational standpoint.

In all my years in the business, I can't remember being so pleased with the outcome of a decision. The 3DX-50 arrived onsite and we completed the installation without incident or complications.

The three cabinets are bolted together and the interconnection is simple and straightforward. The heat rise is so little off these transmitters that the environment is easily controlled by low-tonnage air-conditioning systems. The Destiny 3DX-50 occupies even less space than the DX-50 that is across the room.

The many features and technology behind this transmitter are impressive, including Harris' Direct Digital Drive, which takes digital amplitude modulation to the next step and beyond for improved signal linearity, bandwidth and energy savings.

Control and monitoring leaves nothing to be desired. My favorite is the status fault-log feature that records the date, time and fault condition so there is no wondering what happened and when.

All the components are stored and ready to view with the press of a button on Harris' IntelliStat panel.

I will go so far to say that even if you are not considering a 50 kW transmitter, you need to see this transmitter. Here at WSM, we feel fortunate to have this technology.

We know that the Harris 3DX-50 Destiny transmitter can carry us with confidence and reliability into the future.

For more information contact Harris in Ohio at (513) 459-3400, fax (513) 459-3890 or visit the Web site at www.broadcast.harris.com

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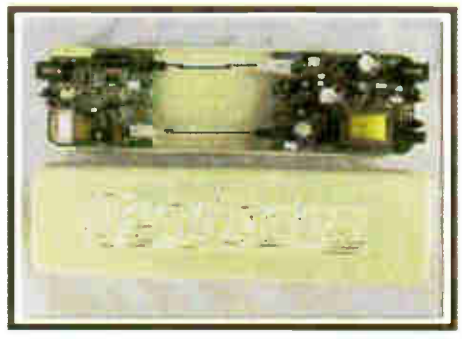

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You can find many uses for the HC-1 around your station: on-air studio, production room, newsroom, sales office, field news kits, sports remotes, etc.

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AM-1A

▶ Continued from page 63

I was attracted to the price and size of BE's AM-1A transmitter. We were already using the company's cart machines. I also like the fact that it's small enough to be shipped on overnight freight and it fits into our existing equipment rack without tying up needed floor space.

The two transmitters from Broadcast Electronics are the best purchase I ever made. They just sit there and run and run and run. All I have to do is clean the filters.

It has cut our light bill by two-thirds. My power bills went from $450-500 per month to $200 or less with one AM-1A, and from $250 to $90 with the other AM-1A.

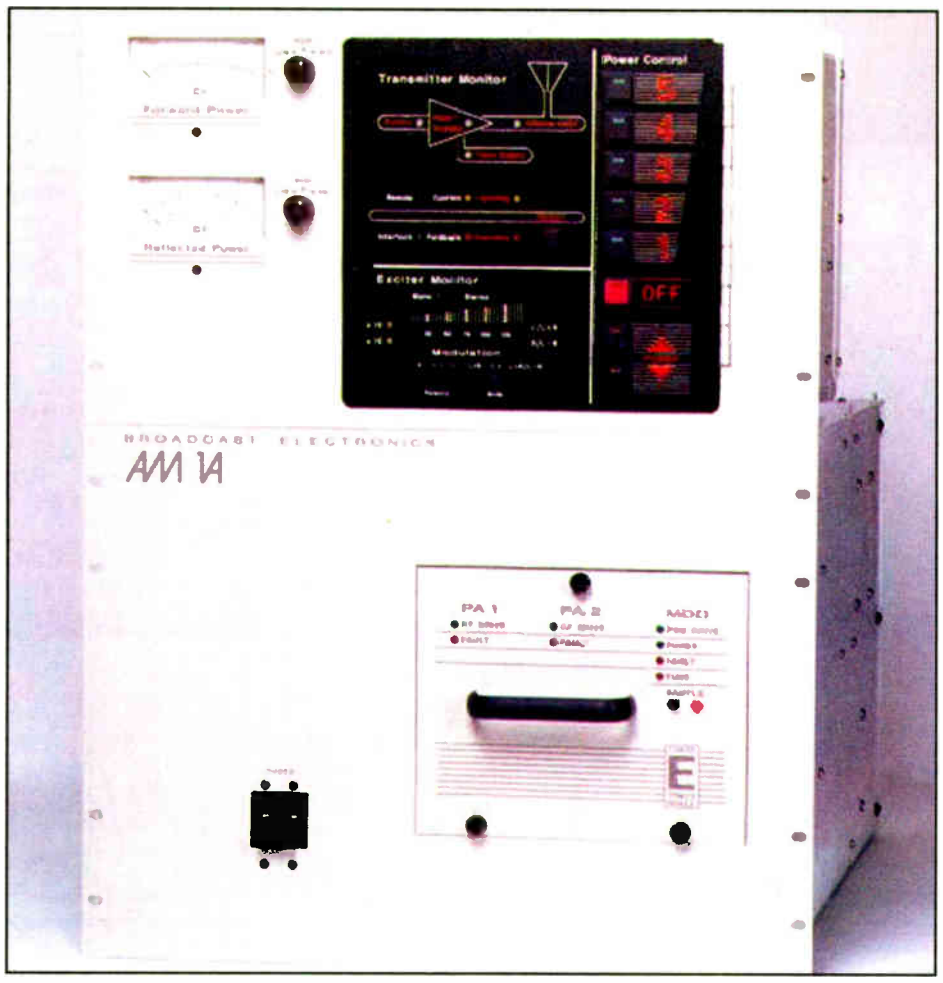
Pass on the good news

I've been so impressed with BE's products that when a neighboring radio station, WXRQ(AM) in Mt. Pleasant needed a new transmitter, I convinced them to buy an AM-1A.

Located 50 miles south of Nashville and broadcasting southern gospel in six different counties, Donald Paul, owner of WXRQ, is equally enthusiastic about the BE AM-1A transmitter he purchased, upon my recommendation, in June 1999.

"I wished I bought it a long time ago," he said. "It's a great piece of equipment."

Replacing his old tube-type transmitter with the solid-state AM transmitter has cut his electric bill too. "I used to average about $130 per month and the last bill I paid was $119. And it only cost me $85 to have it shipped UPS, compared to $500-600 to ship the bigger transmitter."



BE AM-1A Transmitter

The 1 kW solid-state AM transmitter has class E power modules, operates at five user-defined power levels, as low as 5 watts, and has a front-panel plug-in power amplifier. The super cooling system is designed to extend the transistor life up to eight times.

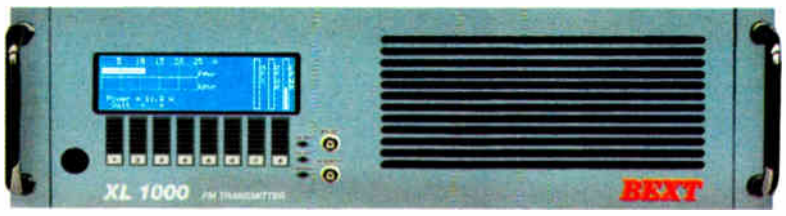
An optional output network eliminates the need for external impedance matching and an optional C-QUAM stereo delivers stereo signal. And the whole thing mounts into a standard 19-inch equipment rack.

For more information contact Broadcast Electronics in Illinois at (217) 224-9600, fax (217) 224-9625 or visit the Web site at www.bdcast.com

TECH UPDATE

Bext Releases Smaller FM Exciter

The **Bext** XL 1000 is an FM exciter that the company says is twice as powerful as any other on the market, packaged into three rack spaces.



Bext XL 1000

The unit is configurable in the field; it can be changed from an FM exciter to one with built-in stereo generation and audio processing, or to an FM translator, or to a 1,000-watt transmitter with STL receiver, with or without RDS encoder.

Removable modules are hot-swappable from the rear, allowing the exciter to function as an FM translator or STL receiver/transmitter.

Bext FC 2000

Engineers can communicate through telephone or Internet with the unit using software-based control of operating parameters, including frequency and power settings. The system features a graphic display for operating data plus menu-based control.

An audio passband with no phase shift allows the transmission of a clean MPX signal with no degradation of the stereo image.

The same power supply design and MOSFET circuitry are used in the FC 2000 RF amplifier. With the FC 2000, 2 kW of RF power can come from a chassis only 6 RU high.

For more information contact Bext Inc. in California at (619) 685-3920 or visit the Web site at www.bext.com

Products & Services SHOWCASE

TECH UPDATE

SVPA Powers Staff, Amplifier

Silicon Valley Power Amplifier Corp. has appointed David M. Annett as senior engineer.

Annett, former chief engineer of KHFM(FM) in Albuquerque, N.M., brings experience in high-power RF applications to this new position.

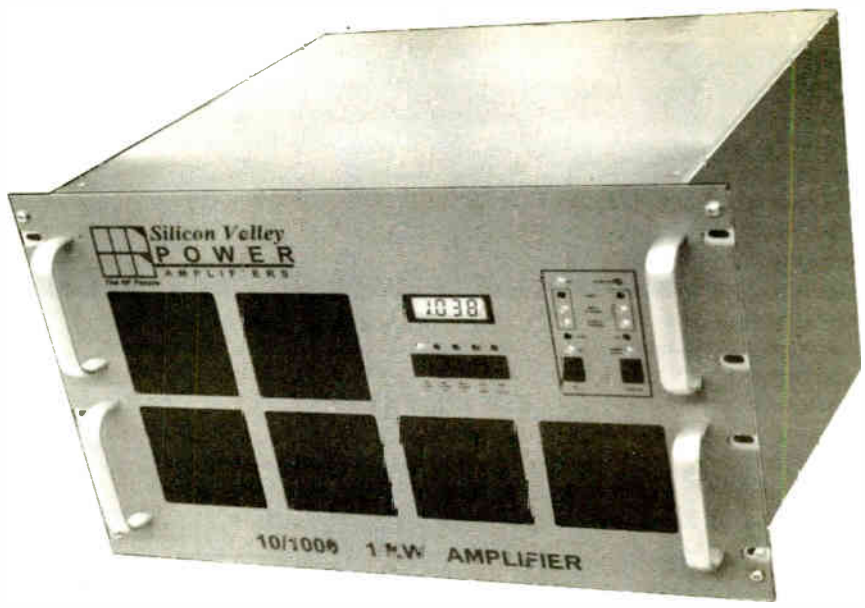
The company said its staff expansion was made as a result in growth of sales of the model 10/1000 solid-state FM broadcast amplifier.

The amplifier requires 10 watts of drive and is capable of well over 1,000 watts CW output.

The unit requires no tuning. The standard features of the 10/1000 include VSWR foldback, remote control and monitoring and front-panel status indicators for components.

The system is designed to be simple to use and lightweight, weighing in at 70 pounds.

For more information contact Silicon Valley Power Amplifier Corp. in California at (408) 986-9700, fax (408) 986-1438 or visit the Web site at www.svpa.com



Model 10/1000 Solid-State FM Broadcast Amplifier

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Dielectric 3-5/8" motorized four port coaxial switch . Continental Communications, 314-664-4497. Email: contcomm@fiastl.net.

AUDIO PRODUCTION

Want to Sell

Symetrix broadcast audio delay unit model 610, never used, 1 year old, $1800. Doug Harris, KGNZ, 542 Butternut, Abilene TX 79602. 915-673-3045.

Auratone 5-C cube speakers. Standard of the industry, very good condition, $70/pair +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

Want to Buy

Yamaha BP-2 bass generator schematic & any literature on this unit. Manual a plus. Bob Meuse, Muse Audio Arts, 191 E El Camino Real #209, Mtn View CA 94040. 650-969-2433 or museaudioarts@aol.com.

AUTOMATION EQUIPMENT

Want to Sell

Arrakis Digilink multiplay CD controller (2); Digilink III & Digilink II, BO. Alex McEwing, Mc LLC, POB 8260, Essex VT 05451. 802-288-1033 x11.

Pioneer M603 CD players with tray/BO. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

Scott Studio System, never used, still in boxes, call for details, $9000. Mr. Cobb, WLRX-FM, POB 370, Nappanee IN 46550. 219-773-7989.

Digilink III Systems (2), complete with cables & manuals. Currently operating & will be available on April 1, 2001. Contact Angie Sugalski, WCN, POB 444, Spartanburg SC 29304. 888-989-2299.

CD PLAYERS

COMPLETE FACILITIES

CONSOLES

Want to Sell

Harris executive rotary 10 pot in good condition with all power & program amps, $300. Joe Garcia, WGNU, 265 Union Blvd, St Louis MO 63108. 314-454-6660.

Tascam M-1016 rack-mount 16-input console with 3-band EQ, phantom power. Nice board, low usage, 16x2. $300 +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

LIMITERS/ AUDIO PROCESSING

Want to Sell

Symetrix 425 dual compressor, limiter, expander, $300. Doug Harris, KGNZ, 542 Butternut, Abilene TX 79602. 915-673-3045.

Alesis 3630 stereo compressor/Gate. Great shape, little use, $150 +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

Valley People 610 compressor/expander, great shape, $300 +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

Want to Buy

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

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RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted, top dollar paid! 615-352-3456, FAX: 615-352-1922. E-mail: billbryantmgmt@home.com.

MISCELLANEOUS

Want to Sell

Henry Engineering Digicord, new, never used, $150. Mr. Cobb, WLRX-FM, POB 370, Nappanee IN 46550. 219-773-7989.

Steven-Trusonic Inc, Stereodot model SD-1, $20; Beta Scope non destructive thickness gauge, $25. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 64952. 573-998-2681.

Want to Buy

TURNTABLES, PREAMPS, TONEARMS. 612-869-4963.

MONITORS

Want to Sell

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

RECEIVERS/ TRANSCEIVERS

Want to Sell

WATKINS JOHNSON 8618B premium Digital monitor receiver with built-in panoramic display. Frequency Range 0.5 to 500 mHz with 100 Hz resolution. AM, FM, CW, SSB, PLS modes. Many options. From $2550. RF Enterprises, 415-332-3905, rf-ent@worldnet.att.net.

Adtram T3U600 (2) T1 multiplexer, $2000 ea/$3600 set; Musicam CDQ Prima 110 (3), 20 kHz stereo bi-directional codec, $3500 ea/$6200 set. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

RECORDERS

Want to Sell

Otari MC5050 full track, 15 IPS, excellent condition, $895. Sam Bogart, 817-467-0158.

JVC stereo cassette deck KD-V6, Dolby B&C, digital peak, output level control, mpx filter, well maintained, great sound, $125. Dennis Scott, 615-309-8688, email: ds.music@home.com.

Onkyo stereo 3 head cassette deck, Integra model, 3 heads, 3 motors, tape type selector, dolby noise reduction, $250. Dennis Scott, 615-309-8688, email: ds.music@home.com.

Sony PCM2700A pro DAT machine, like new, 50 hrs use, box, manuals, remote, rack ears, etc., excellent condition, $900/BO. John, 610-644-1123 x120 or email: john@lpbinc.com.

Tanberg 15-21 (2), 7" open reel machines, need belts, $50/pr. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Tascam 122MKII cassette deck, working, needs work, BO. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

Tascam 32, 1/4" production r-r tape machine, excellent cond w/manual, $550 +shpg. Mark Schackow, Mark Schackow Recording, 307 4th Ave, E, Lemmon SD 57638-1604. 605-374-3424.

Tascam professional cassette deck model MK122-III, approx 6 yrs old, $300. Doug Harris, KGNZ, 542 Butternut, Abilene TX 79602. 915-673-3045.

Teac stereo cassette deck V-340, tape selector, dolby noise reduction, sounds great, dependable workhorse, $75. Dennis Scott, 615-309-8688, email: ds.music@home.com.

Otari MX 50 r-r recorders (2), very nice condition, $350 ea +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

Otari MX 5050 2 track master recorder. Heads recently replaced. Very nice shape. Remote, $450 +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

Studer A80, 24 track, 10K; Ampex 440, 2 track, $500; Studer PR99, 2 track, $500. Art Polhemus, Excalibur Studio, 750 8th Ave, New York NY 10036. 212-302-9010.

REMOTE & MICROWAVE

Want to Sell

MOSELEY DSP6000A , Digital Studio-Transmitter Link, 4 Channels, Still in the box. Must Sell, No Reasonable offer refused. Len Martinez, 915-949-8800.

SATELLITE EQUIPMENT

Want to Sell

SATELLITE C/Ku gear, www.daveswebshop.com.

Musicam Virtex Starguide II, BO. Alex McEwing, McLCC, POB 8260, Essex VT 05451. 802-288-1033 x11.

SOFTWARE/ DATABASES

Want to Sell

Computer tools by Ron Balonis at www.computertoolboxes.com.

Symetrix T1-101 telephone interface (3), all in very good shape, $100/ea +shpg. Joel Block, The Production Block, 906 E 5th St, Austin TX 78702. 512-472-8975.

STEREO GENERATORS

Want to Sell

Moseley SCA EPU SCG-4 and ancillary equipment, i.e. tapes, deck, receivers, etc. BO. W.H. Brown, WWBC/BOGO, 645 Anderson Ct, Satellite Beach FL 32937. 321-777-0265.

TAPES/CARTS/ REELS/CD's

Want to Sell

Fidelipac Greys, 1000 carts, lengths from 30 sec to 7 min, take 500 or more & will throw in cart tape & winder, 3/$1. Joe Garcia, WGNU, 265 Union Blvd, St Louis MO 63108. 314-454-6660.

Shure BC90 cartridges (2), broadcast quality with diamond styli 0.4 x 0.7 elliptical tip, stereo. F Yonker, Penn State Univ, 1229 Inverary Pl, State College PA 16801. email: yonker1229@home.com.

TEST EQUIPMENT

Want to Sell

Weston Instruments model 1240 tester, $20; Ampex 300E vacuum tube voltmeter, $35; B&W Nidek 400 distortion meter, $20; Eico 250 AC VTVM & amp, $20; Electronic Designs 100 electronic voltmeter/ohmmeter, $25; GC Electronics model 36-616 CRT tester & rejuvenator FC&BW, $20; General Radio Co Type 1564-A sound & vibration analyzer, $40; HP 330B & 330C distortion analyzer, $25 ea; (4) HP model 400D vacuum tube voltmeter, $45/all 4. Will Dougherty, WLD, Music Valley, Rt 1, Box 1548, Mill Spring MO 64952. 573-998-2681.

Bellatine Labs model 314 electronic voltmeter, cord cut, $20; NRI model 12 vacuum tube voltmeter, $25. Will Dougherty, WLD Recording, Music Valley, Rt 1, Box 1548, Mill Spring MO 63952. 573-998-2681.

Radio World

TRANSMITTERS

Want to Sell

Harris MW-50-B 50KW pulse modulated AM xmtr. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

Harris MW-5-B five KW pulse modulated AM xmtr. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

RCA BTF-20-E1 20KW FM xmtr. Continental Communications. 314-664-4497. Email: contcomm@fiastl.net.

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LPB AM-30P xmtr; LPB transmitter coupling unit model TCU-30 and all manuals, $800. James Sealey, WMAF, 850-973-3233.

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6KW	FM	1994	Henry 6000D
10KW	FM	1974	Harris FM10H/K
10KW	FM	1982	Harris FM25K

1KW	AM	1976	Harris MW1
1KW	AM	1976	Harris MW1A
1KW	AM	1981	Harris MW1A
1KW	AM	1981	Collins 828C-1 (314R)
5KW	AM	1982	Continental 315R-1
5KW	AM	1980	Harris MW5A
10KW	AM	1983	Continental 316F
10KW	AM	1986	Harris MW10B
25KW	AM	1986	CSI T-25-A1
50KW	AM	1978	Continental 317C-1
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Multi-talented highly motivated individual looking for opportunity with great radio station as on air talent. Group or talk show, morning or afternoon. Tom King, 972-557-6524.

Put me on the air! Young talent looking to enter broadcasting. Music background & training in radio. Can do it all. Jared, 918-293-2955.

Recent bilingual graduate with strong voice & superior talent. Will relocate, call for an aircheck. Peter, 972-768-4022.

Recent broadcasting grad, rookie, but willing to travel, looking for on-air DJ or sports. Ash, 405-314-9732.

Recent grad prefer sports broadcasting. Hard worker, willing to learn, can relocate. Matt, 817-447-0371 or mattmcbrayer50@hotmail.com

Recent graduate from American Broadcasting School seeking employment. If you're interested in a friendly & outgoing talent, call David, 405-348-6133.

Rookie broadcaster with maturity, time & patience plus the voice. Howard, 405-737-8746.

Rookie jock ready to break into broadcasting. Willing to travel, any format is fine with me! Robert, 214-381-7891.

12 years at college radio playing oldies. It was fun & I miss it. Now seeking same PT radios of St Louis. Dennis Hogenmiller, 4612 Theiss Rd, St Louis MO 63128.

Experienced rookie? Such a Thing? Yes, it's me! Yound, energetic female with experience in a #1 top 40 market and reporting. I want to work for you. Kelie, 405-408-8383.

Outgoing, energetic, highly motivated, trained, and well-detailed individual who wants to work in the radio industry. If this is the type of person you're looking for, call Jeff at 405-749-6929.

ACTION-GRAM

EQUIPMENT LISTINGS

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

Please print and include all information:

Are you currently a subscriber to Radio World?
☐ Yes ☐ No

Signature ____________ Date ______

Contact Name ____________
Title ____________
Company/Station ____________
Address ____________
City/State ____________
Zip Code ____________ — ____________
Telephone ____________

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS ☐ WTB ☐ Category: ____________
Make: ____________ Model: ____________
Brief Description: ____________
Price: ____________

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WTS ☐ WTB ☐ Category: ____________
Make: ____________ Model: ____________
Brief Description: ____________
Price: ____________

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 800-336-3045 • Fax: 703-998-2966

ADVERTISER INDEX

This listing is provided for the convenience of our readers.
Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEB SITE URL
12	360 Systems	www.360systems.com
51	AETA Audio Corp	www.aetausa.com
73	Air Corp	See ad for contact information
68	Allied	www.ocwhite.com
69	Altronic Research	www.altronic.com
55	Aphex Systems	www.aphex.com
50	Armstrong Transmitters	www.armstrongtx.com
70	ATI	www.atiguys.com
39	Audio Processing Technology	www.aptx.com
2	Auditronics/Wheatstone	www.auditronics.com
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24	CRL	www.crlsystems.com
38	Crown Broadcast	www.crownbroadcast.com
22	Denon America	www.del.denon.com
29	Dielectric Communications	www.dielectric.com
42	Digigram	www.digigram.com
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68	Electronic Research Inc.	www.eriinc.com
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47	Energy-Onix	www.energy-onix.com
72	ESE	www.ese-web.com
70	Excalibur Electronics	See ad for contact information
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37	Harris	www.harris.com
34	HHB Communications U.S.	www.hhbusa.com
17	Inovonics	www.inovon.com
23	Inovonics	www.inovon.com
70	J Squared Technical Service	jsquared@cdsnet.net
26	JK Audio	www.jkaudio.com
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31	Klotz Digital AG	www.klotzdigital.com
57	Lighthouse Digital Systems	www.lighthousedigital.com
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30	LPB Communications	www.blue5c.com
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5	Radio Systems	www.radiosystems.com
72	Register Data Systems	www.registerdata.com
70	S.C.M.S., Inc.	www.scmsinc.com
46	Scott Studios	www.scottstudios.com
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61	Sierra Automated Systems	www.sasaudio.com
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14	Sine Systems	www.sinesystems.com
43	SMARTS Broadcast Systems	www.smartsbroadcast.com
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73	Studio Technology	www.studiotechnology.com
15	Susquehanna Radio Corp	See ad for contact information
59	Syntrillium Software	www.syntrillium.com
9	Telos Systems	www.telos-systems.com
13	Telos Systems	www.zephyr.com
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79	Wheatstone	www.wheatstone.com
80	Wheatstone	www.wheatstone.com

◆READER'S FORUM◆

'Cousin' Brucie

I read with great interest your article about "Cousin" Brucie ("Al's Boss Picks Up Big Honors," RW, March 30).

Radio is no longer the great experience it once was.

'Cousin Brucie' Morrow

In Cleveland, there is a small 500-W station doing things the old way. Ted Alexander is the GM. His morning show is a throwback to when radio was fun. My good friend Chris Quinn does Friday and Saturday nights. He knows his music and also knows "Cousin" Brucie and Jack Armstrong, and a host of other DJs that are Cleveland legends.

Check out *www.welw.com*. It's great radio as it should be. An article on this station and others like it would be of great interest to those of us old enough to have been there.

Don Ressler
Cleveland

I was in radio for what seemed like decades (and in fact, it probably was).

I read RW and particularly enjoy Al Peterson's column.

I thought you'd be heartened to hear that the bespectacled lady in the background of the Mary Tyler Moore show credits has long since been identified. I won't bore you silly with the details, but when she passed away recently, the Minneapolis Star Tribune ran her obituary on the front page of its Metro Section.

Nonetheless, *great* article on "Cousin" Brucie. He is one the legends!

Steven Dahlman
Owner
DCM Software Solutions
Minneapolis, Minn.

WOR antennas

I was interested in Ed Montgomery's letter concerning antennas that appeared in the March 1 issue.

However, with regard to Mr. Montgomery's comments concerning the WOR(AM) antenna installation in Cartaret, N.J., a correction is in order.

Contrary to his assertion, this installation did not produce a horizontally polarized signal. The long wire extending between the two towers only provided support for a vertical wire between the towers that was in reality the third element in the WOR directional antenna array. The resulting signal was strongest to the northeast and southwest.

In the early 1940s, a third and shorter tower was added, the purpose of which, I believe, was to produce a null protecting WFTL, Ft. Lauderdale, Fla., which had moved from its 1400 KHz to WOR's 710 KHz frequency.

This installation was in use until about 1972 when the present transmission site in Lyndhurst, N.J., was developed.

Donald E. Shippy
Board Operator
WMMB(AM)
Melbourne, Fla.

Handyman

Having tried various ways to vent below-countertop cabinet housings, I finally came up with the idea to space the tops 1/2-inch above the cabinets. This provides a large area for heat to escape, without leaving obvious vent holes (where people tend to lose things) as the countertops extend several inches beyond the cabinets.

As for upper cabinets with vents on top, which always get covered with paper or binders: if you have your cabinetmaker bend the grills to eliminate the flat surfaces (in a "pup" tent shape) it eliminates anyone placing papers (or a water bottle!) atop them.

Vic Drescher
Assistant Chief Engineer
WKQX(FM)/Q101
Chicago

NAB

The following letter was addressed to the NAB and copied to RW's Reader's Forum page:

I had been waiting for information on exhibiting at The Radio Show in New Orleans when I spotted the NAB Xstream show on the same dates. We were planning on exhibiting at the Radio Show, but forget it. The last thing we need is another overbooked show with a watered-down audience.

New Orleans has always been a good site for the NAB Radio Show. It's hard enough trying to get radio people convinced that they should wade through the 100,000-plus people in Las Vegas. What was wrong with a small show dedicated to radio? You know, the original broadcast medium?

We were planning to exhibit this year, and we did not. I'm sure you found two or three video or Internet startups to replace us. I do have to ask, are you doing this for audience size or for the broadcast industry?

Joe Klinger
President
JK Audio Inc.
Sandwich, Ill.

Radio Rolls Up Its Webcasts

After several radio groups withdrew their streamed programming in reaction to new unionized talent fees, Radio World received numerous press releases from suppliers offering new or improved ad-insertion, content-substitution and other specialty services to save radio's "baby."

Clear Channel, Emmis and other owners said their Webcast shutdowns were temporary as they tweaked technology from ad-insertion vendors allowing them to strip out commercials by AFTRA talent from their terrestrial feeds and substitute other ads.

RW readers already knew about such technology, which was shown at recent conventions and reported in our *Internet Radio* section. But it took on new urgency when the radio groups suddenly disappeared from the Web in the weeks before the NAB show.

The technology exists to do all this and more right now. The faster radio gets on board with revenue-generating business models for Webcasting, the better. It's time for broadcasters to get serious about the Internet and devote the planning and resources it needs to flourish, without risk of further interruptions in programming.

If radio had been as attentive to the Internet as to its terrestrial business and its regulation and fees, radio would have screamed when AFTRA won its triple rate for streamed radio commercials when its contract was signed last fall.

And the industry wouldn't have been shocked by the RIAA's moves last November that were based on the three-year-old Digital Millennium Copyright Act. The U.S. Copyright Office agreed that RIAA is entitled to receive separate fees from radio broadcasters for music streamed online, in addition to the fees radio broadcasters already pay to play the music on the airwaves. That decision should have been expected.

We accept part of the blame. Although we've covered AFTRA and DMCA issues in these pages, and we have called on radio stations to understand their implications, our publication can do better too at anticipating these developments and responding to them. We pledge to do so.

Some observers compare radio's relationship to the Web with that of TV networks, which reacted smugly when the cable industry first appeared. While it took cable a while to get up and running, the industry now makes more money by far than do the traditional TV networks.

"Don't wait," radio broadcasters are told, "or another industry will develop to fill the void that radio should naturally claim as its own."

Sounds like good advice.

— RW

KOB (AM) RCA 50-E

Likely by now you've heard from a number of readers that the illustration on page 12 of your March 1 Radio World issue is a photo of some old electrical power switchgear that's a part of the Bolack museum, and not the old KOB-(AM) RCA 50-E.

Love your publication!

Mike Langner
Chief Engineer
Citadel Communications/Albuquerque
Albuquerque, N.M

Write to Us

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READER'S FORUM
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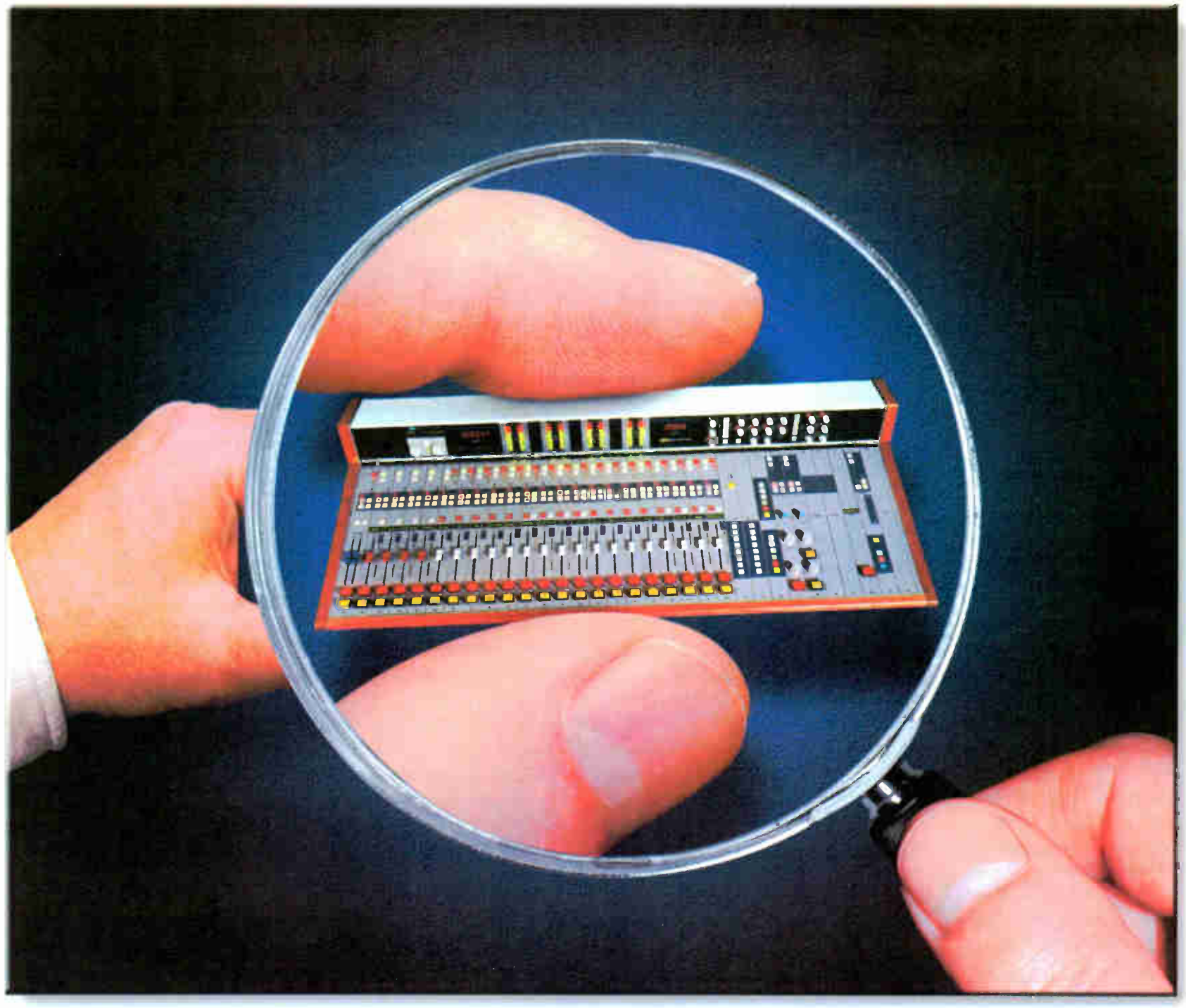

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