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New Stations Ahead

Apart from LPFM, the FCC is poised to open a mini-flood of FM allotments. Barry Umansky explains.

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Cash Makes the News

Here's the time processor that got Rush Limbaugh so upset. Could your station benefit?

See Page 24

Radio World®

The Newspaper for Radio Managers and Engineers

February 2, 2000

FCC Says Yes to FM Low Power

by Paul J. McLane and Leslie Stimson

WASHINGTON Within months, the first of at least 1,000 new low-power FM stations could be on the air.

The FCC voted Jan. 20 to create a new radio service in the United States. Current broadcasters are not allowed to participate.

The NAB called it a sad day for listeners and immediately vowed to "review every option to undo the damage caused by low-power radio."

The FCC will create two power classes. One would be authorized at 50 to 100 watts, providing an approximate service radius of 3.5 miles, called LP100. The second range is 1 to 10 watts, called LP10, with a radius of 1 to 2 miles. Both have a maximum height above average terrain of 30 meters or 98.4 feet.

Licenses will be awarded throughout the FM band, not in one dedicated piece.

It's a sad day for radio listeners.

— Eddie Fritts

'Social engineering'

Broadcasters, led by NAB, have opposed low power on grounds that it would create unacceptable interference and hamper the rollout of digital radio.

NAB President and CEO Eddie Fritts said, "Every legitimate scientific study validates that additional interference will result from LPFM."

The NAB suggested the vote was driven by politics over technical standards. "This FCC has chosen

See LPFM, page 10 ▶

Public Radio Stations Shop for New Gear

Pubcasters Gain More Than $2 Million From PTFP Grants

by Leslie Peters

Public radio station managers and chief engineers are shopping for equipment replacements and technical upgrades, thanks to federal spending money.

The funds come from an annual grant under the Public Telecommunications Facilities Program, operated by the National Telecommunications and Information Administration of the Department of Commerce.

PTFP offers public radio and television stations and nonprofit educational and cultural organizations the chance to compete for grants that can cover up to 75 percent of new service construction, or up to half of their technical replacement or

See PTFP, page 8 ▶

Bobby Bennett hosts the 'Burner' on WPFW(FM), Washington, D.C. The station will use its PTFP grant money for a new transmitter.

NEWS MAKER

Sirius Satellites This Year?

Former cellular telephone entrepreneur David Margolese has been working on satellite-delivered digital audio radio for 10 years, since the chairman and chief executive officer co-founded what was originally called CD Radio in 1990. Now re-named Sirius Satellite Radio, the company is poised for its first satellite launch and executives say the Sirius subscription service will be operational by the end of this year, ahead of its competitor, XM Satellite Radio.

With the latest infusion of $200 million from Blackstone

David Margolese

See SIRIUS, page 5 ▶

◆ NEWSWATCH ◆

NAB on LPFM

WASHINGTON In further comments submitted to the FCC on the proposal to create a low-power FM service, NAB said it was demonstrating "the folly" of LPFM.

"No matter how you slice it, LPFM will result in additional interference on an already congested radio band," said NAB President and CEO Eddie Fritts. He made the comments before the FCC vote in late January (see page 1).

Even a study conducted by LPFM supporters, NAB said, agreed with NAB's conclusions that "the introduction of new LPFM stations without maintaining the existing protections for second- and third-adjacent channel interference, will diminish the quality of FM service."

NAB also failed to convince the FCC to wait for comments in the digital broadcast proceeding. NAB noted that in USA Digital Radio's December submission of test data to the National Radio Systems Committee, USADR was unable to complete tests relevant to understand the impact of LPFM on stations making the transition to DAB.

Next CP Auction Starts March 21

WASHINGTON The FCC has released details of how the March 21 closed supplemental broadcast auction will work.

All spectrum to be auctioned is the subject of pending, mutually exclusive applications for which the FCC has not approved settlement agreements. The March auction will include applications not included in two earlier auctions of AM, FM and TV construction permits. Mutually exclusive LPTV and TV translator displacement relief applications will also be included. Applicants will be eligible to bid only on those CPs for which they previously filed long-form applications (FCC Form 301 or 349).

To participate, a completed short-form application (FCC Form 175) must be submitted by 5:30 p.m. ET on Feb. 18. To receive forms, go to *www.fcc.gov/formpage* or call (800) 418-3676.

The FCC intends to release the bidding schedule a week before the auction.

Nassau Fined $4,000

WASHINGTON Nassau Broadcasting Partners has been fined $4,000 by the FCC for recording and airing phone conversations without proper notification to the callers. The FCC followed up on a complaint filed by Leonard Schnappauf, superintendent/principal of the Shore Regional High School district in New Jersey. He said Nassau-owned WJLK-FM in Asbury Park aired calls to his wife and his secretary without letting them know they were on the air.

The station no longer has a tape of the particular show, but asserts its morning crew did let the parties know they were on the air.

The FCC said without a tape, it is impossible to figure out what occurred, but what is clear is that when Schnappauf's wife and secretary answered their phones, the station was taping them.

FCC rules require notice before taping begins.

Nassau had 30 days to either pay the fine, or explain why the amount should be recinded or reduced.

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GUEST COMMENTARY

Simplify AM Directional Rules

by Ron Rackley

Significant FCC rule changes have been proposed concerning the proof-of-performance requirements for multitower AM directional antenna systems. The outcome of the Notice of Proposed Rule Making (MMB Docket 93-177), for which the public comment period ended in November 1999, will likely become known this year. It appears certain that the FCC rules will be simplified and modernized in such a way that much less work will be required for "proofing" directional antennas.

The seed for the rulemaking was planted in 1989, when my firm and four others — Hatfield & Dawson Consulting Engineers Inc.; Lahm, Suffa & Cavell Inc.; Moffet, Larson & Johnson Inc. and Silliman & Silliman — petitioned the FCC to open "An Inquiry into the Commission's Policies and Rules Regarding AM Directional Antenna Performance Verification." A Notice of Inquiry was issued concerning the matter in 1993 and the public comment period ended in early 1994. The comments were sharply divided between those who favored using the electromagnetic computational technique known as "moment method modeling" to eliminate the requirement for field strength measurements in some cases and those who opposed that idea. Moment method modeling, though well-known in the larger antenna engineering community, was not in common use for adjusting AM directional antennas at that time and software for modeling them was not commercially available.

I'm afraid that the level of the debate over moment method modeling may have "drowned out" worthwhile discussion of other ways in which the proof-of-performance rules might be simplified, such as reducing the field strength measurement requirements for conventional "proofs," at that time.

In a Notice of Proposed Rule Making released last year, the FCC proposed dropping the issue of moment method modeling completely and turned its focus toward simplifying the requirements for proofs using field strength measurements. Discussions among consulting engineers and engineering management personnel in the broadcast industry revealed that many of them had gained experience with moment method modeling in the intervening five years and were open to considering its use for proofing directional antennas in at least limited circumstances. The FCC's own simplification proposals aroused a great deal of discussion with most engineers supporting them and many, including myself, believing that the simplification should go further than had been proposed.

General agreement

At an NAB-sponsored meeting on the topic, attendees generally agreed that moment method modeling deserved further consideration; that it would probably not be applicable for all directional antenna systems, and that further study would be required before specific recommendations could be made for its use. They also agreed that simplification of the field strength requirements for conventional proofs, as had been proposed by the FCC, should remain "on track." The consensus was that the FCC should bifurcate the proceeding and issue a Further Notice of Proposed Rule Making to consider how moment method modeling might be applied to the proof-of-performance process, while at the same time moving ahead with making new rules to simplify the present requirements.

The rules can be simplified to provide better overall performance verification for AM directional antenna systems at much less cost.

To enlighten the discussion of how the present rules might be simplified, I believe that the effectiveness of the present process of licensing AM directional antenna systems should be reviewed.

Unlike other radio services that purchase antennas off the shelf and rely upon manufacturer's data for licensing them with the FCC, each AM directional antenna is unique in design and is licensed to operate with antenna monitor parameters that were determined at the time of the most recent "proof." Typically, adjustments are made on the networks that divide the transmitter output power and feed it to the various towers of an array in an experimental process until field strength measurements made out to 20 miles from the transmitter site indicate that the pattern shape is correct and the station becomes licensed to maintain the tower current ratios and phases that were observed on the antenna monitor at the time of the proof of performance for normal operation. A full proof of performance is normally run whenever a new directional antenna system is constructed. When an existing directional antenna system is readjusted, a partial proof of performance, consisting of a small sample of field strength measurements referenced back to those that were made at the time of the last full proof of performance, is normally conducted.

A full proof-of-performance report with all of the exhibits necessary to satisfy the FCC's present requirements can easily be over 100 pages in length and cost tens of thousands of dollars to complete. Most stations operate with parameters that were determined through the much less costly partial proof-of-performance process at some time subsequent to their original construction.

Requirements

No matter how stringent the requirements are for full proofs, the effectiveness of the present rules to prevent interference is compromised by the fact that most stations are actually licensed with parameters that were determined with partial instead of full proofs. Partial proofs are subject to many errors, most notably the changes in signal propagation that accompany environmental changes.

For instance, a station can become licensed with a full proof in the wintertime and then be readjusted to have much higher radiation in its directional pattern nulls the next summer and still pass a partial proof because of the lower effective ground conductivity of the hot, dry months. Interference to other stations would increase, but the FCC would be perfectly happy with the station since it had become licensed with the new parameters.

Ron Rackley

Another common type of error results when a partial proof is run and referenced back to a full proof that was run decades earlier, despite very significant changes in the propagation characteristics of the area surrounding the transmitter site due to development during the intervening years. My experience working on directional antennas all over this country indicates that such situations are the rule rather than the exception. I believe that we now have the opportunity to rectify this problem by eliminating partial proofs altogether, with simplification of the requirements for full proofs so that they cost less than partial proofs do today.

Basic to the question of how full proof costs can be reduced so dramatically is the question of just what has to be proven by a full proof in the first place. I believe that the sole purpose of a directional antenna proof of performance is to prove a directional antenna's performance. The present rules, which had their origin in the 1930s when AM transmitting antenna technology was still being developed, require extensive measurement work to characterize the radiation pattern of the nondirectional reference antenna and ground conductivity in the region out to 20 miles from the transmitter site.

I believe that the large body of evidence on nondirectional antenna performance that has accumulated through the proofing process over the last 50 years clearly

See GUEST, page 5 ▶

Digital Comes to Prime Time

Digital radio was a headliner at the International Consumer Electronics Show in Las Vegas, where it starred in its own exhibit pavilion and made the front page of the show's daily newspaper.

I had a front-row seat to the digital goings-on. The first day featured a panel, which I moderated, titled "Digital Radio: Is It Ready for Prime Time?" The answer for satellite radio is yes. For terrestrial in-band, on-channel radio, maybe.

Satellite is passing the awareness threshold. Unlike IBOC, it has no regulatory barriers and no immediate standards problems.

The companies holding U.S. licenses, XM Satellite Radio and Sirius Satellite Radio (formerly CD Radio), are signing receiver deals and programming agreements at a furious pace. They plan commercial service in early 2001. Their booths were busy with retailers asking when they could order and how much it'll cost.

Aiming for the dashboard

The answers will come soon.

Receiver development deals made news. Delphi Delco signed up with XM and Sirius to develop three-band car systems, and said it won the first satellite radio-manufacturing contract from a vehicle maker — GM, an XM investor — to produce an AM/FM/Satellite receiver.

Sirius and XM also signed deals with Audiovox Corp. to develop car radios.

Gleaming under the XM spotlights were new cars from Mitsubishi, Saab and Cadillac equipped with mock AM/FM/XM radios. The company also reached "preliminary" agreement to allow Sony to market XM-Ready products. XM has deals with Alpine, Clarion, Mitsubishi, Motorola, Pioneer and Sharp as well.

And XM won a deal for an all-NASCAR channel, making NASCAR the first sports property to announce a satellite radio partnership. That's brilliant use of the niche capabilities of satellite.

Meanwhile, Sirius announced that the BMW Group will install radios to receive Sirius in BMW and Land Rover vehicles as early as next year.

Sirius allied with Kenwood to develop receivers. It has deals with Clarion, Alpine, Panasonic, Recoton and Visteon, and an agreement to install receivers as factory equipment in Ford, Mazda, Jaguar and Volvo vehicles.

The IBOCs had news of their own.

USA Digital Radio conducted a digital broadcast from Clear Channel station KWNR(FM) and offered van rides. It displayed a concept receiver by Kenwood, and announced a deal with Analog Devices Inc. in which USADR software will be integrated with ADI 32-bit digital signal processors for broadcast and radio receiver products.

Retailers heard the message that satellite radio is almost upon us.

USADR talked up its alliance with Digital Radio Express, saying it will help the two proponents unify their efforts and expedite the rollout of IBOC. It promoted its new iDAB branding initiative, and gave details of its filing of test results with the NRSC. Digital Radio Express also exhibited and took part in the panel.

Lucent Digital Radio did not have a booth; company officials met with receiver makers and others in a suite, promoted their Perceptual Audio Coder and took part in the panel. Lucent officials downplayed their absence from the floor, saying their engineers were busy preparing for filings with the FCC and NRSC and that it made no sense to exhibit without real systems to show. Some observers in the USADR camp saw this as an indication that Lucent did not have sufficient progress to report. Lucent officials disagreed.

Lucent is not just an IBOC proponent; it is involved in the satellite side. LDR won a CES Innovations 2000 Award for PAC, which will be used by XM Satellite Radio as well as Lucent's IBOC system.

It's good to see so much attention paid to digital radio, and I'm pleased at the alliance between USADR and DRE, a step toward more industry cooperation (although I had the sense that USADR and DRE are still trying to figure out exactly how the relationship will work and whether the alliance moves the technology forward substantially).

Yet the buzz for radio was about the guys with the birds. Satellite radio is about to hit and retailers are thinking about how they can make money on it.

From the Editor

Paul J. McLane

Meanwhile, even though the NRSC is collecting IBOC test results and the FCC has an IBOC Notice of Proposed Rule Making, I could not escape the feeling that satellite radio is a leap ahead.

Not everyone agrees. Suren Pai, president and CEO of Lucent Digital Radio, told me the difference in rollout schedules will be measured only in months.

"There is a general sense this digital stuff is going to happen," he said of the mood at CES. "The time difference in satellite is not a big deal."

Mass media, he said, have life cycles measured in years. Given the investment that the entire industry has in radio and in seeing IBOC happen, Pai feels confident.

And regardless of bickering over the timing of paperwork to the NRSC and how to establish a standards process, most IBOC fans felt the FCC will act on IBOC by the end of 2000.

Many questions lie ahead for digital radio. Next issue, I'll share the answers that the panelists gave to some of them.

Need More Supplier Info?

Sharp-eyed readers will note something missing in this issue.

Reader Service Numbers, those little numbers that accompanied advertisements in past issues, no longer appear. With so many suppliers offering instant product information through Web sites and toll-free phone lines, the usefulness of the old "bingo card" system of requesting literature has diminished for all publications.

To help you contact suppliers, we've added Web site information to the Advertiser Index found in the *Broadcast Equipment Exchange* section near the back of **RW**. Soon we will expand that list, to provide more contact info.

Thank you for patronizing the suppliers who support our industry and our newspaper. Be sure to tell them you read about them in **RW**.

AM Directional Rules

▶ GUEST, continued from page 3

demonstrates that it is unnecessary to proof nondirectional antenna patterns in order to proof directional antenna patterns. A study that my firm conducted of all of the nondirectional proofs in our records for three representative frequencies (57 total) showed that over 90 percent had measured radial field strengths within less than 2.0 dB of their calculated values and no examples were found with a radial field more than 3 dB from the calculated value.

This means that their directional antenna proofs could have been completed with just enough field strength measurements to allow directional-to-nondirectional ratio analysis, without any measurements to evaluate the nondirectional antenna's performance or ground conductivity, with errors smaller than is generally the case with side-mounted FM antennas. Just look at the specifications that are published by the FM antenna manufacturers for their products — pattern circularity of +/- 2 dB is a commonly given specification for FM antennas before they are mounted on the towers that further distort their patterns by several dB.

Rules

I believe that the rules should require only 10 measurements for directional and nondirectional operation on only enough measurement radials to show that an antenna has been adjusted properly — in the nulls and on the minor lobes — for a proof of performance. The proof report would be simplified since no graphical analysis of field strength data would be required. I believe that the proof report requirements should be further simplified by requiring that maps showing the field strength measurement points be maintained in the station files instead of being filed with the FCC and eliminating other non-essential graphic content such as common point impedance measurement graphs.

I believe that the rules can be simplified to provide better overall performance verification for AM directional antenna systems at much less cost. Licensees of AM stations would be encouraged to make directional antenna pattern modifications to provide better service to the public and decrease interference within the AM band, since many stations that could otherwise make directional antenna pattern changes inexpensively — without constructing towers, for instance — are deterred from doing so by the cost of proofing a directional antenna system under the present rules.

I believe that the overall level of rule compliance will increase also, since the cost of proofing a directional antenna pattern would be reduced and those who provide engineering services would be better able to provide realistic quotes for the work required to return errant systems to licensed operation. Simplification of the graphic content of proof reports would promote efficient electronic filing of application for license exhibits with the FCC once electronic filing has been implemented, suiting the interests of the broadcast industry and the FCC. Depending on the outcome of the studies into moment method modeling, assuming that the FCC issues the requested further notice of proposed rulemaking, we may see further simplification of the proof-of-performance process for at least some stations in the not-too-distant future.

Rackley is vice president, duTreil, Lundin & Rackley and may be reached at ron@dlr.com

To see the firm's comments on this issue, go to the "AM Directional Antenna Proof Simplification Rulemaking" section of the firm's Web site at www.dlr.com

***RW** welcomes other points of view.*

Margolese Leads Sirius To Launch

▶ SIRIUS, continued from page 1

Capital Partners III in December 1999, Sirius has raised more than $1 billion. The public company has agreements for its receivers to be installed in vehicles manufactured by BMW, Ford, Mazda, Jaguar and Volvo.

SIRIUS Satellite Radio

Automotive electronics manufacturers that so far have agreed to produce AM/FM/Sirius receivers are Kenwood, Alpine, Audiovox, Clarion, Delphi Delco Electronics, Panasonic, Recoton and Visteon.

Margolese, 42, spoke with **RW** News Editor/Washington Bureau Chief Leslie Stimson about how Sirius plans to make 2000 the year of satellite radio.

***RW:** What is your timetable for launch?*

Margolese: It was January, March and May. There's been a Proton (rocket) failure. ... So, we think it means the first launch will shift ... to March. (*Note: The new launch date had not been announced at press time.*) ...

We commence operations at the end of 2000 and this does not change that. We had lots of buffer time (in the schedule) between the launch of the satellites and operations.

***RW:** What happened with the Proton rocket?*

Margolese: The Proton (launch) vehicle is one of the most reliable in the world. They've had more than 100

See SIRIUS, page 6 ▶

Sirius Aims for 2000 Launch

▶ SIRIUS, continued from page 5

successful launches on that rocket. It's almost certainly a workmanship problem of some sort, a faulty weld or something like that. They'll find it and then they'll re-open the line.

***RW:** The biggest changes for your company lately are the new name and logo. What was the thinking behind the changes?*

Margolese: The name was getting a little long in the tooth in that CDs are becoming an obsolete technology and we were starting to be referred to as "CD." That was also confusing ... because people naturally abbreviate names. So instead of CD Radio, people started calling us "CD."

Also, CDs are becoming an obsolete technology and it's confusing if you go into a store and you say, "I want CD Radio." The salesperson will say, "Radios with CD players are over there." Some radios are called CD radios. Too confusing: So we changed it.

We changed it to Sirius and Sirius is the brightest star in the sky — the Dog Star. We think that name has tremendous branding potential in that it's a name that scored very, very high in the market research and focus groups that we did in memorability. You don't forget it.

It's a play on the word serious, of course. ... But imagine, with a lot of money poured into the advertising campaign, there are a lot of things you can do with it. "Get serious, You're listening to Sirius music."

People don't forget it. I was walking down the street today when I was coming into the office and I saw "Sprint PCS." Nobody calls it "Sprint PCS" or "Sprint Long Distance." They call it "Sprint." If I'd said "Sprint" to you 20 years ago, you'd say "Sprint? That means to run." It wouldn't mean long-distance service to you. But "Sprint" means long-distance service to you today. ... When you brand something, you can make it mean whatever you want. We think Sirius, has, as I said, great memorability, and (the) double-entendre is fantastic. It ties in with the brightest star in the sky.

***RW:** Do you think the average youths of America know their Greek mythology that well that they would get it?*

Margolese: No. It's like "Sprint" or anything else. Or "Apple." "Apple's a fruit." No, it's a computer now.

***RW:** You're relying on the logo to help them get it?*

Margolese: The logo is cool, but the name's a good name. We will make it mean satellite radio. ... Sirius is only going to mean one thing. It's going to mean satellite radio. ... People will say, "I have Sirius. I got Sirius."

We're not operational yet so we'll pour $100 million annually into this name and it will become an icon of American pop culture. Sirius will mean satellite radio.

***RW:** Let's talk about your operation. What is the status of your repeater network build-out?*

Margolese: We are building and they will be completed in September.

***RW:** Will you and XM share any repeater locations? XM said it's being discussed.*

Margolese: Okay, it may be. I wouldn't say that's wrong. But right now, we're not.

***RW:** In other words, no decision one way or the other?*

Margolese: Right. We're building. When you say sharing, XM has a couple of thousand sites ... .

***RW:** And you've got about 100 ... .*

Margolese: It's such a small part of our overhead or our capital expenditures that it's not a big deal ... but it's huge for them.

***RW:** What is the status of receiver interoperability now that you and XM are using similar versions of Lucent's Perceptual Audio Coder compression algorithm? Does that mean Sirius and XM can use the same chip design in your receivers?*

Margolese: There's more to it than the compression algorithm. We are working on it, and have been working on it for some time but we have not gotten there yet.

***RW:** When do you anticipate getting there? Not first-generation, but when?*

Margolese: It would be second-generation and I can't tell you when second-generation is right now.

(Note: Sirius estimates its receivers will cost $199 to $499.)

***RW:** Speaking of receivers, what do you think they will look like in the car five years from now?*

Margolese: The future receiver, I don't think, is going to look that much different than today. It will have the third band on it. So, you will have AM, you will have FM and you will have the Sat band. XM's desire to brand it notwithstanding, AM/FM/XM, when we have interoperability, it will clearly be the Sat band, AM/FM/Satellite. At that time, (you'll) be able to select between the two of us. We'll see three-band radios.

Beyond that, larger displays with the capability of receiving data on those displays and larger memory ... more memory contained within the radio for that data.

***RW:** And the Internet?*

Margolese: You can do that right now; over a cellular network you can access the Internet. It's costly and obviously it doesn't work everywhere because it's cellular and it's terrestrially based. ...

... When you're driving around and you're mobile, you need a limited amount of information over the Internet. You don't want to look at Web pages and that kind of thing. Like your PCS phone. What do you really want from it when you're running around on the Internet?

***RW:** Probably directions, traffic information, weather ... .*

David Margolese

Margolese: Yes, updating your Palm Pilot ... but it's not the same as when you're sitting down and you're really delving into something. So for that limited interaction with the Internet, the wireless networks, PCS are attempting to address that and I believe will continue to do so. That's a fairly costly and limited way to access the Internet on a mobile basis. That should be fine. There doesn't appear to be the same kind of need or desire to interface with the Internet to the extent you do when you're not mobile, when you're at the office or at home. That's a different user mode. That's more of a mode where broadband is important.

***RW:** What is Sirius thinking about the next generation of receivers beyond AM/FM/Sirius/IBOC?*

Margolese: You'll see IBOC (in-band, on-channel digital audio broadcasting). IBOC will be there. The satellite band will be there late (in 2000). And IBOC will start to creep in there also after that. And that's fine.

***RW:** When will there be a receiver that integrates analog, S-band and IBOC?*

Margolese: That's really up to the terrestrial broadcasters in terms of their adoption of IBOC. Everybody talks about it. We'll have to see how fast it's adopted. I also don't know how much the consumer really cares about an upgraded amount of fidelity from FM.

Really, IBOC upgrades the fidelity and that's about all it does. While we will provide a digital-quality fidelity, we've never seen that as our main selling feature at all, or the main reason anybody would be interested in listening to us. We think that the difference between digital fidelity and an FM-quality sound on the radio in your car isn't so huge. It's important, but we don't think it's a major differentiator.

We do think that the ability to drive and never lose signal is huge. The seamlessness — always to have your service ever-present — is big. Sort of like, once, you were used to your TV service, then you went to cable, and now you'll always have your channels perfect no matter when you turn it on. You'll turn your radio on, drive anywhere and always have your service. We think that's important. We think the commercial-free thing (for music channels) is important.

We think that the huge thing is the ability to be able to hear what you want when you want, where you want, and just specifically, that genre really tightly done, without interruption everywhere. None of that can be addressed by IBOC. IBOC is just an upgraded fidelity. We'll have to wait and see just how fast that's adopted and how much consumers care about it.

***RW:** Will consumers be able to distinguish between your service and XM's?*

See SIRIUS, page 7 ▶

▶ SIRIUS, continued from page 6

Margolese: Yes. When you're driving by a truck on the highway, XM's service will be blocked. If you're driving east-west and you are on the north side of the truck, while you're behind that truck you're not going to get the service.

RW: Because their satellites will be in a lower orbit than yours?
Margolese: Right. Their angles of elevation can't overcome a 13-foot, 6-inch tractor-trailer, which is 4 or 5 feet away from your car, if you're driving on the north side of an east-west pass. So, when you go by that truck, or it goes by you, or you're sitting behind it, it's over, unless you have a terrestrial repeater (nearby). They're not going to have those ... there are long stretches of highway and so on. There will be other blockage areas as well that will happen to them. Not everybody will notice that, but certainly ... it is a difference.

I think the major difference is the commercial-free aspect. They say they will have commercial-free, but, of course, all of our music will be commercial-free. I think there's a huge difference between saying, "some of our music will be commercial-free" and then saying, "some of it won't." They'll say they'll limit their commercials, well, that's every radio station's promise. More music, more of the time, less commercials.

We have no commercials (on music channels). We have the hosts. It's a fully hosted group of programming, but no commercials. That's a major difference. When you listen to the two, you're going to notice it right away. One's going to sound like radio.

RW: You mean the radio of today, which, according to satellite radio suppliers, is inadequate and underserves many people?
Margolese: Look who's doing their (XM's) programming: Clear Channel, BET (Black Entertainment Television), Salem. These guys are broadcasters. That's who's doing their programming. That's fine, but it's going to sound like that. ... Even if they limit their commercials, so what? They still have commercials. People don't like that.

Now, imagine that gone. I think you'd notice that.

RW: We should discuss how you became president and chief executive officer of this company.
Margolese: It was 10 years ago that I essentially started out in this. It was a function of my investing in DMX (Digital Music Express) and making that investment back in '89. It's now called PCI Music.

RW: Was that also subscription service?
Margolese: Yes, over cable and over DBS now. I made an investment in that company back in '89 when they were getting financed and I saw the idea was a good idea, except the market they were attempting to address was a secondary market in terms of where people listen to radio. ...

The founder of that company was trying to do for television what cable did for TV. I said, "If you're going to do for radio what cable did for TV, you better do it where people really listen to the radio, and that's the car. So, let's make this thing happen in the car." That's really the story behind the genesis of this company and my involvement in it.

I had just sold my interest in both Cantel Inc. and Canadian Telecom (*Note: for about $2 billion*).

(Margolese co-founded Cantel, a national Canadian cellular telephone carrier, and founded paging company Canadian Telecom, where he served as the company's president.)

RW: It must feel good since you've been working on this for so long that it's starting to be real now that you have studios.
Margolese: It does. It's very similar to Cantel, (which) started in '79, '80, and I sold my interest in 1989. That was 10 years. Cantel at that point was a multi-billion dollar company with several thousand employees. And today, (it) is Canada's largest national cellular telephone carrier — a $3 billion company.

This (Sirius) has been 10 years. We don't have our $3 billion in revenue yet, and our thousands of employees, yet. But we're getting there.

RW: Are you an engineer? What is your background?
Margolese: I am a college drop-out. I never went back after my first year. ... I started my company, Canadian Telecom (by bringing in corporate partners) ... and I never looked back.

In terms of engineering, I've always been self-taught. I've had the aptitude or the ability to understand electrical engineering quite well, although I don't have a formal degree.

RW: Did you ever work in a radio station?
Margolese: No. It was paging, cellular and this. And I've venture-capitalized a bunch of companies, financed a lot of companies.

RW: Do you know how to work the equipment in your studios?
Margolese: Of course not!

NonComs Get $2M+ in Gear Funds

▶ PTFP, continued from page 1

augmentation costs.

Without PTFP funding, "public broadcasting in this country could not remain healthy," said Ginny Berzon, director of federation services at the National Federation of Community Broadcasters, a national organization of about 150 of public radio's smaller operations.

"There really isn't another source of funding to keep equipment functional," said Berzon. Replacing obsolete technology is expensive, she said, "and Congress has limited the ways in which public broadcasting can raise money, so support from federal programs like PTFP is absolutely necessary."

Most of the almost $20 million awarded last September went to public television stations, chiefly to defray the costs of digital conversion, leaving $2.1 million to distribute among 37 successful public radio station applicants. Previous-year PTFP totals were $19.8 million, of which $3.6 million went to radio. Television got a bigger share than radio because of digital conversion projects.

Shopping lists for radio grantees mostly focus on new transmitters, antennas and studio-to-transmitter links to replace failing equipment in an aging public radio infrastructure, which for many stations is about 30 years old. But some managers are planning to take their production and on-air facilities digital for the first time, and others are embracing automation.

Pictured is the main studio of WQED-FM, Pittsburgh. A PTFP grant paid for a transmitter upgrade in Johnstown and T-1 multiplexers in both Pittsburgh and Johnstown to provide a reliable audio link between sites.

Don Mussell provides engineering services to more than two dozen public radio stations through his California company, Broadcast Engineering Services of Bonny Doon. He is faced with a special challenge for one of his client grantees, WMMT(FM), a 100 kW operation in Whitesburg, Ky.

Like many community-run public stations, WMMT is staffed largely by volunteers. Consulting engineer Mussell's assignment is purchasing equipment "that can be operated by people with a lot less than an engineering degree. We have volunteers that range from 12 to almost 90 years old. What I buy for WMMT has to be simple, tough and durable."

The $54.000 PTFP grant WMMT will receive will help replace obsolete broadcast and production equipment. New CD players, DAT recorders, microphones and an audio console are among the items WMMT will be acquiring.

Announcer Mark Pennell in the Studio of PTFP Grant Winner WKSU-FM, Kent, Ohio

For simplicity and durability in a console, Mussell favors the Audioarts Engineering R-60. "I've put it in a dozen community stations across the country," he said. "It is reliable and has very standard parts. And when there is a problem, my clients can call me on the phone and I can literally guide them through the fix."

At KHCC-FM, Hutchinson, Kan., Director of Engineering Ric Jung also likes Audioarts analog technology. The R-60 is one of two consoles the 100 kW news and classical station will receive from its $40,000 PTFP grant.

"It was an easy choice because it's a proven technology," he said. "There is no need for digital functions in an on-air console."

Two things in particular concern Jung about digital equipment. "Will the chipsets and components be obsolete in five to 10 years, and how failure-prone will it be? I know engineers who have had to re-boot exciters on the air. That's nasty. You can't get a manufacturer to tell you the truth if you tried, so I'm sticking with analog for on-air."

Jung will go digital for his production console purchase, despite his reservations about digital reliability and shelf life.

"I'm forced to because nearly every audio source in the production studio has a digital output spigot," he said. "The production people want it, but I'm still thinking about it because the engineers have to take care of it. If it breaks down, no matter what the problem is — even if we can't get parts — they will expect us to fix it."

One piece of digital technology that seems to attract praise from public radio managers and engineers is Broadcast Electronics' AudioVault digital storage, editing and automation system. It is quickly becoming popular basic equipment at many public radio stations, which, unlike most of commercial radio, have traditionally operated without automation.

New Hampshire Public Radio will apply its $28,000 PTFP grant to a first-time AudioVault purchase. The facility is based in Concord, N.H., with transmitters and repeaters throughout the state.

"We're really looking forward to it," said Program Director Andrew Morrell. "We will be able to save money in a couple of ways, mostly in personnel costs during overnights and mid-afternoons on weekends, and we'll sound better when we run network programming."

One problem that AudioVault will fix concerns synchronizing with the variable local break times in a syndicated overnight classical music service.

"All we have now are three spots running off of cart machines," Morrell said. "Sometimes our legal break occurs at 20 minutes after the hour. With AudioVault, we can schedule breaks precisely from a touch screen."

New Hampshire Public Radio Chief Engineer Larry Beavers has another reason to sing AudioVault's praises.

"We hope to stream two services soon, one classical music and the other news and talk," he said. "We are going to add a couple of 18 GB mirrored servers to the basic AudioVault system."

Minnesota Public Radio, a 30-station public radio network that extends throughout Minnesota and several other states, will use part of its $65,000 PTFP grant to add to its already extensive AudioVault capacity.

Ralph Hornberger, MPR director of engineering, confirmed the popularity of AudioVault among public radio colleagues.

"We don't make the kind of complex use of it that commercial stations probably do," he said. "Right now, it's a glorified cart machine at eight MPR stations, so we can download funding and ID information. But we rely on AudioVault for short turnaround time. The underwriting people can get new credits on the air at the various stations very quickly."

What makes AudioVault a favorite digital storage and retrieval system among public radio engineers? Beavers said, "It's probably due to the fact that a few of the larger facilities bought AudioVault years ago and had good things to report about it."

Pub Tech, the Internet listserv for public radio engineers (*pubtech@lists.wduq.org*) keeps the buzz going, according to Beavers. "There are other good systems, but hardly anyone in public radio uses them. You tend to listen to recommendations from your own colleagues."

While most stations are investing their PTFP dollars in new technology, WMMT, an Appalachian mountain operation that bills itself as the "Home of the Hillbilly Nation Celebration," is spending part of its grant on a century-old invention: turntables.

"Most of the country's historic folk recordings are still available only on LPs or reel-to-reel," said consulting engineer Don Mussell. "Until you realize that, turntables seem kind of quaint."

And the Winners Are ...

The Commerce Department's Public Telecommunications Facilities Program (PTFP) is the major public broadcasting grant pool for construction and technology projects. The program allows public stations to re-equip their operations and keep their services running smoothly — viewed by some politicians and public broadcasters as key to preserving the federal government's long-term investment in the industry. For the same reason, PTFP is also a significant source of support for public radio and television stations' conversions to digital technology.

Operating continuously for over 30 years through annual appropriations from Congress, PTFP was created primarily to help achieve

See LIST, page 12 ▶

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FCC OKs LPFM

▶ LPFM, continued from page 1

advancement of social engineering over spectrum integrity," Fritts said.

The harshest critics have likened low power to Citizen's Band, and wonder how the FCC will monitor and enforce the new stations. Sen. Conrad Burns, R-Mont., said the initiative "basically legalizes pirate radio stations."

The FCC said its engineers conducted extensive testing using the new standards and found that every radio tested exceeded its interference criteria. Chairman Bill Kennard dismissed complaints that spectrum is not available.

"There is more room at the table," he wrote. "Today we recognize the important role of more modest technical facilities, and throw open the doors of opportunity to the smaller, community-oriented broadcaster."

A proposed class of 1,000 watts was not approved; Kennard said it was not in the public interest.

Kennard, a Clinton Administration appointee, had pushed the LPFM concept as a way to increase ownership and programming diversity, and to counteract what some see as a trend of homogenization in the wake of radio consolidation.

The concept has been cheered by radio "pirates," community groups, churches and many other would-be broadcasters who told the commission they do not have sufficient access to public airwaves.

The United Church of Christ has started an effort to assist churches and community groups with low-power planning. Executive Director the Rev. Robert Chase said, "Microradio will offer an unprecedented expressive forum for our nation's cultural diversity."

No third-adjacent

Interference protection was a big part of the debate over LPFM. The FCC imposed separation requirements between the new LPFM and existing stations on co-channel, first-adjacent, second-adjacent and intermediate frequency channels, but the new stations will not be required to protect stations three channels away.

Applicants must meet minimum separation distances to protect the contours of commercial and noncommercial FM stations of all classes; existing FM translator and booster stations and any LP100s; and proposed full-service FM, translator and LP100 facilities.

Former "pirates" can apply if they voluntarily went dark by a cutoff date in early 1999 or when told to by the FCC.

LPFM stations will be subject to sponsor ID, political programming, minimum hours of operation, obscenity, call-sign and certain EAS rules. But they will not be subject to main studio, ownership report and public file requirements.

It's unclear exactly how many new stations will be created. According to some estimates, more than 1,000 new licenses will be approved at the 100-watt level, which the FCC will consider first.

The FCC hopes to accept filings for LP100 stations during a five-day filing window and will handle "the bulk" of these applications before accepting LP10s. Details of the filing process are pending. The commission must put software in place to help determine where and how stations can be allowed.

License terms

The new stations are considered noncommercial, able to accept underwriting.

Licenses are for eight years, renewable. During the first two years of eligibility, licensees will be limited to "local entities," ones that are headquartered, have a campus or have three-quarters of their board members residing within 10 miles of the station. After two years, non-local groups can apply for any remaining slots.

No one can own more than one LPFM station in a community in the first two years. In fact, no one can operate more than one LPFM station nationwide during that time. The national limit lifts to five stations after two years and 10 stations after three.

The FCC will settle competing applications with a point system based on community presence, hours of daily operation and promises of locally originated content. If a tie results, up to eight applicants will be awarded successive licenses of a year or more.

Commissioner Harold W. Furchtgott-Roth voted against the initiative, which passed 4-1.

"This entire proceeding has been marked by a rush to judgment," he wrote. "There are real costs — to existing stations, their listeners, and to public perception of the quality of FM radio as a media service — here that the commission has not even attempted to quantify."

He said that, according to the original proposal, elimination of third-adjacent protections would allow the creation of few if any LP100s in the largest markets. FCC officials projected after the meeting that New York, for example, could accommodate none, Philadelphia one station and Washington, D.C., three.

"The commission has, at the expense of existing service quality, created: a handful of new stations in primarily non-urban areas; stations that may not meet their licensing requirements if they air religious programming; stations that may well be unlistenable by fixed listeners due to interference received from higher power stations; a threat to the development of digital radio services; a heavy regulatory scheme, including cross-ownership, political programming rules, and EEO outreach duties, to govern these very small operators; and more enforcement and administration burdens for the commission," Furchtgott-Roth wrote.

When filing details become available, the FCC will post them at *www.fcc.gov/mmb/prd.lpfm*

If you want to know what's new in AM processing, ask the guy who's been thinking about it since 1962.

BOB ORBAN is a quiet legend in radio. Which is ironic, considering all he's done to engineer louder, clearer, punchier sound in AM broadcast. But after nearly four decades studying, listening, and thinking about audio processing, that wealth of experience has found its way into the latest release of the OPTIMOD 9200 version 2.0. What began as the industry's first 100% digital, fully programmable AM processor is now ready to take major market sound into the new millennium – with unmatched performance, price, and, of course, Orban engineering.

ART AND SCIENCE

Version 2.0 takes the polished, proven sound of the OPTIMOD-AM and blends it with exceptional digital controllability. So now you have a much wider range of sound signatures at your fingertips, with factory presets that guarantee outstanding results even if you aren't an audio processing expert. Day-parting is easy, too, just by using the 9200's versatile remote control to recall presets. Whether it's sports, news/talk or music, Orban's exclusive receiver equalizer overcomes the muddy sound of typical AM radios without sacrificing loudness or coverage. The 9200 delivers a bright, clear, punchy sound at a price that's even less than its analog predecessor. So small market stations can easily achieve major market sound, while larger stations can customize their sound precisely for their format and target demographic.

NOW HF READY

Version 2.0 adds presets that improve punch and intelligibility for narrow-bandwidth audio like shortwave. The same presets are perfect for MW stations needing to cut through co-channel interference at night. So the 9200 is now the perfect choice for MW broadcasters and HF broadcasters alike.

What's more, programmable bandwidth gives MW users the ability to tailor bandwidth to suit their program, and optimize coverage. You can use full bandwidth for music, lower bandwidth for voice. Or reduce your bandwidth if it's required for AM IBOC broadcasts. No other AM processor offers you more options, better engineering, or greater investment protection. That's why in just a few short years, it's become the best-selling digital processor in AM. With nearly four decades of Orban expertise behind it, it's the digital solution that deserves to be called an OPTIMOD.

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PTFP Grant Winners

▶ LIST, continued from page 8

universal public broadcasting service. Currently 95 percent of Americans have access to public television signals; public radio reaches about 90 percent of the population.

PTFP grants are annual, competitive and matching. Applicants usually must raise at least half of the expense for equipment replacement, the most common type of award. PTFP will also cover up to three-quarters of the costs for major construction.

The program guidelines explicitly favor funding for telecommunications services "available to, operated by and controlled by minorities and women."

This year, PTFP awarded $19.6 million to 46 public television, 37 public radio stations, nine educational projects, and one satellite project. Public radio's share was $2.1 million; public television received more than $15 million.

The following radio grantee list was supplied by PTFP through the National Telecommunications and Information Administration Web site (*www.ntia.doc.gov*). The list is organized by state.

— Leslie Peters

1999 PTFP Radio Grantees

Rainbird Community Broadcasting Corp.
KRBD(FM)
Ketchikan, Alaska

Wrangell Radio Group Inc.
KSTK(FM)
Wrangell, Alaska

University of Alaska/Fairbanks
KUAC(FM)
Fairbanks, Alaska

Raven Radio Foundation Inc.
KCAW(FM)
Sitka, Alaska

Koahnic Broadcast Corp.
KNBA(FM)
Anchorage, Alaska

Unalakleet Broadcasting Inc.
KNSA(AM)
Unalakleet, Alaska

Kuskokwim Public Broadcasting Corp.
KSKO(AM)
McGrath, Alaska

Arizona Board of Regents on behalf of Northern Arizona University
KNAU(FM)
Flagstaff, Ariz.

Tohono O'odham Nation
(New noncommercial station, no signal assigned)
Sells, Ariz.

San Bernardino Community College District
KVCR(FM)
San Bernardino, Calif.

Santa Monica Community College District
KCRW(FM)
Santa Monica, Calif.

KPFK Pacifica Radio
KPFK(FM)
North Hollywood, Calif.

Radio Bilingue Inc.
KSJV(FM) and KMPO(FM)
Fresno, Calif.

Humboldt State University
KHSU-FM
Arcata, Calif.

Redwood Community Radio Inc.
KMUD(FM)
Redway, Calif.

Pacifica Foundation
WPFW(FM)
Washington

Idaho State Board of Education (Boise State University)
BSU Radio Network
Boise, Idaho

Board of Trustees, University of Illinois
WILL-AM-FM
Urbana, Ill.

University of Northern Iowa
KRNI(AM)
Cedar Falls, Iowa

Iowa Radio Reading Information Service for the Blind & Print Handicapped Inc.
Des Moines, Iowa

University of Northern Iowa
KHKE(FM)
Cedar Falls, Iowa

Hutchinson Community College
Radio Kansas, KHCC-FM
Hutchinson, Kan.

Kanza Society Inc.
High Plains Public Radio, KANZ(FM)
Garden City, Kan.

Wichita State University
KMUW(FM)
Wichita, Kan.

Appalshop Inc.
WMMT(FM)
Whitesburg, Ky.

Minnesota Public Radio
(Multistate network)
St. Paul, Minn.

Board of Regents, Montana University System
KGLT(FM)
Bozeman, Mont.

Nebraska Educational Telecommunications Commission
(State network)
Lincoln, Neb.

Shoshone-Paiute Tribes of the Duck Valley Reservation
(New noncommercial station at 88.5 MHz)
Owyhee, Nev.

New Hampshire Public Radio Inc.
WEVO(FM)
Concord, N.H.

New Jersey Public Broadcasting Authority
(State network)
Trenton, N.J.

Regents of New Mexico State University
KRWG(FM)
Las Cruces, N.M.

Santa Fe Community College
KSFR(FM)
Santa Fe, N.M.

Kent State University
WKSU-FM
Kent, Ohio

Cincinnati Classical Public Radio Inc.
WGUC(FM)
Cincinnati

WQED Pittsburgh
WQED-FM
Pittsburgh

Evergreen State College
KAOS(FM)
Olympia, Wash.

Wisconsin Educational Communications Board
(State network)
Madison, Wis.

BUSINESS DIGEST

Report business news to: Radio World, P.O. Box 1214, Falls Church, VA 22041, or FAX: (703) 998-2966

On the Road Again With Harris

Dubbed as the "almost-famous" Harris Road Show, this first-of-millennium mixed-media event will take place Feb. 10 at the Castaway in Burbank, Calif.

Dave Burns, Harris' studio product manager, touted the free event. "Doors open at 11 a.m.," he said. "We show and tell until 5 p.m. with a free lunch in between."

According to Burns, "live, trained factory humans will provide hands-on demos for the radio, television and post industries."

Equipment will be displayed and demonstrated from Telos, 360 Systems, Harris PSIPplus, Pacific Research & Engineering, Sierra Audio and many others.

"A large feature of the show will be the Time Code Recorder from 360 Systems," said Burns. "Radio and TV stations both like the product. In fact, Bob Whyley of 'The Tonight Show' just acquired one."

This is the first of six planned Harris Road Shows. Next stop: Austin, Texas. The date of the show has yet to be determined.

For further information or to RSVP for the Feb. 10 event, contact Dave Burns via e-mail at *dburns02@harris.com* or via fax at (513) 701-5311.

— Sharon Rae Pettigrew

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*Source: *Duncan's Radio Market Guide*, 1999 edition
**Source: *The American Radio* by Duncan's American Radio; based on Arbitron Spring 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight.

FEED LINE

A Brief History of Insulation

Steve Lampen

A few years ago, I was in the Wells-Fargo Bank Museum here in San Francisco. This bank is known in the West for its use of a stagecoach as its symbol.

I was surprised to see a display of wire in the museum. In fact, the curator said, they were major investors in telegraph systems. Because the stagecoach, and later the Pony Express, were the key communication media of their time, I shouldn't have been surprised.

It is little known that the famous Pony Express, that everlasting romantic story of the lone rider and his sack of mail, only lasted a few months from its inception until the telegraph overtook them.

Knowing my interest in wire, the curator sent me a photocopy of a wire catalog from 1870. Note that this was before the incandescent electric light, or even the telephone, so the only real use for wire was the telegraph.

I was surprised that the Brown & Sharpe system of wire gage was in use at the time. This has since been adopted, with minor changes, as the American Wire Gage system (AWG) which we know today — you know, the one where the wire gets smaller as the number get bigger.

In this catalog were two kinds of wire: copper and steel. Although steel has about seven times the resistance of copper, this catalog mostly pushed steel, and for good reasons.

First, copper mining was fairly young. Sure, mankind has mined copper for thousands of years. (That 5,000-year-old frozen hiker found in the Swiss Alps a few years ago carried a beautiful copper axe.) But the production of copper in mass quantities, with the purity and strength required, was an emerging industry. In other words, it wasn't cheap.

Steel, on the other hand, was strong, could be strung for long distance between poles without stretching or breaking, and was inexpensive. To make up for the resistance difference, you ordered bigger wire, or put the relay stations a bit closer to each other.

Of course, you only needed one wire to make the thing work. (The other wire was ground!) You just had to keep the wire above ground (literally) and hence the invention of the telephone pole.

Wood might not

While wood is a good insulator, it is not so good after years of dirt and soot. These telegraph poles invariably paralleled the railroad right-of-way. And carbon black from the engine smoke is a very good conductor.

In fact, carbon black is used today in cables. Layers of plastic or cloth filled with carbon black are inserted to reduce noise generated inside a cable, called "self-noise" or "triboelectic noise."

When this messy dirty telephone pole got wet, it could compromise the conductivity, if not short out, the telegraph wire. So the ceramic or glass insulator was born.

When planners wanted to put the telegraph under the ocean, the bare wire had to be insulated.

It was only with the rise of the telephone that the noisy nature of this arrangement became known. In fact, it is interesting to note that the dots and dashes of Morse Code, and its ability to be heard under the most noisy conditions, are not unlike the ones and zeros of today's data streams, which also are resilient to the EMI and RFI of our modern world.

But the biggest problem came when planners of the day wanted to put this telegraph under the ocean. The bare wire now had to be insulated. And this insulation had to be both flexible and rugged.

The material that saved the day was the first rubber insulation, called gutta percha. Hard but flexible, and with very good resistance to water and salt, it eventually enabled cables to be laid across the Atlantic.

I say "eventually" because the number of failed attempts, bordering on folly in many cases, was astounding. Some lines were even blown up thanks to the belief in some quarters that huge voltages were needed to run the distance.

I recommend Arthur C. Clarke's excellent book "How the World Was One," which recounts, in great detail, the history of the undersea telegraph.

Native source

By the time a line successfully was laid to Nova Scotia and back, Latimer Clark, one of the early advocates of the telegraph, had the two cables at the far end connected together, forming a 4,000-mile cable.

With a battery formed by a lady's thimble, a needle and a drop of lemon juice, his dots and dashes could be detected easily through 4,000 miles of gutta percha insulated copper wire.

If you asked Latimer Clark to name

See INSULATION, page 30 ▶

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* Call or see www.bswusa.com for details.

NEW
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DXing: Not What It Used to Be

Scott Fybush

Internet listeners have learned the excitement — and challenges — of hearing radio broadcasts from thousands of miles away. But another group of listeners has known that same thrill for decades.

Back in the 1930s, when just about everyone scanned the radio dials after dark to hear the big clear-channel stations, the National Radio Club was organized to help DXers share their tips and triumphs.

While such groups thrived at the time — remember the Newark News Radio Club? — most disappeared as the coming of FM and the overcrowding of the AM dial dimmed interest in the hobby.

The NRC survived and counts about 700 members who keep in touch through a newsletter, an audio magazine for sight-impaired DXers and an annual convention.

Attendees gather in front of one of the receiving antennas erected for the National Radio Club convention in West Virginia.

Last fall's gathering drew some 50 DXers to the Holiday Inn in Bridgeport, W. Va., for a weekend of listening and talking about the state of a hobby that members say is still strong, even as Webcasting provides a new way to hear distant broadcasts.

"Radio is supposed to come through the air," said NRC member Jerry Starr, who directs engineering for Connoisseur Communications' Youngstown, Ohio, group and keeps track of changing call letters and formats in the club's newsletter.

Starr said the biggest impact he's seen on the hobby from the Net is the ease with which members can share information with each other. Several reflectors allow hot DX tips to circulate instantly.

"Reflectors can carry as much bad information as good, though," Starr warned.

As a broadcaster, Starr said he appreciates the DX reports he receives from hobbyists, but he acknowledges they have little practical use to today's engineers.

"Maybe for the new X-band stations there's still some gee-whiz factor to seeing how far they get out," he said, "but they're far from a big factor."

Other club members pointed to changes in radio ownership as a reason why stations are less likely these days to send out QSL cards in response to reception reports.

"You have to explain to them what you want," said Pittsburgh DXer John Malicky. "So many people are younger these days ... it's hard for them to respond, because they just don't have the time."

Starr pointed to the rise of contract and cluster engineering in place of the old "one station, one engineer" approach.

"Even if an engineer wants to reply" to a report, Starr said, "he probably doesn't have station letterhead or postage to use."

The QSL cards that stations sent out in response to reception reports are almost a thing of the past. They're now found only at the biggest 50-kW clear-channel stations, where engineers still receive dozens of reports and see the QSL cards as a public-relations tool.

Malicky tries to visit radio stations when he travels, but finds that at many smaller stations there's only one person, often a veteran engineer, who understands what DXers do. "The more you talk to anybody, one thing leads to another," he says. "It's fun to talk to people who have worked for stations for years."

Paul Swearingen, a DXer since 1955 and a former broadcaster, edits the "DX News" newsletter.

"There are two types of owners," he said, "the ones who are bottom-line only — no verifications — and the more traditional broadcasters, who will still respond warmly to DXers."

Like many members, Swearingen isn't yet paying much attention to Webcasting as a means of hearing distant stations.

"The quality of broadcasts is not quite up to even what poor operations can provide for free, and the time and money investments needed for a computer are critical factors," he said.

He sees a positive side to Webcasting. "Listening to London might possibly remind you of what else is out there."

Starr sees a potential danger, though.

"It may be something to siphon off prospective new DXers," he worries. "It depends on whether they want to just hear a program or they want the challenge of building an antenna."

Some DXers have found ways to combine old and new. For Blaine Thompson of Fort Wayne, Ind., "DXing via Webcasting does help identify a station heard via regular radio reception."

Thompson also uses affiliate lists found online to help identify stations carrying sports play-by-play and other network programming, though he finds many of them plagued by outdated information.

DXers also worry about the quality of AM programming they're hearing at night. Some complained about AMs that failed to offer even the mandated top-hour ID.

Members bemoaned the gradual disappearance of interesting local shows in favor of syndicated programming.

"The satellite broadcasts have no real personality," said Malicky.

NRC members are happy to point out counter-examples, including a few favorites in the expanded AM band, which has been a boon to DXing.

Back to the ol' days

For some, new "X-band" stations have represented an opportunity to log California from the East Coast (or vice versa) for the first time in decades.

At the convention, the club added its own offering to the band. Carrier-current "WNRC" on 1610 gave members a chance to return to the days of 1960s radio, complete with PAMS jingles, "20/20 News" and mock commercials.

In a bow to the '90s, station programming came from a voice-tracked automation system using tracks that had been e-mailed to the station "program director."

Some NRC members take their love of radio pretty far. John Bowker, a retired RCA engineer from Florida, travels the country collecting and recording station IDs, which he presents frequency-by-frequency in the "Travellog" section of the "DX Audio Service" cassette magazine.

The project began in 1986, and neared a conclusion on the final morning of the convention with a live taping of the first part of the 1600 kHz segment.

"We've been rolling seven tape recorders at once in our motor home," said Bowker, whose travels include hourly stops to add to the collection.

"The quality of many of today's AM stations is very good," he said, but he senses a sameness to many. "As we drive around, it's getting to the point where all the towns all look alike with their Burger Kings and McDonalds. Radio stations are starting to be that way, too."

Some sound a bit *too* distinctive. "It is remarkable how many mistakes, stupid mistakes, awful mistakes that we hear."

In 1998, Bowker organized a panel, "Is Webcasting Killing DXing?"

"The initial answer was no," he said, "but when we got done, we decided, frankly, yes it is."

He also cites increasing noise on the AM dial. "I used to get up at 1:30 a.m. and there would only be a dozen or so stations on the air and they would all be different stations each night," he said. "That doesn't happen anymore with stations staying on all night."

A further complication is verifying the nature of long-distance reception. Before the Web, faking a DX report was all but impossible. Now it becomes harder to prove that their reception was really thanks to skywaves and not RealAudio. Bowker has suggested the NRC issue its own verifications, with tapes of off-air reception required, but the club has yet to act.

Whatever changes the Web may bring, some hobbyists say they'll never succumb to the lure of typing in a URL in place of stringing a longwire antenna and twisting a dial to pull a signal through the ether.

"It takes the thrill out of it," said Malicky.

GUEST COMMENTARY

A Call for Software-Based DAB

Dave Hershberger

The author is principal engineer for manufacturer Continental Electronics.

In the past, broadcast systems such as FM stereo, AM stereo, monochrome and color television were standardized by defining the transmitted signal. But now it is possible to standardize the receiver instead, and to broadcast using many different signal types.

The receiver would contain a low-cost, general-purpose programmable digital signal processor, or DSP. Broadcast stations would transmit decoding software to the receiver along with the program, invisible to the user.

As new modulation coding and audio compression algorithms are developed, they may be applied immediately by broadcast stations to improve audio quality or coverage area, or to increase the number of program streams on a single station.

Figure 2

This approach can be applied to any digital broadcasting system, including "digital AM" (meaning digital broadcasting on frequencies below 30 MHz), FM (VHF), and IBOC (in-band, on-channel) systems.

Previously, standardization activities have concentrated on the specification of a broadcast signal, as shown in Figure 1. Once the signal is defined and receivers are built for that particular signal, it is difficult to incorporate improvements. As technology improves, the standard is abandoned or inflexibility limits its usefulness.

Standardization activities often include highly competitive "systems battles," where considerable resources are expended in political as well as technical pursuits, promoting one's own technologies and attacking those belonging to others. The best technology does not necessarily emerge victorious.

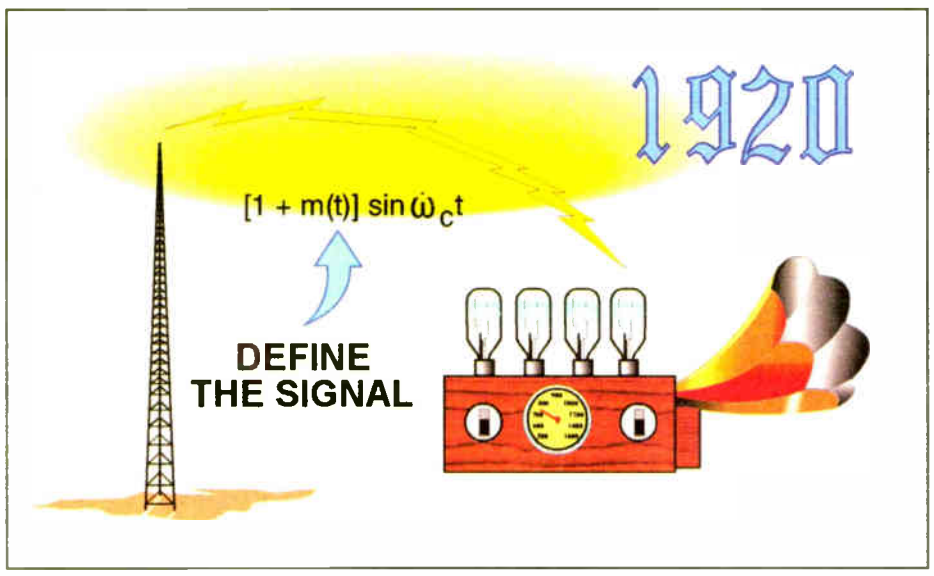


Figure 1

A software-based system would eliminate "systems battles."

Old-style thinking

The old way of specifying the broadcast signal has been called "6SN7 thinking" (Figure 2). This refers to a type of vacuum tube developed more than a half century ago.

When the 6SN7 was in use, the only practical approach to standardization was to specify the transmitted signal.

Now it is possible instead to standardize the receiver, allowing several different transmission methods to be used without requiring any action by the receiver's user (see figure 3, page 38).

Regardless of what kind of digital broadcasting systems eventually are implemented, the decoding will most likely be done with a general-purpose DSP chip or core, as opposed to a dedicated single-function hardware design. General-purpose DSP chips are inexpensive, and allow fast development and easy product improvements.

Most important, they are programmable, and within their speed and size limits can be programmed to do any kind of signal processing.

The standardized digital broadcast receiver would consist of a tuner followed by a general-purpose DSP, with a predefined method of transmitting decoding software to the receivers, as shown in Figure 4.

Digital broadcast receiver operation would be controlled by software, downloaded to the receivers over the air.

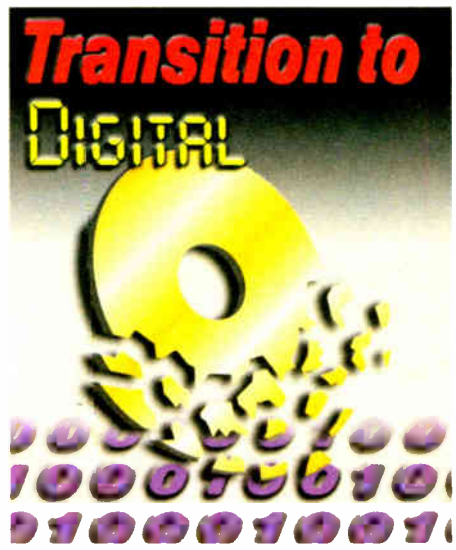
The modulation and compression types could be almost anything. As new modulation coding and audio compression algorithms are developed, they could be coded into the receiver's known machine language and broadcast along with the program material. Importantly, this would allow new techniques to be used almost immediately after they are developed.

Quickened pace

A software-based digital broadcasting system could actually advance the introduction of digital broadcasting by several years. The tasks of receiver design and signal specification could proceed in parallel rather than serially. The digital broadcasting process would not have to be slowed by a long comparative investigation of different modulation types and audio compression methods.

The objectives of broadcasters and receiver users vary widely. Some AM broadcasters only care about their groundwave coverage area. HF broadcasters only care about skywave propagation. Some broadcasters have interference problems while others do not.

Propagation conditions, interference and antenna patterns frequently change with time of day. FM broadcasters, who have the bandwidth to support higher data rates, may want to transmit multiple



program streams.

A software-based system would allow broadcasters to tailor the transmitted signal to best serve their listeners.

There are many tradeoffs. Important ones include the following:

Quality vs. quantity — A station may want to transmit multiple program streams, or transmit a single program with the highest possible quality.

Data rate vs. coverage area — A higher data rate generally can be supported if the coverage area is reduced.

Robustness vs. time delay — Generally, error correction and fade immunity are improved if time delay is increased. But, with increased time delay, there will be a time delay from when the station is tuned in until audio output from the receiver begins.

Available audio compression algorithms require approximately 100 kilobits per second to provide audio quality comparable to FM stereo under good reception conditions, and somewhat more to sound similar to a compact disc.

While such 100+ kbps data rates are feasible for FM, VHF, UHF and microwave DAB systems, systems being proposed for "digital AM" will not support such data rates.

This has several implications.

First, unless compression technology improves significantly prior to the introduction of digital AM, at its introduction, "digital AM" will not have audio quality comparable to FM or to compact discs.

Second, it will be highly desirable to have a digital AM system that will allow improvements in audio compression algorithms to be incorporated without changing the receivers.

Third, audio quality improvements through future compression technology advances will be possible only if receivers are easily reprogrammable in the field.

Audio-compression technology seems

See DIGITAL, page 38 ▶

Radio World, February 2, 2000

Refresh Your Staff on EAS

John Bisset

It appears that more than one station has been inspected recently for EAS compliance. Forfeitures are occurring, so it's not a bad time to refresh your staff's memories about how the system works, how tests are sent, how the month test is relayed and what to do when a test is received.

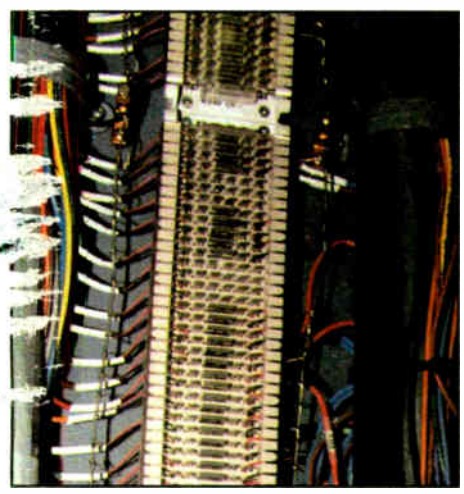


Figure 1: Labels and cable holders make for neat dressing of punchblocks.

One of the specific questions being asked operators about the Required Monthly Test is what is the maximum alert forward delay time. (The answer is 15 minutes.)

It's not a bad idea to schedule an EAS update session for the next jocks' meeting. It's important the operators know what to do. Blank stares apparently are not being tolerated.

As for the logging of tests, make it easy on yourself by keeping a separate EAS log. This log will keep track of dates and times of tests, and help you spot omissions quickly. Keeping track of the EAS paper slips is just as important.

The main focus seems to be on how the hardware is set up, and that *all* operators know what to do, without hesitation. Make sure your station passes with flying colors, make the time to educate your staff!

★ ★ ★

Figure 1 shows some split 66 blocks and the layout of multipair cable. Note that both the blocks and the cables have been identified using P-Touch labels. A grounding buss bar — or in this case, a solid copper wire — ties into the station ground. The plastic cable holders keep everything neat and organized.

Figure 2 shows cable dressing on a more modest budget. Note that colored electrician's tape has been used to ID the multipair cables and their destinations — a different color for each studio.

Even the budget-minded can figure a way to make cabling neat. In Figure 3, on page 18, galvanized door handles have been used to route the cables. These handles were mounted under the console cabinetry. Having little or no money to wire up a studio is no excuse for sloppiness. What is needed, though, is time. Don't "paint yourself into a corner" by agreeing to unrealistic schedules; give yourself enough time to do the job right the first time.

Thanks to Gary Crouch and his son Colin, of South Bay Engineering, for providing the cost-saving wiring ideas.

★ ★ ★

Ted Tait is an engineer with BBC North America, and followed our MiniDisc maintenance Web site tip.

Ted offers two other sites that *Workbench* readers will want to visit. The first offers some general MD information:

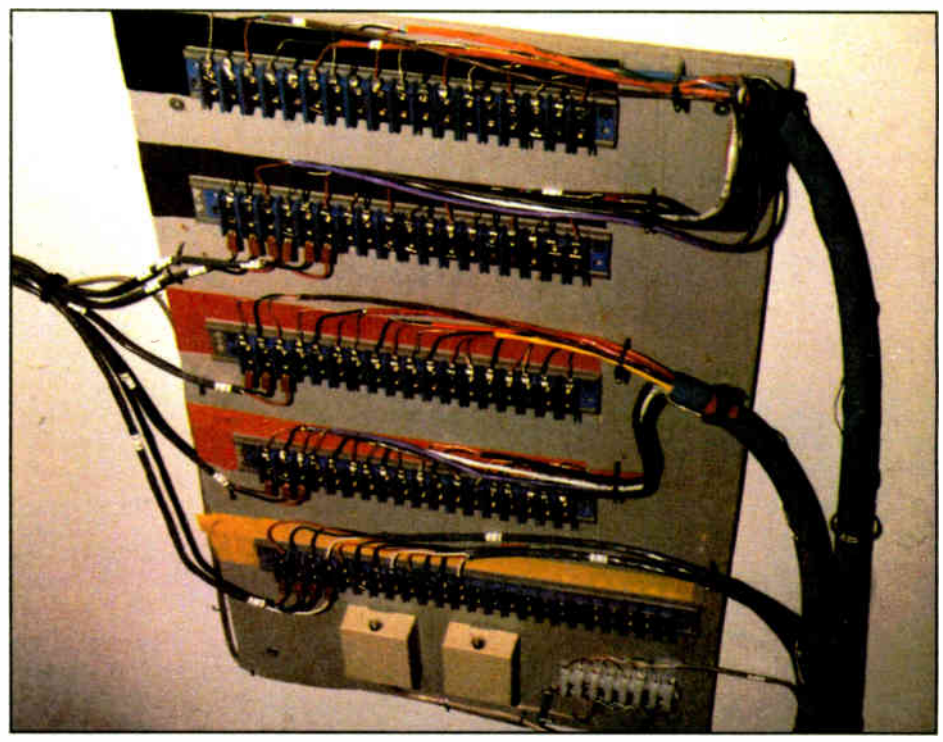


Figure 2: Wire management can be done on a budget.

www.ewtoo.org/~matt/minidisk/index.shtml

A more inclusive site, which includes copies of service manuals, maintenance tips, and suggested modifications and repair tips is located at *www.minidisc.org*

★ ★ ★

Here's an inexpensive way to save headphones, courtesy of Jack Keller of the Harris Broadcast Center. Prior to joining Harris, Jack was a chief engineer and contract engineer for a number of stations in western Maryland and West Virginia.

At several of his stations, a common pair of headphones was used by the staff. Twenty-four-hour-a-day wear and tear eventually took its toll on the "cans," but the most common failure mode was the operator who rolled the chair too quickly, only to rip the phone plug off the end as the cord was pulled.

Jack solved the problem by purchasing a small belt key ring found at hardware or locksmithing stores. The device has a metal chain or cord that is spring-wound to normally retract keys. Using some telco hookup wire, Jack looped the headphone cable through the clip end which would normally hold keys.

As the cord was pulled, the key ring cable would extend, but only so far. The tugging of the keyring remind the jock of

See WORKBENCH, page 18 ▶

Try These Radio Alternatives

Tom Osenkowsky

As a consultant, I am frequently called upon by high school and college students and foreign-language interests wishing to start broadcast stations. But in the Northeast and elsewhere, radio airwaves are saturated and the likelihood of finding an open FM frequency is slim.

If the Federal Communications Commission opens up a new batch of low-power FM licenses, some of these would-be broadcasters may qualify. But other alternatives can be pursued without the need for an FCC broadcast license.

They include:

1. Carrier-current AM broadcasting. The low-power AM transmitter utilizes the power lines in a dormitory or other building to carry the signal. Multiple buildings each require a separate transmitter, power line coupler and audio input feed. The signal cannot be broadcast over a wire, pole or other radiating antenna. FCC Part 15 Rules must be followed and no interference to existing broadcasters may be caused.

2. Low-power FM internal broadcasting. This is similar to AM carrier current; however, the antenna can be in the form of radiating coaxial cable (Radiax, for example), strung internally about the building or a small centralized radiator. FCC Part 15 Rules must be followed and no interference to existing broadcasters may be caused.

3. Cable TV audio access. Many cable systems have one or more community channels with a "crawl drum" screen of local events, etc. A live or taped audio program may be aired on this channel.

Some cable TV systems carry commercial FM signals on their cable. It may be possible to install an FM modulator at the cable headend and broadcast to the cable subscribers. The main disadvantage is that the service is not mobile. It may also be possible to produce a regular segment on a community access channel. The main advantage here would be that the presentation would be visual as well as aural.

4. Webcasting. An Internet-only station does not require an FCC license. The necessary equipment includes a computer, audio streaming accessories and an Internet Service Provider (ISP). You will have to choose the audio encoding method and ensure your provider supports audio streaming. Monthly ISP costs will be incurred.

Want to start a radio station but can't find the money or spectrum? Don't overlook these options.

5. SCA rental from an existing broadcast station. You may be able to purchase a subcarrier generator and broadcast over the SCA channel of a licensed FM station. Professional SCA generators can be expensive, but may include built-in audio processing. The Modulation Sciences Sidekick unit is an example.

Your costs would be investment in the SCA generator, lease fees to the broadcast station, and the method to deliver your audio to the station's transmitter site where the SCA generator is installed. Listeners require a special receiver to hear the broadcasts. Such receivers are advertised in trade journals such as **Radio World**.

If you are able to rent an SCA subcarrier, the broadcast station may impose restrictions on your content because that licensee is ultimately responsible for any transmission on their station.

6. Time lease on an existing broadcast station. Here in Connecticut, there is a Class D FM high school station that allows a nearby community technical college to lease broadcast time on its frequency. The college has run a phone line to deliver its audio to the high school and runs several hours of afternoon programming. In return for the airtime, the college offers high school students some courses free of charge.

If you choose this option, remember that all FCC rules must be adhered to. The transmitter must be turned off by remote control or other automatic means once the leased time broadcast is finished.

7. Buy an existing station or have one donated. Here in Connecticut, there is one example of a defunct AM broadcast station being donated to a university for tax purposes.

Of course, an FCC license is required and all rules must be adhered to. The tower site must be maintained, there may be land leases involved and the station may be a daytime-only facility. The up side is that you would have a commercial license and be able to sell advertising to support the station.

All of these methods require a studio. Possible budget items, depending on your facility, including audio mixer, microphones, CD players, MiniDisc machines, turntables or other music source players and possibly other audio storage media for playing jingles, public service items or commercial announcements.

If you are serious about placing a new broadcast station on the air, an allocation study is necessary. Such a study will examine a frequency or the entire FM band to determine if a channel is available in your area. The cost of such a study varies.

Stations in the NCE band are not allowed to play commercial announcements, whereas private non-broadcast stations have no restriction on commercial content since they do not fall under FCC jurisdiction.

I did not mention the possibility of placing a new AM station on the air due to the technical and financial complexities involved. The costs of a full-time allocation study, license application preparation, land acquisition, zoning application and multiple tower erection may be overwhelming for a small broadcaster. At present, no new daytime- only AM stations may be placed into service. Nighttime broadcasting often involves the design and construction of multi-tower directional arrays.

If you are anxious to be a broadcaster, one of these options may get you started.

■■■

Tom Osenkowsky is a consulting engineer based in Brookfield, Conn.

Contact him via e-mail to tosenkowsky@prodigy.net

Key Ring Helps Save Headphones

▶ WORKBENCH, continued from page 17

the finite length of headphone cord.

Another advantage was the keyring kept excess cable from laying on the floor, waiting to be cut in two by the control room chair's wheels. The small keyring came with a metal clip, which Jack bent and screwed into the underneath of the wooden console table top.

Jack can be reached at (800) 622-0022.

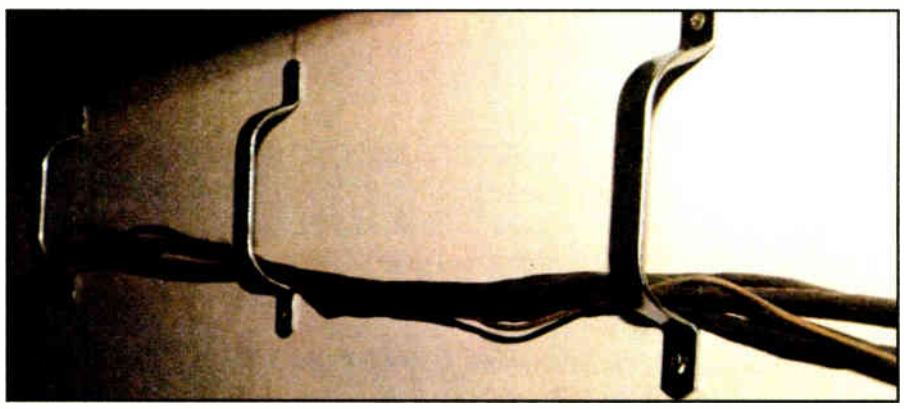


Figure 3: Try door handles as wire routing rings.

■■■

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

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

ENGINEER PROFILE

Scott Is Three Times a Winner

Robert Rusk

This story first appeared in the Jan. 5 issue of RW. Due to a production error, the second half of the story was omitted. We reprint the entire article here.

Score three goals in hockey and it's a hat trick. Win three times in engineering and it's a vote of confidence by your peers.

Such is the case for Michael P. Scott, CPBE, who was recently co-named Educator of the Year for a third year by the Society of Broadcast Engineers.

Scott, 53, is lead instructor in the Communications Technologies Department at Bates Technical College in Tacoma, Wash. He has been an instructor there for 10 years; previously he worked for six years as chief engineer of campus radio station KBTC-FM.

Today Scott also serves on the SBE's Ennes Educational Foundation Trust Scholarship Committee. Married and the father of three grown children, Scott is the certification chairman for SBE Seattle, Chapter 16.

Like father ...

It must run in the family. His oldest child, Kenneth, 25, a Bates graduate, is video engineer at Safeco Field in Seattle, home of the Mariners. Not only has he followed his father's career path, but Kenneth, who holds the CBTE professional designation, is also a member of Chapter 16.

Talking like a very proud father, the elder Scott said, "A lot of kids go into whatever field their father is in. It's not uncommon for the sons and daughters of dentists and doctors to become dentists and doctors themselves — not because they were pushed into it, but because it is something they have always known.

"It was like that with Ken. It just happened that he was interested in engineering and evolved to it."

Nonetheless, in his career as an instructor and role model, Mike Scott encourages young people to take up broadcasting and engineering as a career.

He serves as an advisor in the communications and arts departments at three area high schools and, with Bates instructor Willie Kelley — affectionately known as the "Lord of Audio" — has just started an Explorer Troop at the college.

"We got the post number to be guess what?" Scott excitedly said. "Nine-one-seven, for 91.7, our campus station's frequency!

"One of the reason's we're doing this is to bring young people in and show them the wonderful world of broadcasting — not just audio, but video and everything."

Scott knows of the SBE's new Youth Membership program, which aims to capture the interest of high-school students, and certainly does his share to further the cause. But he has other ideas, too.

"That age is almost too old. We need to capture peoples' imaginations at a much younger age."

Scott thinks a comic strip or animated TV series would be the best thing that could happen to the broadcasting business.

"It sounds like a joke," he said. But, Scott thinks, if somebody came up with a comic or program — with an engineer as the hero — it could attract more people to the business at an even earlier age.

Dollars and sense

Scott acknowledges that broadcasting is losing people to better-paying jobs in the computer and wireless industries. But he insists there are enough dropouts from those industries to train and re-train for broadcasting — not just engineering, but on-air, programming, sales and the related fields including television, audio and video production, and equipment sales.

"To succeed in broadcasting nowadays," said Scott, "you need to have skills in communication, human relations and critical thinking. Those people who succeed today in the broadcasting environment are articulate — they can read and write. That's probably a more important part of the package than specific job skills.

Looking back on his time as a chief engineer at KBTC-FM and KSTW-TV in Tacoma, and as a consulting engineer, Scott said, "It's been my experience as an employer that, if you have the right person, you can teach him or her how to do things. On the other hand, if you don't have the right person — and they can be the most talented individual in the world — they're worthless."

As far as earning potential, Scott tells his students that, as a general rule, TV pays better than radio, and the technically-inclined can do better than people who want to be strictly on-air talent.

"For television, it won't be tremendous in the smallest markets," Scott said. "It's not going to be minimum wage, but it won't be $16 an hour to start. The range will be more like $9 to $14 an hour. But the key is, five years after a person starts in program (at Bates) — if they made the right choices — they'll be earning in the mid-40s. That's been pretty consistent."

While some radio salaries, particularly for people who stick with only on-air work in small markets, will be lower, Scott said, "I buy a lottery ticket every time the jackpot gets over $5 million. My chances of winning the lottery are like my chance of God coming down right now and taking me straight to Heaven. But the thing is, you dream. And you can't even dream if you don't buy the ticket.

"I'm sure there are a lot of people (at Bates) who think they're the next Wolfman Jack. They have a dream and they're following it."

In reality, according to state labor information for December, Bates graduates are working KBRO(AM) in Bremerton, KING-TV in Seattle and Microsoft Corp., among other places.

"We place quite a few people at Microsoft," said Scott. "That includes Microsoft Studios, MSNBC — even NBC-TV in Charlotte, North Carolina. All of our people are good — some just choose to go into things that aren't as lucrative as others."

In the past two years, more than 100 students have found "solid" jobs in broadcasting and related fields, Scott said.

Commenting on the knowledge he passes on to his students and his position as a positive role model in their lives, Scott said, "I have met a lot of wonderful people." Among them: fellow Bates instructor Kelley and SBE Chapter 16 Director/Entercom Seattle chief engineer Clay Freinwald.

"They offered a helping hand and encouraged me to ask questions in a non-threatening atmosphere. That's what I like to pass on in school. I believe you empower people with information and knowledge and they'll do great things."

■ ■ ■

*Bob Rusk is a frequent contributor to **RW**.*

Know of an engineer with an interesting story to tell? Drop us a line at radioworld@imaspub.com

Photo by Angel D. Bates

SBE Vice President Rick Edwards, left, presents Mike Scott with his third SBE Educator of the Year award at the society's annual Awards Dinner. The award's co-winner was Bruce Ziemienski.

Bruce Ziemienski is SBE's other 1999 co-educator of the year.

Ziemienski, CPBE, is director of engineering/operations at Armed Forces Radio and Television Service, Broadcast Center.

He has been responsible for systems engineering at AFRTS-BC for 10 years. He is instrumental in instructing AFRTS employees in broadcast operations, technology and engineering, as well as in information technology, in order to be prepared for careers in the broadcasting profession.

Bates Technical College is located in Tacoma, Wash., near Seattle. It has about 2,000 undergraduates, with 90 in the radio and television Communications Technology department, which operates with state-of-the-art digital equipment.

Mike Scott teaches the technical side of radio and TV and is assisted by Willie Kelley, who teaches the art of audio. Kelley, who formerly worked at KGY(AM) in Olympia, Wash., and attended Bates, has "the voice," Scott said.

"He defers to me to teach about EAS, power and decibels."

For more information about the school, log onto the college Web site at *www.bates.ctc.edu*

GUEST COMMENTARY

We Want a Toaster, Darn It

Rick Kemp

I would like to make comment regarding Ron Burley's *Guest Commentary* article in the Jan. 5 **RW** titled "Overbuilding Into Oblivion."

This article started out by blaming the end user for not being aware of what kind of hardware was needed to run the manufacturer's software. Mr. Burley was explaining why a system that included an industry standard RAID array, industry standard software (NT server) and a roaring 500 MHz Pentium computer wouldn't run his program.

Now, usually, I read this stuff and just consider the source, but I felt compelled to comment. As end users, we've all heard it before. It's always something you or I did wrong.

Do any of these excuses sound familiar to you?

"The motherboard has the wrong BIOS."
"No, it *must* be SCSI II."
"No, it can only use SCSI."
"The problem must be in that *other* software you're running."
"No, it has to be 32 bit."
"Sorry, it can only support 16 bit."

And of course the classic excuse: "The new software revision addresses that particular issue, but unfortunately you do not have the proper hardware to run the new software."

Okay, okay, I cry uncle. Instead of blaming the hardware, software or the end users, can't we all just get along?

Rethink the approach

How about this for a solution? Maybe things would work more smoothly if the software guys wouldn't put in so many new bells and whistles that always require a new hardware platform.

Maybe end users should not be as demanding or expecting more bells and whistles so often.

Maybe we need to rethink how we approach the whole deal.

For example, in my on-air control studios we have a device called a VoxPro. It edits telephone calls. Period. It works in real time, and for the most part is bullet-proof, as long as none of the users think of it as a PC and start "digging around" inside its operating system.

It is *not* a PC. It is *not* a Mac. It is a VoxPro. Nothing more, nothing less. We love it for what it is, not for what we wish it was.

Also in these same studios are boxes called Maestros. Again, the product is not an Internet computer, it is not a word processor. It simply plays music, commercials and liners. While it is far from perfect, the Maestro is friendly to our staff because we approach it as a device that is designed to do one thing.

Just make toast

Several years ago, I was at working at a station using a computer automation/storage system that was having problems. I was walking by the program director's office and I couldn't help but overhear part of a telephone conversation between the him and vendor.

The PD said to this vendor in total frustration, "Let me ask you something. Have you ever worked in a *radio station* before?"

In my opinion, the vendors consider the users as someone they have to "put up with." We pay thousands, sometimes hundreds of thousand of dollars for these "miracle" boxes and when they don't live up to our expectations, we get upset. Very upset. All because we want our toaster to simply make toast.

Several years ago, when our stations were looking for a new traffic system, a colleague suggested that maybe we should stick with the old system that used a mainframe. It was old, expensive and only did one thing. But it did that one thing really well. (After all, we *were* talking about our receivables.)

Now, several years and several traffic systems later, we are still trying to come up with a system that works as well and reliably as that one did ... despite all the *advances* in technology.

I'm getting less tolerant of the finger being pointed at the user — at me, the customer.

Focus on function

I'm getting less tolerant of the finger being pointed at the user — me, the customer — of these systems.

Why don't you vendors make a killer application that will run on almost anything, will work as originally intended, and I as your customer won't expect you to do more and more from a program that wasn't designed to do?

Instead of looking for all-purpose programs that do everything almost well, I'll buy more boxes that do one thing very well.

I recently bought a new toaster. Right next to the dark/light control is a label that reads

"Toast Logic."

Hey, Sunbeam, let me ask you a question. You ever make *toast* before? Since when is making toast logical?

■■■

Rick Kemp is chief engineer for the Journal Broadcast Group, Boise/Ontario Radio Station Cluster, in Boise, Idaho. Besides being a logical expert at making toast, he has worked as a digital product specialist for BSW. In his spare time he does beta testing of digital audio and video workstations for software developers.

RW welcomes other points of view.

MARKET PLACE

Neutrik Debuts Minilyzer

Neutrik has extended its Minstruments series with the Minilyzer, a palm-sized analyzer that the company says provides comprehensive audio measurement and analysis functions. It complements Neutrik's Minirator.

The Minilyzer continuously measures audio levels as RMS or peak levels, absolute or relative to a definable reference with selectable units. The accurate frequency measurement, with high resolution of 100 ppm, gives additional functions and acts as the base for distortion measurement.

Distortion is measured as THD+N, automatically rejecting the fundamental frequency and calculating the THD+N value in dB or percent.

A set of audio weighting filters can be activated in all measurement functions. A balance indicator continuously monitors and displays the quality of the signal balance giving immediate detection of defective or wrongly wired cables.

Results are displayed on a high-resolution 100x64 pixel backlit LCD as numerical values, a bargraph when in meter mode or recorded as a curve vs. frequency in sweep mode.

The user interface is based on pull-down menus providing quick, simple access to the different functions, modes and menus. The unit is powered by three standard AA-size batteries.

For information, contact Neutrik USA in New Jersey at (732) 901-9488, fax to (732) 901-9608, e-mail at neutrikusa@aol.com *or visit the Web site at* www.neutrikusa.com

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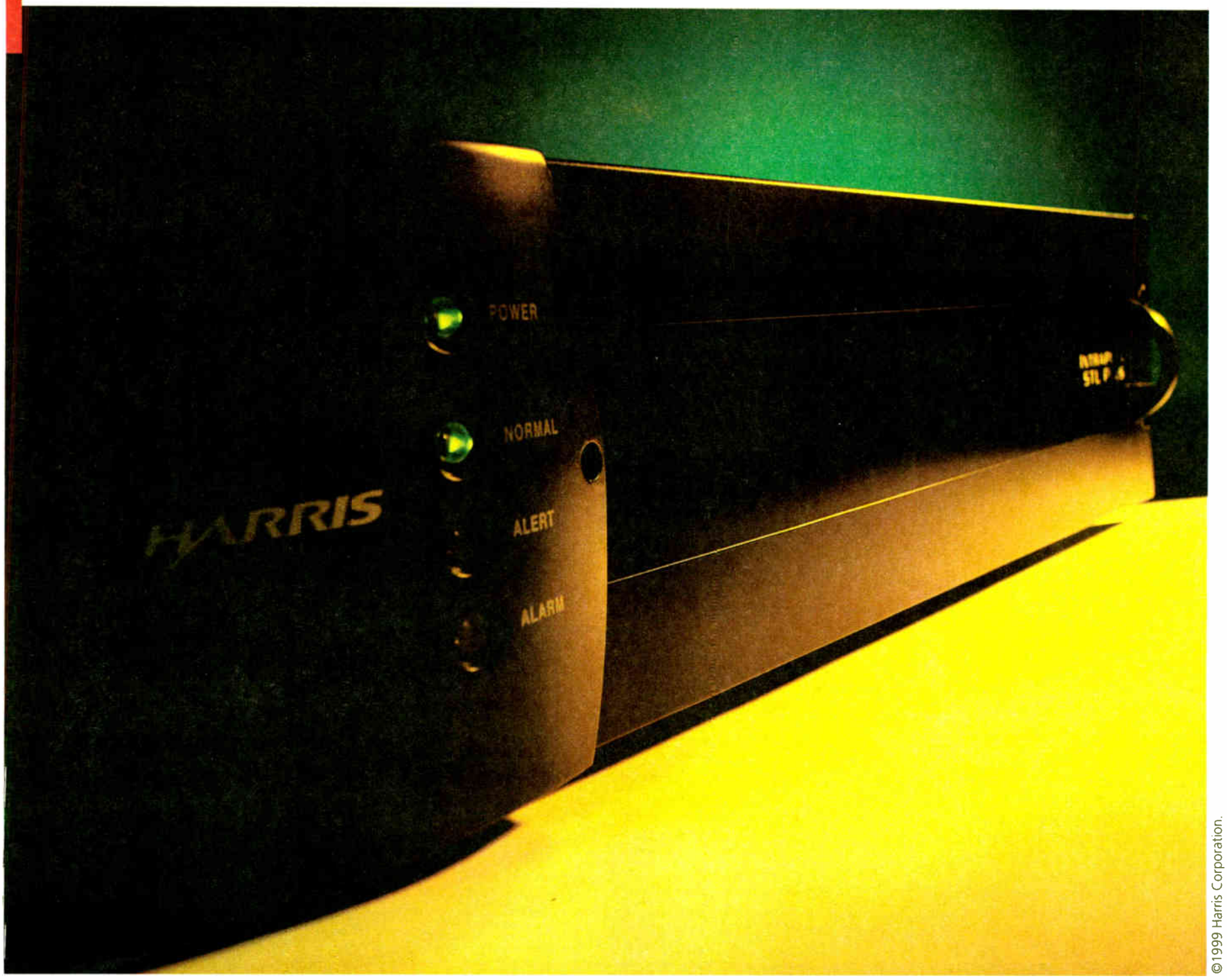

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PRODUCT EVALUATION

Cash Makes Money ... and News

W.C. Alexander

Once a radio station or network has sold out every available bit of inventory, its billing will level off and growth will stop. The only ways to resume growth have, until now, been to raise rates or add inventory.

Raising rates is unattractive to clients and buyers and may well drive business elsewhere. Adding inventory clutters the air and reduces the amount of programming available for listeners, which may drive listeners elsewhere.

What if broadcasters could manufacture additional time in their broadcast day? What if they could create even one additional minute in each hour?

At the rates that many stations command, this would amount to a considerable amount of additional money. Depending on the total number of units per hour already in place, this could amount to a total billing increase of 5 to 10 percent.

Cash in the air

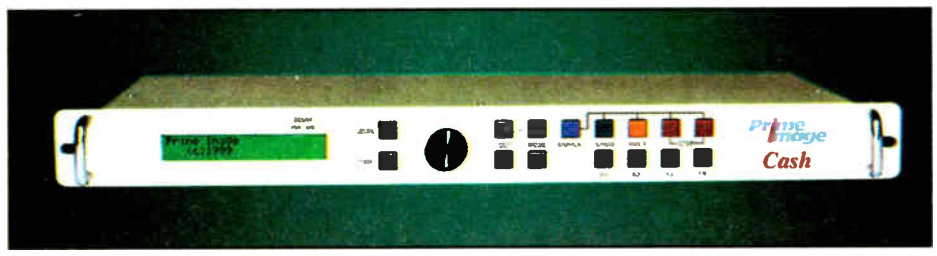
Prime Image recently introduced a patented device that does just that, in effect "creating" additional time that the broadcaster can sell. The company, based in the San Francisco area, makes corporate, industrial and broadcast equipment, including a similar time processor for video.

The radio product has been on the market for a few months — a description appeared in **RW**'s Oct. 13, 1999 issue, page 26, and the company has been advertising in trade publications — and it has been at work in some high-profile operations that you have probably listened to.

This device, appropriately, is called Cash.

The Cash is a one-rack-unit, self-contained device that reduces audio program time in order to create commercial insertion time.

According to Prime Image Vice President of Operations Jim Aldrich, it works using "intelligent microediting." This process does not employ data compression; rather it looks for material that is less detectible to the human ear and removes it. This allows the user to add 60 seconds or more of commercial time every 10 minutes.



Cash by Prime Image

The unit is based on the audio portion of a similar device for TV called the Time Machine. The radio version came about after a TV user urged the company to make an audio-only version for radio and promised to buy several if it could turn them out within 30 days for display at the NAB '99 convention last spring.

Audio delay memory

The Cash device uses an audio delay memory to "create" time.

The unit is inserted into the station's audio chain ahead of the processors. When started, it begins storing the program material into the audio delay memory. Output will not begin until after the programmed preset delay time has lapsed. It is during this delay that the additional commercial time is "created" and the added commercial material is inserted downstream of the Cash unit.

Once the programmed delay time has passed, the unit begins to output audio. During the course of the remaining program time, the delay is reduced slowly through the intelligent microediting process until at the end, there is no delay from input to output.

The amount of time reduction that takes place does affect the quality of the time-reduced audio at the output of the device. The Cash unit calculates a "Q" factor and displays it so that the operator can determine the overall effect of the time reduction on the station's on-air sound.

Q factors range from 99, with no detectible quality reduction, to 36, with obvious changes to the output audio. Q factor increases as delay time decreases throughout the program segment.

While five minutes or more can be added to any one-hour program segment, Prime Image recommends that time reduction rates be maintained at less that 4 percent, and 2 percent or less for optimum results.

The maximum guaranteed rate of time reduction is 16 percent. A typical application is to add 60 seconds of commercial time to a one-hour program block.

When we tested the unit, we connected it to a stereo program audio stream in the manner recommended by the manufacturer.

In our first test, using the manufacturer's instructions, we programmed in a segment time of 10 minutes with an insertion time of 60 seconds. This amounts to a 10 percent reduction rate.

When the Start button was pressed, the output went dead for exactly 60 seconds. At the completion of the 60-second period, output began with the output program material delayed exactly 60 seconds.

Over the next nine minutes, the delay time slowly was reduced, allowing the output to "catch up" with the input until the end of the 10-minute period, when the delay became zero. The transition to the zero-delay condition was seamless and virtually undetectable.

In this 10 percent reduction rate test, we could clearly hear the unit working early in the program segment. The effect was particularly pronounced with music but less so with talk programming.

Our next test was a more typical application, adding 60 seconds in a one-hour program block. In this test, the mechanics were the same, with an initial 60-second delay followed by delayed output from the Cash unit.

Over the remainder of the hour, the delay gradually was reduced until the end of the hour when the delay was seamlessly removed altogether. No degradation of the output audio was detected during this less-than-2 percent time-reduction test. This obviously was the mode in which the unit was designed to run.

Programming the unit was not difficult, but programming it on the fly during a busy daypart could be confusing.

To help with this, the Cash unit is equipped with four preset buttons. Settings can be preprogrammed and recalled with one-button press, considerably reducing operator workload and the propensity for mistakes.

See CASH, page 30 ▶

Cash Makes Headlines

It's not every day that a piece of radio station hardware makes the front page of The New York Times. But this one did.

The Cash processor created a ruckus last month when the New York Post, then the Times, CNN and other media outlets ran stories about it.

Rush Limbaugh, it seemed, was displeased to find out it was being used on his program on WABC(AM) in New York.

"A new kind of digital technology," the Times reported on Jan. 6, "was literally snipping out the silent pockets between words, shortening the pauses and generally speeding up the pace of Mr. Limbaugh's speech. ...

"While the radio industry has previously used devices to speed up programming," the story continued, "this is the first time that time compression has been applied on live programming to expressly make room for more advertising. And that has angered radio denizens like Mr. Limbaugh, who says he uses pauses for emphasis much like an actor raises an eyebrow on stage. He spared no hyperbole when he spoke in an interview of its potential impact on radio: 'I think it is potential doom for the radio industry,' he said."

But Prime Image owner Bill Hendershot said that's not the way the machine works.

"It doesn't change the rhythm and beat," he said. "We maintain tempo."

The company said about 40 radio stations across the country are using Cash. The Times said WWDB-FM in Philadelphia was among them, but that WABC had since suspended its use.

More Truth in Advertising

It's no longer a secret, people all over the world are discovering, despite the hype, that digital dynamics processing can't compete with good analog. Even Cutting Edge® claims their Omnia unit sounds almost as good as analog, while both Cutting Edge and Orban® claim each others digital product trashes the signal.

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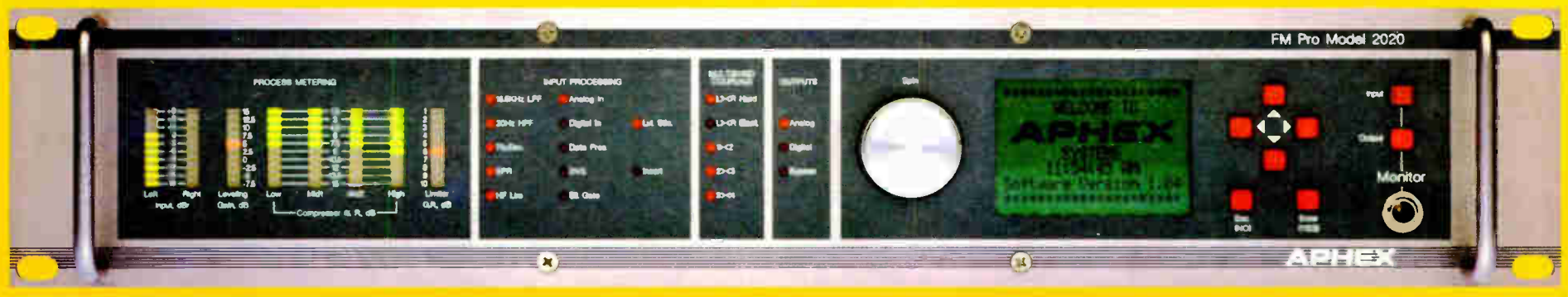

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PHOTO ESSAY

WEEU Tower Project Is a Smash

RW welcomes photos of your broadcast event or project. Send them to the address found in Readers Forum on the inside last page of this issue.

James K. Hodgkins

After a year of overcoming delays, adult contemporary station WEEU(AM) in Reading, Pa., released its excellent four-tower antenna site to non-broadcasters.

In doing so, the 68-year-old station turned the loss into two amazing gains.

First, the buyers of the 52-acre piece of land paid a price comparable to that of high-traffic malls, far more than the value of an AM antenna field.

Second, the station owners successfully applied to the FCC for a change of frequency from 850 to 830 kHz and subsequently increased power from 1 kW to 5 kW day and 6 kW night.

Considering band congestion on the East Coast, kudos are in order for WEEU.

Tower destruction

What happens to an AM broadcast antenna when a turnbuckle is disconnected?

In the case of the well-built towers of WEEU, not much. When Chief Engineer John Engle tried to drop the four-tower array in October, he found the towers wouldn't fall any more than a slight bow until he got to the third level of the five-tier guy points.

Excellent construction standards in 1947 and regular painting apparently kept these towers safe.

As shown in the photos below, the 52-year-old, 205-foot towers went down with dignity.

The horizontal sequence starts with a tower before the drop, shown in Figure 1. Loosening an upper guy resulted in Figure 2.

Things really started happening after the next two guys were loosened, resulting in Figures 3 through 6, taken only seconds apart. The upper tower sections smashed into the tower fence.

Figure 7 shows the lower section dropping, and Figure 8 is the crumbled results. Irv Fidler, a local antique radio historian, stands nearby.

The vertical photo was taken in an effort to get closer to the tower, showing more detail. This time the tower dropped in one operation because the force apparently caused the guy wires to fail, albeit slowly in the final tier.

With the top two tiers of guys missing, the tower showed just a slight bow, unusual strength for a 52-year-old stick.

When the upper section hit the ground, it broke into three pieces. The remaining lower section very slowly topped on its own.

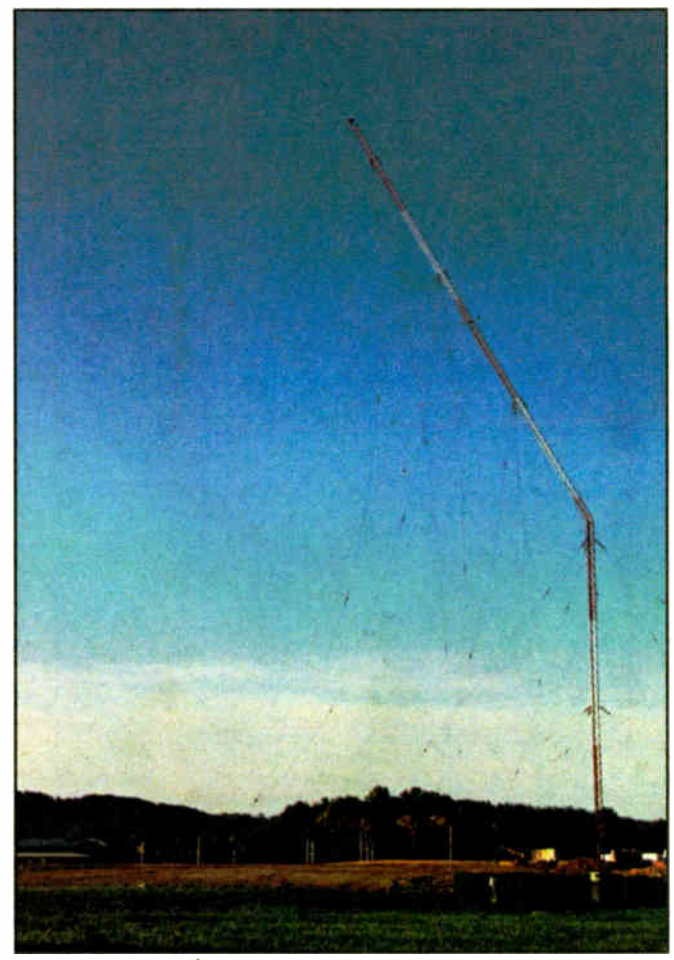
The towers were dropped by Engle and Jim Miller of Miller Electric, who climbed the towers to remove the beacons. Miller was the only outside contractor associated with dropping the towers. Each of the resulting tower drops hit within one foot of John's target.

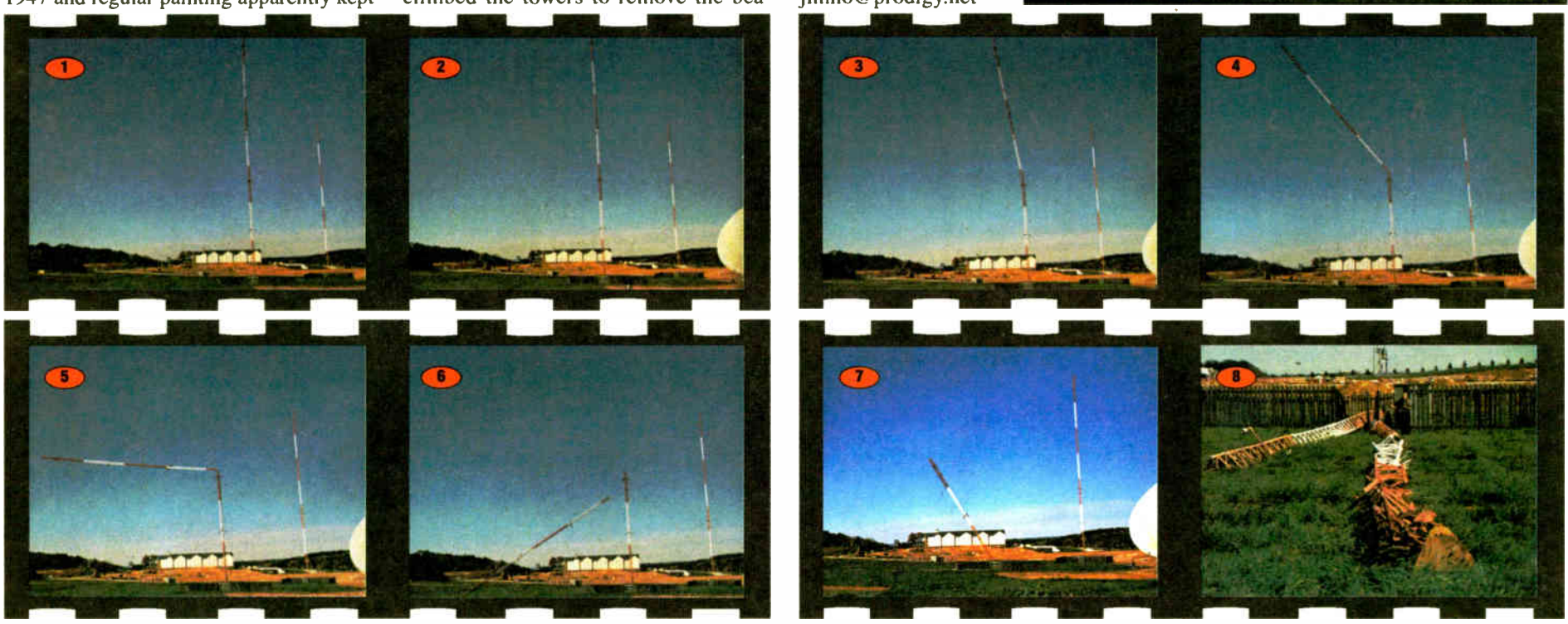
The metal was subsequently scooped up by a scrap company. One week later, the sturdy brick building was razed, but not before asbestos insulation was disposed of by an EPA-approved contractor.

The site will be combined with another parcel and used for a strip mall.

■■■

Sequence photos are by James K. Hodgkins, taken Oct. 12, 1999. The author is a former staff engineer with WEEU, now retired and active in preserving broadcast history in his hometown of Reading, Pa. Reach him at at jimho@prodigy.net





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HC-3 shown with optional rack mount

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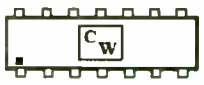

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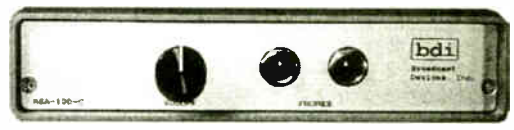

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Prime Image Makes Time With Cash

▶ CASH, continued from page 24

All programming is done via a front-panel LCD menu and push-buttons/rotary switch. Anyone familiar with multilevel menu programming, as is popular with much of our modern-day digital audio gear, should have no trouble navigating the menus.

The Cash unit can be controlled and programmed by RS-232 commands, and a rack-mount remote control unit is offered as an accessory.

The audio feed with which we tested the Cash unit came from an ISO-MPEG source. We could detect no obvious artifacts as a result of running this audio through the device.

Prime Image believes no artifact problems will result from use of the device in any audio chain, because it operates linearly and does not employ data compression.

Other observations

It occurred to me while testing the unit that seldom, if ever, do radio stations program 60-minute blocks commercial-free. Commercials are inserted in breaks throughout each hour.

Unless the user intended to time-reduce commercials in addition to other program material — not exactly ethical if not outright illegal — it would be necessary to use higher levels of time-reduction in shorter segments, leaving the commercials completely in the clear.

For example, in a typical hour consisting of four 12-minute music segments with a three-minute break at the conclusion of each segment, if it were desired to insert 60 seconds into each hour, one of the 12-minute music segments would have to be time-reduced a little over 8 percent.

This could be made more manageable with less audible time-reduction effects if two 30-second insertions were to take place in different breaks — about 4 percent reduction.

Cash is not cheap, but it could quickly pay for itself.

Clearly, talk programming would accommodate the higher levels of time-reduction with much less in the way of apparent audible effects.

While programming of the unit is straightforward, actually operating it in a real-world radio station or network environment may be somewhat difficult. The operator would have to alternate between real time and delay time, depending on where in the time-reduction scheme the program currently was.

For example, when the device is first started, the operator simultaneously has to insert the additional commercial element and start his or her program element, no easy task in a busy, high-energy radio station environment.

If an additional time delay unit is employed for talk programming, the picture is further complicated. Provision for monitoring raw console audio, insert audio downstream of the Cash unit and other sources would be necessary.

A separate audio processing chain just for real-time audio monitoring may well be necessary so that the talent can hear what the on-air product sounds like in real time.

Bypass wanted

One other observation, which we suggested to Prime Image's Jim Aldrich: To make the unit truly self-contained, a method for inserting bypass (commercial) audio should be provided within the unit. This should consist as a stereo bypass audio input and an internal relay that switches the bypass audio directly to the output during the time when the Cash unit is queuing up input audio (before delayed audio output starts).

Otherwise, the installation would require an external switching or mixing arrangement that would complicate the life of the engineer charged with making the unit work.

The Prime Image Cash is an innovative device that will allow sold-out radio stations to increase their income without raising rates or cutting back on programming. The list price is $12,000, which may seem steep. But in many stations the unit would pay for itself in a short amount of time.

The unit is available through broadcast equipment dealers. Our demo unit was provided by Harris Corp. at (800) 622-0022.

For a set-up diagram and answers to frequently asked questions, visit *www.primeimageinc.com*, or for more information, call owner Bill Hendershot at (408) 867-6519.

■ ■ ■

Cris Alexander is director of engineering for Crawford Broadcasting. He writes the column Feed Line, including a current series of articles about maintaining AM directional arrays.

Product Capsule: Prime Image Cash

Thumbs Up

- ✓ Creates additional commercial time without data compression
- ✓ XLR audio in/out connections
- ✓ Well-written manual
- ✓ Easy-to-follow LCD menus
- ✓ Easy programming and presets

Thumbs Down

- ✓ Requires external switching or mixing
- ✓ Somewhat difficult to use in real-world situation
- ✓ Expensive for smaller operations

For information, contact Prime Image in California at (408) 867-6519 or visit www.primeimage.com

Like a Rubber Ball ...

▶ INSULATION, continued from page 14

the person who invented gutta percha, he would have listed a number of early British scientists, who claimed to have invented it in the early 1840s. Further improvements were made later by Charles Goodyear, who invented the "modern" rubber process with heat and sulfur, the so-called "Vulcanizing" process, late in the 1800s.

Or so it was thought until three years ago, when an MIT freshman, Michael Tarkanian, asked a simple question.

He had heard stories of Mayan games, akin to basketball. Witnessed by the Spanish, these games must have been intense — the losers were beheaded!

New compounds

Spanish records indicated that the ball bounced, something new to the Spaniards. Some of these balls, as large as a foot across, were presented to King Carlos V of Spain in the early 1500s.

But the composition of the balls was ignored or forgotten. Tarkanian asked his professor, "How did the Mayans use rubber if Vulcanization wasn't invented until 1876?"

When Tarkanian and his team went to South America in 1997, they were astonished to learn that the natives still knew how to create rubber from uncured rubber (latex).

The trick was adding juice of the Morning Glory vine, stirring vigorously and doing it on a very hot day. Because the Morning Glory contains a lot of sulfur, this process is virtually identical to the sulfur-and-heat process of Goodyear.

But our story of rubber and other insulations doesn't end there. It moves to 1928, and a man named Waldo Semon. He worked for the B.F. Goodrich Company and was told to work on inventing new rubber compounds. He used chemicals discarded by the petroleum industry to create "ethylene-propylene-diene monomer," known today as EPDM, or artificial rubber. He also played around with many new compounds that were coming from the petroleum industry, compounds like vinyl.

He invented the second most popular plastic in the world today, polyvinyl chloride or PVC. We use 44 billion pounds a year. A lot is used in the manufacture of wire and cable. And, if you think this is ancient history, think again. Waldo Semon died last June, age 100, in Ohio.

But PVC is not the best-selling plastic of all time. Can you name the best selling plastic? The answer will be in our next installment.

■ ■ ■

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 at shlampen@aol.com

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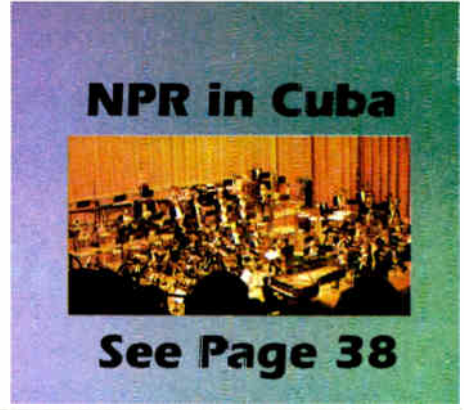


RAB 2000 Will Be Net-Intense

Laura Dely

RAB 2000 will be bigger and more diverse than RAB annual conferences in years past, according to Wayne Cornils, vice president of meetings at the Radio Advertising Bureau.

Tracks are devoted to sales managers, sales people, promotions, non-traditional revenue, small markets and RAB2000.com, a track devoted to money-making opportunities on the Internet.

There also will be a track designed for Hispanic radio, the first time RAB has devoted a block to this surging area of the industry.

Tres topics

These topics will be available in each set of workshops throughout the conference, set for Feb. 16 to 19 in Denver.

"This means that you can go to wall-to-wall sessions of any topic that interests you, or you can sample from a variety of subjects," said Cornils.

Out of 100 sessions, RAB 2000 will feature 16 Internet workshops.

"The entire thrust of the RAB 2000.com workshops, forums, keynotes, exhibits, demonstrations and special attractions is geared to show radio station management and account executives how to make money with the Internet right now," said Cornils.

Charles Warner, vice president of interactive marketing at AOL and a long-time radio broadcaster, said the radio industry needs to get some perspective about where radio fits into the media spectrum vs. where the Internet fits.

"Radio is in a nice growth pattern right now, and will continue to grow at about the same rate depending on the economy's growth.

"But on the other hand, Internet advertising and e-commerce revenues are growing much, much, much faster, so they should look at the Internet not as a threat but as an opportunity to get in and learn how to use it in combination with the brand names of their radio stations."

Warner, whose employer announced last month that it will merge with media conglomerate Time Warner, will be the Internet keynote speaker at RAB 2000.

He suggests that, at least up to now, radio people have not really understood the value of the Internet and what it can do.

"They're sticking their heads in the sand. It's just like what CBS said about cable television — that it will never amount to anything. Radio had better get on it right away and learn how to use it and use it properly, because if they don't, they will miss an enormous opportunity."

Warner promises that he will share some of his ideas on the "proper" use of the Internet in his keynote speech, but he did provide some prospective on the question of the threat of the Internet vs. traditional radio.

"The largest-billing radio station in the country might do $70 million. We (AOL) will do $1.1 billion in advertising and e-commerce revenue this year. So it's not like we're a small business competing with the radio business or competing with radio stations. We are competing with and probably will surpass the entire radio industry, well, in 3 or 4 years.

"But I don't think radio is going to be replaced by the Internet. Radio's revenues will continue to grow rapidly, but the Internet's will grow even faster," Warner said. And the Internet's profits are distinct from radio's, generated by a different sector that the Internet created.

"If you look at the source of most of our revenue, you will see it comes from e-commerce or transactions. So we're taking money from retailers, from catalogue people, from bricks-and-mortar retailers," said Warner.

One radio group that he cites as "brilliant" with regard to its Internet strategy is Infinity.

"What they're doing is trading unsold time on their television and radio properties for stakes in Internet companies, because the Internet companies — the dot-coms — realize that they have to advertise to get any traction at all. I think it's one of the smartest maneuvers that I've seen in the last couple of years."

100 ideas in 100 minutes

RAB 2000 also will reflect a new approach to sales that Wayne Cornils said is best described as "the psychology of selling."

"Five years ago, we used to have sessions on the 'Ten Best Closing Lines,' 'Overcoming Objections' and things of that sort. We still have a little bit of that, but now we have much more of relationship building, determining a customer's needs, wants and desires. And no one is more dynamic or exciting on these subjects than our retail keynote speaker, Peter Glen."

Glen, who will make his sixth RAB keynote appearance at the Denver conference said, "What people need are specific ideas — not theories, not speeches by old tired football coaches talking about rah-rah motivation. My point of view is that of the retail customer and radio listener."

Glen is the author of two books on customer service. He said his emphasis will be to show radio salespeople what radio sales people will benefit from is improved time-management skills, something he promises to deliver in his retail keynote talk.

Radio people have not really understood the value of the Internet and what it can do.

— Charles Warner, AOL

Charles Warner

"This has a lot to do with advertising. Radio should recognize that people do not have an attention span of even three full seconds, and people are more frantic and more enraged than ever. It's as if they are listening to six radios at the same time all the time."

Glen said that clarity will be the next great human triumph, and radio advertisers and sales people will be wise to attempt to master this, as well as adopt better time-management skills.

See RAB, page 41 ▶

Exclusive Grammy Coverage by WW1

Westwood One began its exclusive worldwide radio broadcast coverage of the 42nd Annual Grammy Awards Jan. 4, when the National Academy of Recording Arts & Sciences (the Recording Academy) announced the Grammy nominees in New York.

WW1 Grammy programming will include live reports from rehearsals and live interviews the night of the Grammy Awards, Feb. 23.

Also included in the WW1 Grammy programming will be nine two-hour, format-specific specials in classical, country, smooth jazz, Latin, mainstream rock, alternative rock, CHR/top 40, urban and adult contemporary formats.

"Our partnership broadens the Academy's reach on radio programming, while also giving listeners a front-row seat and a backstage pass to the music industry's biggest night," said Michael Greene, president/CEO of the Recording Academy at the nominee announcement press conference.

— Laura Dely

(Left to Right) Mel Karmazin, CBS Corp. President/CEO; Joel Hollander, WW1 President/CEO; Michael Greene, Recording Academy President/CEO and Les Moonves, CBS Television President at the Grammy Nominees Press Conference in New York

Brand New Bag: Classical Profits

Bill Mann

As popular classical music moves into its fifth century and classical radio heads into 2000, the once-stuffy format is showing renewed signs of life and vigor, thanks to aggressive and atypical new approaches in sales, marketing and promotion. And as the listening audience ages, time seems to be on the side of classical, which skews to more mature audiences.

And although the number of classical stations is down from four years ago — especially in smaller markets — those that have survived that **RW** contacted have learned — and are learning — to adapt to modern marketing and promotion strategies and are upbeat about their future.

Classical stations in many major markets are showing increased ratings. For example, recently San Francisco's KDFC-FM managers celebrated the station's third-straight top-10 finish in the local 12-plus Arbitron ratings and its most recent Arbitrends. Plus, classical's better-educated, upscale audience has always been attractive to buyers, and classical's traditional 35-54 demos are getting increased buys, classical station managers and other execs report.

Classical's biggest problem these days, it seems, comes not from playing centuries-old music, but from sniping from long-time listeners resistant to change and to stations' shrinking (but hardly small) playlists.

One manager told **RW** he received a death threat from a disgruntled classical listener. Some local newspaper classical critics also have been harsh in their comments about changes in the format.

"We're not in the classical-music business. We are in the radio business," said Bonneville-owned KDFC-FM's General Manager Valerie Howard flatly. "We are also in the entertainment business. We are *not* a museum."

By comparison, KDFC-FM's founder, the late Ed Davis, liked to describe himself as "the curator of a museum, open free to the public."

Bill Leuth

Since Bonneville bought the station four years ago, reports KDFC-FM PD/morning personality Bill Lueth, "We've cut our playlist of 20,000 titles down to a more manageable 2,000 in regular rotation. Our average song lasts 13 minutes. The average rock or AC station has a list of 450 songs averaging three minutes.

"When I tell rock or AC execs about our 2,000-song playlist and 13-minute length, they're amazed — and some start laughing."

Even so, its supporters say classical's on a roll — a small group of critics notwithstanding.

Lueth and KDFC-FM have been stung by some negative articles in San Francisco's newspapers after the station recently dropped the Metropolitan Opera live broadcasts it has carried for many years — the Met refuses to allow them to be taped for later broadcast. Other classical stations have followed suit.

"We like to visit 'Planet Art,'" said Lueth, a classical-radio veteran who knows the music. "We just don't want to

Jim Allison

live there. You don't need to rent a tux, smoke a pipe and get a music dictionary to appreciate classical music."

Most of the classical-station managers **RW** contacted shared Lueth's progressive attitude.

Bill Campbell, GM of Boston's long-time classical outlet, locally owned WCRB(FM), said he's also been "trashed" by local newspapers' classical critics. Campbell said what he calls "the harrumphers" aren't happy with his station's more populist approach.

"As far as I'm concerned," said Campbell, answering his moss-backed critics, "Snobbism is the same thing as elitism, and elitism is a form of bigotry."

Like KDFC-FM, WCRB regularly places in the market's top-10 stations in 12+ listeners.

"This is the station Boston Symphony conductor Seiji Ozawa listens to. I told symphony officials when I came here that they were our 'sports franchise.' We are

See CLASSICAL, page 37 ▶

BROADCAST LAW REVIEW

New FM Stations Go to Auction

Barry Umansky

After a long regulatory hiatus, the FCC is poised to open up a mini-flood of FM allotments. Within months, you will be able to file applications to build and operate new FM stations in various locations throughout the country.

As experienced radio broadcasters know, each year the FCC adds dozens of new FM "drop-ins" to its FM Table of Allotments. (The table lists, by city and state, the FM frequencies that may be used for broadcasting at these locations.) Most observers expect that by some time this spring, several hundred FM allotments will become available for application at the FCC.

Indeed, due to delays brought about by some significant changes in the FCC station application process, this will be the first time in more than two years that the FCC has accepted any applications for new FM stations.

FM opportunities

These channel allotments have been made in response to the requests of individuals and companies who petitioned the FCC to add specific FM channels to numerous communities. But, these petitioners are not the only ones who are eligible to file applications at the FCC to obtain these station licenses.

Virtually anyone may apply for these licenses. You need not have played any role whatsoever in the process that added the station "allotment" to the city in question.

The new FM allotments are found in all parts of the country. Although most are located in less-populated regions, some of the allotments will be for FM stations serving large metropolitan areas. These new FM opportunities range from Class A stations, with a nominal 6,000-watt power limit and an effective service radius of up to approximately 20 miles, to full Class C stations that can operate with up to 100,000 watts and provide wide-area FM service.

Most communications law firms and consulting engineering firms have developed listings — by city and state — of the new FM allotments that have been added to the table since late 1997. Now is the time to review these listings to determine whether you want to apply for these stations.

New application process

Until late 1997, the FCC typically opened a "filing window" shortly after it adopted a Report and Order adding a channel to the FM table. Interested parties then filed an FCC Form 301 (construction permit application) during the filing window. If more than one application was filed for a particular allotment, the FCC usually would designate the application for a "comparative hearing." During the hearing process — which, in some cases, could run for a considerable period of time, and at significant costs (particularly legal fees) — the applicants would argue in favor of their being selected as the winner of the construction permit. An FCC administrative law judge would preside over the hearing and make a decision. That decision then could be the subject of an appeal within the agency and possibly later in the courts.

Now the process has changed — and changed dramatically. Competitive bidding now has replaced comparative hearings. Where more than one applicant files for an allotment, an FCC auction — not an FCC administrative hearing — will determine who gets the new FM station.

Competitive bidding now has replaced comparative hearings.

How will the auction work?

Last year I gave **Radio World** readers a summary of how this competitive bidding system works (Sept. 15, 1999). It's a big change from the traditional comparative hearing process.

Thus far, the FCC has conducted only two broadcast auctions. They were "closed" broadcast auctions for a limited number of allotments that had been created — and for which applications already had been filed — prior to the time that the FCC began the change from a "hearing process" to an "auction process."

Another, smaller "supplemental" closed auction begins on March 21. Participating at that auction will be those who filed other long-pending applications for AM, FM, TV and LPTV facilities. Another future auction will decide who gets new AM stations that were the subject of applications filed during the Jan. 24 – 28, 2000 "window" for such applications.

Based on the experience of the first broadcast auctions, once the "open" FM auction process begins, it will proceed at a brisk pace. While the bids generally will rise fast from the "opening minimum bid" level set by the FCC, the amount of the final winning bid for each allotment is difficult to predict.

The first broadcast auction resulted in wildly varying winning bids for stations that will operate with comparable facilities in markets of much the same audience potential.

The winning high bidder for each FM allotment then will file a more detailed application at the FCC. Upon grant of the application, the auction winner obtains the authorization to build and operate the new FM radio station.

Highest bids

A local radio or TV station or cable television company that is the high bidder generally will pay the federal government the full amount of its high bid. (Yes, cable television companies may be bidders for local radio stations and the FCC's recent changes to its one-to-a-market rules may result in TV stations being active bidders for new, local radio stations.) However, the FCC will grant a 35-percent discount to the high bidder if this bidder has no "attributable interests" in any mass communications medium. A 25-percent discount will apply to a high bidder with no such interests in more than three mass communications media, provided that none of these interests is in the same geographic area as the new FM station allotment.

'Attributable' interest

So, if you hold an "attributable" interest in three or fewer radio stations, you can get a 25-percent discount on your winning high bid, provided that the new station will be in a market distant to where your current stations are located. And if you are an employee of a radio station or station group, and you have no ownership or other "attributable" interest in any of these stations, you could get a 35-percent discount on your winning bid. As such, this upcoming auction may provide station ownership opportunities for station employees who have the expertise and desire to become successful radio station owner/operators.

While this first "open" FM auction won't be the spectrum land rush that we saw in Docket 80-90, it does mark the first time in a long while that new FM station opportunities have been presented to all of us. And for the non-owner radio broadcaster (who will get a big federal dollar discount off a winning high bid), this might be the right time to make your move to station ownership.

■■■

Barry D. Umansky, the former deputy general counsel of the National Association of Broadcasters, is with the communications practice group of Vorys, Sater, Seymour and Pease LLP in Washington, D.C.

He may be reached at (202) 467-8822 or via e-mail at bdumansky@vssp.com

What You Should Do Right Now

First, you should go through the allotment list and decide which of these FM allotments interests you.

Next, quickly compare notes with your communications attorney and your communications consulting engineer. They can explain the steps needed to firm up your plans and prepare your FCC auction application. These steps involve, among other things:

1.) Selecting a transmitter site.
2.) Determining whether that site would pose a hazard to aircraft navigation.
3.) Preparing some basic engineering information to aid your planning and the preparation of your "auction" application.

Note: The FCC will amend in time for the FM auction the basic auction form (FCC Form 175) to include a space to specify the coordinates of your tower site. You will get protection for the reference site established by the FCC as well as for the site you specify on the auction form. The commission will assume you will operate with maximum power for the facility in question.

Products & Services Showcase

Classical — A Format to Watch

▶ CLASSICAL, continued from page 34

their station. Our station even has a box in the concert hall."

Campbell, who is no stranger to "Planet Art" himself — he's the author of two books — said, "Our personalities are always out in the community. We do over 100 live appearances a year. And you know what I like about classical jocks? They show up on time and they're not stoned," said Campbell, laughing.

Some of the things WCRB does to market itself as a contemporary radio station probably mortifies the "harrumphers," as Campbell calls them.

Keith Lockhart, conductor of the Boston Pops (left), stands with WCRB's Bill Campbell.

Chuckling, Campbell said, "The other day, at one end of a local mall, a local rock station was broadcasting live and handing out T-shirts and bumper stickers. At the other end of the mall, we had a live string quartet playing — and we were handing out bumper stickers and T-shirts.

"We're broadcasters. We're just like any other music station; we just happen to play classical music."

Lueth, whose station is conducting its first market research into listeners' classical tastes, said, "If we lose 20,000 musical snobs and gain 150,000 listeners, I think we've helped the culture."

Lueth's research said the station's listeners like the "Mozart/Vivaldi melodic sound. Most listeners don't want Bartok and Schoenberg crammed down their throats."

"At the end of the day, it's how popular you are — as long as it's not a disservice to the community. And, also at the end of the day, we're the number-two classical station in the United States in cume."

KDFC-FM airs broadcasts of the San Francisco Symphony, the Berkeley Symphony, as well as other local musical groups it sponsors like Chanticleer and the Women's Philharmonic.

Campbell's station is the home of the World Classical Network, which now satellites music to 18 markets including San Diego; Kansas City; Tulsa, Okla.; and Naples, Fla.

"We're playing music for real people, not old fools and elitists," he said, "and our operation is quite profitable." Campbell said that, like many classical operators, he also has competition from a local NPR affiliate that plays classical, as well as two suburban stations.

Classical execs interviewed said the role of educator is one that is mandated to National Public Radio, not to commercial classical stations.

"Our goal is to become a mainstream station," echoes Dennis Stortz, operations manager at St. Louis' KFUO-FM, which recently won the NAB's Marconi Award as best classical station.

"We're a radio station that just happens to play classical music," he said. "You don't have to be a scholar to listen. We do news and traffic just like any other station, with a jock approach."

KFUO-FM is owned by the Lutheran Church, but Stortz said it's a profitable business.

"Every day now, we see 35-54 buys. As boomers age, more and more of them are getting into classical music. The aging demos are definitely on our side."

Bill O'Connell, program manager of Cleveland's classical WCLV(FM), agrees that as the listening audience ages, "a lot of people will come to us naturally in the next few years." He added acerbically, "We just want to be sure we're the best station we can be when people get tired of the other crap on the dial."

O'Connell said locally owned WCLV is showing "double-digit revenue increases every year."

Dennis Storz (Standing) and Jim Connett of KFUO-FM With Their Marconi Award for Best Classical Station of 1999

O'Connell also said that consolidation is responsible for classical disappearing from some markets — Philadelphia and Detroit now have no full-time commercial classical stations. According to the M Street Radio Directory, in November 1993, there were over twice as many classical stations — 47 commercial, 271 non-commercial. In 1997, that number had dropped to 44 commercial and 117 non-commercial, many of the latter part-timers and NPR affiliates.

"When consolidation occurred, many of the big chains had no idea what to do with classical, and some dropped it," O'Connell said.

KDFC-FM's Lueth said, "Radio and Records doesn't even carry it as a format, so many major groups don't know what to do with classical when they buy a station with the format. Fortunately, most major-market full-time classical stations have survived because they're locally owned."

In some markets, like San Francisco, the local NPR affiliate was a classical format station, but KQED-FM decided five years ago to drop the classical music it carried part-time and add more news and talk programming.

KFUO-FM, like all the stations mentioned in this article, Webcasts its programming. And all classical managers **RW** interviewed cite recent studies that show classical as second only behind alternative rock as the music of choice for Net radio users.

Another factor helping classical radio, Stortz said, "is the fact that there's really no MOR any more except for us. There's no beautiful music format, no easy listening, not much jazz. So we get a lot of office listening."

Stortz said KFUO-FM "actively supports local theatre and arts groups, and reciprocates with on-air plugs for these groups."

Jim Allison, veteran program director at Bonneville station WGMS-FM in Washington, D.C., is buoyed by his station's vigorous sales — $28.97 million through October 1999 — and a 3.6 market share, according to BIA Financial Network.

These days, Allison said his broadcasting philosophy is that "if classical is presented in an ivory-tower manner, you put off a lot of people. We make a point to try *not* to be stuffy, with none of this better-than-thou attitude. Our air people do it well."

Allison said WGMS-FM personalities also go out into the community.

"We broadcast live every three or four days from a coffee shop, a mall, or a retail establishment. Yes, we've taken a page or two from rock and AC's book."

WGMS-FM doesn't overlook the chance to educate, something classical has traditionally done even without a mandate. But it's taken a new approach, Allison said: WGMS-FM doesn't lecture listeners, but instead solicits classical instrument donations. The instruments are donated, refurbished and then given to local Washington schools.

"Music education in schools is hurting," said Allison, "and so we do a yearly live remote to collect instruments."

Another problem common to classical managers is how to handle spots that may be a bit too loud for classical listeners' sensibilities.

"We walk away from some business," said Allison.

KDFC-FM's Lueth said, "I go around and around on this at least once a week with my sales manager. Under KDFC-FM's previous regime, many spots wouldn't run at all," said Lueth. "We walk away from one or two a week. The 'dot-com' spots may be the worst offenders — many of them are produced without regard to format."

"I'm a broadcaster," said Campbell. "Before I came here, I ran a country station. Classical is like any other format — play the hits and embrace the community."

KDFC-FM GM Howard puts her mission succinctly: "Bonneville did not pay $50 million for this station and not expect to make a profit."

And even with all the sniping from some of KDFC-FM's disgruntled listeners, Howard said, "Bonneville has been very supportive. They like this format and they want it to work. The music we play remains relevant. Our job is to put it in today's context."

MANAGEMENT CORNER

Radio Power Shift Goes Beyond Big

Vince Ditingo

Today's radio broadcast industry is in the midst of the most significant power shift in its history. And that shift appears to have a positive effect on the financial landscape of radio's middle- and lower-market tiers.

The results prompt industry executives and potential investors to stand up and take notice. Without question, radio's remaining large conglomerates, CBS, ABC and Clear Channel (the largest group since its announced merger with AMFM), have now established a strong revenue foothold in the advertiser-desired top-25 major markets. The goal here, of course, is to maximize shareholder value through increased revenues.

But in today's high-stakes, publicly traded radio world, these companies are not the only factors fueling Wall Street investors' radio business frenzy. Indeed, the long-range financial viability outside radio's top-tiered markets is now being advanced by several key elements, most important of which is the growing success of a new generation of entrepreneurial station groups.

Their names include Citadel Communications, Cumulus Media and Saga Communications, among many others. For the most part, these groups are making their mark in radio's small to mid-sized markets.

With aggressive acquisition strategies, these companies have built strong station clusters. They and others have entered the radio ownership picture in recent years through existing group management buyouts, company mergers, acquisitions and startup ventures that sometimes result from spin-offs from other deals.

In general, their operating strategies have not only included station ownership consolidation into local market clusters, but regionalization of those clusters.

The low unemployment rates of the past few years have generated increased discretionary income among consumers. This is a strong contributing factor, driving radio advertising revenues up to record levels within many middle- and lower-tiered markets.

This was certainly not the case a few years earlier. A major economic recession during the early 1990s greatly affected consumer spending, and was one of the factors that led the FCC to first deregulate radio ownership in 1992. Radio advertising sales, especially in the Midwest and Northeastern regions of the United States, declined precipitously during this period, but now it's quite a different story.

Ad growth

Trends in today's local radio spending are obvious in Radio Advertising Bureau data.

According to RAB research, all regions of the country registered double-digit local revenue growth from January through November 1999 over the same period in 1998. This growth ranges from 11 percent in the Midwest to 13 percent in the East to 15 percent in the West and

See MANAGEMENT, page 39 ▶

NPR Goes to Cuba With Symphony

National Public Radio covered the Milwaukee Symphony Orchestra's December 1999 visit to Havana, Cuba. The cultural exchange included the first concert by an American professional orchestra since the United States embargo was imposed 37 years ago.

"Performance Today," NPR's daily classical music program, reported from Havana on the visit and NPR's news programs presented features on the Orchestra's Cuban visit.

NPR also recorded the Dec. 17 Milwaukee Symphony concert at Havana's Teatro Amadeo Roldan, and offered it as a special feature to member stations to broadcast anytime between Dec. 25, 1999 and Jan. 2.

— Laura Dely

Andy Buelow, Milwaukee Symphony Orchestra

Like American kids waiting for the start of a rock concert, these young Cuban music students gathered outside the Teatro Amadeo Roldan hours before the Dec. 17, 1999 concert began.

Andy Buelow, Milwaukee Symphony Orchestra

Milwaukee Symphony Orchestra Director Andreas Delfs signs autographs for young Cuban fans in Havana.

▶ MANAGEMENT, continued from page 38

Southeast. If the available billings data and percentage growth rates from January through November continued at the same pace through year's end, local radio advertising dollars in 1999 will total roughly $13.5 billion, an increase of 13 percent over 1998. The overall industry, encompassing local, national spot and network billings, would top $18 billion.

Those are early projections at the time of this writing based upon 1999 year-end estimates.

Building equity

From a purely operational standpoint, there is little doubt among radio broadcasters that "multiopolies" — three or more stations in the same market — create higher advertising leverage for each property. This economic efficiency has become the *modus operandi* for owners to pay down their debt, which in turn builds greater equity as well as shareholder value.

"The question to ask when consolidating stations under common ownership is how do we maximize the benefits," said Mark O'Brien, vice president of the BIA Financial Network, a Chantilly, Va.,-based broadcast research company.

Taking a page from the Clear Channel handbook on steady growth through acquisition, both Citadel and Cumulus conducted significant station-buying sprees in recent months.

For instance, pending FCC approval, Citadel will acquire 36 stations from Broadcasting Partners Holdings L.P., many of which are in Northeastern markets such as Syracuse, N.Y.

Cumulus, on the other hand, announced in November that it purchased Connoisseur Communications, which has 35 stations in Midwestern markets, including Youngstown, Ohio, and Evansville, Ind. This will add to Cumulus' established Midwestern presence. And many of these newly acquired stations are already operating as local cluster groups.

Other players

As radio enters 2000, Citadel, Cumulus and Entercom rank in the top-10 biggest radio groups, according to BIA Financial Network. In fact, as of mid-December, Cumulus had 303 stations in 56 markets, making it third in station ownership behind CBS (second) and Clear Channel (first).

In terms of annual revenue estimates, Entercom was fourth at approximately $317 million. Two years ago, the Philadelphia-based company emerged as a successful medium-market group player when the company began an aggressive acquisition strategy.

Citadel is sixth, at about $243 million, and Cumulus seventh at roughly $223 million. All are helping to redefine radio's power order.

While these groups bolster the financial solvency of radio's middle and lower tiers of stations, it is easy to see that, with few exceptions, the days of family-owned mom-and-pop single or duopoly operations essentially are over.

The key for all operators to leaving an imprint in the ownership marketplace of the new millennium is a sophisticated corporate infrastructure with access to capital — lots of capital.

"The industry is creating a whole new paradigm for station ownership," said Gary Stevens, a Connecticut-based media broker. "Today, you need a multibillion capitalization program to be a major player."

Top 10 Radio Groups
Ranked by Annual Revenue

		Millions
1	Clear Channel Communications	$3,083.7
2	CBS Radio	1,667.4
3	ABC Radio Inc.	356.4
4	Entercom	317.2
5	Cox Radio Inc.	286.6
6	Citadel Communications Corp.	243.6
7	Cumulus Media Inc.	231.9
8	Hispanic Broadcasting Corp.	193.4
9	Emmis Communications	184.5
10	Susquehanna Radio Corp.	162.6

Note: This ranking uses 1998 revenue and assumes the completion of all announced mergers.

BIA Financial fn network

Source: BIA MEDIA Access Pro

Audience measurability

Beginning with the fall 1999 survey period, Arbitron has expanded its audience measurements for radio into as many as nine new, smaller markets, bringing its nationwide total of measured radio markets to 279. These small to mid-sized markets generated radio listening data for the first time — yet another indication that radio's lower-tiered markets are more financially viable.

Among the new markets measured for the fall were Rochester, Minn., (ranked 229) and Jonesboro, Ark., (271). That also entails three new markets for the upcoming spring 2000 survey period: Bowling Green, Ky., (201); Elizabeth City-Nags Head, N.C., (241) and Sebring, Fla., (268).

"Even bigger companies like Clear Channel keep growing in the smaller markets," O'Brien said.

Local group sales managers and account executives in these markets now will be able to present advertisers and local agencies with standardized audience listening information to better compete with newspapers and television. And national advertisers, agencies and reps will be armed with this data for regional buys.

■■■

Vincent M. Ditingo writes frequently on radio management, marketing and information technology issues.

Contact him via e-mail at vditingo@aol.com

One-on-One With Wink Martindale

Peter King

What is Wink Martindale's *real* first name? And where did "Wink" come from?

Those are a few of the nuggets picked up in a one-on-one session with one of TV's all-time great quizmasters. After sitting through three days of sessions at last fall's NAB Radio Show filled with radio names, numbers, statistics, platitudes and advice, I was ready to put down my pen and take in a session of pure enjoyment. But the reporter in me rolled tape and took notes anyway.

Wink Martindale talks one-on-one with Mike Kinosian.

The first thing you need to know is that Wink Martindale looks great! He's lean, trim — looking much younger than his 65 years — and without makeup.

And number two, Martindale has had a lifelong love affair with radio. "I always wanted to be a radio announcer," Martindale said.

In 1996, syndicator "Music of Your Life" made him the proverbial offer he couldn't refuse, and the chance to work from his home in California. Music of Your Life programming is heard on 174 stations across the country

Just as baby boomers can sing the "Gilligan's Island" theme, Wink can still recite the openings of old-time radio shows — without cue cards, and without missing a beat.

Martindale told the NAB crowd how he got his start, when instead of doing schoolwork, he had the radio on by his pillow, listening to "I Love a Mystery" and "Mr. District Attorney."

And, Martindale said that when he was still a schoolboy, he would take pages from "Life" magazine and ad lib them into commercials which he'd read out loud.

After months of begging, he convinced his Sunday school teacher to put him on WPLI(AM), the radio station he ran in his hometown of Jackson, Tenn., in 1951.

Wink was 17 and made a whopping $25 a week. Later, he "graduated" to a bigger competitor, WJJS(AM) in Jackson, as an announcer and play-by-play man for high school basketball and football. An audition acetate (no tape in those days!) got him hired at RKO's WHBQ(AM) in Memphis, Tenn., where, he said, he became the Dick Clark of Memphis by hosting radio shows and airing a local version of Clark's "American Bandstand."

A big Memphis moment: "I was at the radio station the night Elvis was discovered, when Sam Phillips brought him in, so I've got the first Elvis interview ever done."

Go west, young man

In 1959, Wink moved west to RKO's KHJ(AM), Los Angeles, a perennial loser to rock and roller KFWB(AM), run by the legendary Chuck Blore.

"I worked with a bunch of network radio announcers who'd never done top 40; the station was playing 'chicken rock,' meaning it wouldn't quite go 'all the way' to compete with KFWB."

Still, it was a start that helped him springboard into records ("Deck of Cards," Billboard No. 7, 1959), more television (a dance show on KHJ-TV) and eventually, to KRLA(AM) and Gene Autry's legendary KMPC(AM), "The Station of the Stars."

There, he worked with radio legends Dick Whittinghill, Gary Owens, and Geoff Edwards, and developed his own niche by producing weekly audio biographies of music stars, weaving his questions and their answers to lead in to their hits. Today, you can hear some of that work on his MOYL program.

Martindale's first game show was NBC's "What's This Song" in 1965; he said the network made him change his name.

"They thought 'Wink' was too juvenile, so I became Win Martindale for a year." As his television career soared, he became "Wink" again, hosting numerous shows between 1965 and 1998. His favorite? "Tic Tac Dough" — because it was on the air for eight years — the longest run in Wink's long career.

His favorite host other than himself? Bill Cullen. Which game show got him hooked to begin with? "Password" with Allen Ludden. Who are Martindale's media heroes? Arthur Godfrey, whom he calls the best salesman ever; Chicago legend Howard Miller, whose daily interviews he used as models for his own; and Art Linkletter, who hosted television's "House Party" and coined the phrase "Kids Say the Darndest Things" when Bill Cosby was reaching puberty.

About today's shock jocks, Martindale said "I don't agree with them, I don't approve of them, but I do defend their freedom of speech."

Favorite game shows of all time? "Jeopardy," "I've got a Secret," and "What's My Line." He's also a big fan of this summer's ABC hit, "Who Wants to Be a Millionaire." His advice for those who knowingly pass up bigger bucks in sales because they want to be on the air? "Follow your dream."

As for the future, he said he loves doing his radio show, and the challenge of coming up with creative ways to introduce the same songs. "I love the music, and I want it to feel like I'm playing every song for the first time," he said. Wink is currently working on several game show projects.

And how did he come up with "Wink?" It came from a childhood friend who couldn't pronounce his real first name, "Winston," and called him "Winkie" instead. He shortened it to "Wink," and the rest, as they say, was history.

■■■

Peter King is a reporter for CBS Radio News based in Orlando , Fla. Contact him via e-mail at pkingnews@aol.com

For more information on Music of Your Life programming, call Tammy Fink at (212) 947- 0049 in New York City.

Carlough Joins broadcastspots.com

Judy Carlough has joined the Internet media sales company **broadcastspots.com** as vice president, affiliate/agency relations.

Carlough previously served as executive vice president, national marketing for the Radio Advertising Bureau. She had been with the RAB since 1991.

Sennheiser Announces Promotion

Sennheiser Electronic Corp. has promoted **Lee Stein** to the position of Western Regional Sales manager, professional products.

Stein has been with the company since 1996. In his new position, he is responsible for all aspects of marketplace management, including the development and implementation of sales and marketing support for sales reps and dealers, as well as the development of sales strategies to grow market share for Sennheiser, Neumann mics, D.A.S. Audio loudspeakers and Chevin Research amps.

RAB 2000: Internet, Buyers' Needs

▶ RAB, continued from page 33

New this year will be a block of sessions devoted to Hispanic broadcasters. Cornils said the RAB has been aware for some time that the Hispanic area of the radio industry is the most rapidly growing single area, and that this was a clear opportunity for RAB members.

Radio revenue

According to Interep, ad revenue targeting Hispanic consumers in the United States has grown 60 percent since 1995, reaching $1.7 billion last year, or 26 percent of total radio ad revenue. And Arbitron reports that Spanish-formatted radio receives a 6.8 share of all measured formats, according to the latest radio survey available, summer '99.

"The census will be our emphasis at RAB 2000," said Laura Hagan, president of Katz Hispanic Media and a member of the planning committee for the Hispanic block of sessions.

"Radio is an important part of getting the Spanish-speaking community to participate. We'll help radio stations to understand how they can do this," Hagan said.

Hagan also said people in the Hispanic community are afraid of government agencies. "Our radio stations are trying to make it easier to build up the trust factor through public appearances and promotions by radio personalities who are known in the community."

Dr. Kenneth Prewitt, director of the U.S. Census Bureau, has been invited to speak to the Hispanic groups at RAB 2000.

To appease RAB members who have requested that the annual conference offer workshops before breakfast and after dinner, RAB 2000 will offer workshops that begin as early as 6 a.m. and as late as 7 p.m. Rhody Bosley, a partner at Research Director Inc, will present his company's in-car listening survey data at one late-night session, while Irwin Pollack, president of Broadcast Sales Intelligence, will present "Ruthless Rules of Doubling Your Sales Staff" at a 6 a.m. workshop.

Cornils said requests for the longer workshop day are understandable given that people attend from many different time zones. Denver is two hours behind Eastern Standard Time, and one hour ahead of Pacific Standard Time.

"And this year, we have a delegation of 35 people from Sweden attending," said Cornils. That's in addition to about 275 other international guests who will attend.

"Every year we add about 50 more international guests, and this year we have exactly 50 more overseas guests than in '99."

Advance registration for the conference has been brisk.

"It is running at twice last year's pace. As of Dec. 31, we were just about even with last year's entire registration — almost two months before the conference," said Cornils.

The exhibition area, which will be the largest space ever provided for an RAB conference, was completely sold out by the end of December. (See sidebar for selected exhibitors.)

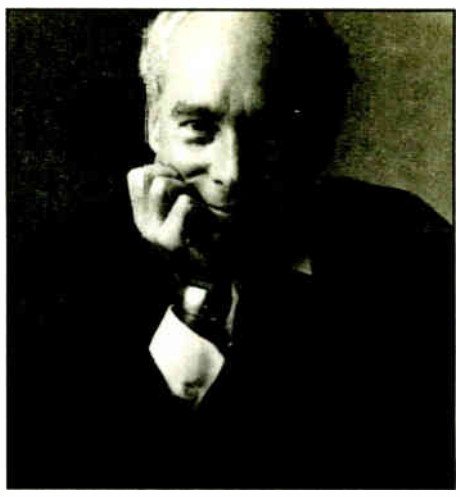
The setting of this year's conference, Denver, inspired RAB to help its members take advantage of the excellent ski facilities nearby. Attendees will be able to ski at Snowmass or Aspen for the two days following RAB 2000 at a special rate reserved for RAB members. President's Day conveniently extends the weekend when RAB 2000 concludes.

There will be daily aerobics sessions and golf and tennis workshops as well.

Doyle's Den will be a prominent feature at the RAB 2000 conference. Named in honor of Doyle Rose, president of Emmis Broadcasting and chairman of RAB 2000, Doyle's Den will be an informal gathering place that will open each evening for the conferees to relax and network with colleagues.

Gale Stephens, conference coordinator of the RAB, is accepting advance phone registration by phone until the day before the conference at (800) 917-4269 or online at *www.rab.com*. Fees are $595 for RAB members and $995 for non-members — the same price as last year's conference, and discounts are available.

For every 10 staff members registered, companies will receive one free registration. And there is a general manager's discount: Each registered GM's fee will be reduced by half, provided the GM's company also registers a full-price staff member.



Peter Glen

Radio is an important part of getting the Spanish-speaking community to participate.

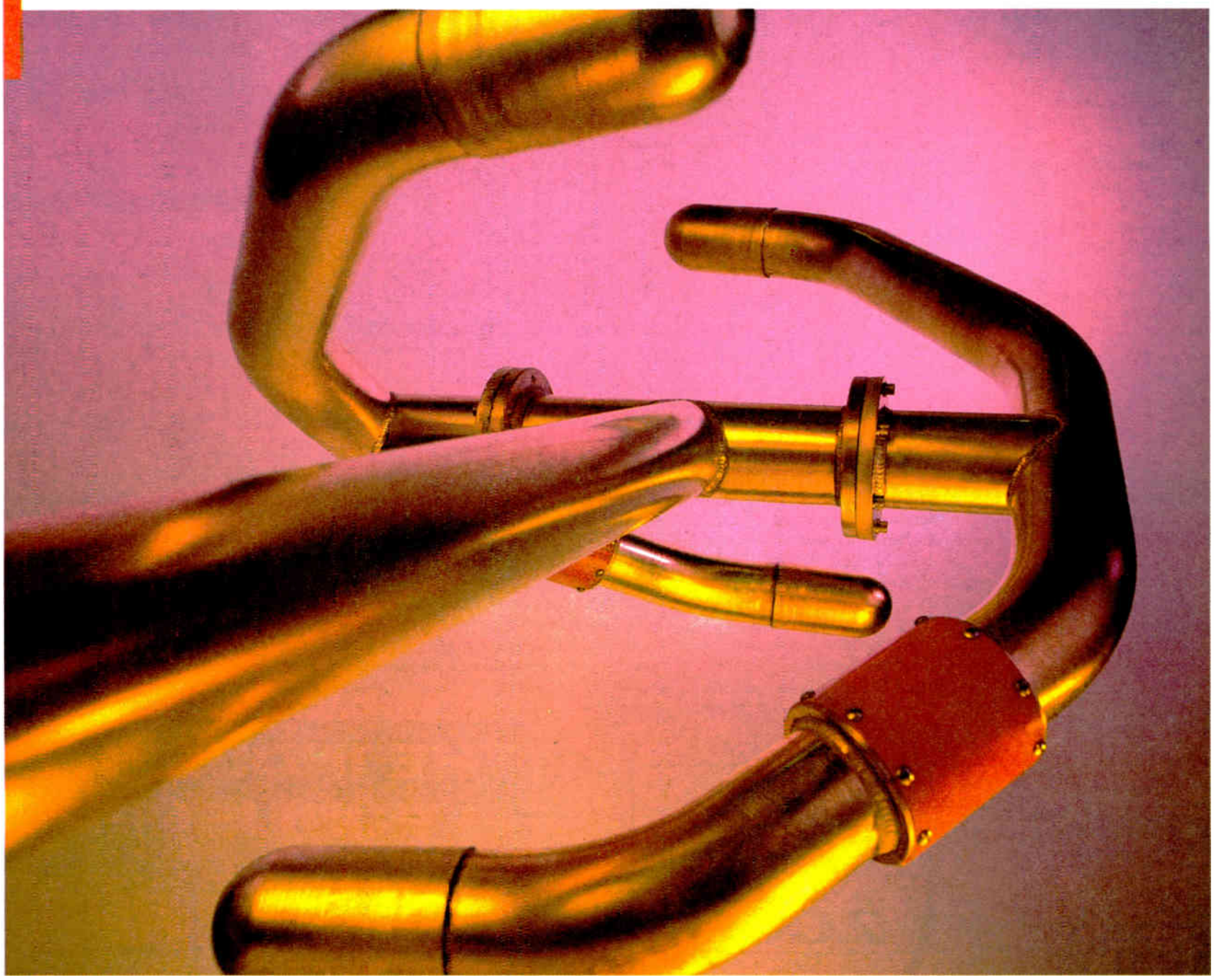
— Laura Hagan, Katz Hispanic Media

RAB 2000 Exhibitors

The following is a sampling of exhibitors you will find at RAB 2000 in Denver, Feb. 16-19. See the official show information on site for a complete list.

$2.95 Guys
Access Broadcasting
Airdate by TPI
America List
American Media
Arbitron/Tapscan Worldwide
AVI Communications
Birschbach Media Sales & Marketing
Broadcast Products
BRg Music Works
BroadcastSpots.com
Buymedia.com
BuySellBid.com
CBSI/Custom Business Systems Inc.
CareerLink.com
CoLearn.com (Center for Learning)
Columbine JDS
Datacount Inc.
ewireless
First Internet Media
Global Media
Hungerford, Aldrin, Nichols & Carter
International Gameco
International Strategies Holding Corp.
KD Kanopy
Kaplan Career Services
Mad Dog Wireless
Magnitude Networks
Marketron
Maxagrid International Inc.
The Media Audit
Miller, Kaplan, Arase & Co. CPA
Mondial Media Nets/Marketing
Multi Dimensional Marketing
NBG Radio Network
National Association of Broadcasters
National Media
The Omni Group
P–3 Sports Guides
PopMail.com
Radio Advertising Bureau Store
Radio Profits
RadioWave.com
Reef Industries (Roll-A-Sign)
Research Director Inc.
SCA Promotions
Strata
Talk America Radio Network
Target Positioning
TOMA Research
Traffic Station
uclick
UncleWebster.com
Voice Trak
Warpradio
Web Presence

Cultivate new listeners.
Harvest expanded markets.



The new Skytiller™ FM antenna, available exclusively from Harris, lives up to its name by taking the basic "rototiller" antenna to higher levels of performance and durability. We designed the Skytiller with signal improvement in mind, so you get all the ERP your license allows. A low-cost, optional fine matcher makes fine-tuning for minimum VSWR and maximum signal performance a snap. Wide bandwidth not only ensures maximum performance of SCAs but also enhances IBOC transmission. Plus, the Skytiller is ruggedly built for years of use. Exclusive construction provides increased mechanical strength, reliability and weather protection. And a DC stub comes standard to improve lightning protection at no additional cost. Every antenna also comes with Harris' unrivalled RF experience and service expertise. Want to nurture customers and grow your markets? Start reaping the benefits of Skytiller today.

Skytiller antennas come in a variety of configurations to fit your needs.

next level solutions

WIRELESS

BROADCAST

GOVERNMENT

NETWORK SUPPORT

1-800-622-0022 ▪ www.harris.com

HARRIS

Studio Sessions

Radio World — Resource for Radio Production and Recording — February 2, 2000

Win2K: Developers Eye New OS

Carl Lindemann

In the Jan. 19 issue, we looked at how the design of Windows 2000 (Win2K) overcomes latency, a major issue in using Windows as a real-time production platform. Though Win2K will be superior to older Windows platforms, it is obviously new, which raises other issues.

One question surrounding the introduction of any OS is the availability of driver software. Potential early adopters of NT had to wait for programmers to write appropriate drivers to make the hardware work. Particularly, support for MIDI devices was problematic.

Mike Winter, software engineer for Sonic Foundry, sees it as an inevitable part of the upgrade process.

He said, "The driver issues will not go away. Hopefully, the peripheral manufacturers will improve the NT/2000 support. Users should check manufacturer Web sites for driver updates and FAQs."

The introduction of Win2K has a major advantage over the introduction of NT.

Chief Technology Officer for Cakewalk Ron Kuper said, "Windows 2000 will support Microsoft's new Win32 Driver Model (WDM) specification, currently available in Windows 98 SE. WDM is a single driver standard for all Windows platforms and has an indirect benefit toward increased driver availability. Hardware vendors will only need to develop a single WDM driver and its code to run on Window 2000 and future versions of Windows 9x. WDM addresses limitations in the NT multimedia architecture, which means latency should be much improved."

Mike Guzewicz agreed. Guzewicz is the manager of software development in the E-mu/Creative Tech Center. He said, "The common driver model between 2000 and the new version of '98 is the big thing. A lot of vendors will start putting more emphasis on the WDM drivers because they are 'killing two birds with one stone' and the newest computers are supporting them. You might find more support for those drivers, than support for the legacy NT4 kernel drivers and the 95 VXDs (the earlier driver model for Win9x)."

Not everyone in the Microsoft camp is jumping on the Win2K bandwagon. Not yet, anyway.

Jeff Wilson of Minnetonka Audio Software

Microsoft

Microsoft Windows 2000 Professional

The Reliable Operating System for Business

Bob Lentini, president and CEO of Innovative Quality Software, will wait before redirecting his energies to developing a Win2K version of the SAW. He said, "I decided to concentrate on NT which I hope will be around for at least another two years or so."

Problems and priorities

COO of ZH Computer Inc., Dave Sadler, does not see Win2K support as a major priority or problem for DARTPro98, a digital audio restoration package.

He said, "It does not seem more difficult or different than moving from Win95 to Win98. In that case, there were minor changes to be done.

"The biggest part is retesting the software, which is mostly tedious and time-consuming. We have been supporting NT for a couple of years. There doesn't seem to be any issues that we haven't dealt with."

Jeff Wilson is the director of marketing for Minnetonka Audio Software, the company that creates Fast EDdit and MxTrax. He said, "We will wait for consumer demand before offering a Win2K version of MxTrax. We haven't heard our customers talking about going to 2000. The big debate seems to be whether to stick with 95 or move to 98. Windows 95

See WIN2K, page 47 ▶

PRODUCT EVALUATION

Hafler Creates Full Sound

Rick Barnes

I received two Hafler TRM6 self-powered near-field monitors and the TRM10 self-powered bass reflex unit. With the near-fields and the sub, this speaker system is "too good" as one of my fellow reviewers said.

Half of a Pair of TRM6s

The TRM6 lists for $625 each and TRM10 sub lists at $695.

The TRM6 frequency response is 55 Hz to 21 kHz +/-2 dB with an output greater than 119 dB-SPL. The woofer is 6.5-inches and the tweeter is a one-inch Vifa soft dome. The internal amplifier produces 35 W on the highs and 55 W on the lows.

The TRM10 amplifier produces 200 watts. The speaker is a 10-inch cellulose fiber cone with a two-inch

See HAFLER, page 45 ▶

PRODUCT EVALUATION

Digigram Card for Road-Ready DAW

Carl Lindemann

The latest Digigram PC Card soundcard, the VXpocket, is a welcome arrival on the hardware scene. This new card is a stripped-down version of the original PCXpocket.

The PCXpocket was a showstopper, but all the bells and whistles came with a hefty $1,500 price tag. The VXpocket retains the audio quality, but sacrifices the digital signal processing and SMPTE input. The result is a soundcard for the laptop that lists for $729, but can be purchased on the street for around $600.

The VXpocket comes with a rather octopussian six-connector cable. Balanced analog audio connections are made through a pair of XLRs. The digital I/O is through two RCA S/PDIF connectors.

Initially, I was concerned there was an inherent problem with any audio PC card. What would happen if someone accidentally snagged the cables? The cables make the card vulnerable.

I raised this concern with Digigram officials before the product was released. Since the PCXpocket was introduced, only a single card has been known to suffer from cable abuse. However, a few people have damaged the cable.

Besides being more durable than it appears, the VXpocket cable includes two support screws to distribute and deflect the force of such an accidental tug on the cable. It does not make it idiot-proof, but they will have to invent a better idiot before this becomes a real problem.

Win and Mac-friendly

The card crosses platforms. It will work both in PC laptops and Apple PowerBooks — the iMac does not have a PC Card slot. Support for Windows includes 95/98 and NT platforms.

The lack of DSPs could have been a problem back in the era of slower laptops. With today's laptops rivaling desktop power, most any Pentium II or PowerPC class machine has enough horsepower to manage the processing demands.

The only limitation comes from being confined to two channels. A second card cannot be synched to turn a laptop into a four-track recorder. For most radio applications involving remote laptop production, this is a minor point.

The VXpocket and the PCXpocket are not as quiet as the 110 dB 24-bit soundcards that are widely available. The unit offers 24-bit recording up to 48 kHz, but the modest 94 dB signal-to-noise ratio is mostly a function of the tiny form factor involved. How much filtration can be placed on the PC card circuit board?

The idea is not to replace the desktop DAW, but to take a DAW on the road. The overkill in S/N rating will hardly be missed outside of the quietest studio environment.

The VXpocket is likely to be quieter than any makeshift recording space.

The band, man

Besides testing the VXpocket on voiceovers, I tested it on a local rock band playing in a small club. I used a Pentium 233mmx laptop with 144 MB RAM and SAW32 multitrack software from IQS. The two-track stereo mix was taken directly off the production board with a backup going to a portable MD.

The MD recording was fine, but the VXpocket captured a more three-dimensional sound at 44.1/16. There was a depth and a presence or "musicality" lacking in the ATRAC-compressed MD.

I am a fan of MD for newsgathering, but the limits of the format were clear here. The VXpocket turned a modest laptop into a hard disk recording system.

Where does the VXpocket fit into the bigger picture? It cannot be used as a recorder replacement, because it is simply not practical to run around with a mic attached to it.

In other situations, it can take the place of a field recorder, such as covering events with a multi-box like council

See VXPOCKET, page 46 ▶

Radio Brings Out Colorful Types

Alan R. Peterson

"Why do the nuts always seek us out?"

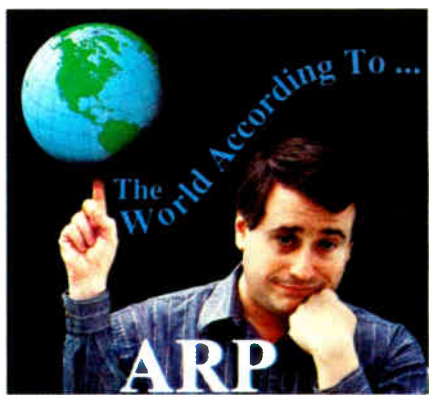
If I had a cookie for every time a jock asked that question, I would be Ernie Keebler. To a great extent, they are right on target — Why do the nuts seek us out?

I don't mean persistent fans or steady listeners, I mean the real troublemakers. The ones that bombard us with phone calls, send suggestive pictures through the mail, find our home addresses, follow us to remotes and crowd the mic, tell us what we should be doing or playing on the air and get belligerent at the worst possible times with unpredictable outcomes.

Radio would not be the fun job it is without hot and cold running lunatics making our lives interesting. They could even be on the same side of the microphone as you are or just out there in listener land. They can be mildly irritating, outright obnoxious or lethally dangerous in some cases. They are out there, and they have you under their microscopes.

What is it about radio that draws these folks out into the open? It is a small comfort, but most creative occupations have its share of kooks that are, shall we say, a few degrees off their proper phasing. Actress Kathy Bates was an example of the writer's worst nightmare in the movie "Misery." Late-night TV host David Letterman found out how difficult it was to keep his personal life intact when a fan kept breaking into his home.

You don't often see furnace repair technicians or cabinetmakers fielding calls from groupies or contest



hogs. Those would have been wise career decisions, but lucky us, *we picked radio.*

That one small misstep in our career path set us up for endless encounters with people so loopy, we could not have even invented them for a morning comedy bit.

Am I the right caller?

Let us start slow with the contestant from hell, the listener that is always trying to be the 10th caller.

This person waits by the radio and speed-dials the station every half-hour, no matter how feeble the prize. He or she calls up during the segue between songs because that is when you play the secret sounder.

Often, it is a random call to say, "I thought I heard the contest sound. What caller am I?" The contestant from hell will stay home from work all month, poised like a hawk over the phone, in hopes that today is the day they hear "American Pie" for $100,000.

The contestant from hell goes to all the remotes and begs you for "another T-shirt for my kid … he's a double-XL."

See ARP, page 47 ▶

Powered Speaker System Rocks

▶ HAFLER, continued from page 43

four-layer voice coil and a 30-ounce magnet. The frequency range fills in the 27 Hz to 110 Hz region where the low end lives.

The secret to this system lies in the downward facing woofer that can be placed anywhere in the room. The bass and fullness added to the sound is astounding.

To properly evaluate this speaker system, I took it to two different studios. The first was the home recording studio of my friend Charlie Garrett. The second was John Burr Productions in Bethesda, Md.

The intent was to compare the Hafler

The TRM10 sub completes the system.

TMR6 and 10 to the speakers already in place at both studios. Charlie has a pair of JBL 4410 monitors on the far wall and a pair of Alesis Point 7 units as nearfields. A pair of Audiotone 5PSC speakers is used as the main monitors at John Burr Productions, because most of the product from the studio ends up on car radios and boom boxes.

"The only problem with these speakers is that they are too good," said producer Charlie Garrett once we set the new Hafler powered speaker system up in his home recording studio.

John Burr and recording engineer Frank Brown both expressed similar feelings when we tested these speakers in the new voice-over recording studio.

Although a technical booklet came with the nearfield monitors and another with the bass reflex speaker, neither offered directions on how to wire the entire system up to the control board.

I called Hafler technical support and found out that the company intentionally does *not* include a wiring configuration, due to the diverse applications in which the speakers can be used. However, they told me that the booklet will include a wiring diagram in the future.

Some consoles offer internal crossovers with separate outputs. The consoles I was working on did not. Charlie and I came up with our own system, which seemed to work with no problems.

Because we wanted to compare this speaker system to other unpowered house speakers, we kept those connected to the main output. The Haflers went to the studio outputs of the control board, connected with Y-cords to the nearfields and the bass reflex speaker.

The nearfield monitors and the bass reflex cabinet can accept either balanced XLR or unbalanced RCA line-level input. On the bass cabinet, the inputs are marked Signal In. I do not believe that inputs are meant to chain two subs together.

When I described to the tech support person the method Charlie and I used to wire the speakers to the control board, he said that our Y-cord method was acceptable and innovative. This same configuration was used when I took the speakers to John Burr's studio.

Mark W. Hill and Steely model the speakers in a studio.

At Charlie Garrett's studio, we listened to a variety of music. The selection that really put a smile on our faces was the Camille Saint-Saens "Organ Symphony." Symphony No. 3. The reproduction of the organ's bass pipes and orchestral string basses through this speaker system was incredible.

At Burr's studio, Frank Brown and I listened to a number of voice-over demo CDs and some commercials produced at Burr Productions.

With the first demo CD that Frank and I put on, I noticed a smile on Frank's face. The bass reflex cabinet gave an extra fullness to the sound. Frank said, "Man, I'm hearing notes I've never heard before."

The nearfield monitors also sound excellent by themselves and were comparable in sound to Charlie's Alesis Point 7 monitors.

The sub's rejection of higher frequencies is excellent. Charlie and I turned off the TRM6 near field monitors and all that we could still hear was the *thump-thump-thump* of the bass without any upper harmonics or pitches.

The TRM6 and TRM10 use a proprietary mounting system called MEHSA, for Maximum Efficiency HeatSink Application. Hafler claims this is five times better in transferring heat from FET components.

The multilayer MEHSA insulated metal substrate spreads heat both downward and outward, allowing devices to quickly dissipate heat across the heatsink.

The units allow the signal to pass through the amplifier at low voltage in a process called "Transconductance Active Nodal Amplifier" or "Trans-*ana*." It is an extended frequency bandwidth that is supplied to the output stages of the amplifier that makes amplifier performance highly stable and linear.

Hafler uses MOSFET components in both the power supply and output stages of the amplifier. The amplifier has a low output impedance and increased wide bandwidth linearity.

The backs of the TRM6 has a series of DIP switches for changes in bass shelving. Charlie and I experimented with them, as did Frank Brown at Burr's studio. We all agreed that changes in these switches caused no noticeable difference in the tone of these speakers. Hafler said the switched change the response in 2 dB steps and some engineers have asked for switches that change in 1 dB steps.

John Burr and Frank Brown felt that this speaker system had too much bass for accurate monitoring of their commercial production. The bass response can be easily altered by lowering the output of the TRM10.

I noticed that when I turned the sub off, the TRM6s sounded a little flat — almost as if a high-pass filter was turned on.

If the situation calls for extended listening to full spectrum audio, the Hafler TRM6 powered nearfield monitors in conjunction with the TRM10s powered sub-woofer are great speakers for the studio.

If louder and deeper speakers are needed, Hafler also makes the TRM8 powered nearfield monitors with eight-inch woofers ($825 each) and the TRM12 powered sub-woofer that lists at $795, with a 12-inch driver in a 6th-order vented alignment system.

■ ■ ■

Rick Barnes, CBRE, is a studio engineer with the Voice of America and a Ph.D. candidate in communications technology.

Product Capsule:
Hafler TRM6 and TRM10 Speaker System

Thumbs Up
- ✓ Accurate full spectrum sound
- ✓ Excellent for applications requiring a lot of bass

Thumbs Down
- ✓ No management (crossover) for entire system
- ✓ Full range is overkill for mixing commercials
- ✓ No clear wiring instructions included

For more information call Hafler in Arizona at (888) 423-5371 or check out the Web site to take a virtual reality tour of the speakers at www.hafler.com

PRODUCT EVALUATION

Unique Design for Headphones

Carl Lindemann

The Sennheiser HD 270 closed-ear headphones are the latest from what the company calls its "BioNetic" line.

The HD 270 is a decent set of cans for all-around use. It is a fine performer in the studio and in the field, but in electronic news gathering (ENG) use, I would call its performance average.

A good pair of consumer headphones should be like ultra-nearfield monitors. Comfort and clarity are essential to keep listener fatigue to a minimum.

Using headphones in the studio and for ENG applications means it should be more a combination of monitors and soundproofed studio. Closed headphones are crucial for eliminating feedback and getting a sense of what the field recorder is picking up.

The HD 270s are circumaural, meaning they reach around the ears with the cup sealing against the head. The heart-shaped cups are quite comfortable. Weighing only eight ounces, they feel light on the head. Unlike open-ear designs, the sealed design offers little chance for leakage and subsequent feedback.

According to the company specs, the frequency response reaches down to 12 Hz and all the way up to 22 kHz.

Listening to a variety of material showed the HD 270 delivered the goods — crisp clean highs, solid midrange, and nice tight bass response. They did not quite have the same musicality of the pricey Sennheiser Hi-Fi models, like the 580 and 600.

In the field

Going beyond the intended use of the headphones, I used them in the field with a Sony MZ-R55 portable MD recorder.

Sennheiser HD 270 Headphones

The real test for an ENG headphone is how it rejects external sound and provides enough volume. The HD 270 was an adequate, though not stellar, performer.

One problem with consumer recorders is the headphone output sometimes is low. Perhaps, in an effort to avoid hearing damage, some companies trim back levels from the headphone amp. The HD 270 could generate only moderate sound levels with the volume all the way up.

The "BioNetic" design refers to the larger ear cups and curved headband for a better fit, but the headphones have a downside.

While comfortable, covering the ear makes a larger area that has to be soundproofed. Gathering sound at a noisy conference with the HD 270 could be problematic. The leaking noise competes with the recorder headphone amp.

If fed by a *pro*-field recorder with a higher output headphone amp, I believe the HD 270 would perform better than it did with the MD deck I had.

The list price of $150 is higher than other headphones targeting the same market. However, these are designed with easy-to-replace parts like ear cushions and cables.

With a pair of phones as light as these, it is easy to forget they are on your head until the cable is pulled out. With most cans, it is frustrating to solder micro-components back onto the cheap tinsel wire inside the cable. This leads to one simply throwing the phones away.

The modular construction of the Sennheiser HD 270 offers a better, easier fix that makes for a better long-term investment.

Product Capsule:
Sennheiser HD 270 Headphones

Thumbs Up
- ✓ Clean sound
- ✓ Comfortable and light
- ✓ Modular — parts easily replaced

Thumbs Down
- ✓ Low output
- ✓ Isolation for ENG only average

For more information contact Sennheiser in Connecticut at (860) 434-9190 or check out the Web site at www.sennheiserusa.com

Lower Price for Soundcard

▶ VXPOCKET, continued from page 44

meetings and political events. Use the word processor to take notes, while the laptop is recording.

The advantage over any other recording medium is obvious. Instead of transferring audio from DAT, MD or cassette into the DAW, it is already digitized and in the computer on the first pass. If time is a factor, cutting out this bottleneck is crucial.

The finished production can be done in the laptop or the data can be dumped into a DAW by an Ethernet card. The latest generation of laptops can compress the audio into high-quality MP3 files for online delivery.

With the explosion of online audio, production can become decentralized to match the new medium. Producers can gather audio directly with a VXpocket equipped laptop, or feed DAT or MD sound into it.

The VXpocket is not intended to transform a laptop into a DAW desktop replacement. It allows for bringing most of desktop capabilities to the field or home.

The VXpocket may not be a desktop killer, though some might find it is a reasonable replacement. It does offer a greater flexibility.

While the PCXpocket already offered this and more, the lower price of the VXpocket brings these capabilities within the reach of more radio producers. Instead of being a luxury, it is a cost-effective tool.

If there is a DAW in the facility you work in and someone is thinking about adding a second DAW, consider a portable VXpocket-powered DAW instead.

Product Capsule:
VXpocket by Digigram

Thumbs Up
- ✓ Portability
- ✓ Reasonable price
- ✓ Cross-platform compatibility

Thumbs Down
- ✓ Lower signal-to-noise ratio

Digigram products are available from select broadcast and pro audio distributors. Check out the Web site at www.digigram.com

Win2K Raises Driver Issues

▶ WIN2K, continued from page 43

version C seems to be especially up-to-date and stable. Most people see no advantages, and are especially cautious about new software wondering if all the bugs have been sorted out."

Others are less than enthused at the prospect of following Microsoft's lead.

Jim Fiore, owner of Dissidents, originally developed Sample Wrench for the Commodore Amiga computer, then began developing for Windows 95. Given Microsoft's track record with past product releases, he said, "My concern with Win2K is how buggy it will or won't be. An OS this size is not trivial. Think of all the things in it that the average musician will not need."

Fiore wonders if the new OS complexity is right for pro-audio users. He said, "Most musicians buy computers so that they can play around with music. They have no desire to become computer gods.

Stephen Scheffler of Steinberg

In such a case, the old axiom 'keep it simple' is good to live by."

Inevitably, discussions of Win2K will eat up bandwidth as Windows and Macintosh aficionados argue the merits of the new OS online.

Will Win2K settle the ongoing debate over what is the best production platform?

Project manager at Steinberg, Stefan Scheffler, has a stake in both camps with Cubase VST/24 and takes an evenhanded attitude.

Scheffler said, "This old question can't be answered until Windows 2000 ships. That has been delayed for months, not necessarily a sign that it will overtake an available and mature operating system, but maybe it will."

For Scheffler, the success of the new platform in audio is peripheral. He said, "Windows 2000 has a lot of potential. Microsoft's main focus is the enterprise market however. This market has different requirements than a media production/authoring system," he said.

Even in the new millennium, it may be that sizing up Macintosh to Windows is no better than comparing apples to ... PCs.

Ron Kuper of Cakewalk

Just Who Are You Calling a Nut, Man?

▶ ARP, continued from page 44

He or she racks up so many restaurant gift certificates per ratings book that the inside of a supermarket is probably a distant memory.

When advised of the 30-day prize cycle, this listener will call in using a maiden name or a dead relative. The address is always the tip-off.

This type is annoying, but rates fairly low on the Kook-o-meter, unlike the Rude-Mouthed Request Machine (RMRM). This one can really get under the skin.

Could you play ... ?

An RMRM will call in a request that is either impossible to get, completely out of the format or was just played. They call us back immediately and curse us out when they don't hear their selection next.

They resort to guilt "Can you play 'Ballad of the Green Beret'? My brother was killed in action 27 years ago tonight"; or competition "Hey, the guy who was on before you always plays my songs;" or comparative musical styles "Man, what's that **** you're playing? Put on some Alan Jackson!"; or memory tests "Remember me? I won the T-shirt and gift certificate at the remote. Couldja play me a song?"; or whining, "Why don't you play 'Free Bird' anymore? You always did when I was 13."

When an RMRM does not get their way, they let you know with a barrage of potty talk directed at you, your mother, your car, your cat and your station. When liquor is involved, the language is usually tinted a lot bluer and the threats a lot more graphic, so weekenders and overnight jocks be warned. At this point, I am usually concerned for my safety.

Oddly, the RMRM never calls in during the request hour, when listeners are invited to call the shots. Which brings me to groupies.

Ahh, yes ... the motivation behind many a younger man's desire of getting behind the mic: the adulation of the ladies in the audience. What a drag if your first job out of college is at a Big Band/Nostalgia AM station and the groupies are in their mid-70s.

I won't belabor the details on this category, as I approached it last year in **RW** ("Are You Busy After the Show?" June 23, 1999), but I will warn you that seemingly innocent fans have the power to destroy marriages, ruin jobs, annoy the boss and screw up your ability to do a good show.

What appears as a harmless diversion after the show quickly fills your life with apprehension and dread. This is another case of "the nuts seek you out," but the power is yours to keep anything from developing.

Did it ever happen to me? (Cough) Of course not. Don't be silly ...

One of our own

Now and again, one breaches the line and ends up working at the same station you do. We all have tales of that one overnight jock that flipped out and trashed the kitchen, or took the station's van to the doughnut shop in the middle of the shift. I've known several such colorful characters in my career.

We were always too scared to pull the reins on this guy for fear we would hurt ourselves or be branded a "snitch." Usually, management took care of the situation, with the troublemaker ending up at another station in town.

I could never figure out why nobody ever called *them* and drove *them* nuts during *their* shift. Nobody ever followed them home or threatened them. Nobody ever bugged them for one extra shirt or CD at the live broadcast.

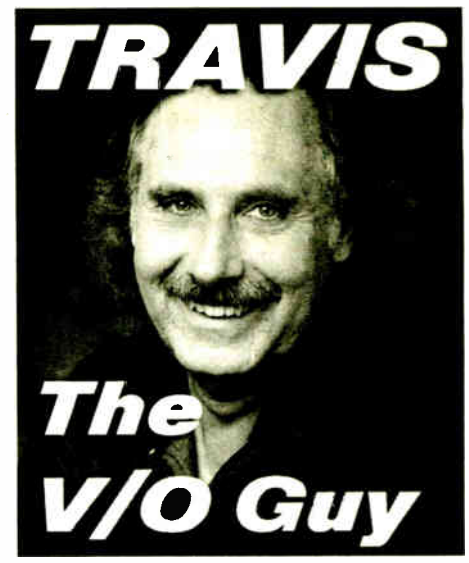
I think the problem was not enough groupies.

■■■

Alan Peterson keeps things glued together at Fairfax Public Access Corp., Fairfax, Va.

Reach him via e-mail at peterson@fcac.org

Setting Up a Voice-Over Web Site



Travis

In my last article (**RW**, Jan 5), I discussed how the Internet is becoming a necessity to voice performers.

In the last few months, several voice artists have asked me how to set up a Web site with their demo on it. The Web is the most efficient way to distribute a demo. Anyone, anywhere in the world with an Internet connection can play a demo online, instantly. Voice-over professionals are noticing Web sites can lead to new business.

Considering that a Web site does not cost much, a site is priceless. I've had my Web site for almost five years. It has brought me work, and I expect it to bring more work as more people log on.

It is not a requirement to be a "techie." I know several performers who did not have a computer a few years ago and have set up their own site.

If you have never attempted to set up a Web site, at first the process might seem difficult. Remember the first time using a computer and learning how to "surf the Web" might have seemed a bit challenging.

Tools

There are three tools needed to set up a Web site.

The most obvious is a computer with an Internet connection. If you have a PC with Windows 95 or Windows 98 or a Macintosh, and are already surfing the Web, you probably have all the hardware and software needed.

You will need an Internet service provider (ISP), which is the company that provides the connection from the PC to the Internet, such as AOL. If you have a computer and are surfing the Web, you already have the two of the tools.

You will also need an Internet hosting service, which is a company that places the site on the Internet. The company is known as the Internet server. The server links the individual Web pages to the site.

Most ISPs provide some hosting services as part of the basic service. For instance, if you are using AOL, you already have a free Web site available as part of the basic AOL service package.

If your ISP does not provide a hosting service, there are a number of companies providing a free Web site, in exchange for an advertisement to the site.

There are several terms you will need to be familiar with.

Storage Space is the amount of disk space available on the hosting service's computer. Saving a Web page on an Internet host takes up space on the host's hard drive.

Web sites are usually limited to a certain amount of storage. On AOL, for example, each screen name is limited to two MB of storage.

Data Transfer is the amount of data that can be downloaded or transferred. Most hosting services limit this, and if exceeded, the hosting service could either charge you or stop allowing it until the next month.

Storage

Sound from the Web site needs more storage space and will transfer more data than a typical graphics and text site. A minute of audio could use up that two MB, depending on the storage device. Different compressions use different amounts of space. Mono should use half as much space as a stereo.

It is good to find out these limitations to make sure you do not exceed them, even though you probably will not.

HTML stands for hypertext markup language, which is the language or code all Web pages are written in. It is possible to set up a site without having to deal with HTML code. ISPs and hosting services should have programs allowing you to set up a site without ever seeing HTML code.

HTML is easy to learn, and knowing a little HTML code will make setting up and getting your voice-over demo on the site easier.

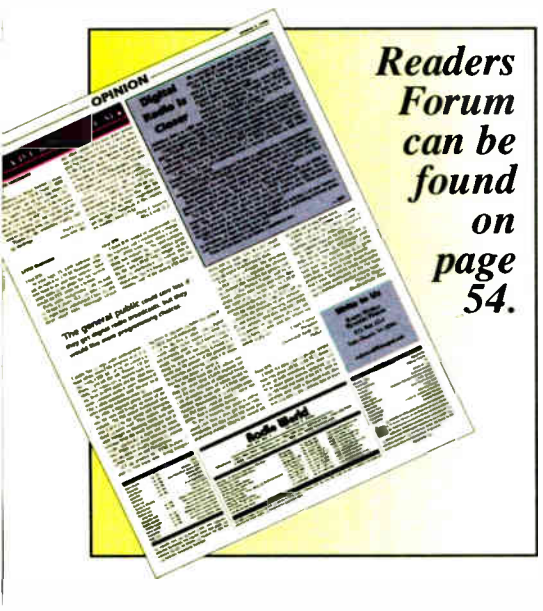
Authoring Software, such as Microsoft Front Page, helps you design and set up the site and page without using any HTML. Excellent authoring programs can be downloaded for free from the Web.

File Transfer Protocol (FTP) is the standard method for transferring data to or from a Web site. You do not need to know anything about FTP to create an effective site, but you will probably encounter the phrase "FTP" at some point when you are setting up the site. Many ISPs and hosting services allow for using other methods than FTP for getting your page on the Net.

In my next article, I will discuss how you use these tools and phrases to get your site up on the Web. I will then explain how to get "streaming" audio on your site, so that you can have your voice-over demo available on the Net at anytime for anyone to listen to.

■■■

Travis the V/O guy is a veteran voice-over artist writing from California. Send e-mail to vo-guy@voice-guy.com *or check out his Web site at* www.voice-guy.com



Readers Forum can be found on page 54.

Radio World

Broadcast Equipment Exchange

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

ACOUSTICS

WANT TO SELL

AMPLIFIERS

WANT TO SELL

Crown D-60 single rack space stereo pwr amp, $150. J Borden, 414-482-8954.

Custom built Altec-Lansing A323B monaural, pwr amp, push-pull 6L6 output tubes, BO, transformers worth over $350. M Crosby, 408-363-1646.

WANT TO BUY

Vintage bdct audio equip, RCA, WE, Altec, Harris, etc. E Davison, 561-287-8832.

ANTENNAS/ TOWERS/CABLES

WANT TO SELL

Collins Type 37 circ pol FM antenna w/de-icers, 97.0 MHz, working when removed, buyer transports from Central Indiana, $1000. B Tennant, 765-642-2750.

Shively 6810 3 bay FM antenna tuned to 90.7, new in 1991, BO. E Bremer, 425-742-4541.

Andrew L44-N _" connectors (8), new, $20 ea; Andrew 870R 1-5/8" connectors, $125/ea; EF Johnson 145-102-13 antenna switches, 40 amps, used, BO; various vacuum capacitors, fixed & variable, used, BO. C Bryson, 724-776-5204.

Scala 5 element Yagi, one ctr mount & one rear mount, both 106.5, $150/ea. C Marker, 906-249-1423.

Coax patch panel 3-1/8"-7 pole. Mike. 800-588-7411.

Dielectric 3-1/8" coaxial relay, Mike, 800-588-7411.

AUDIO PRODUCTION

WANT TO SELL

Sidekick subcarrier modulator, $800/BO. G Cassidy, 507-433-9650.

Spencer-Kennedy 308A vintage tube filter, rack-mount dual electr audio filter, 16 tubes, mil-spec built, vintage 2 band tube filter, gd cond, $350/trade. M Hugnes, 301-962-6823.

CRL DX1 dynafex NR system, like new, $150. P Stanton, 480-461-9609.

CRL SEP 400A 4 band spectral processor, like new, $400. L Mueller, 407-830-6398.

Optimod 8000A, gd cond, $850. J Ingram, 662-563-4664.

Sony VO5850, new heads, $1000. Bill, 973-773-3559.

Symetrix 528, rack space prod channel, mic pre, EQ, de-ess comp/limiter, $200. M Schackow, 605-374-3424.

Urei 565 Little Dipper EQ, $700; ADC Propatch 1/4" punchblock patchbays, new, $600 (many); 1.4" TRS patch cords like new, $15; ADC TT 144 point patch bays, recond, $149-229. W Gunn, 760-320-0728.

AUTOMATION EQUIPMENT

WANT TO SELL

Arrakis Digilink DL-DNA-2 automation system, complete, w/DL-CD-8SC CD controller w/8 Pioneer PD-TM3 18 disc players, $3500. M Gollub, 410-535-2201.

Arrakis Digilink III, extra SCSI drive for addtl 24 hrs record time, gd clean cond, $2750/BO. P Wolf, 941-458-3777.

Smartcaster automation systems (3), one in service, two w/switchers & one w/o, all units used in satellite automation, $4000/all. B Geyer, 304-523-8401.

Sparta remote control w/cable hookup & Sparta cart automation systems, BO. W Dougherty Jr, 573-998-2681.

WANT TO BUY

Automation System in good working condition that does live, live assist & auto. Also should allow front and/or back selling of songs, etc, must be reasonable. 616-873-7129.

BUSINESS OPPORTUNITIES

WANT TO SELL

SYNDICATE YOURSELF 1-100 MARKETS, US and Caribbean via satellite, airtime available now, call Mr. Ferguson 954-735-4070, www.ibnradio.com.

CART MACHINES

WANT TO SELL

BE 2100 Series stereo cart PB (3), BO; BE 2100 Series stereo R/P cart machine, BO. C Smith, 501-524-7194.

BE triple deck, gd cond, record mode, needs work, 200 carts free, $1000/BO. C Marker, 906-249-1423.

CD RESTORATION

COMPLETE FACILITIES

CONSOLES

WANT TO SELL

Auditronics 200 Series on-air console w/4 mic inputs, 14 stereo line inputs, CRM, CSM, Tel, 2 stereo line outputs, mono line output, PEQ, LS8, 2 PS-60 pwr supplies, $2000/BO. J Clark, 208-356-2906.

Neotek Elite console strips, mic pres & other parts, includes great mic pre, EQ, etc, $850 ea; Neve JPEG avail & other Elite parts avail, will consider trades, M Hughes, 301-962-6823.

Webster Electric vint mic pres (4) tube w/2 band EQ, rackmount 2 space, pwr supply included, lo z & line ins, tubes nuvistors & a couple 12ax7 size tubes, 30+ yrs old, no rust or pit marks, very nice cond, $750 ea. M Hughes, 301-962-6823.

Neve 5116 24 input console w/V-Series EQ's w/20 input sidecar, TT patch bays, mic snake to preamps, direct outputs, comp limiters on ea channel, $35,000/BO; Neve 5432 8x2 table top mixer w/power supply, $3500. S Wytas. 860-953-2834.

Logitek 12 stereo mixer. Mike, 800-588-7411.

Soundcraft 600, 24x8, $3900; JL Cooper 16 trk automation, $1200. W Gunn, 760-320-0728.

WANT TO BUY

Soundworkshop 40 for parts. A Polhemus, 212-302-9010.

LIMITERS

WANT TO SELL

AKG C-3000, dual pattern condenser mic, never used, $250. D Meyer, 805-962-8273.

Optimod 8100A/1 & 8100A/XT2, 6/99 factory refurbed, $4250. D Brown, 910-455-9200.

Urei-JBL 7110 stereo pair, like new, $800/pr. M Schackow, 605-374-3424.

CBS Volumax, $400/ea; mint Urei 1176LNs, black, $2300; 1176LN silver, $1800; 1176 original blue/silver transformer I/o, $2300. W Gunn, 760-320-0728.

WANT TO BUY

Symetrix 528-E mic processor, must be in very good condition. D Meyer, 805-962-8273.

RCA BA-6A, 1 or 2. M Schackow, 605-374-3424.

UREI, dbx, Collins, RCA, Gates, Universal Audio. T Coffman, 619-571-5031.

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.

MICROPHONES

WANT TO SELL

Shure 565 gold mics (3), unisphere unidirectional, dual impedance, collectors item, in original boxes, never used, $150 ea. Frank, 401-274-1999.

EV 635L mics, $95; Altec salt shaker mics, $295/ea. W Gunn, 760-320-0728.

WANT TO BUY

Sennheiser MKH 416. H Hogan, 317-740-0022.

Ribbons, condensers, dynamics, tube 1950-1990. T Coffman, 619-571-5031.

TCA 4A-1, shaped like a box camera, 6"x6" square. L Drago, 203-230-5255.

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted. 615-352-3456, FAX: 615-352-1922.

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

RCA ribbon mics. W Gunn, 760-320-0728.

MISCELLANEOUS

WANT TO SELL

60 slot cart racks (2), 4 shelves ea, solid wood, $25/both +shpg. 203-840-5167.

Jennings HV vacuum capacitors, MLC1000 30 KV, CSVF500 12-500PF 15 KV. M Jones, 423-573-8670.

Motorola T1099A, KC peak deviation meter, a 7.5KC & 15KC switch, off/limiter, current/freq set, sero/dev, ant & osc jacks, missing power cable, $35; Motorola TA142, $30. W Dougherty Jr, 573-998-2681.

Audiometrics voice over booth on wheels w/XLR/phono inputs, 60x42x30, $1275 +shpg. J Baltar, 207-623-1941.

Infonics CSR 200 stereo reel to cassette tape duplicator, 4 copies per pass, $995. P Stanton, 480-461-9609.

Spectra Sonics 601 compressor, MONO, complete w/outboard controls & VU meter, schematic, brand new, $200; Allen & Heath "Mini-Limiter/Pro-Limiter" $50/BO. M Crosby, 408-363-1646.

WANT TO BUY

Broadcasting Yearbook, 1 yr old. E Davison, 561-287-8832.

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Recdgs, 228 East 10th, NYNY 10003. 212-674-3060.

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.

Yamaha NS10Ms, $295. W Gunn, 760-320-0728.

RECEIVERS & TRANSCEIVERS

WANT TO SELL

CDQ 1000 audio codec ISO/MPEG layer 2, gently used, $2000 +shpg. M Tait, 202-488-3905.

Dayton Industrial SCA AF-61 rcvrs (24), $50 ea/BO for all. G Cassidy, 507-433-9650.

McKay Dymek MK AM5 long distance high fidelity AM tuner, Solid State w/owners manual, top cover missing, in box, gd cosmetics, $325/BO; Heathkit BC-1A Am tube radio tuner, $35; Heathkit AJ-31 high fidelity FM tuner, $60/BO. W Dougherty Jr, 573-998-2681.

RECORDERS

WANT TO SELL

Marantz PMD-200 pro portable cassette deck, w/built in limiter, variable speed control, 2 speed motor, mic in, speaker out, battery check & more....works, but may want to replace belts, $35. W Dougherty Jr, 573-998-2681.

Otari ARS1000 (2) in gd cond, $125 ea. R Jacobson, 712-362-2644.

Otari ARS1000 in gd clean cond, $150/BO; Tascam 32 in gd clean cond, $750/BO. P Wolf, 941-458-3777.

Sony MDS-B2P/B4P PB MD (4), maintained by Sony, BO. C Smith, 501-524-7194.

Tapecaster 700P, BO; Tapecaster 700-RP (2), BO; Tapecaster X-700-RP, BO. Frank, 401-274-1999.

Ampex AG-440C (2) in gd cond, one needs brake adjustment, $2000/BO. C Marker, 906-249-1423.

Otari MTR-12, .50 inch, 4 trk w/CB-109 autolocator w/manual, $550; MCI JH-110 Series parts, call for availabilities. J Borden, 414-482-8954.

Sony U-matic top loading players (8) and a few recorders, $300/all +shpg. J Baltar, 207-623-1941.

Akai M7 Cross-Field head recorder, $100; Roberts portable recorder, mono, tube-type, take-off on Ampex 600 Series, $100; (3) Ampex 440/450 tube type PB electr w/o tubes, $200 ea; Ampex early recording monitor amp w/S-31A output xfmr & 5" Utah speaker, tube type, rack mount, $150/BO; AMPEX RESTORATION FREAKS!! – VIF tube replacements & adapters, VIG 1006-JFET replacement for 12SJ7, 12AX7 or 6F5 tubes, spec sheet avail, $16 ea. M Crosby, 408-363-1646.

ALL NEW!! Spotmaster TP1B tape timers, $175; CLOSEOUT Spotmaster TP1B cart winders, w/o pressure roller & timer, $25 +shpg; STL alignment carts C0031-FI (IEC), CO234-2-FI (stereo IEC), X1235-1-FI (3150 Hz Flutter), $25 ea. M Crosby, 408-363-1646.

New MCI 110C-2s, $1800; Scully 8 trk, $1500; new short MRL test tapes, $229 for 2", $79 for 1/4", all formats avail; Otari MX5050 Mk III-8, $3k; Otari CB110 remote, $300; CB116 locator, $550 (all for $3.5k); Tascam 85-16 w/locator, remote, dbx, $1800; MCI JH110B 8 trk w/locator, $2900; Akai ADAM new, digital 12 trk, $3500; Ampex ATR102 rebuilt 1/4", $4900, 1/2", $6400; Technics RS1500 isoloop recorders, $695; Otari 5050 2 trk, $695. W Gunn, 760-320-0728.

Scully 280B-2 w/servo motor in Russ Lang roll-around console, new record & PB heads & idler, $1100 +shpg; Ampex 622 speaker/amp in portable case, $200; portable case for Ampex 622 speaker/amp, case only, $75; Inovonics solid-state R/P electr for Ampex upgrade, 2 chnls, $100 ea. M Crosby, 408-363-1646.

WANT TO BUY

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

REMOTE & MICROWAVE

WANT TO SELL

Comrex 2XP Incoder, $450. Tom, 1-800-860-9771.

Marti RMC 2AXS & RMC 2AXT remote control systems. W Dougherty Jr, 573-998-2681.

Moseley ICU-1A isocoupler, 940-960 MHz, used, $150/ea. C Bryson, 724-776-5204.

REPAIR SERVICES

SATELLITE EQUIPMENT

WANT TO SELL

Microdyne 1100-PCDR (5) analog SCPC rcvr, works great, requires 70 MHz down converter, $400. L Selzle, 970-356-1310 x204.

15 KHz DAT card for Dart 384 sat rcvr, BO. C Bryson, 724-776-5204.

STATIONS

WANT TO SELL

Radio stations for lease in Virginia Beach VA. Looking for reliable broadcaster to lease one or both of our radio stations (1000W/1450, & 5000W/1550). Top market (over 1,600,000 people), with lots of income potential for right party. No tire kickers please. Ron, 757-496-6556.

Radio stations for sale (2)/Virginia Beach VA, (1) 5000(1550) W daytimer (nd) with plenty of upgrade potential; (1) 1000(1450), top 40 market, biggest city in the state, one consolidated well located transmitter site. Serious inquiries only. Ron, 757-496-6556.

TAPES/CARTS/ REELS/CD'S

WANT TO SELL

Audiodisc 10 - 10", 20 – 12", 3 – 16" in master shipping case, BO. M Crosby, 408-363-1646.

TEST EQUIPMENT

WANT TO SELL

Allen Dumont Labe Type 303-AR cathode ray oscillograph; Tektronix Type S61A oscilloscope, vertical type 3S76 sampling dual trace/hor Type 3T77 sampling sweep; Beta Scope 8519 non destructive thickness guage, mfg for Twin City Testing Corp by Lionel Electr Labs.; Sylvania Electric 29 tube tester & box of tubes, $400/BO. W Dougherty Jr, 573-998-2681.

General Radio 1606A RF bridge, as new w/cables & manual, BO; General Radio GR821A Twin T impedance measuring circuit, as new w/cable & manual, BO. J Nashmy, 201-384-0500.

Delta TCA 20 ext, 20 amp Tortol antenna meter, $600. M Jones, 423-573-8670.

Rutherford Electronics B7B Mod 2 pulse gen; model 36-616 CRT tester & rejuvenator, full color & B?W w/instruction booklet & case, $20; NRI Model 12 vacuum tube voltmeter, $30; Allen Dumont Labs made for WE type 2577-KS15586 oscilloscope, $45. W Dougherty Jr, 573-998-2681.

FS Tektronix 1720 Vector scope, like new, $1300; (2) Tektronix 1420 Vector scope, low hrs, ckt board & pwr supply, still shines like new, $575; (1) Tektronix 528A wave monitor, low hrs, very clean, $450. Bill, 973-773-3559.

Potomac Instruments HA-51 & AG51 audio gen & dist analyzer, $2500/BO. L Mueller, 407-830-6398.

Prime Image HR600 TBC, $950 +shpg. J Baltar, 207-623-1941.

Xedit 15P flutter & drift meter, recently calibrated, $125. P Stanton, 480-461-9609.

WANT TO BUY

Teac/Tascam MU4 or MU6 meter bridge, a rack mount, lighted 4 VU meter bridge. C Marion, 215-543-9873 or email at cj949@hotmail.com.

Potomac Instruments FL 31 .5 to 1.7 MHz, bandpass filter wanted. L Mueller, 407-830-6398.

TRANSMITTERS

WANT TO SELL

BE FM-1B 1 kW single tube FM xmtr, 8 yrs old in very gd cond, needs some minor repair. E Bremer, 425-742-4541.

CONSULTANTS

Continental 314-R 1 kW, gd cond, needs minor repair, 11 yrs old, w/manuals, $4500/BO. R Thompson, 606-785-3129.

Gates BC16 AM 1000W, complete but not running, buyer transports from Central Indiana, $500. B Tennant, 765-642-2750.

Harris BC10H 10 kW AM, 1090 KHz, $500/BO; RCA BTA-5U 5 kW AM in excel cond on 810 KHz, $3000/BO; Continental 831-D-2 2.5 kW FM in excel cond, no exciter, $5000. T Toenjes, 785-437-6549.

Harris MW1A AM, working when removed from service, $2500. M Jones, 423-573-8670.

McMartin 25M, 25 kW FM in gd cond w/spares, $18K. D Denver, 402-734-5521.

Collins 20V-3, currently on air, excel cond, many spare parts, avail in the spring, $3500. J Scott, 518-725-7175.

Harris MW-50-C 50K Watts 1983 AM xmtr, used since 1983, daytime use only, excel cond & ready to ship immediately, $25,000. J Weitzman, 202-682-3536.

Nautel Ampfet ND1 1 kW AM factory tuned to 1570 KHz in perfect cond, $8500/BO. R Miller, 808-572-5534.

Tepco J-340 (3), like new, 2 yrs old, $2000/ea. C Marker, 906-249-1423.

Various silver mica doorknob capacitors, BO. C Bryson, 724-776-5204.

Harris FM-25-K xmtr. Mike, 800-588-7411.

McMartin BF-10K 10 kW FM, factory rebuilt, in perfect, like new cond, includes new tubes, tested & tuned on your freq. Guaranteed. Adjustable from 5.5 kW to 15 kW, FCC type accepted. Goodrich Ent, 402-493-1886.

McMartin BF-5K 5 kW FM, factory rebuilt in perfect, like new cond, includes new tubes, tested & tuned on your freq, guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Ent, 402-493-1886.

WANT TO BUY

B5 kW single phase FM xmtr. J Ingram, 662-563-4664.

McMartin AM/FM xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

TUBES

WANT TO SELL

4CX250B (2), 828 (6), 810 (2), new, BO. C Bryson, 724-776-5204.

AMPEREX, EIMAC, SVETLANA 3CX400A7/8877, 3CX3000A7, 3-500ZG, 4CX250B, 4-400, 4CX400A, 807, 833C, ETC. Westgate 800-213-4563.

TUBES, Eimac, Svetlana, **800-430-6683,** ams@hard-to-find.net **Fax: 905-844-6263** www.hard-to-find.net

SERVICES

TURNTABLES

WANT TO SELL

Technics Quartz 2-speed direct drive TT (2), SP-25 w/arms & carts, BO. Frank, 401-274-1999.

WANT TO BUY

Tone arm for Gates 12B TT. E Davison, 561-287-8832.

EMPLOYMENT

HELP WANTED

COX RADIO-TAMPA
Is looking for a talented Chief Engineer for the Tampa cluster. Experience with high power FM's, computer audio delivery systems and major construction projects desired. Self starter with good people skills a must. Please fax resume to DTO 727-579-3320 or e-mail: job@coxtampa.com.

TECHNICAL DIRECTOR
The Connection
An award-winning Boston-based nationally-broadcast talk radio show, seeks a full-time Technical Director. Responsibilities include on-air audio console operation, audio editing & mixing, troubleshooting signal flow, & ensuring the highest possible on-air audio quality. This position requires a BA/BS & at least 5 yrs experience in the broadcast industry or 8+ yrs experience with radio broadcasting and/or digital audio production. Candidate must also have a working knowledge of audio processing & music production & a genuine interest in broadcast technology & journalism. Contact: Ken Tebbetts, Dir/Organizational Development, WBUR, 890 Commonwealth Ave, Boston MA 02215. ktebbett@wbur.bu.org. EOE

POSITIONS WANTED

15 yr radio veteran, relocating to PA.MD/DC area in early 2000, primarily news-oriented, seeking FT or PT leading to FT. T/R available: Tory, 207-882-4865.

CE/Computer tech w/20+ yrs hands on engineering exper seeks CE position in a top 100 market. Strong audio, computer networking & RF skills. 704-563-8676.

Experienced CE seeks FT, PT, contract, seasonal work NE. Friendly, outgoing, works in the NE. Radio, Am, Fm, TV work, FCC licensed, CET, amateur radio operator, exper in carrier current AM & MDS also. M Rakoff, 718-969-5224 or email at RadioMitch@Webtv.net.

Experienced CE seeks FT/PT, contract, seasonal work NE, friendly, outgoing, seeking work in the NE, radio, AM/FM, TV work, FCC liensed, CET (4 options), amateur radio operator, exper in carrier current AM & MDS also. M Rakoff, 718-969-5224.

Broadcasting school grad ready to get it on in the radio world, fast learner, hard worker & a great mind! JD 405-356-0035.

Middays, afternoon drive or nights, any of those need filling? 10 yr vet relocating to work for you. Andy, 330-633-5323.

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations and recording studios *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 agian. 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: _____
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Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
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WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
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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

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Radio World assumes no liability for inaccuracy.

PAGE	ADVERTISER	WEBSITE URL
15	AETA Audio Corp	www.aetausa.com
45	Antex Electronics	www.antex.com
25	Aphex	www.aphex.com
40	Armstrong Transmitters	www.armstrongtx.com
28, 29	Arrakis	sales@arrakis-systems.com
8	ATI	www.atiguys.com
2	Audioarts Engineering	sales@wheatstone.com
46	Belar	www.belar.com
24	Bext	www.bext.com
26	Bradley Broadcast	www.bradleybroadcast.com
27	Broadcast Devices, Inc.	www.broadcast-devices.com
5	Broadcast Electronics	www.bdcast.com
51	Broadcast Richmond	www.broadcast-richmond.com
44	Broadcast Software Int'l (BSI)	www.bsiusa.com
27	Broadcast Tools	www.broadcasttools.com
16	BSW	www.bswusa.com
4	Burk Technology	www.burk.com
14	CBSI	www.cbsi.org
27	Circuit Werkes	www.circuitwerkes.com
7	Comrex	www.comrex.com
20	Conex Electro-Systems	www.conex-eletro.com
13	Cutting Edge	www.nogrunge.com
48	Dayton Industrial	NOT AVAILABLE
27	Econco	www.econco.com
39	Energy-Onix	www.energy-onix.com
36	Excalibur Electronics	Not Available
27	Gorman-Redlich Mfg. Co.	www.gorman-redlich.com
1	Harris	www.harris.com
21	Harris	www.harris.com
22	Harris	www.harris.com
23	Harris	www.harris.com
42	Harris	www.harris.com
17	Henry Engineering	www.henryeng.com
18	Inovonics	www.inovon.com
36	J Squared Technical Service	jsquared@cdsnet.net
36	LBA Technology	www.lbagroup.com
43	Mackie Design	www.mackie.com
32	Media Touch	www.omt.net/future
36	NICOM	www.nicomusa.com
27	Nott Ltd.	www.tjantenna.com
11	Orban	www.orban.com
27	PTEK	ptekpower.com
47	QEI	www.qei-broadcast.com
6	Radio Systems	www.radiosystems.com
36	RDA Systems	www.rdasystems.com
35	Rules Service	www.ruleserv.com
10	Scott Studios	www.scottstudios.com
36	Shively Labs	www.shively.com
36	Silicon Valley Power	www.svpa.com
46	Sine Systems	www.sinesystems.com
36	Studio Technology	www.studiotechnology.com
19	Superior Broadcast Products	www.sbpjj.com
3	SWR	www.swr-rf.com
9	Telos Systems	www.telos-systems.com
31	Telos Systems	www.telos-systems.com
48	Universal Electronics	NOT AVAILABLE
55	Wheatstone	sales@wheatstone.com
56	Wheatstone	sales@wheatstone.com

◆READERS FORUM◆

On-air errs

Dear **RW**,

This letter is in reference to Al Peterson's Oct. 13, 1999, *World According to ARP* column "So What the #@%+* Are Dingbats?"

Here's my story: It was 1959. I was working at my third radio station in a thus-far three-year announcing career, doing my combo air shift from the Palm Beach-Watsonville artichoke-adorned transmitter site of Salinas, Calif.'s KDON(AM) 1460.

"You're listening to K-DON — your big 5,000 watter by the water!" (They made us say that.)

From time to time, a veteran crop duster pilot from Salinas by the name of Don (no relation to K-DON) would buzz our tower in his pesticide-packed biplane when his spraying assignments brought him to our vicinity.

Tuned to my DJ show, his AM radio let him know whenever my mic was open. That way, Don, likeable exhibitionist that he was, would roar by and get a plug out of me, thereby also apprising his family of his whereabouts.

One day, Don did his usual buzzing shtick, which prompted my usual free-ola response. But, this time, something was different. Apparently, one pass wasn't enough. A few seconds later, he buzzed our site again. And then again.

Puzzled, I whipped off my headphones, grabbed a nearby hand mic connected to a 25-foot cord, threw its key to the on-air position and brought up the pot. At the same time, I turned down the pot on my board mic and ran outside to see firsthand what was going on.

Don must have been in a friskier mood than usual because right there, directly above me and for my benefit only, he was putting on an eye-popping, aerobatic thrill show.

All the while, Don was performing one death-defying maneuver after another. I discovered myself doing impromptu play-by-play. A couple of times, much to my terror, Don's wheels couldn't have been more than six feet above the thistly tops of the artichoke plants.

At some point in this surreal spectacle, I must have gotten especially caught up in the moment, because reacting to a particularly low-to-the-ground, upside-down, lightning-fast display, utterly mortified I heard myself shout directly into my microphone phraseology consisting of that hardly original, tri-syllabic expression,"*holy s***!"

I felt my blood depart my face just as I felt my future in broadcasting evaporate. Stunned, realizing what transgression I had just committed, I slinked silently into the transmitter shack, put on my headphones, potted-down the hand mic, switch-started (and WOWed) the slip-start-prepared record on the turntable, and proceeded with my plan to segue music for at least the rest of my shift, if not the rest of my life.

It wasn't until a few minutes later that I exultingly learned my indiscretion had not been discerned. Evidently, the engine in Don's crop duster was so extraordinarily loud, only a blessed handful of all those words I had spoken in my extemporaneous play-by-play commentary had been readable by the listeners.

To this day, even when I'm certain a microphone is closed or even unplugged, I regard it as open.

Norm Hankoff
Sacramento, Calif.

*Editor's Note: There is no truth to the rumor that **RW** once printed a headline about Frequency Shift Keying and omitted the 'f' in 'Shift.' Really.*

A great Guy

Dear **RW**,

What a great joy it was to read the letter to the editor from Guy Erway (**RW**, Nov. 10, 1999).

I met him several years ago when he owned a station in Pueblo, Colo. I worked for him as an engineer at a small daytime directional. We became instant friends and when he says he operated in the public interest, believe me he did.

While the station was never a big moneymaker, Guy always was a good owner/operator. He and his wife ran the station literally by themselves.

This man has my respect. I use much of what Guy's dedication taught me — community service, integrity, honesty with your sponsors and respect for your listeners.

Yes, it was truly a "mom-and-pop" operation — friendly, easygoing and with a heart. I remember his wife, who loved all the Colorado wildlife, feeding a family of skunks which lived near the old station. The animals must have known of the Erway's kindness, as they never caused any problems.

Many of today's big corporate operators could learn a lot from Guy. While I am not a supporter of LPFM from an engineering standpoint, I certainly support the sprit of good community-based broadcasting. We all could learn some valuable lessons, and maybe, just maybe, get back to some of the original spirit of our business by listening to broadcast veterans like Guy Erway.

Dan Thomas
GM/CE KKPC(AM)
Pueblo Community College
Pueblo, Colo.

Nasty or nice

Dear **RW**,

The article "Nasty or Nice: Two Ways to Go" by Ken R. (Oct. 27, 1999) asked for information about being fired in radio.

I thoroughly enjoy my job in radio. However, I'm only a weekend guy. There are only a handful of radio stations in Dover, Del., where I live.

I was officially hired by an AMFM Inc. cluster of stations on Aug. 24, 1999, via e-mail. The program director asked me to come in and work a shift "this weekend."

I went in, filled out some paperwork, and ran the transmitter logs for four of AMFM Inc.'s Delaware radio stations from midnight Saturday to 6 a.m. Sunday morning.

Exactly a week later, I received an e-mail from the same PD in all caps telling me that I was fired because I was scheduled to be at the stations, but I was not present. I responded by identifying the last time he and I had communicated and precisely when he had asked me to work: "this weekend." I have copies of all those communications between AMFM Inc. and myself.

Andrew P. Lynch
Dover, Del.

Radio, One Choice Of Many

A radio person walking around the exhibit floor at January's 2000 International CES show received a stark visual reminder of what our medium is up against as it fights for the attention of American consumers.

There, spread out over 1,500 booths and four venues, were the companies and the electronic toys that want your listeners.

Internet audio portables. Digital TV. Better, feature-laden car CD players. Family Radio Service. Cellular and Global Positioning hybrids.

Super Audio CD and DVD-Audio. Multimedia devices for the car, with everything from digital video to voice command. Portable MiniDiscs that can download Net audio and convert text files to voice.

In our next issue, we'll tell you about many of those new products and technologies in more detail.

Some of these technologies have little to do with radio at first glance; others are aimed straight at our listeners' time in the car or in front of their computers at work. All of these products are a reminder that radio must fight to keep its position in people's lives.

Traditional radio didn't get a lot of attention at this show, and that's troubling. If people were talking about it, their attention most likely was on satellite digital radio.

Satellite radio is coming. The booths of XM Satellite Radio and Sirius Satellite Radio were packed with retailers and other professionals, people in the trenches. They wanted to know, "What will it cost?" and "When can I sell it?"

The satellite providers have more answers to those questions than in years past, with targeted launch dates measured now in months rather than years. The CES community is getting fired up about it. The realization is dawning: Consumers soon will be able to pay a monthly fee to have 100 channels of digital audio choices in their car and maybe, someday, in a portable format.

The folks who are pushing terrestrial in-band, on-channel DAB sense this urgency. Most of them agree that there is a window of opportunity, one that could close soon if American consumers reach a point where their reaction to digital terrestrial radio is "So what? Everything else is digital, and I'm listening to my computer and my MP3 files now."

But this is not just a question for IBOC fans. The entire radio industry, flush with income and merger successes, must constantly reinvent itself to stay current with the grand developments in new media that were apparent at CES.

— **RW**

Write to Us

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READERS FORUM
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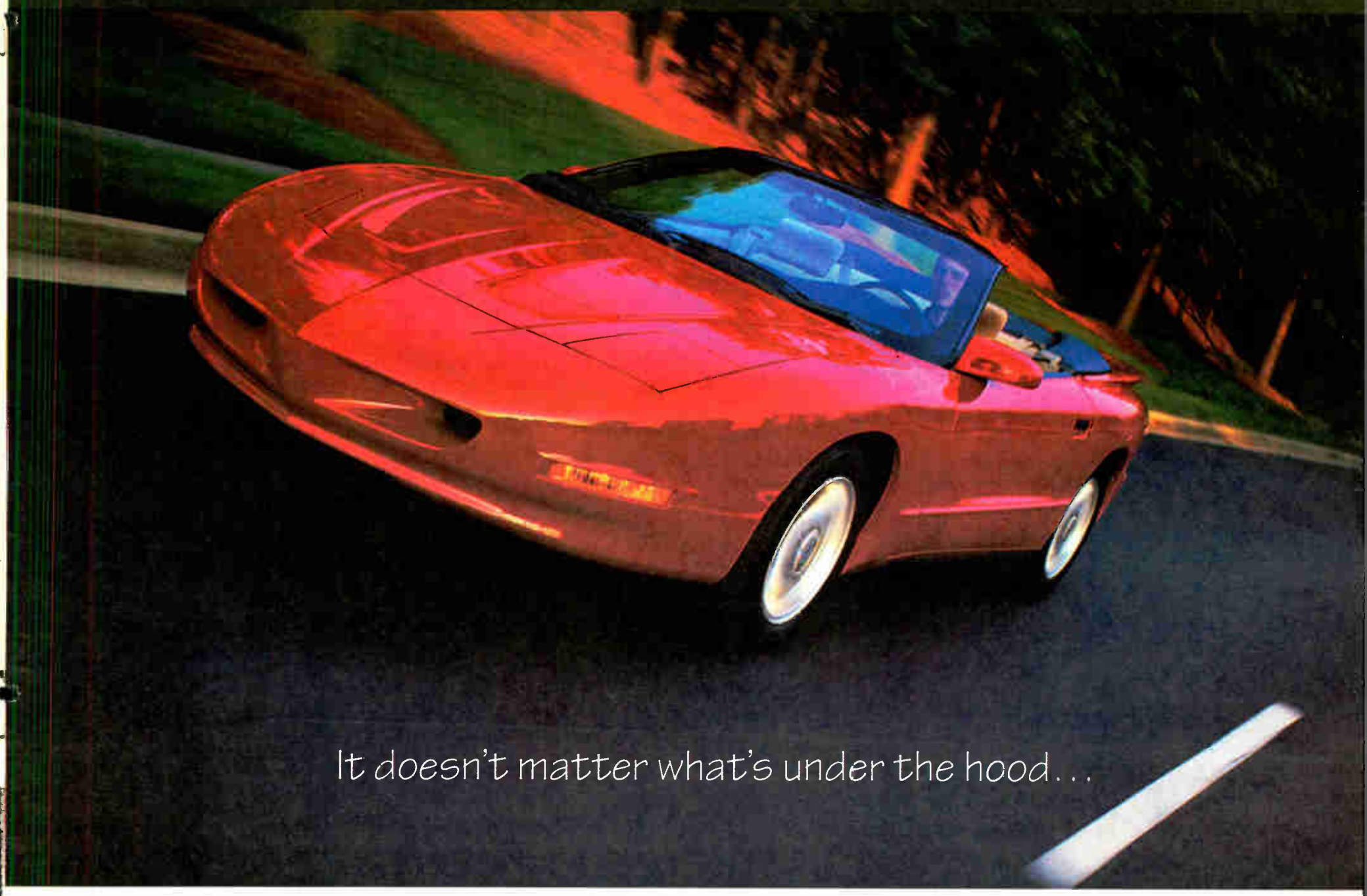
Everyone Wants to Own a Convertible!



It doesn't matter what's under the hood...

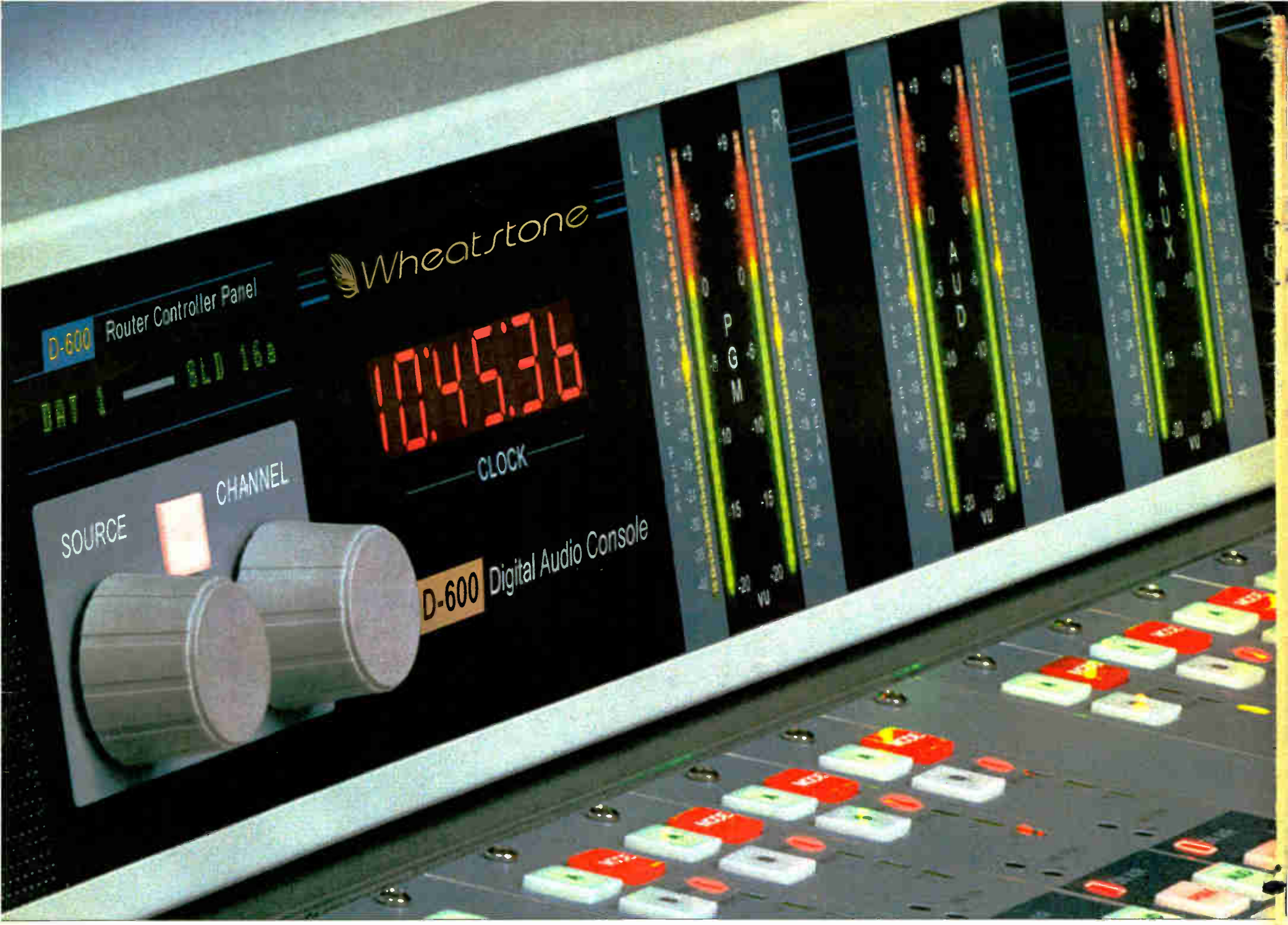
So...How About a Convertible Radio Console?

Our New WHEATSTONE A-5000 gives you the **best** of both worlds. Order it from the factory now as a topnotch ANALOG on-air console. Then later, when you're ready, switch it out to DIGITAL! That's right, this new design accepts modules from our top-of-the-line D-500 and D-600 consoles, allowing it to be converted from analog to digital in the field!

Think of it. no new studio furniture, *no rewiring*—all your existing studio connections simply replug. And while we're at it, no re-training your staff either. A painless switchover on your own timetable, right in your own facility! If you need a new radio console *now* but aren't quite ready for the Big Switch, then check out our new A-5000—you'll like what's under the hood!

Wheatstone Corporation

600 Industrial Drive, New Bern, North Carolina 28562 (tel 252-638-7000/fax 252-637-1285/email: sales@wheatstone.com)



The Leading EDGE

WHEATSTONE'S D-600 is *the* DIGITAL CONSOLE with the features you NEED!

It can control our digital AES routing switcher and display source information right above each fader. It can receive serial commands from your station's automation system, displaying track and cut IDs; it can even store and recall channel setups directly from its control surface — all without the use of an external PC.

Each individual channel can have multiple parametric equalization, limiting, ducking and digital gain settings—complete with preset recall—a great feature for your production suite or demanding on-air talent.

Its LED metering system provides dual readouts showing full scale digital peak *and* calibrated VU or PPM ballistics, so you can derive maximum benefit from its 24-bit architecture. You can even have in-line channel VU and gain reduction metering!

The D-600 allows you to smoothly transition into digital technology without upsetting your entire organization and retraining your whole staff. THIS IS A TRULY EXCITING CONSOLE!

ADVANCED TECHNOLOGY, SYSTEM INTEGRATION and HIGH RELIABILITY—
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