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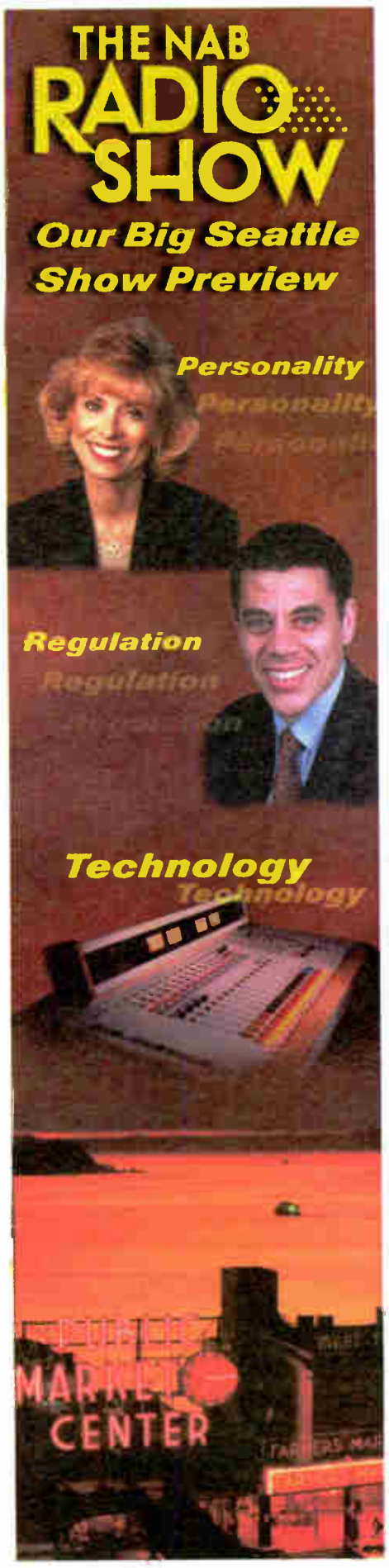
Digital Flexibility
In Studio Sessions: The Fostex FD-4 lets you pick your recording medium.
See Page 85

Radio Espresso
Five groups dominate Seattle in a classic case of consolidation. Check out our special Market Watch in GM Journal.
See Page 71

Radio World®
The Newspaper for Radio Managers and Engineers
September 30, 1998



NEWS MAKER

Chancellor's Man at the Helm

Tom Hicks Surveys His History-Making, Multibillion-Dollar Media Empire

Thomas O. Hicks may be the most important man in radio. The 52-year-old Texan is at the center of the swirling vortex of radio consolidation. He is chairman of the board of both Capstar Broadcasting and Chancellor Media Corp., and he will be chairman of the new, combined group which will be called Chancellor Media Corp.

For the moment, Hicks finds himself as the top man of the top group in an industry that has exploded with change since ownership deregulation took effect two years ago. This former high school DJ now heads a company with more than 460 radio stations that take in an annual estimated revenue of $1.58 billion.

Hicks is accustomed to big numbers. He also is chairman of the board and chief executive officer of Hicks, Muse, Tate & Furst, a private investment firm specializing in leveraged acquisitions and strategic investments. In a wide-ranging interview, he talked about how Chancellor will integrate its acquisitions into logical clusters; what these changes mean to employees, including sales and engineering workers; and how long he thinks consolidation will last. Hicks touched on the threat to radio from satellite, his interest in other groups like Jacor, and his "Wall of Women" theory.

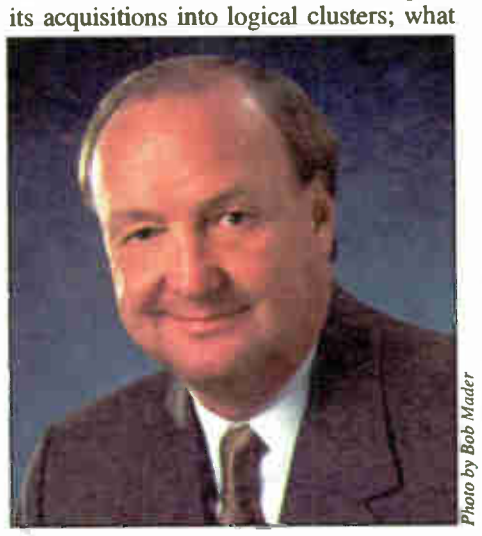


Photo by Bob Mader

Thomas O. Hicks

Hicks spoke with RW News Editor/Washington Bureau Chief Leslie Stimson.

RW: You're the head of the largest radio group in the country. Plus you own TV,

See HICKS, page 8 ▶

NEWS ANALYSIS

Where Is IBOC DAB Going?

by Leslie Stimson

Industry observers and proponents of an in-band, on-channel digital audio broadcasting system for the United States may not agree about when broadcasters will begin airing a digital signal, but they do agree that the committee process that is supposed to help make DAB a reality is painstakingly slow — so much so that proponents say

they are sticking to their own deadlines to develop an IBOC DAB system that can be up and running roughly within the next two years. They might even go around the committee process if they feel they have to.

While the three active proponents have different plans and rollout schedules, it's clear that they have stepped up their efforts to convince the industry that IBOC DAB will work and be profitable for radio.

See IBOC, page 14 ▶

Circle (27) On Reader Service Card

World Radio History

◆ NEWSWATCH ◆

Tristani to Radio: Slow Down Trades

WASHINGTON FCC Commissioner Gloria Tristani thinks radio station consolidation is happening faster than Congress intended when it passed the Telecommunications Act of 1996, and that radio ownership rules need to be fixed.

While saying consolidation is good because it makes it easier for advertisers to buy radio, Tristani warns of a downside. Calling station owners a "vanishing breed," she told attendees at the annual convention of the Texas Broadcasters Association that the number of station owners has dwindled by 12 percent over two years — even though the number of stations has increased by 3 percent. She fears a loss of localism in radio.

The FCC is reviewing broadcast ownership rules as mandated by the Telecommunications Act.

Chancellor Adds Billboards

Chancellor Media, the country's largest radio group, is acquiring Whiteco Outdoor — a transaction that will more than double Chancellor's outdoor division to about 35,000 faces.

Chancellor has agreed to pay $930 million for Whiteco. The deal is expected to close in the fourth quarter.

Canada, U.S. Reach DAB Pact

After several years of talks, the governments of the United States and Canada have agreed on the technical conditions for implementing terrestrial DAB in Canada and satellite-delivered DAB in the United States. The agreement means that terrestrial DAB can now begin in Canada. Satellite-delivered DAB can begin in the United States after a transition period. Details of the conditions are available on the FCC Web site for the International Bureau at *www.fcc.gov/ib*

Frequency coordination talks continue between the United States and other countries.

See NEWSWATCH, page 3 ▶

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World Radio History

Mackie, Behringer Mix It Up

by Randy Stine

WOODINVILLE, Wash. With no settlement in sight and depositions that could begin as soon as next month, the legal battle between Mackie Designs Inc. and Behringer Spezzielle Studio-Technick has now dragged on for more than a year.

Mackie filed suit in federal court against Behringer, alleging patent and trademark infringement. The lawsuit claimed that the Behringer Eurodesk MX8000 product was a copy of the Mackie 8-Bus mixer line. Also named in the lawsuit were audio equipment manufacturer Samson Technologies of Syosset, N.Y., and music/pro audio retailer Sam Ash Music.

The suit was filed in June 1997 in federal court in Seattle. Also named as defendants in the suit were the CEOs of Samson and Sam Ash Music, Scott Goodman and Richard Ash, respectively.

The lawsuit claimed the three companies conspired to copy the Mackie 8•Bus mixer line, alleging that Sam Ash Music and Samson gave the Mackie mixer to Behringer to duplicate. In the lawsuit, Mackie claims "uncanny similarities" between the 8-Bus Mixer line and the Eurodesk.

Mackie is seeking $327 million in damages.

In January of this year, the U.S. District Court for the Western District of Washington ruled that the patent violation claims portion of the lawsuit was invalid and dismissed the claims. In the ruling, Judge Barbara Jacobs Rothstein wrote that the three defendants had stopped selling the Behringer Eurodesk MX8000.

Jurisdiction questions

Rothstein also dismissed the trademark infringement part of the lawsuit, saying the claims were too broad. Gregg Perry, director of advertising and public relations for Mackie Designs, said Mackie has since refiled to have the trademark infringements again be part of the suit.

"What the judge said was our filing needed to be of a more narrow focus and specific," Perry said. "We had over 200 copyright and trademark infringement documents that we thought were violated. The judge asked that we refile with less generality," he said.

The court also removed Sam Ash Music, its CEO Ash, and Samson CEO Goodman from the lawsuit, according to court records. In her ruling, Judge Rothstein said the court lacked jurisdiction over the defendants and suggested that Mackie bring its case against the three in a different court.

Perry said, "The judge ruled since Sam Ash doesn't do business in the state of Washington, that we must refile in New York state." Mackie refiled against Sam Ash Music, Ash and Goodman on Feb. 17 in U.S. District Court for the Eastern District of New York.

Counter suits

Counter suits have been filed by Sam Ash Music and Samson Technologies. In April, Samson filed a defamation counter claim in U.S. District Court in Seattle. Attorney Ken George, representing both Samson and Sam Ash Music, said, "Samson alleges that Mackie Designs, through false claims, attempted to damage Samson's reputation and business." Samson is seeking $10 million in damages.

Sam Ash Music, which no longer carries the Mackie line of mixers, filed its own counter suit against Mackie in May. Of that suit, George said, "Sam Ash claims that Mackie damaged it by publishing false information about Sam Ash on the Internet. We're asking for $38.5 million in damages." The suit was filed in U.S. District Court for the Eastern District of New York.

In response to the counter claims against Mackie Designs, Roy Wemyss, chief operations officer for Mackie, stated in a press release, "The counter suits from Sam Ash and Samson come as no surprise. I am confident that our effort to protect our intellectual property rights will prevail."

Mackie officials did not want to comment further on the counter claims.

Both Perry and George predicted a trial would begin by next spring.

"Everything is still in the discovery process," George said. "Depositions of the parties involved will be scheduled for this fall." A motion to dismiss the Mackie suit against Sam Ash Music, Richard Ash and Scott Goodman is under advisement in the New York court. "We don't know when to expect a ruling on our request, but we're proceeding," George said.

While the case has taken some unexpected twists and turns, George said any confusion in the suits will eventually be cleared up. "Everyone is spinning stuff their own way. We'll let the facts speak for themselves in court. We continue to claim that there was no intentional wrongdoing on the part of Sam Ash and Samson."

As the case proceeds on multiple fronts, is there any hope that the two sides could settle out of court?

"I can't speak for our lawyers, but from Mackie Design's point of view, it's extremely doubtful," said Perry.

Cebula Joins RW

FALLS CHURCH, Va. **Radio World** announced that Laurie Ann Cebula has joined its staff as business editor, responsible for the *GM Journal* section of the newspaper.

Editor Paul J. McLane said Cebula would be responsible for continuing to build the paper's coverage of industry management, business, financial and programming trends.

Photo by Alan R. Peterson

Laurie Ann Cebula

"After 23 years, **RW** is now a strong, multifaceted publication with news coverage and features for professionals in the radio environment," McLane said. "We continue to offer the leading content for engineers and other technical readers. Our readers include informed decision-makers in radio groups and markets of all size, both technical and non-technical, and they need to know about the world of business going on around them. Our new *GM Journal* section accomplishes that."

Cebula has experience as a news anchor and reporter for news/talk radio station WFMD(AM) and as a writer, editor and account executive for The New Paper, both in Frederick, Md. She also has extensive public relations and communications experience. She joins a staff of more than 125 editors and free-lance writers covering radio.

◆ NEWSWATCH ◆

▶ NEWSWATCH, continued from page 2

Capstar Drops Texarkana Buy

Capstar Broadcasting Partners dropped its plan to buy two Texarkana market stations after the Justice Department opposed it. The DOJ said there would be reduced competition in that market if the purchase had gone through. Capstar had planned to buy KATQ Radio-owned KTWN-FM and KTFS(AM). The DOJ said after the acquisition, Capstar would have controlled 62 percent of the radio advertising in that market — more than the DOJ's unwritten 40 percent marker.

Capstar owns five other stations in that market: KTHN(FM), KYGL(FM), KKYR(AM), KKYR-FM and KRMD-FM.

FCC: Ratcliffe Up, Bedell Out

WASHINGTON Bob Ratcliffe, acting deputy chief of the FCC Mass Media Bureau, has been given the job on a permanent basis. Ratcliffe has been at the FCC since 1975 and has been acting deputy chief since November of 1997.

Meanwhile, Assistant Chief of the Audio Services Division Stu Bedell planned to retire Sept. 3 after 30 years of government service. Bedell was instrumental in implementing the relaxed local radio ownership rules mandated by the Telecommunications Act of 1996, and in acting on the record number of radio transactions following the legislation's passage.

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World Radio History

Few Kind Words for FCC Busts

Respondents to an Online Survey See The Heavy Hand of Government at Work

A recent survey of visitors to our Web site shows how varied are your opinions on low-power radio.

We asked visitors: "Recent FCC enforcement actions against so-called radio pirates have made the headlines around the country. Is the FCC taking appropriate action against these unlicensed operators?"

The response: an overwhelming 82 percent said No.

An informal survey like this is not scientific, and it tends to invite comments from the most vocal opponents of the status quo. Nevertheless it demonstrates the strong feelings abroad.

Gestapo tactics

We asked how visitors would change FCC enforcement. Many respondents, including some who work at licensed stations, proposed draconian measures or revealed belligerence toward the FCC or the NAB. These are typical:

"The FCC is using German Gestapo tactics. They should be using their efforts to solve an interesting First Amendment question. This is the United States, not some Fascist country. Why is the NAB allowed to dictate the control of the U.S. airwaves?"

"I would get the rich bastards in the NAB off of the FCC's back, that way the FCC could run experiments with community radio and see what good it actually does."

"The NAB are the real pirates that have stolen the airwaves from the average American citizen and have commercially exploited radio ... Micropower broadcasting by average citizen engineers offers program content which stands on its own without having to be ok'd and paid for by corporations. Leave these stations alone. Deregulation means deregulation."

"The FCC needs to follow the law they are held to uphold. They made a mockery of the Communications Acts of 1927-1934."

"The only time that the FCC should shut a station down, is when it interferes with vital communications, such as emergency frequencies and air control frequencies. So long as no one is being hurt, the FCC should keep its ugly head uninvolved."

"Abolish the FCC altogether."

Other respondents took a more thoughtful tone:

"Congress should change the laws that serve as a prior restraint on free speech for 'pirates,' and allow low-power broadcasting — so long as there is no RF interference."

"They should consider licensing these low-power stations as it would allow the government to receive more funds via fees and perhaps change the face of radio by giving us commercial broadcasters a run for the money."

"The Telecom Act has not done what it was supposed to do. There is *less* diversity, *fewer* independent stations, *less* competition. The pirates are a symptom, they are not the disease."

"Suspend prosecutions pending a final rule on RM-9208 and/or RM-9242. Provide retroactive amnesty if microradio is ultimately made legal again. Waive the suspension and possible amnesty if pirates can be shown to be: (1) broadcasting *and* (2) neglecting to take action, when and if necessary, to eliminate any damaging interference."

"Don't enforce regulations against part-time pirates that don't cause interference; only attack full-time and irresponsible operations."

"Licensed broadcasters should note why such a movement has gained so much momentum, they need look no farther than their programming practices."

"Reinstitute no-knock inspections on licensed broadcasters."

At least one respondent had no sympathy for unlicensed radio stations, writing simply: "Shut them down."

★ ★ ★

Most readers of **RW** work in licensed radio facilities, but tend to be muted on this topic. What do *you* think? Let me know.

We feature a new radio question each week on our Web site. To take part or see past replies, visit *www.rwonline.com*

While I'm on the subject: engineer John Bisset, author of our popular *Workbench* column, says his industry colleagues are getting a lot of use out of our new site. One engineer likes knowing that he can tap in from his transmitter site when he needs a supplier phone number and doesn't have a copy of **RW** at hand.

Online answers

The online Product & Service Directory comes to the rescue. If you need to contact an equipment or service supplier, go there first, and don't forget to bookmark the site.

If you have suggestions for improving our Web presence, drop me a line via e-mail at *radioworld@imaspub.com*

★ ★ ★

This is our big preview issue for The NAB Radio Show, and I hope you find it useful. Session previews, exhibit listings and a look at the radio career of Dr. Laura Schlessinger are highlights. On our cover, we're pleased to feature Leslie Stimson's interview with Chancellor radio baron Tom Hicks. No man in radio has ever controlled so many stations. Regardless of your opinions about consolidation, his thoughts and plans affect you if you work in radio or listen to it.

Beyond our NAB coverage, you'll find a number of useful features.

Al Peterson checks out the Linux operating system. ABC radio engineer Gary Sharpe offers tips for your staff about using the traditional VU meter properly.

Michael LeClair tries out the Belar FMSA-1. Dee McVicker talks to radio managers about their Year 2000 plans and problems; Frank Montero considers the implications of radio groups looking south of the border for acquisitions. And our Buyer's Guide looks at the latest telco devices for your studio, including a discussion of talk radio gear, written by Tom Ray of WOR(AM) in New York.

★ ★ ★

Last, I'm pleased to welcome Laurie Cebula to our staff. She is an experienced writer and editor with a background in radio news. She is part of **RW**'s expanding commitment to covering the business and management issues of the radio industry as thoroughly as we cover the technical side. Cebula is responsible for the *GM Journal* section of the newspaper.

See you in Seattle.

'Bring back the Class D or educational designation. Allow 10-watt community stations again.'

— Survey respondent

From the Editor

Paul J. McLane

Circle (79) On Reader Service Card

World Radio History

◆ READERS FORUM ◆

Letters received are the property of **RW**, and may be edited for space considerations.

Harris on D/CET

Dear **RW**,

The "rebuttal" article (**RW**, Sept. 16) by Frank Foti simply reiterated what Harris considers to be a strawman analysis of the issue.

Essentially, Mr. Foti is attempting to propose a solution for the overshoots seen when the Omnia's 48 kHz AES3 output is applied to a Harris DIGIT CD FM Exciter. Cutting Edge is proposing an elaborate and unique digital composite interface to correct an issue that would not exist if the audio bandwidth of the Omnia was in compliance with the restraints of the filters required in the digital generation of the modulated FM carrier.

In the Harris paper appearing in the July 8 issue, Harris pointed out that it is the excessive bandwidth present on the output of the Omnia processor that is responsible for the overshoot they report, and not the sample rate used. Either 32 kHz or 48 kHz can be used with the DIGIT CD Exciter. Neither rate will cause rate converter overshoot in the DIGIT if the FM processor observes the 15 kHz bandwidth limit required for FM stereo transmission systems.

Harris stands by our analysis of the Cutting Edge demo at this past NAB show.

— Jim Woods

Additionally, Harris stands by our analysis of the Cutting Edge demo at this past NAB show. This demo was assembled and presented without the knowledge or cooperation of Harris. Cutting Edge chose to use a Harris DIGIT CD FM exciter, which had been heavily modified without consulting our engineering organization. We stand by our statement that the D/CET demo on the NAB show floor was invalid because part of the D/CET signal was mixing with the exciter's signal path when the AES3 mode was selected.

The radio broadcast industry already has a digital audio interface standard – AES3. This interface works extremely well in a properly engineered digital path. Overshoots of less than 2 percent (0.17 dB) are achieved when an Orban 8200 is connected to the AES3 input of the DIGIT CD. There is no need for an alternative standard if the FM processor design respects the audio bandwidth requirements of stereo FM broadcasting (including the presence of RBDS and SCAs).

Harris is proud to have led the radio broadcast industry with the introduction of the first digital FM exciter, the DIGIT CD. Since its introduction, almost 2,000 have been placed on the air worldwide. We followed up the DIGIT with the world's first uncompressed digital STL system, the CD LINK. These two products, in conjunction with Orban's 8200, are in use at hundreds of sites without high peak overshoots.

Harris has prepared a much more detailed analysis of the claims made in Cutting Edge's rebuttal. Interested readers can find it posted on our Web site at *www.harris.broadcast.com*. If you would like a copy e-mailed to you, contact *mwooley@harris.com*. If you would like a copy mailed or faxed to you, contact us at fax number (765) 962-0671.

Jim Woods
Vice President,
Broadcast Radio Business Unit
Harris Corp. Broadcast Division
Cincinnati

Mic check

Dear **RW**,

After reading your fine article about choosing the correct mic cable (**RW**, July 22) I was almost hesitant to point out a fundamental error in your diagram and the way you worded the theory behind why balanced lines work.

To be blunt, voltage does not flow. Current (electrons) flows, but never voltage. To be more rudimentary, voltage is the force that causes current (electrons) to flow; resistance is opposition to that current flow.

The interference or noise induced into the mic line is in the form of a current. As the current is passed through a resistance (the input to a mic mixer) a voltage that represents that signal is dropped across that input, amplified, etc.

Joe Tymecki
Owner
Focus Engineering Services
Atlanta

Technical Editor Al Peterson responds: Good catch, Joe, you are right. In our efforts to get things like "Orthogonal Frequency Division Multiplexing" and "Adaptive Differential Pulse Code Modulation" straight, an easy one like this occasionally wiggles right by.

Foxworthy fun

Dear **RW**,

In the Jeff Foxworthy tradition, I have created this piece for the wives of engineers to see if they are really married to one.

My husband, Dave Hebert, was a station engineer and contract engineer for over 30 years and now works at Armstrong Transmitters in Marcellus, N. Y.

You might be an engineer's wife if:

- Your kitchen table has solder iron burns on it.
- You have made more trips to the transmitter site than the general manager has.
- You can find the correct value of resistor from the box on the workbench.
- Your husband makes household repairs with tie wraps.
- Your kids bring home broken toys because their dad can fix anything.
- You have served the exact same plate of food for three nights but he wasn't home to eat it.
- Your husband has more Greenies than credit cards in his pocket.
- You are in a romantic mood and his eyes glaze over as he tells you about a shunt-fed antenna.
- Your husband's idea of high society is the weekly SBE meeting at the all-you-can-eat lunch buffet.
- You get 3 a.m. calls from the talking remote control box at the transmitter saying, "Something is wrong with me."
- Your husband spends all day at the Hamfest turning knobs like a safecracker.
- The whole family has Christmas dinner at the transmitter with dad.

Judy Hebert
Marcellus, N.Y.

Bring On The Engineers

If you are coming to Seattle for The NAB Radio Show, we hope to meet you. If not this year, maybe next. This is one show that radio people absolutely should set aside time to attend.

Unfortunately, anecdotal evidence suggests that many important decision makers, specifically including engineers, won't be allowed by their employers to attend unless they pay their own way. That would be a shame.

Perhaps the boss glanced at the lineup of sessions and noticed only those of interest to owners and salespeople, programmers and investors. And on the surface, there is plenty for the manager in a suit and tie, but not for the shirt-sleeved engineer. What happened to the workshops on cart machine alignment and tower painting? Should we fear that the business of broadcasting is so detached from the technical aspects that it now dominates the entire event?

Look more closely. While the business of radio has changed, the engineer is by no means ignored. There is a revamped AM directional antenna seminar with Ron Rackley and Ben Dawson, as well as an all-day comprehensive workshop on digital facilities. The AM/FM transmitter workshop, moderated by **RW** *Workbench* columnist John Bisset, is an invaluable resource. These panels are aimed specifically at engineers.

Several additional sessions are devoted to helping the non-technical manager make sense of the swirl of digital audio, digital radio and computers. On the sold-out exhibit floor, 160 companies will display their wares in the largest radio-only show in the United States. *All* managers responsible for making business decisions should take advantage of that.

It is easy to be overwhelmed by the changes in radio, to be numbed when you don't know which corporation name might be on your business card tomorrow. There is so much to know in such little time that the latest buzzword cannot help but grab our attention. But in the midst of such change, the NAB apparently realizes that radio stations still need a man or woman with a wattmeter and logic probe to assure that a listenable, receivable signal goes out into the community.

Engineers get slighted enough as it is. The NAB deserves credit for presenting a show worthwhile to everybody.

— **RW**

Write to Us

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Correction

The NFL radio station chart on page 12 in our Aug. 19 issue showed WBT(AM) licensed at 1100 kHz. It should have been listed at 1110 kHz.

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World Radio History

GUEST COMMENTARY

Radio: The Net's Natural Partner

by John Dinges

The Internet is beginning to look and sound like radio and television, as tools for real-time streaming of audio and video proliferate and the quality of Webcasting continues to improve exponentially. Much of the discussion among those involved, however, seems to assume that the television-like productions will be most attractive to Internet audiences.

I question whether Internet users will prefer to stare at moving pictures hour after hour on their PCs, as if Internet junkies will degenerate into cyber-couch potatoes.

Radio reincarnation

Radio, on the other hand, is the Internet's natural partner. Streaming audio offers a tremendous added layer of satisfaction to computer uses. And it offers the potential of yet another reincarnation of radio, which has proven itself over and over to be the hardiest and most flexible of media.

At this point, most radio available on the Web is live programming, some of it original but mostly streaming of existing on-air radio broadcasts. But that only uses part of the potential. Radio Webcasting also offers a prodigious new outlet for the highest-quality radio documentary and artistic audio experimentation. I'm talking about the kinds of wonderful real radio pieces and programming you occasionally hear on National Public Radio and Public Radio International: long-form (usually 10 minutes to a half-hour) with great layered sound and flashes of brilliant writing.

Radio Webcasting offers a prodigious new outlet for the highest-quality radio documentary and artistic audio experimentation.

NPR has edged away from this kind of artistic radio in recent years because — to belabor the obvious — the pieces are too long and create more tune-out than tune-in opportunities. If you've ever tuned in at the fifth minute of a 12-minute feature and wondered what planet you are on, you know what I mean. Yet when you come in at the top, these pieces represent the highest levels of radio production and creativity. They are the ones that keep you in your car listening in your driveway even though you've arrived home.

A few examples for those familiar with the public radio world: Joe Richman's Teen Age Diaries, David Isay's "Remorse" and the series of NPR-National Geographic Radio Expeditions.

Webcasting solves the problems that keep NPR from putting more of these pieces on the air. Webcasting allows the listener to listen always from the top, and never forces you to listen to a piece you aren't interested in. These are programs that suffer because they can't sustain the audience numbers you need on network radio — i.e. audiences consistently in the millions. But on the Web they should be able to generate the 10,000 - 20,000-size tune-in you have been talking about.

Production costs

And production costs? Take TV costs and reduce by a factor of 10. Low-budget video Webcasting may be cheap, but radio is much cheaper (production, I mean, not encoding, connecting, etc.).

And the big advantage: Radio sounds majestic on the Web, especially compared to the herky-jerky of Web TV.

Very little of this kind of radio is on the Web, however. Why? I suppose because the radio producers (whose guild

See DINGES, page 14 ▶

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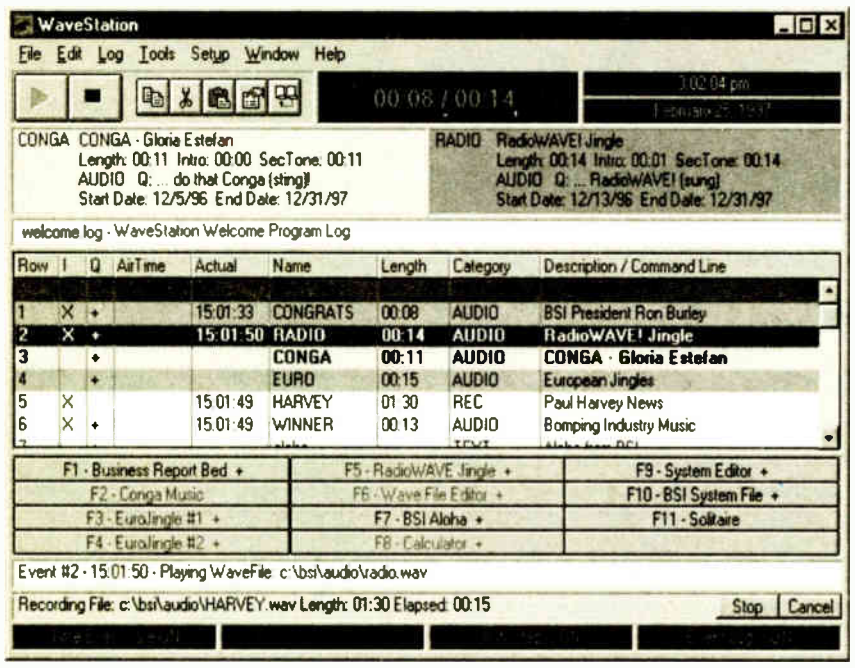

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GUEST COMMENTARY

Why Internet Radio Doesn't Spell Doom

by John Adams

The Internet is not going to kill the radio star. It is, however, challenging traditional radio to think hard about what it does best.

As an Internet broadcaster with a background in traditional radio, I am constantly faced with the question of what Internet radio means for traditional radio. Internet radio can deliver listeners an experience they can't get from traditional radio. But instead of posing a threat to broadcasters, Internet radio will deepen the listener's relationships with music and radio by offering more — more times and places to listen, and more choices of what to listen to.

The Internet will make the radio star more important than ever.

The obvious potential of Internet radio lies in the unique one-to-one distribution. Through Internet radio, it now becomes possible for listeners to influence their own rotation of songs within each format, ensuring that each listener hears more of what they like and less of what they don't.

No borders

Another benefit of Internet radio is its reach, which extends the listening audience from being local to global. The Internet radio "signal" is not hampered by geography and can reach through physical barriers, such as the impenetrable walls of office buildings.

Because the Internet knows no borders and no limits to broadcast spectrum, Internet radio broadcasters can also deliver a virtually unlimited number of highly segmented niche formats to a worldwide audience. Specialty stations and shows that couldn't otherwise draw a large enough audience in a single geographic market can now build a viable audience of listeners.

In the world of traditional broadcasting, an entire station devoted exclusively to a relatively obscure format like "drum and bass" would not be commercially viable. But consider that broadcasting markets are based on geographic metro areas. Think of the entire online population as one huge metro.

John Adams, Imagine Radio

Internet radio can pool disparate listeners while leveraging unique advertising opportunities — very similar to the way cable has zeroed in on sports lovers, personal investors, food fanatics and home shoppers.

Keep it local

Internet radio shows great promise, to be sure, but only Chicken Little would suggest that the Internet's arrival

See ADAMS, page 17 ▶

World Radio History

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World Radio History

Tom Hicks: Consolidation Is Good

▶ HICKS, continued from page 1

outdoor and the rep firm Katz Media. What's next for Hicks, Muse?

Hicks: We believe that the best way to maximize our shareholders' value and achieve growth over the next five years in the media industry, which is consolidating for different reasons ... is to be able to be in a position to cross-sell strong clusters of radio and markets where you also own television and outdoor. That's what we're trying to be in a position to do.

RW: Would you explain the cluster concept further?

Hicks: We don't want to have many markets where we have a single radio station, because they put you at a competitive disadvantage in that market (compared) to the alternatives that the advertisers can chose from.

Be it the local newspaper, the local television stations, local cable channels, local Internet provider ... all those alternatives are increasingly going to be available to advertisers. We want to be able to offer a strong coverage, as much of a one-stop shop as we can to our customers, the advertisers, so that they can serve their customers.

RW: Are you still looking to acquire more stations?

Hicks: Our main thrust from now on, or for the next 12 to 18 months, is going to be to really focus on managing the assets we put together.

We were in the consolidation phase. We moved very aggressively to establish our platforms, and now we do have the best radio platform, and we have a very strong TV platform, we have a strong outdoor platform. Our emphasis now is going to be on gaining the appropriate control and operating what we have as efficiently as possible.

We will also try to fill in markets where we don't have as large a cluster of radio stations as we would like. If we can, we'll add stations in those markets, and we'll try to either acquire or swap to make sure we line up our TV and outdoor and markets where we have radio. Right now, 60 percent of the assets we've acquired in television and outdoor are in markets where we have radio stations. We'd like to move that 60 percent up to 80 or 90 percent over the next couple of years through swaps or initial purchases.

'We're not selling any stock. We're long-term holders. We're going to focus our energies on trying to build the best possible company we can build.'

Competing with CBS

RW: The only radio group close to you in terms of revenue is CBS. How do you plan to maintain a strong competitive advantage over Mel Karmazin?

Hicks: Size by itself is not important to us. What's important to us is to increase our profits and our return on investment for our shareholders.

Whether we're larger or Mel's larger, that doesn't make any difference to us. We're clearly going to be competitors because we both have the two largest groups — particularly in the large markets where there's no way we would ever have any opportunity to do something together because we would be over the maximum number of (allowed) stations. They're good people, we like them, we respect them. I think that the better they do, the more it will challenge us to do as best we can do.

RW: What do think about Mel bringing back the Infinity name?

Hicks: He made a very smart, strategic decision, to unbundle his radio and outdoor assets away from the television network because the television network was hurting his stock price. If he's going to highlight his radio assets, it would be very good to highlight them with a name that was associated with how he built his radio group in the first place.

RW: A name that still has cachet, that is still recognized.

Hicks: Probably "CBS" is going to be associated with television, and if you're trying to draw distinction between television and television networks, with faster-growing markets like radio, then I can certainly see why they would have a different name.

More to come?

RW: On the Chancellor/Capstar merger... we kept hearing that Jacor would be involved somehow. Was that considered?

Hicks: At this stage in a rapidly consolidating industry you've got to assume that everybody in the business has talked to everybody else about some potential combination or something that would benefit their shareholders by them getting together. We have had those conversations, we've had other conversations. ... At this point, with the stock market going through what it's going through, I think the days of acquisitions are over for a while.

RW: The pace of consolidation will continue to slow down?

Hicks: Essentially, it has already run its course. The (radio) platforms have now been built and it will be a matter of a few large companies that try to build on their large platforms and then a much larger number of medium- and smaller-sized groups.

RW: How many radio groups do you think will be left five years down the road?

Hicks: There will be a large number, but I think they'll be divided into a few number of large companies and then a whole lot of smaller- and medium-sized niche players.

RW: Did the stock market fluctuation affect your deal at all?

Hicks: No. We're not selling any stock. We're long-term holders. We're going to focus our energies on trying to build the best possible company we can build. I'm not involved in the management on a day-to-day basis, so from my point of view, the important thing is to have our management team, led by Jeff Marcus, really put the right foundation in place for our future growth.

Strength of radio share

RW: In what areas of the marketplace do you see advertising growth for radio coming from in the next two years?

Hicks: Everything. We believe radio will increase its share of the market from the seven, or maybe slightly in excess of seven to eight, nine, 10, percent over the next 10 to 15 years. That trend has already started and partially that is because radio is now in a position to do a better job for its customers. That (increase) will primarily come, I think, from newspapers.

RW: Radio is doing a better job because ...?

Hicks: Five years ago, or 10 years ago, if the local Coca Cola bottler wanted to have his annual media buy, he'd talk to one newspaper, three television stations, and 22 radio stations. Each individual radio station was at a relatively weak position to be able to provide a service that mattered to the advertiser.

Now ... if you have four or five FMs in a market, and you've got your programming targeted, like we do in New York City, where we essentially cover all age groups of programming that appeal to women, we can offer our "Wall of Women," as we call it, to an advertiser. If you have a product that you want to target to the female half of our population in New York City, you're going to be on our radio stations. That just was not the case a few years ago.

RW: This is a more efficient way of selling radio.

Hicks: All human beings, if they have a choice, would rather do something that is easier for them, than harder. Our customers are no different than anybody else. If we can provide a broader coverage for our customers, without having to have them make individual decisions to, on their own, deal with four or five different alternatives to do the same thing, they are going to be more inclined to decide that is an effective way for them to reach their customers. ...

That's what's going on with the consolidation of radio. Those of us who have clustered are learning more every day about how we can offer those better services to our customers. For example, with the merger we now have with Chancellor and Capstar, we basically have the dominant radio group in a state like Texas. Capstar had all the clusters and all the smaller markets. Now with Chancellor, we have Dallas, Ft. Worth and Houston. If (there's a) a customer with a product who wants to target that product to the Texas market, in one meeting we can provide that alternative for them to reach the vast majority of the Texas market through radio. That's a new paradigm.

RW: As you merge facilities within the new group, how are you going to handle the sales forces?

Hicks: So far the successful way to do it has been to keep the sales forces very separate, so that everybody can maximize their coverage but have a close coordination at the top so that with the large advertisers we can provide a coordinated approach. ... As we do these regional or national concentrations, we can do that with kind of an umbrella sales group.

RW: How does merging affect station equipment purchase decisions? Do your engineers have leeway in deciding what equipment to buy?

Hicks: The more financial resources that are available, the better equipment the engineers are going to be able to buy.

If you have five stations in a market, you don't need five engineering staffs. You only need maybe one larger staff. But you do need all the right equipment. If you have the financial resources and the profits to reinvest in that equipment, you can buy the best possible equipment for each station.

RW: Capstar set the groundwork for consolidating certain aspects of a station, including technical facilities that allow you to share data and audio among stations. Is that network going to be shared throughout the new, merged group?

Hicks: We're feeling our way

See HICKS, page 12 ▶

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World Radio History

Telos

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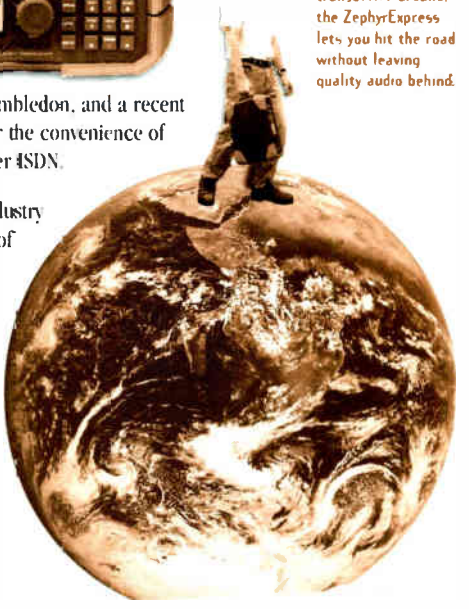
ZephyrExpress Ships Around The Globe!

ZEPHYR IS EVERYWHERE. ZEPHYREXPRESS IS EVERYWHERE ELSE.

After a brief holding period following beta testing, Telos Systems' ZephyrExpress portable digital audio codec/mixer was officially released. During 1998, the ZephyrExpress was successfully tested and used for remote broadcasts that include the Grammy Awards in New York, the MTV Europe Music Awards in Rotterdam, the World Cup, Wimbledon, and a recent Three Tenors concert. This ISDN-based codec/mixer is housed in a rugged chassis for the convenience of travel and is the most reliable method for broadcasters to transmit stereo remotes over ISDN.

The only fully portable, stereo transceiver around, the ZephyrExpress lets you hit the road without leaving quality audio behind.



The ZephyrExpress is a portable version of its sister product, the Telos Zephyr, the industry standard for sending and receiving audio via ISDN lines. ZephyrExpress shares many of Zephyr's capabilities, including MPEG Layer 3, Layer 2, and G.722 coding technology, and a built-in ISDN terminal adapter with NT-1. Some unique features include: three digitally-controlled stereo mixers with two 48-volt phantom-powered mic inputs, a stereo line input, and two monitor outputs with individual send-and-receive mixer controls.

"The demand for ZephyrExpress is very high," said John Casey, vice president of marketing and sales for Telos Systems. "To the best of our knowledge, ZephyrExpress is the only portable product on the market that is capable of making two independent mono-ISDN calls or one stereo call on a single ISDN circuit."

ZephyrExpress is available today through Telos' worldwide dealer network. ~

For Sale: Big Time Network Producer

Assistant Producer™, released earlier this year, has become the call screen management software of choice at major market radio stations and for high-volume talk shows. The system completes Telos' advanced multi-line talk show systems by addressing the need for Windows-based client/server call screening software, handling multi-studio environments and enabling producers to provide talent with information on each caller, send instant messages, and control the status of multiple telephone lines.

Assistant Producer offers extended flexibility, and can handle up to 20 incoming lines at a given time. Additionally, Assistant Producer is accessible via dial-up modem, in-house Intranets, and via the Internet, allowing constant remote access by all personnel connected with the broadcast. AP also has an impressive and very useful database capability for use with Microsoft Access and other protocols, for easy manipulation of data to suit varying needs.

Of course, Assistant Producer also allows multiple Telos Direct Interface Modules to inter-communicate, permitting several different studio locations to share lines.

AP
Assistant Producer
TALKSHOW MANAGEMENT SOFTWARE FOR WINDOWS

~

d.c. 20
Fall
1998

Inside:

Internet Broadcasting in Europe

Looking out for Radio 1 in Norway

New Audioactive MP3 Production Studio ver. 1.5

A Suite Story

Customer Support with Rolf and Corny

Telos on Tour in the U.S. and Beyond

Visit Telos Systems on the World Wide Web: http://www.zephyr.com

World Radio History

IRT Takes a Turn at Internet Broadcasting in Europe

The Institut fur Rundfunktechnik (IRT) in Munich is the central research and development center for the German, Swiss, and Austrian public broadcasters. Recently, the IRT has been devoting its efforts to researching broadcast over the Internet.

Gerhard Stoll plumbs the future of radio with Audioactive

Gerhard Stoll, the leading researcher in the project, firmly believes radio on the Internet is the future. "I feel it is an important part of broadcasting, and will certainly grow rapidly," said Stoll.

One of the IRT's latest undertakings involves using the Telos Audioactive MPEG [Layer 3] Realtime Encoder to stream live programming. Stoll has expressed his enthusiasm for the system. IRT's first effort was to stream a program called "Bayern Mobile" which, until now, was only available on DAB.

Stoll says they like using the Audioactive system for its superior audio quality. "After extensive tests of a lot of different systems on the market," said Stoll, "we became convinced that this is one of the top systems available."

Stoll is enthusiastic about Audioactive's IP multicasting capability, and its built-in AES/EBU I/O with sample rate converter. He also notes that Audioactive uses a stand-alone hardware encoder made with broadcasters in mind, making it easier to use (unlike systems using computers, which sometimes depend on very unreliable, poor-quality sound cards.)

Zephyr Looks Out for Radio 1

It's Telos to the Rescue in Norway

Radio 1 is Norway's largest private national network, with stations in Oslo, Tronheim, Bergen, and Stavanger, all of which are supposed to run on the same format. This is not always the case, however, which caused engineering headaches throughout the system . . . until Telos came along.

Now, thanks to the Telos Zephyr, Radio 1 is not only able to ensure that all stations are running the same programming, but that they are saving money as well.

Technical Director Geir Malmnes built the network up by using a Zephyr with a V.35 connection at each site. Then, using leased lines, he was able to have a point to multi-point connection. Now, Radio 1 is able to send the same programming from Oslo to all the affiliate stations between 10:00 a.m. and 2:00 p.m. every day.

The only glitch in the system is the fact that each station has its own commercials to run. Malmes was able to solve the problem thanks to the contact closures on the Zephyr. There are four commercial breaks each hour; for each of those four breaks, a button is pushed in Oslo that triggers the contact closures in the Zephyrs at the remote locations. The Zephyrs in turn send a pulse to the Dalet system, which each of the stations has, to cue the commercial break.

Although Malmes says this was a complicated system to put together, it was worth the effort, and he is very pleased with the results.

Audioactive MP3 Production Studio Version 1.5 Software now Available!

Only a few months after releasing Audioactive MP3 Production Studio software encoder, the development team at Telos will release the new version 1.5 software.

"This [version 1.5] is the greatest thing since sliced bread for radio news. I don't know where we would be without it," said Aaron Brodie, anchor and reporter at KRLD-AM in Dallas, Texas. Brodie, who uses Production Studio to transfer news clips between the station and reporters, says a high quality 30-second news segment can be sent via e-mail in only 60 seconds.

Audioactive MP3 Production Studio converts PCM files and stores them in compressed MP3 and compressed WAV audio formats. Designed for optimal audio encoding, all bitrates between 8kbps and 256kbps are supported. The intuitive interface allows users to preview sound quality at varying bitrates, and individually or batch-encode audio files to fit their application needs.

Version 1.5 upgrade features include Shockwave compatibility, Microsoft NetShow and Microsoft Multimedia Player support with ASF file conversion, and enhancements to window displays and functionality.

Features available for the professional version include higher quality encoding options for production-quality audio, unlimited batch capability, and an extended command line interface with wild card expansion. Support of external commands after encoding offers users maximum flexibility; files can automatically be moved to an archive directory, FTP'd to a website, or sent via E-mail to customers.

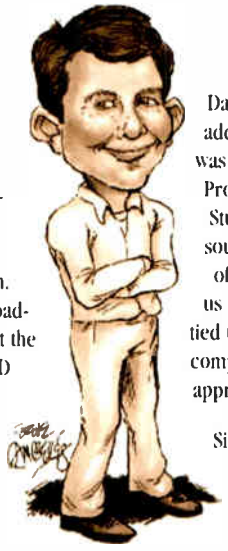
Brodie will continue to support Production Studio enthusiastically. "With the Audioactive MP3 file transfer, the quality is guaranteed! We may have to wait a few extra seconds if line connection isn't the best, but the quality never fails us."

For more information on Audioactive Production Studio, visit *www.audioactive.com*, email at *info@audioactive.com*, or call Telos Systems at (216) 241-7225.

World Radio History

A Suite Story

We spoke with an unlikely customer the other day: Daniel Anstandig, a 15-year-old whiz-kid and CEO of Internet DAER radio (*www.daer.com*). Anstandig, already a veteran broadcaster when he came to us having owned and operated his own AM station, was looking to improve the sound of his new Internet radio station. Of course, we chuckled when we heard that he broadcast out of his bedroom, but then we took a look at the site. A professionally produced look, a pro-grade ID package, and nationally-syndicated programming made the site seem much more professional than we would've imagined. So we cut the kid a deal on some equipment: Audioactive MP3 Production Studio Software, and an Omnia.net from our sister company, Cutting Edge.



Daniel Anstantig, CEO of Internet DAER radio

After only two hours of running the Omnia.net on his DAER Internet radio, Anstandig began receiving complimentary e-mails about the noticeable enhancement of his broadcast sound.

"I was just listening to DAER this evening and noticed your new and improved sound and I was compelled to write! Your new stereo sound and new processing is dominating yet soft, doesn't produce a "slush" sound, and it brings my little sound blaster speakers to life!" wrote Darell Kantera, Broadcast Consulting Engineer of Boston, MA.

Daniel received some other comments, and was kind enough to add a promotional page on his site to answer all the questions he was getting about Omnia.net. He added information about MP3 Production Studio, as well. "The Audioactive MP3 Production Studio converts our large PCM audio files into MP3 files, the best sounding compression available today," he writes. "The best part of our Audioactive MP3 Production Studio is the fact that it allows us to compress files fast, whereas before the PDX studio would be tied up for two hours trying to compress a ten-minute file. We can compress files quickly and e-mail or FTP them to our clients for approval."

Since then, he's been invited by Microsoft Corp. to speak at this year's AES show. "I do have to juggle my schedule a bit to accommodate my responsibilities in the tenth grade," says Anstandig, "but I'm really very excited about going to the show."

Sure, we like getting the big contracts with the big companies, but we also enjoy the seemingly little contracts that grow right in front of our eyes. And, the world being as it is today, we like to help out enterprising young people like Anstandig as much as we can. Someday soon, we might be asking him for a job.

Visit www.audioactive.com for more information about Production Studio, or www.nogrunge.com for more information on the Omnia.net. Hear the difference our Internet products make by tuning in at www.daer.com. ~

Telos On Tour

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Ordering and testing ISDN

To ensure that your ISDN installation will work properly, we strongly advise you to place your order for the line in writing and to test the line in advance. The following advice will help ensure success.

Ordering

ISDN BRI service is widely available in the US, Canada, and Europe. For this article, we will stick with the USA. If you can only get switched-56 service instead of ISDN, check with us first to be sure you have the correct Zephyr options and cable to support an external Switched 56 CSU/DSU (dialer).

ISDN is so flexible that the line must be ordered to match your equipment or things might not work. For that reason, you should always order your ISDN line in writing and request a written confirmation of your order. We prefer to deal directly with the local phone company, although some users have reported success going through an ISDN reseller or authorized agent. If you are going through the phone company, check with your business office and see if you already have an account representative—that should expedite matters. We assume you are using the Zephyr's built-in ISDN Terminal Adapter (TA). If, however, you are using an external TA, be sure to follow that manufacturer's ordering information.

Your order should include the usual business information. If this is to be a temporary installation, be certain to include the termination date on the order. Most importantly, the last few pages of your Zephyr manual include a "Faxable ISDN Order Form" which you should fill out and send to the appropriate person at the phone company or agent.

In the past few years, the Telcos and TA manufacturers have learned a lot. The National ISDN User's Forum and Bellcore have designed a system to simplify ordering ISDN. If your phone company uses this method you need only specify the IOC (ISDN Ordering Code) capability package "S" and RJ-11 style jack. However, we still suggest you fax the entire form.

The Zephyr's built-in Terminal Adapter (TA) supports National 1-1 as well as some of the Custom protocols. If your phone company can give you National 1-1 (or any of the subsequent National protocols such as National 1-2) then that is usually the best choice. If your phone company can only provide one of the custom protocols involving an AT&T/Lucent 5ESS switch, be sure you get the "Custom Point-to-Point" protocol, and NOT "Custom Point-to-Multipoint" protocol.

Your job of ordering is not complete until you have a written order confirmation that includes an installation date.

continued on Page 4 →

World Radio History

Hey Tonmeisters!

Look for us at the International Convention on Sound Design, November 20–23 in Karlsruhe, Germany, where we'll be giving the following papers:

November 22

2:30 p.m.—**Frank Foti**, president, Cutting Edge, gives a paper on Digital Broadcast Audio Processing for FM, DAB, Netcasting, and Beyond.

4:30 p.m.—**Steve Church**, president, Telos Systems will talk about ISDN for Studio Call-in Talk Systems.

4:30 p.m.—**Martin Wolters**, Cutting Edge's newest research and development engineer discusses The Acoustical Properties of Sibilance and New Basic Approaches for De-essing Recorded Speech.

November 23

11:00 a.m.—**Tony Thimet**, senior software design engineer, tackles the hot topic of "The Internet as a Broadcast Medium."

For more information on the show, visit http://www.tonmeister.de

→ "Rolf & Corny," continued from Page 3.

Testing things out

You should follow the "Quick Results" section in the Zephyr manual each time you test a new ISDN line. We will summarize the steps here.

Check the line as soon as it is installed. If you can't get it to work, call Telos Customer Support while the phone company representative is *still on-site*. You should also consult the appropriate troubleshooting sections in the Zephyr manual.

If you are using Zephyr's built-in NT1, then just use an RJ-11 (6 pin/2 or 4 conductor) style cable from the lower "Line direct" jack to the ISDN jack.

Once you have the equipment connected to the ISDN network and powered up, you should see some indication on the NT1 that an active line is present. The built in NT1 has an LED indicator that will stop flashing and lights continuously, or you may see two green LEDs illuminate on your external NT1. This indicates that you have "U synchronization." While this proves an ISDN line is present, it does not prove that the line and TA have been correctly configured.

SPIDs and Protocol

Unless you have the AT&T/Lucent "Custom Point-to-Point" protocol, the phone company should have also given you one or more "SPID" or Service Profile ID numbers. You will need to enter these SPIDs into your Zephyr correctly before its TA will be able to function. Phone numbers, on the other hand, have various "rules" that we all know. For instance, sometimes an area code or 1 is dialed—and sometimes not. Similarly, SPIDs abide by certain rules (see "Handy Tips," below).

Your phone company should have given you the ISDN "protocol type" when they confirmed your order. The ISDN proto col type may also be called "switch type" or "Telco." Note that this is frequently different than your "switch," since most switches support more than one type of protocol. The Zephyr's "Telco" option should be set for the appropriate setting. Note that the "Natl I-1" option is used for both National ISDN-1 as well as the Custom DMS-100 protocols. If your protocol is "AT&T Custom," you may have to distinguish between AT&T Custom "PTP" or "PMP." If your information just indicates AT&T Custom, you can determine which of the above to use by the number of phone numbers given; if only one phone number is given (or the same number is given twice), you have PTP.

Once you have entered (and double-checked) your SPIDs, set the ISDN protocol by going to the menu option called "Telco." Even if the correct protocol is shown, push the <YES> button, since this will allow the TA to initialize with the phone company switch. When you have confirmed that the SPIDs are correct, write them down and post near the ISDN equipment for future reference, as they might be needed in a hurry at some point in the future. Incorrect SPIDs are the number one problem with getting ISDN to work for you.

Once you see "Ready/Ready" as your line status, you should perform the following tests from *Quick Results* to make sure the line is working:

- First, use your first B channel to call your second channel. Success on this test proves that the ISDN line and Zephyr basic configuration are correct and, if there are no audio dropouts, the local line is probably error free.
- Next, place a call to another line. If you have another Zephyr, you can use that for your test.
- Next, place a long distance call. Success on this test proves that you have a data-compatible long distance carrier assigned to your line and that it can successfully call the destination you used for your test.

Handy Tips

SPIDs for lines installed before 1997 vary widely. For National ISDN lines installed from 1997 to the present, the SPIDs are generally: Area code+phone number+0101 (XXXYYYZZZZ0101).

SPIDs beginning with an 01 indicate that you are on a AT&T/Lucent 5ESS switch. 01+phone number+0 (01YYYZZZZ0) means AT&T/Lucent "custom," while 01+phone number+000 means National ISDN.

In situations where you can't determine the correct SPIDs, calling into the unit in question may force the TA to temporarily initialize. This works best if the "Telco" is set PTP and the SPID and Directory fields are left blank.

If you need to confirm your SPIDs or line provisioning (configuration), call the Telco's service number and request that someone who can "log into the switch" call you back. Once you have someone who can do so, you can fax them a copy of the ISDN line Order Form and they can determine what SPIDs and configuration were actually programmed into the switch.

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Circle (183) On Reader Service Card **See Us At The NAB Radio Show Booth # 132**

World Radio History

ZephyrExpress Is

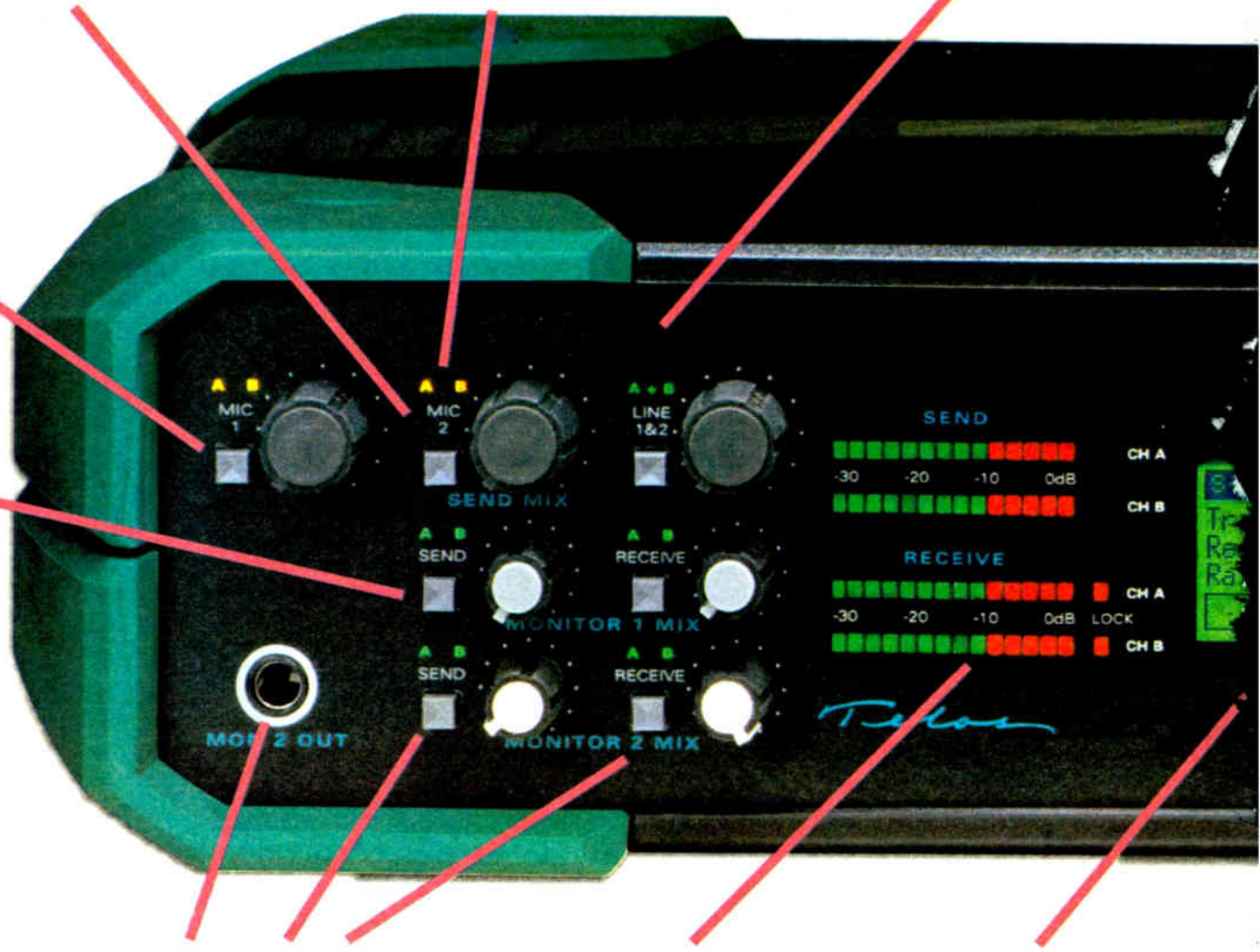
Careful analog design helps to ensure superior sound. Thanks to the mic input audio limiter, your audio won't distort when your talent screams.

Each mono input can be assigned to channel A, B, AB, or muted (with no assignment). The stereo line inputs are either routed as a stereo pair, summed to mono, or muted.

Test tone generator is included for ease-of-setup. Now you can instantly verify levels and signal integrity.

Onboard 48V phantom power and highpass filters come standard on both microphone inputs.

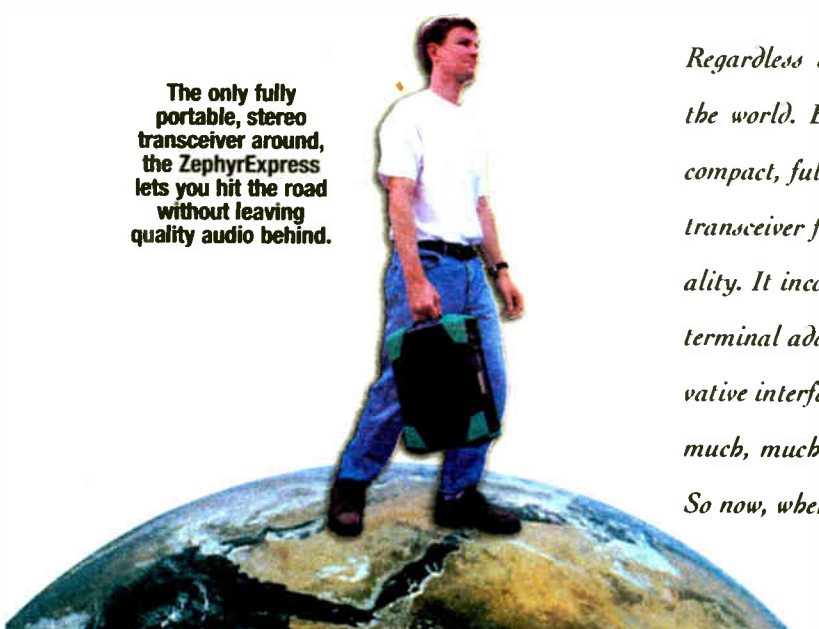
Flexible channel source selection and panning are all available at the touch of a button. Monitor mixer configurations can be customized, saved and recalled using the LCD and EDIT knob.



Headphone jack can receive independent levels of both send and receive audio.

Full metering of send and receive audio levels for both channels provided.

Call out timer.



The only fully portable, stereo transceiver around, the ZephyrExpress lets you hit the road without leaving quality audio behind.

Regardless of where you are, if you can grab an ISDN line, you can get your full-frequency audio to the world. Embodying the spirit and technology of the famous Telos Zephyr, the new ZephyrExpress is a compact, full-featured portable ISDN transceiver/mixer. Rather than merely offering a handful of traditional transceiver functions in a portable chassis, ZephyrExpress provides no-compromise performance and functionality. It incorporates three digitally-controlled stereo mixers, a built-in ISDN terminal adapter, MPEG Audio Layer 3, Layer 2, and G.722 coding, an innovative interface with graphical displays that are easy to read and navigate, and much, much more—all in a road-worthy unit based on the most widely-used ISDN transceiver in the world. So now, when you hit the road, you no longer have to leave your Zephyr behind.

World Radio History

EVERYWHERE ELSE!

Full-featured ISDN transceiver including three coding schemes (MPEG Layer 3, Layer 2, G.722) capable of simultaneous transmit and receive. Coding modes can be individually selected for transmit and receive paths.

Front panel has a clean, uncluttered design for simple operation.

Dialing functions include manual dialing and one-button auto-dialing of 40 presets. These 40 user-programmed auto-dial sets include codec section settings, local ISDN line information, and the numbers of the remote location you wish to dial.

shown at actual size

Easy-to-read LCD display is adjustable for various viewing angles when ambient light in the field makes reading difficult. Menus are organized in logical order and are easily navigated via EDIT knob.

Online HELP includes comprehensive documentation and step-by-step, how-to instructions.

The ISDN terminal adapter is built-in and is compatible with US and Euro-ISDN systems. Everything required for the ISDN connection is included.

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World Radio History

Hicks Sees Good Times for Radio

▶ HICKS, continued from page 8

through that process. Clearly, the smaller markets that, by themselves, could not support some of the high-priced talent that the larger markets can afford have benefited from the decentralized programming. How that plays in the medium and larger-sized markets has yet to be determined.

Consolidation a plus

RW: Members of Congress are discussing reviewing the Telecommunications Act because of the lack of competition between long-distance and local phone companies. Could this affect radio?

Hicks: I don't think there is any potential, because the consumers are the ones who are winning right now. ... Radio is a business of covering your fixed costs.

In too many markets you (had) three or four radio stations that were successful and 15 or 20 that lost money. From a programming point of view, everybody had to play it safe. You had clusters of three country and western stations, three AC stations, three AOR stations .... Now, if we have five stations in the market, we can do the proper research and decide what are the right market segments we can do to expand the total market.

We offer a much broader range of listening formats to the customers than we ever did before. Consolidation has been a tremendous plus for consumers. Our advertisers obviously like it, or they wouldn't be spending more money with radio than they have before ...because radio is now able to offer a better product and a better alternative way for our advertisers to reach their customers. The only people that don't like it are the newspapers. We're taking share away from that industry. I don't know how many owners of newspapers there are in the country, but certainly not enough to influence Congress.

RW: The FCC is looking at ownership as well, and Commissioner Gloria Tristani told the Texas Broadcasters Association that she thinks that the radio ownership rules need to be fixed. Is there a chance the local limits may be changed?

Hicks: They can't do it without Congress ... and, there's no reason for it. The one thing that the FCC is sensitive to, and we're sensitive to, is that just because you've had consolidation, there's been a shrinking of stations owned by minorities. There are a lot of wealthy former owners of stations that happen to be minorities who sold their stations for prices they never dreamed they could get. But people cashed out, so I think that has created its own set of issues.

'Consolidation has been a tremendous plus for consumers. ... The only people that don't like it are the newspapers.'

From Chancellor's point of view and from Hicks, Muse's point of view, we are dedicated to trying to expand minority ownership. Chancellor has recently formed a joint venture with a minority owned investment firm, to back them to buy Z Spanish (Media Corp.). We're a non-attributable investor.

Hicks, Muse announced intentions to form a new investment fund called the Twenty First Century Group, headed and controlled by minorities, headed here in Dallas by John Ware. We're going to raise funds to invest in minority-owned companies and companies that can benefit urban areas. We think that's a tremendous underserved investment market. A significant part of Twenty First Century's investments will be in minority-owned media.

Our target is to invest over $500 million of equity with minority-owned enterprises over the next five to seven years.

RW: Let's switch topics and discuss the Justice Department. Did you have to work with them from the beginning on the Chancellor-Capstar merger?

Hicks: It was actually a non-event, on that particular transaction, because both the FCC and the Justice Department had viewed Hicks, Muse as the controlling shareholder of both companies, even though we only owned about 10 or 11 percent of Chancellor, and were the control shareholder of Capstar. We'd already been viewed as a single owner even when they were two separate companies. ...

We've actually had to make some spinoffs from Capstar over the last 12 or 18 months because of overlaps with Chancellor, even when they were separate companies. All that got cleaned up before we merged so there was no issue at all.

Threat from the sky

RW: We've talked about existing competitors of radio. What about the threat from a future competitor, satellite delivered DAB, which is to be up and running roughly a year from now? Why should someone buy an ad on a Chancellor outlet when they can just target, say, a woman in her car, driving to work, on a satellite digital channel?

Hicks: Radio essentially is a local medium. There were expectations that cable would be severely impacted by satellite. That has not happened, and we don't anticipate that it's going to happen in radio either.

There will be a business there, no question about that. We feel it will be part of expanding the overall market rather than taking anything away from the local market. ... We're also really focused on trying to figure out where radio fits with the Internet.

RW: You mean as a competitor, or putting radio on the Internet?

Hicks: We believe that the Internet will be a significant part of the delivery of radio, we're just trying to figure out what's the right way for Chancellor Media to participate in that process. ... Maybe having a whole different kind of ad delivery than traditional radio, too, with interactive response and all sorts of things that people are looking at. We know it's going to be a big factor, and we intend to participate in the right way.

RW: Just before we did this interview, you were in Argentina. Why?

Hicks: We have a large investment in the largest telecom and media company in Argentina. We're called CEI City Corp. Holdings, through Hicks, Muse. We had a number of meetings with our partners down there. We at Hicks, Muse are making significant investments in telecom, cable and media in South America as part of our overall investment program.

RW: How did you get your start in radio?

Hicks: My dad was a media rep. He ran the Dallas office for a company called Paul H. Raymer, which is one of the consolidatees that folded into what's now called Katz. In the '50s that's what he did, so I was exposed to radio and TV as he called on his customers, which were radio stations and television stations in Texas.

In his early 40s ... with some financial backing, he bought a small station in Port Arthur, Texas, and moved his family, including me, when I was age 13, to Port Arthur. He bought a little AM station and from there he bought a number of other small AM and FM stations and small markets in Texas. So I kind of grew up in junior high and high school with a small radio owner as a father.

I hung around the stations. I was a weekend disc jockey, and I just kind of got to know the business that way. I was one of four brothers. He wanted to have all of his sons come to work at the radio. My older brother did, for a number of years. My younger brother Steve did. I went off to Wall Street and did my own thing, but always stayed interested in the business, so it was just kind of natural for Steve and I to invest together in the radio business, which we've been doing for the last 18, 19 years.

RW: Did you like being a DJ?

Hicks: In high school, it was cool.

RW: Would you like to be one now?

Hicks: No. Certainly not for the measly one dollar an hour I was making at the time!

Vertical Consolidation

The new Chancellor combines the big-market character of the existing Chancellor, with the smaller-market bias of Capstar. Its piece of the revenue pie will still vary widely by city. Here's a look at the current market share of the groups in the top 15 markets plus a sampling of other cities, as compiled by BIA. Revenue figures are based on 1997 estimates.

Mrkt Rank	Market	# FMs	# AMs	Station Revenues (In 000's)	% Share Market Revenues	Parent
1	New York	5	0	111,000	20.1%	Chancellor Media Group
2	Los Angeles	4	1	92,200	16.0%	Chancellor Media Group
3	Chicago	5	1	92,000	23.7%	Chancellor Media Group
4	San Francisco	5	2	64,650	24.4%	Chancellor Media Group
5	Philadelphia	5	1	58,400	25.7%	Chancellor Media Group
6	Dallas - Ft. Worth	5	1	39,350	15.4%	Chancellor Media Group
7	Detroit	5	2	70,000	33.6%	Chancellor Media Group
8	Washington, D.C.	5	3	70,200	29.8%	Chancellor Media Group
9	Houston-Galveston	5	3	89,300	39.3%	Chancellor Media Group
10	Boston	2	1	33,400	14.7%	Chancellor Media Group
11	Miami-Ft. Laud.-Hollywood	1	1	10,500	5.3%	Chancellor Media Group
12	Atlanta	1	0	12,500	5.6%	Chancellor Media Group
14	Minneapolis - St. Paul	5	2	42,300	33.2%	Chancellor Media Group
15	San Diego	2	0	14,200	10.9%	Chancellor Media Group
22	Denver - Boulder	5	1	28,600	20.8%	Chancellor Media Group
23	Cleveland	4	3	36,100	39.9%	Chancellor Media Group
25	Cincinnati	2	2	15,400	15.4%	Chancellor Media Group
37	Indianapolis	2	1	20,200	27.2%	Capstar Broadcasting Partners
38	Orlando	4	0	26,500	35.1%	Chancellor Media Group
59	Honolulu	4	3	11,860	48.4%	Capstar Broadcasting Partners
87	Des Moines, IA	2	1	3,730	15.4%	Capstar Broadcasting Partners
95	Melbourne-Titusvl-Cocoa, FL	3	2	4,150	61.0%	Capstar Broadcasting Partners
103	Roanoke-Lynchburg, VA	8	3	10,830	64.5%	Capstar Broadcasting Partners
118	Ft. Pierce-Stuart-Vero Bch, FL	5	1	6,700	66.3%	Capstar Broadcasting Partners
122	Pensacola, FL	3	0	6,250	60.7%	Capstar Broadcasting Partners
132	Stamford-Norwalk, CT	2	2	6,430	90.6%	Capstar Broadcasting Partners
136	Biloxi-Gulfport-Pascagoula	2	0	4,900	53.3%	Capstar Broadcasting Partners
139	Huntington, WV - Ashland, KY	5	5	6,890	66.9%	Capstar Broadcasting Partners
192	Waco, TX	4	2	5,820	89.5%	Capstar Broadcasting Partners
	Chancellor Media Group	**330**	**141**	**994,360**	**25.8%**	**Combined Groups**

Tom Hicks: Money Man Of Radio

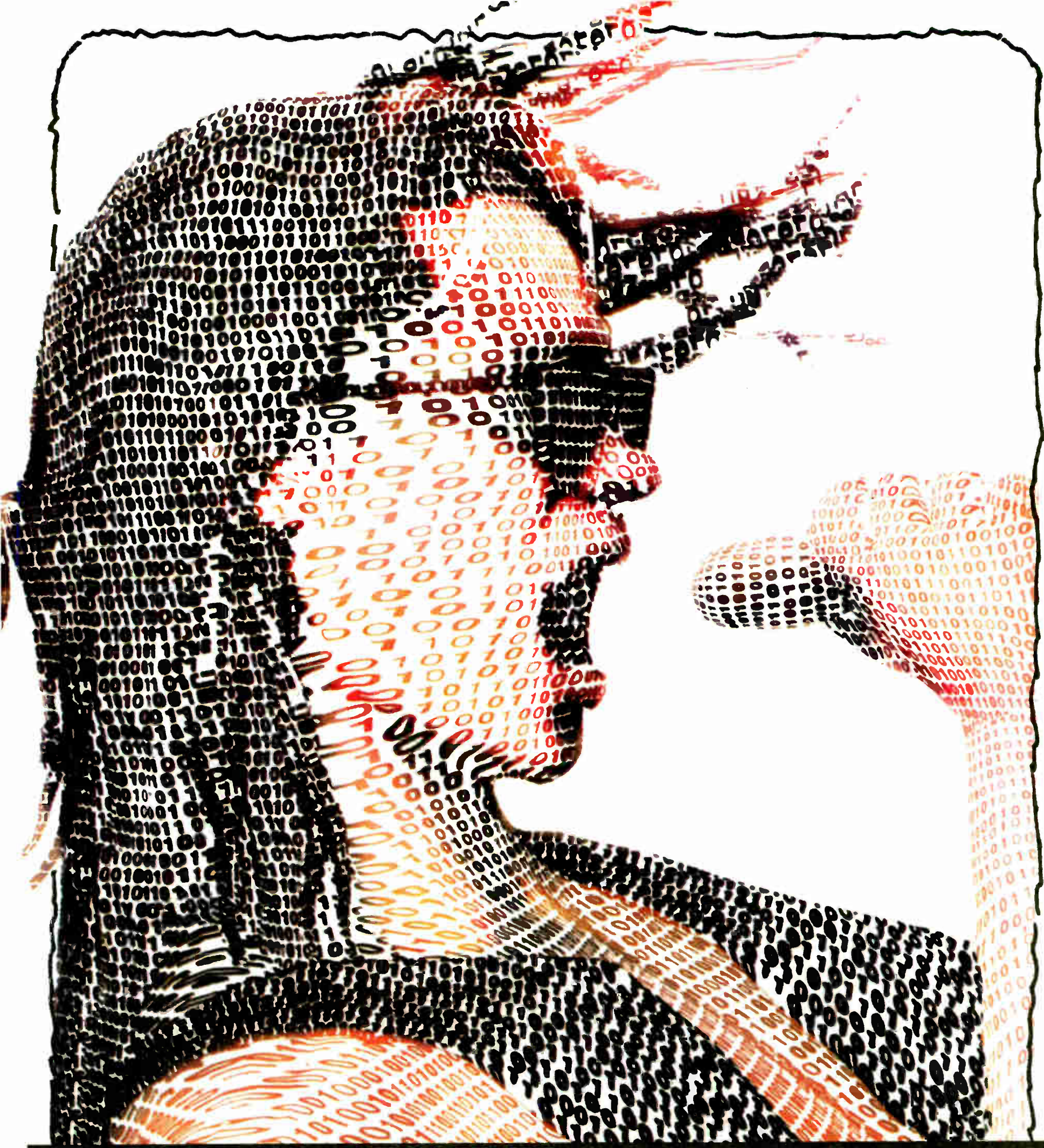
Thomas Hicks' father wanted all of his four sons to join him in the radio business. Three did. But something happened to Tom Hicks on his way into a radio station: he caught the money bug.

After graduating with a masters degree in business administration from the University of Southern California in 1970, Hicks worked as an investment officer for the venture capital affiliate of Morgan Guaranty Trust Company in New York. Then he became president of First Dallas Corp., the venture capital affiliate of First National Bank of Dallas. His next position was co-managing partner of investment firm Summit Partners in Dallas.

Prior to forming Hicks, Muse in 1989, Hicks was co-chairman and co-chief executive officer of Hicks & Haas Inc., a private investment firm specializing in leveraged acquisitions.

Tom's brother, R. Steven Hicks, mentioned in the accompanying interview, is Capstar's chief executive officer and will be president and vice chairman of the combined company Chancellor Media.

World Radio History



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World Radio History

IBOC Status Check

▶ IBOC, continued from page 1

"It's not a science project. It's a business," said USA Digital Radio President Robert Struble. "If I were to grade how this has gone on in the past, it's been approached as a science project. That's appropriate in the early stages, because you've got to prove the technology works. But we're now at the stage where we know it, and we're going to do a bunch of other things."

USADR had a booth at The NAB Radio Show in 1997.

Competition

The competitive spirit between USADR, Lucent Digital Radio and Digital Radio Express is strong and propelling the proponents to stake out positions in the eyes of their public — meaning broadcasters, regulators, receiver manufacturers, transmitter suppliers, even advertisers. Competition drives the companies to conduct demonstrations to court this public, even as they reveal as few details of their systems as possible.

This close-to-the-vest way of doing business is frustrating for members of the National Radio Systems Committee's DAB subcommittee.

The NAB liaison for the subcommittee, engineer David Layer, said, "They do not want to give their competitors any advantage. If they think they have an advantage, they don't want to talk about it."

At a recent subcommittee meeting, Layer said, the companies gave good presentations describing their progress, but were hesitant to share technical details.

"As an engineer, I find it hard to get satisfaction from the proponents in terms of what they're doing. But I'm just going to have to deal with that, because from a business standpoint, they're doing the right thing."

The committee's goal of adopting test criteria for the proponents to follow isn't likely to be adopted at the subcommittee meeting set for The NAB Radio Show in Seattle. (Asked about this, an engineer for one proponent laughed for quite a while. He then replied diplomatically that anything done by committee takes a long time.)

Committee members have agreed in principle on what proponents must submit for evaluation, specifically lab and field test results for both AM and FM IBOC systems. Results would include the impact on FM subcarriers, multipath for FM and the impact on the host station.

The subcommittee has also made it clear its members want each proponent to have a third party — a consultant, independent organization or test facility — scrutinize the test process, look over equipment and data and, according to Layer, "confirm that it's on the up and up."

"Frankly, if the committee's work is going to be accepted, the committee needs to be able to say more than, 'The proponents handed us this data and we looked it over.'" Details of this and the test criteria guidelines are still being discussed.

While some observers expect the subcommittee to pick one system, the members say this is not a goal, at least not now.

"It may be something to look at in the future," said Consumer Electronics Manufacturers Association Director of Engineering Ralph Justus. "Right now, they (committee members) would like to see the proponents come back with data and evaluate that data."

The proponents have made it clear in comments to **RW** they don't intend to let the committee process slow them down. While all three have agreed to try to work with the group, all said they are prepared to go around the committee, take their test data and work it up into a proposal of rulemaking for the FCC without the subcommittee's sanction, if they think that would be more expeditious.

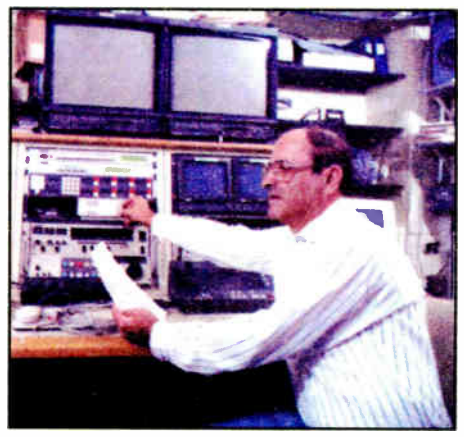
All proponents intend to submit IBOC DAB proposals to the commission; whether that happens before, after or at the same time they submit details of their systems to the subcommittee remains unclear.

One of the most important constituents the proponents must court are receiver manufacturers, who are watching the process but have yet to express a clear endorsement of the IBOC DAB approach.

Of receiver manufacturers, Digital Radio Express Norm Miller said, "The only time they're going to buy in is when the regulatory bodies approve it and say it's ready to go. Nobody is going to start committing a production line" until the technology is ready, Miller said.

Justus of CEMA, which represents electronics manufacturers, said, "Is there a new product opportunity here? If so, we're interested. ... There is a natural viewer and listener migration to higher quality media, such as CD, MiniDisc, cable audio ... all-CD or higher quality media that are attracting listeners' ears and their pocketbooks."

The time to bring a receiver from conception to retail can be 18 months to three years, depending on how fast the manufacturer can reconfigure its product process.



Lucent's David Mansour

"You don't invest those types of resources unless you have a strong business plan for payback," Justus said.

Proponents feel IBOC DAB must happen if radio is to keep pace with competing media that are making the transition to digital. The proponents and radio owners also anticipate competition from satellite-delivered digital radio in the next year to year-and-a-half. For receiver manufacturers, satellite radio is another

See IBOC, page 17 ▶

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Circle (28) On Reader Service Card

Internet Radio Lowers Listener Tune Out

▶ DINGES, continued from page 6

is Association of Independents in Radio — AIR) aren't into Webcasting, and few Webcasters apparently are into that kind of radio production.

New media

Instead, a lot of creative effort goes into creation of new audio-visual-interactive forms of new media in the true sense of sound and animation, sound and slides and, of course, television. The great thing is that we can have and create the best of all three worlds. There are no either/or exclusionary choices, really.

My thing is radio, unembellished by graphics or slideshows. I envision a simple apparatus that pops up when I go online that will allow me to choose a "station" or stream that I can listen to while I work. Radio on the Internet has that element of simultaneity: You can listen while doing something else. (Isn't that why television never replaced radio in the '50s and '60s as predicted so many times?)

I would like to choose my audio stream quickly from a list of great choices — live radio, music, NPR feeds, artsy-fartsy experimental pieces, the latest news, serious documentaries. Sometimes I would listen to music — music on the Internet is already more varied and interesting than most of what you can find on FM. Sometimes I would choose a high-end long-form documentary to listen to if I had the choice. I choose my audio, then I do e-mail or whatever else I need to do.

What is needed is the software equivalent of the radio tuner, an apparatus on your screen that has only three simple controls: on-off, volume and choice of station. The technology exists for all of that now, even though I find existing attempts (such as the RealPlayer Plus) are clumsy and frustrating.

A radio on every computer! Greatly increased production capability! Not just more choices, but more better radio. All of it on demand. I like the sound of that.

■■■

John Dinges is a professor at the Columbia University Graduate School of Journalism. Reach him via e-mail at jcd35@columbia.edu

World Radio History

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MDS-B5 Recorder

Radio World declared that our MDS-B5 Professional MD Cart Recorder "continues in the tradition of the Sony MDS line and proves itself to be a quality performer."

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MZ-B3 Portable Recorder

Our MZ-B3 drew raves: "Not only is it 'bullet-proof' reliable and compact, but it is the only portable MD model available with built-in microphone and speaker."

MZ-R30 Portable Recorder

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MDS-JE520 Recorder

The Sony MDS-JE520 is the affordable solution for general studio recording and playback.

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World Radio History

DAB Timetables

▶ IBOC, continued from page 14

potential new product opportunity.

The IBOC DAB landscape has changed and become more crowded. One year ago, Lucent and USADR were working under a joint development agreement that came to an end in February. Now they are competitors. The third proponent, DRE, came on the scene publicly at the beginning of the year.

IBOC snapshot

As the radio industry pauses to meet in Seattle, the proponents are in various stages of development. They will be on hand at the NAB show in booths and on panels to provide status reports and continue their lobbying efforts.

DRE claims it is ready to submit its FM and AM system test data to the DAB subcommittee and the FCC by the end of this year. Having completed tests of its FM system on KSAN(FM) in San Francisco (**RW**, July 22), the company now is focused on developing an AM system. Terming San Francisco a harsh environment to test FM interference, Miller said the data from those field tests "would pretty much eliminate a lot of the doubting that still exists" about their system. Testing in additional cities would be "a nicety," but not necessary, Miller said.

DRE will show the van it used for recent tests on California ststion KSAN(FM).

Lucent Digital Radio plans a low-power, over-the-air hybrid FM demonstration at the show. Lucent Digital Radio President Suren Pai said higher-power testing on stations in several cities would begin after the show. As Lucent develops wireless systems, Pai said, its engineers go through the same kind of testing they are doing for the IBOC system. Drawing on that experience, Pai estimated Lucent would field test in about 10 cities.

Asked if Lucent has considered teaming up with a broadcast partner to compete with the CBS-backed USA Digital Radio, Pai said Lucent would consider it in the test planning process, but it was not absolutely necessary. He said several stations want to test the Lucent system.

Lucent also announced additions to its DAB team. It appointed David Mansour vice president of research and development and Nick Karter as vice president of business development. Both report to Pai.

Mansour was chief technical officer of Geotek Communications, which provides wireless mobile logistics systems. He will manage four development teams: systems engineering, transmitter design, receiver design and integration/testing.

Karter was director of business development for NextWave Telecommunications, a wireless network provider. He will be in charge of marketing and strategic alliances for Lucent's IBOC technology.

Pai predicted that 12 months from now, Lucent would have demonstrated some systems and be in field trials. Even with the resources of Bell Labs, Pai said, it took the new venture some time to realize the challenges of developing IBOC DAB and bringing it to market.

"If you want to get this done right ...the question is, 'Will you be able to deploy this technology into the marketplace where people will pay for it?'"

USADR plans to have a listening room at the show, complete with easy chairs. Struble said, "We plan an over-the-wire demo with a toggle switch so listeners can switch back and forth between analog and digital." This would not be an over-the-air demonstration.

The company also planned to reveal prototype IBOC DAB receivers and exciters "cobbled together" from several sources.

Asked if plans by CBS to split off its radio division from TV operations could affect funding for DAB development, Struble said it would have no effect.

Struble predicted that a year from now, the FCC would be considering an IBOC rulemaking. He thought the first licensing agreements could be completed with manufacturers at that time.

Net Won't Kill Radio

▶ ADAMS, continued from page 6

spells disaster for traditional radio. Traditional radio stations will need to retrench themselves in the local content they can produce better than anyone.

In this way, local radio stations will continue to survive and flourish by providing that which others cannot: local news, traffic, weather, sports and personality — personality defined by the commitment to the local community.

Create local celebrities out of your air talent. It's the one thing we will not be able to do.

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■■■

John Adams is program director at Imagine Radio, an Internet radio company that launched in March (www.imagineradio.com).

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World Radio History

Reinvented Radio Comes to Seattle

Leslie Stimson

For the first time, The NAB Radio Show is in Seattle, after spending several years shuttling between New Orleans and Los Angeles.

A new city seems appropriate for this annual convention, which drew more than 7,200 attendees last year and is expected to top that this year. A new venue seems right for an industry that has been reinventing itself since passage of the Telecommunications Act of 1996.

At last year's show, the Westinghouse/CBS purchase of American Radio Systems made headlines. It put CBS into the top slot as the No. 1 radio group in revenue and station size (then at 177 stations). At that time, the Hicks, Muse, Tate & Furst-owned Chancellor Broadcasting and Capstar Broadcasting moved to the second and third positions, respectively.

Now, those two companies plan to merge to form a company they value at $17 billion, giving the combined entity more than 460 stations. The deal was announced in late summer.

Meanwhile, at closely watched CBS, President Mel Karmazin, who was honored last year at the Radio Luncheon, now plans to separate the company's radio and outdoor divisions from TV, and sell as much as 20 percent of the radio division to the public. Karmazin plans to rename the radio division Infinity Broadcasting, reviving the name of the company he sold to CBS two years ago.

Washington State Convention & Trade Center

At this show, the big business that has become radio will be explored in several sessions. Tom Hicks, chairman of the board of the combined Chancellor-Capstar, told **RW** he believes the consolidation wave has run its course in large markets, as big groups now are moving to fill in gaps still left in their market clusters (see interview, page 1).

His peers no doubt will have something to say about that at the popular group head session, set for Thursday. Participants in that session include Lew Dickey of Cumulus Media, Dan Mason of CBS Radio, Mark Mays of Clear Channel Communications, Larry Wilson of Citadel Communications, Jeffrey Marcus of Chancellor Media and Frank

See SHOW, page 32 ▶

Three Full Days of Engineering Seminars

Thomas R. McGinley

For years, the NAB offered day-long engineering workshops on various topics at its fall shows, but there was always a hefty surcharge for participants. Not any more. With full convention registration, you may attend any one or all three Engineering Certification Workshops at this year's show in Seattle.

The first session on Wednesday, Oct. 14. offers a revamped AM Directional Antenna Seminar with Ron Rackley and Ben Dawson. Thursday features a comprehensive workshop on Digital Facilities. And Friday's affair features the AM/FM Transmitter Workshop, moderated by **RW** *Workbench* columnist John Bisset.

Participants earn SBE recertification credits for each workshop attended.

AM radio is enjoying a bit of a renaissance as large groups scoop up stations and spend money improving them. New owners are finding out that engineers with AM antenna knowledge seem to be in dwindling supply. The NAB Radio Show has just the ticket to help today's station engineer who is in charge of maintaining an AM directional antenna system. Two of the industry's pre-eminent experts will present an all-day tag-team workshop on this enigmatic subject from 8 a.m. to 5 p.m.

Ron Rackley of duTreil, Lundin, and Rackley Consulting Engineers, and Ben Dawson of Dawson and Hatfield, have updated this unique workshop, now in its second year of a restructured format. The program focuses on proper maintenance techniques, including troubleshooting tips, proofs of performance, handling all modes of failures, how to stay out of serious trouble, and, when all else fails, when to call for the consultant or other outside expertise.

See ENGINEERING, page 21 ▶

The Facts

What: The NAB Radio Show

Where: Washington State Convention & Trade Center, Seattle

When: Oct. 14-17, 1998

Attendees: 7,200 last year

Exhibits: More than 150 booths, open Wednesday evening and all day Thursday and Friday

Cost to attend: $435 for members, $735 for others

To register in advance: Go to *www.nab.org/conventions/* or call (301) 682-7962 before Oct. 7

PERSONALITY PROFILE

Jacor's Premiere Radio Doc

Dr. Laura Preaches, Teaches and Nags Her Way to the Top Of Radio Syndication

Bob Rusk

Dr. Laura Schlessinger is poised to overtake Rush Limbaugh as the most popular radio personality in the country. The "Dr. Laura Program" and the "Rush Limbaugh Show," both syndicated by Jacor Communications' Premiere Radio Networks, are now in a dead heat, each attracting between 18 million and 20 million listeners each week, according to Arbitron.

Schlessinger, who is heard on about 450 stations and will appear at

Dr. Laura hams it up with Greg Moceri, general manager of WSB in Atlanta.

the Radio Luncheon during The NAB Radio Show, certainly has the demographics to challenge the imposing figure of Limbaugh. Her audience is almost evenly divided between men and women, with females 35-54 holding a slight edge. Adding to her strength, she also attracts children, adolescents and senior citizens.

According to AT&T, upwards of 250,000 people attempt to call "The Dr. Laura Program" every week — much to her surprise. Schlessinger said she never imagined that the program would become so popular.

"My husband did, (but) I never

See DR. LAURA, page 28 ▶

World Radio History

Sessions Focus on 'Small' Talk

Can Radio Stations in Very Small Markets Still Cut it in These Big-Deal Days?

Dee McVicker

Radio stations live and die by the numbers written in two books: the Arbitron book and the accountant's ledger.

What, then, do we make of that group of radio stations whose numbers, for the most part, are not adding up — not with Arbitron and, all too often, not on the income statement?

Donna Halper

The NAB Radio Show sessions will include nine that deal specifically with challenges and triumphs of small-market radio. The sessions will be moderated by general managers, consultants and programmers of small-town stations, many of which serve communities of less than 3,000 in population.

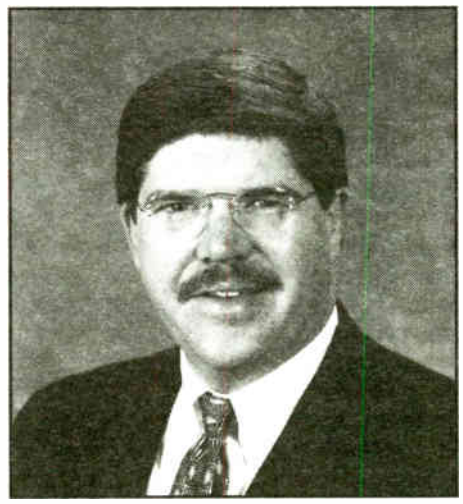
Commonwealth Broadcasting President and CEO Steve Newberry of Glasgow, Ky., the owner of 25 radio stations located in what he calls "micromarkets," sums up the challenge as too many expenses and too little income.

"Our typical advertising rate is $10. If you go 100 miles down the road to Louisville, Kentucky, to the No. 4 station in town, their rates are probably $100. But their air talent isn't making $200,000. He might be making $40,000," he said.

By that calculation, the rate charged by the micromarket station is only one-tenth, but the salaries one-fifth, of those in the larger market, producing a relative imbalance in expenses and income.

How a healthy small-market station rates in terms of profit margin, expenses and operating capital will be explored in depth for the first time during this convention, according to Newberry, who is on the NAB steering committee for the session track.

"That's one I really pushed for, because I don't think we have all the answers to that yet," he said of the Friday session "What a Healthy Station Looks Like (By the Numbers)," moderated by Jerry Zimmer of Zimmer Broadcasting.



Steve Newberry

Also foremost among the issues to be discussed is small-market station consolidation, said Bob Duchesne, the market manager for Cumulus Media's recently acquired WQCB(FM) and WBZN(AM) in Brewer, Maine. He will moderate a roundtable discussion on this subject and others during the show.

"It is definitely happening down the chain in smaller markets now," he said.

McCoy and localism

Technology also is having an impact, often to the detriment of local coverage — the small-market station's competitive advantage in the media-crazed '90s.

"We actually agonized a bit over the issues of localism, because I think we saw in the '70s satellite-delivered radio do some damage to that, and radio was the worse for it," Frank McCoy, director of engineering for GulfStar Communications, said. McCoy will moderate a discussion on how stations can stay local in a high-tech world. McCoy's efforts to create digital interconnection among GulfStar and Capstar stations have been documented in **RW**.

Other discussions will center around personnel, promotions, assessing station performance, and success stories by panelists.

"You can have compelling programming, still be profitable and be in a small market," said Donna Halper of Halper & Associates, Boston, a broadcast consultant and historian who serves on the NAB steering committee for small-market sessions.

Successful station operation is the theme running through the nine sessions. Among them:

Selling sports

On Wednesday, Dave Casper of the Radio Advertising Bureau will discuss "Selling Sports in Small Markets." Also, Bidgood Wall of WVHL(FM) in Farmville, Va., Larry Fuss of WDTL-FM in Cleveland, Miss., and moderator Donna Halper will share "Small-Market Success Stories" on Wednesday.

On Thursday, engineers and other managers will benefit from "Affordable New Technologies for Small-Market Stations," moderated by David Leeds of KPQX(FM), Havre, Mont., with panelists Dave Burns of Harris Corp. and Tim Schwieger of Broadcast Supply Worldwide.

"No-Budget Promotions in Small Markets" is moderated by Sara Willett with Cumulus Media. The session "Recruiting, Training and Retaining" will be moderated by Steven Newberry with panelists Bill Groody of Lakeport, Calif., Cary Simpson of WGMR(FM), Tyrone, Pa., and Jo Guck Bailey of KXLP(FM), North Mankato, Minn.

On Friday, in addition to the sessions mentioned above, attendees can "Ask the Consultants," moderated by Jay Mitchell of Jay Mitchell and Associates. The sessions conclude with the roundtable discussion on Saturday.

Career Fair Seminar
Wednesday, Oct. 14
Noon-5 p.m.

The employment outlook is all over the place in radio right now. GMs have seen their job market threatened by group consolidation. Jocks worry about the trend to virtual radio. But computer-savvy engineers are in demand, as the industry realizes it has lost technical people to other, higher-paying tech industries.

Job-seekers, owners and managers can meet at the NAB Career Fair. A morning seminar offers interview and industry tips.

Show tip: Come prepared with printed résumés in hand.

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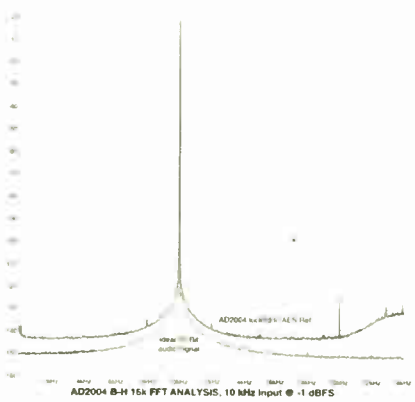

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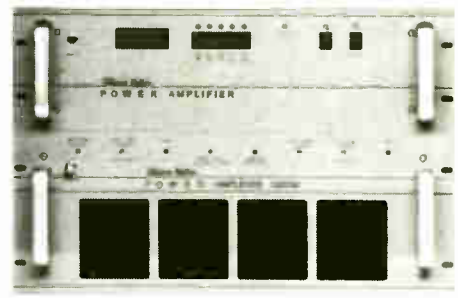

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READER SERVICE NO. 76

World Radio History

Digital Issues to be Discussed

▶ ENGINEERING, continued from page 18

This workshop had been offered by the NAB previously, following a program developed by the late Carl Smith, back in the days when stations employed larger engineering staffs and the FCC rules required more constant attention. That format included more emphasis on math and theory.

According to Ron Rackley, "The typical radio engineer of today spends most of his workday dealing with the LAN and computer systems, leaving little time for transmitter and antenna system maintenance. This workshop will be especially helpful for those who are responsible for their station's DA systems but need to do it properly in a minimal amount of time."

The day's syllabus is divided into five separate topics, beginning with Introduction to DA Patterns. In nonmathematical terms, the basics of theoretical, standard, modified and converted standard patterns will be discussed. Then the system building blocks will be introduced and shown how they are used to form a directional pattern.

Two sessions of DA hardware discussion will cover coils and capacitors and how they work together to form a phasor. Then the antenna sampling system components will be considered thoroughly. After a lunch break, the afternoon will be devoted to DA troubleshooting principles and practices, plus all of the FCC compliance and paperwork issues that govern ongoing legal operation as well as changes that may be contemplated.

This will be an interactive workshop with ample time to ask questions specific to your system. If you have to deal with AM antenna systems, and have never had the chance to learn from the masters, this is your golden opportunity!

Ever since digital began seeping into the radio business almost 20 years ago, engineers had to start learning new ways of doing things. The technical bitstream propelling this industry has now become a torrent of digital solutions. The NAB Radio Show offers perhaps the most important comprehensive session a general manager or chief engineer could attend: The Digital Facilities Workshop.

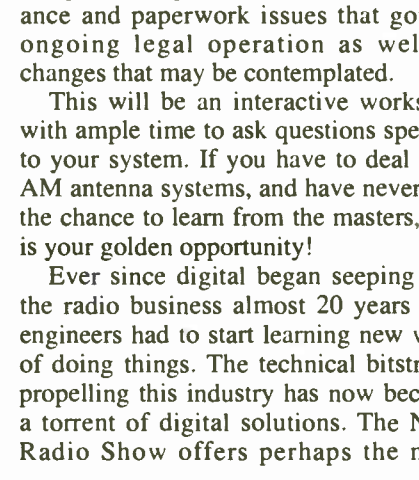
This session begins at 8 a.m. and leads off with a general tutorial of digital audio and digital compression basics. Attendees will look at coding, quantizing, sampling and Nyquist, as well as bit-rate reduction techniques and how they have developed and improved over the years. The session includes an overview of the advantages and disadvantages of the more popular data reduction algorithms, as well as the current trend of "going linear" where no compression is used.

Today's radio engineer spends more time dealing with computer systems than on transmitter and antenna maintenance.

Desktop PC computers have literally taken over the audio production and delivery chores at most radio stations. Large reel-to-reel tape recorders now are dusty relics, relegated to dumpsters and dead storage. But all PC computers are certainly not created equal. The morning includes an examination of the many equipment choices and platforms available in this critical area and provides a few shopping tips.

Integrating all of the delivery systems in a radio station that use PC computers is both highly desirable and problematic. Interconnecting digital production, digital storage, program logs and billing systems which can be on different platforms and networks is almost always challenging. Long-time major-market chief engineer

See ENGINEERING, page 22 ▶



Opening Reception
Wednesday, Oct. 14,
5-7 p.m.

The NAB made a smart move in the past when it set up its opening reception right on the exhibit floor. Attendees and exhibitors both like it. You can get a taste of the booth layout, and have some food and drink at the same time, as the first day of the show winds down.

Show tip: Don't forget to pick up your badge beforehand, so you'll have no trouble getting onto the exhibit floor.

World Radio History Circle (106) On Reader Service Card

Handling Your RF Nightmares

▶ ENGINEERING, continued from page 21

Kevin McNamara of Exegesis Technologies based a new career and business around this challenge. He offers a timely discussion of hardware, software and network issues (Novell vs. NT) and what it takes to make workstations and servers talk to each other.

Cluster effect

Many stations now are part of larger clusters operated by one owner with one business office. Integrating computer-based audio and administration conference systems across a multi-station facility presents unique challenges. Presenter Shronda White of Fisher Broadcasting will share the war-stories of having to learn many things the hard way to get the integrated system running smoothly.

Every piece of equipment along the radio air chain can now be digital, including some new RF and remote control entries. The morning session will conclude with a discussion of the evolution of digital STLs, from 23 GHz and T1 circuits to the new uncompressed 950 MHz technology. What are the advantages in quality and reliability when you create a digital air-chain of mixers, switchers, audio processors, STLs and exciters?

Most digital equipment either works perfectly or not at all. Maintaining it requires new approaches, but is still important if you expect to avoid crashes and other nasty surprises. Kirk Harnack, who not only owns radio stations but services them as a contract and field engineer, draws from a wealth of experience as he offers invaluable tips on systems and equipment configuration, setup and maintenance.

"Defragging hard drives is the modern way of cleaning heads without cue tips," Harnack quips. He kicks off the afternoon part of this day's session.

Radio stations now enjoy exposure and coverage all over the planet via the World Wide Web. Part of Thursday's afternoon discussion will look at the ways stations can profit and have fun by connecting to the Internet, with both Web sites and real-time streaming audio.

The all-digital radio station first appeared almost two years ago. Philadelphia's AC leader, WBEB(FM), took the plunge headfirst and now is spreading the all-digital word. Hear that gospel of success from Chief Engineer Russ Mundschenk, who may know more about implementing all-digital radio at the station level than anyone, anywhere. Russ will strain the AES/EBU bitstream into component parts more easy to understand. And he'll share his litany of learn by doing tales from the WBEB experience.

As readers of RW know well, in-band, on-channel digital audio broadcasting now has three players vying for attention. Both USA Digital Radio and Digital Radio Express have done considerable testing since the NAB spring show, including FM band multipath studies over real on-air stations. Newcomer Lucent Digital Radio also has been conducting tests with its new FM system. All three IBOC proponents will report progress of their respective systems as part of the Thursday afternoon activities.

Transmitter workshop

Back by popular demand and moderated by one of the industry's best can-do engineers, Friday's engineering workshop features Transmitter Troubleshooting and Maintenance. John Bisset, former head of Multiphase Consulting Engineers and now a Harris Corp. regional sales rep, leads the day-long discussion beginning at 8 a.m. John may be best known as the author of the popular and long-running *Workbench* feature in RW. This event drew a full house at last year's show in New Orleans.

"Whether you are new to the business, work mostly on audio or computers, or are a seasoned vet, this event will sharpen the skill levels of all who attend," Bisset promises. Anyone who has been responsible for keeping a broadcast transmitter going has spent many an all-night session with a dead box, having tried everything reasonable but still not finding the fix. This session will provide many new fresh ideas, tips and tricks on how to get old Betsy up and going again.

A panel of representatives from the major transmitter manufacturers will be on hand to cover AM and FM transmitter fundamentals, block diagram and control circuit analysis, signal tracing and troubleshooting techniques, and a list of common problems and cures for each respective family of transmitters. Then a panel of experienced chiefs and contract engineers will discuss memorable catastrophic problems and how they handled them and prevented future recurrences in a session entitled, "My Worst Nightmare." This should prove to be both instructive and entertaining.

The day's session will wrap up with an interactive troubleshooting discussion, in which attendees participate in group-troubleshooting a variety of potential transmitter and antenna problems. This will allow all participating to "put what they've learned to good use," as they tackle both typical and exotic problems at the transmitter site.

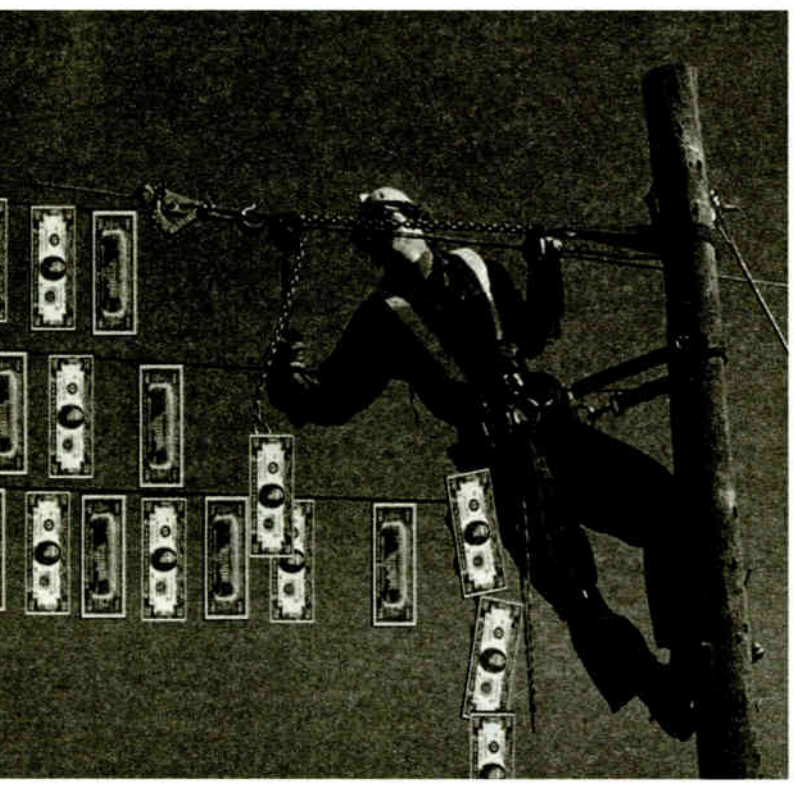
Three all-day technical sessions

will deal with directional AM systems, digital audio issues and the special problems of transmitters.

"Bring your toughest problems and questions and let the experts have at 'em," Bisset said. "There is no substitute for real-world experience when it comes to dealing with this area of broadcast operations. Learn from the best in the business. Many of them will be at this workshop."

In addition to handouts from the transmitter manufacturers, a maintenance checklist and other helpful materials will be provided. SBE recertification credit will be awarded in certificate form to all those who complete the entire workshop. Again, there is no additional charge for admission beyond the full registration.

Check show material on site for exact times and locations of these sessions.



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Audio OnLine is ideal for weather reports, ski conditions, concert information, traffic updates, sports scores, lottery, and school closings. The list of possibilities is endless! Sell information sponsorships to local ski shops, record stores, gas stations, concert promoters, theaters, and convenience stores. Practically any advertiser will benefit from sponsorship.

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Keynote Address
Sam Zell, Jacor
Thursday, Oct. 15
10:15-11:15 a.m.

This year's keynote speaker is Sam Zell, chairman of the board of Jacor Communications. At press time, the industry was watching to see what he would do with Jacor. Would Zell sell at last?

Tip: Listen closely and you might pick up a few stock-market tips. Zell is a successful investor, a billionaire entrepreneur.

See Us At The NAB Radio Show Booth # 606

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How much are eight miles worth ?

Plenty, if you are a AM broadcaster. What if your station could get out another eight miles of coverage? What would it be worth to you? The audio processing that you use plays a big part in the coverage of your station. Are you getting all the coverage area that you can ?

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New audio processing from CRL can maximize the coverage area of your station. Our tri-band Limiter design delivers extra sideband and modulation energy to your listeners' radios. Our patented NRSC-1 filtering gives you the tightest peak control of any processor on the market. The result is an average of eight miles of additional coverage area compared to older processing equipment (average at 1200 kHz with 1 Kw power).

We manufacture the largest assortment of AM processing products on the market. Instead of only one or two processor choices, we offer 7 different AM systems. With thousands of systems in use, it's no wonder that we are the leader in AM processing technology. Plus our systems start at less than half of what the competition charges. How much is eight miles of additional $elling penetration area worth to your station ?

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Broadcasting in Stereo ? Moving to the expanded band ? Our matrix stereo AM systems deliver up to 6 dB better envelope (L+R) loudness than the competition. That translates into full reception range on all mono radios. Our patented matrix processing circuitry provides full stereo depth and fidelity that sounds almost as good as FM. Eight out of ten stations that broadcast in stereo use CRL audio processing.

MBL-100 NEWS/TALK PROCESSING SYSTEM

How many miles will a new CRL audio processing system give you? It's easy to find out ! We have a demo program available through our dealer network. Ask us for the details. In just a few weeks you could have better coverage and loudness, plus a larger $elling penetration area. Can you afford not to use a CRL AM processing system ?

CRL SYSTEMS

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Old Coverage Area

See Us At The NAB Radio Show Booth # 520

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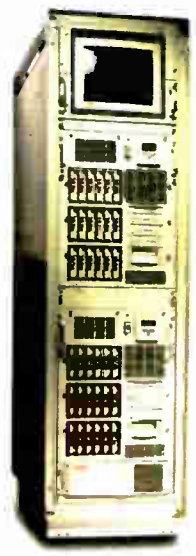
Jim McGivern,
Chief Engineer, Emmis New York
(Hot 97, Kiss FM, CD 101.9)

Leading broadcasters all over the world rely on Dalet. Dalet has more installations than any other system.



Full Redundancy Servers

Reliability

Dalet has the proven expertise to assure that your station stays on the air. Choose from a wide range of security options (RAID array, mirrored servers, local backup) to meet your specific requirements. Dalet's digital audio system has been running on Windows and networks for eight years, at hundreds of sites – from stand-alones to hundred-plus workstation networks. It works for them, it can work for you.

Cost Efficiency

Whether you are a large or small market station, Dalet offers a completely integrated suite of software which allows the entire staff to work together. All departments – traffic, production, programming, news and on-air – have simultaneous access to all audio, copy and logs. With modular software options, the Dalet system can meet your specific budget requirements – growing with your business needs. Standard hardware also means cost savings. The system is not proprietary, and will grow with the industry. Finally, with Dalet's easy-to-use interface your staff will be operational in no time.

Partnership with long-term leaders in the computer industry helps us remain at the forefront of technological innovation.

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The World Standard

- Windows 95 or NT
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World Radio History

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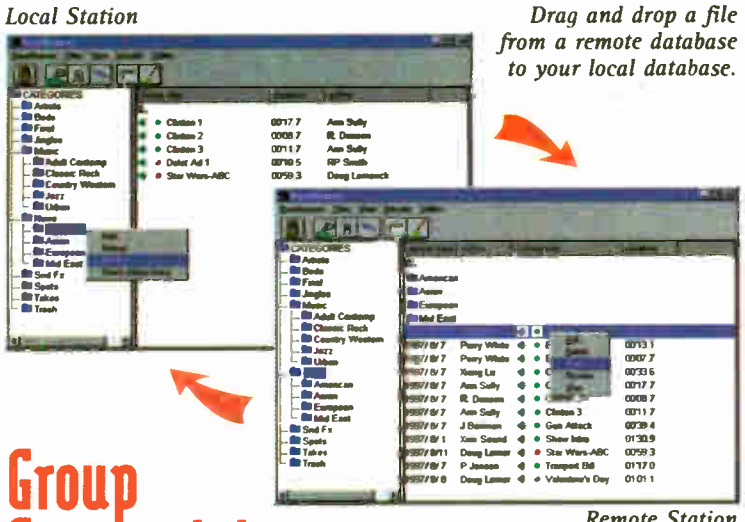
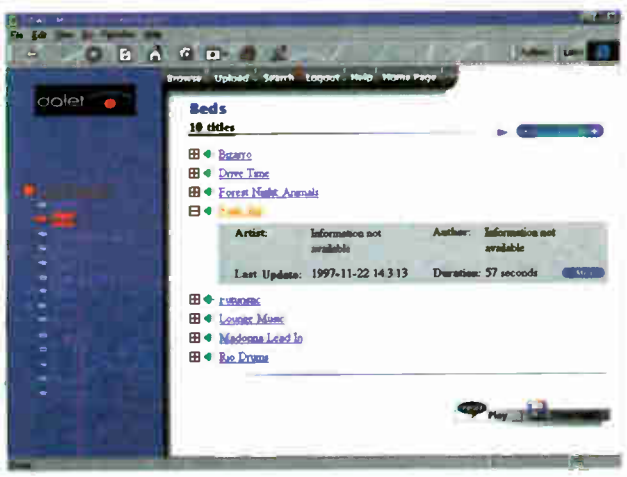


Group Connectivity

Consolidation can generate huge productivity gains, provided groups have the right tools. Dalet is continuously developing new solutions to meet the evolving needs of our clients. With TeamRadio – Dalet's traffic and billing software – the business of over 1000 radio stations can be linked together. Intranet applications allow stations within a group to access each other's orders and audio remotely. The production work done by one station can be used by another, only minutes later.

Dalet On Air Workstation



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Dalet is a service-driven company. With more than 70 engineers, we guarantee your station stays on the air. Dalet's support experts are on call, 24 hours a day. Clients have on-line support over the Internet. We can also provide on-site visits to upgrade an existing system.
"Support on any of these systems, I think, is imperative...
Dalet support has been excellent."
Jim McGivern

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What Have You Sold for Me Lately?

Sales & Marketing Sessions Aim to Provide Real-World Solutions to Radio Sales Problems

Bob Rusk

In the end, it all comes down to sales.

That's the reality for most radio stations, and for a great number of the people who will attend The NAB Radio Show. Any talk of mergers, consolidation and improving technology means nothing if commercial radio stations can't get the signature on the contract from their clients.

Show planners think they've got some new and creative tools to offer this year. Marilyn Kushak, vice president of sales and marketing for Mid-West Family Broadcast Group and the chair of the NAB Sales and Marketing Subcommittee, said the industry is reinventing how it sells itself, and these sessions are designed to help sales people adapt.

"One critical element is to focus on what needs to happen for each individual client. Times are good and advertisers are in a position to be very aggressive; they need to justify their return on investment. This presents a huge opportunity for radio professionals to become marketing people. As long as we identify what needs to happen for the client and become problem solvers and good marketing thinkers and executers, we're going to get results for the client."

Better marketers

She said, "This is a whole lot different than sales in the past — of just getting a spot on the station. That is not what radio is all about today. We're much more professional than that and we have to achieve results for our clients."

She would like to see the stations in a market sell radio together first, then sell time on their individual stations.

"We are in the best position to achieve a good return on investment. It is very important that all stations in a market join hands and sell the benefits of all radio, and even recommend a competitor as opposed to another media when it makes sense."

Among the most promising sessions in Seattle:

Sheila Kirby, Morrison & Abraham

Utility companies, fresh from deregulation, have millions of new dollars to spend, but don't know where to spend it. A Thursday session called "Feel the Electricity: Utility Deregulation" shows radio how to grab some of the revenue as utilities enter everything from communications to retail.

Session leader Sheila F. Kirby, president of consulting firm Morrison & Abraham, said, "Radio salespeople have gotten stuck in establishing their value and hoping that their Arbitron numbers relate." That attitude must be changed, she said, so a station's audience is positioned as a valuable asset to present to advertisers.

"The reality is, you have a million, 2 million, or even 200,000 loyal customers," she said. "That is a powerful number."

Sure to be well attended is Wednesday's "Urban/Hispanic: Ratings vs. Revenue." Panelists include Stu Olds, president of Katz Radio Group, and Carey Davis, vice president, Spanish Broadcasting System. Part of the discussion is likely to be a controversial Katz memo, leaked earlier this year, suggesting that clients not buy time on urban or Hispanic-

See SALES, page 30 ▶

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Exhibit Walk-Around Lunch
Thursday, Oct. 15
Noon-1:45 p.m.

One way organizers balance the demands on your time during a show is to put food on the exhibit floor and let you browse while you eat. Thursday, you can sample Seattle-style farewhile you look at the radio products and services on display.

Tip: Wipe the salmon off your fingers before trying out the computer touchscreens.

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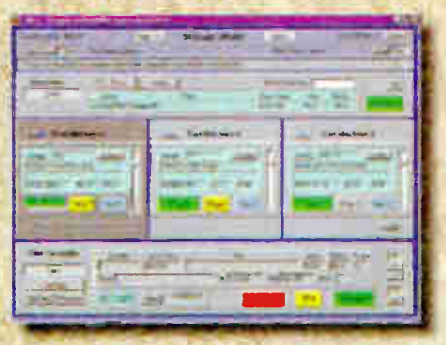
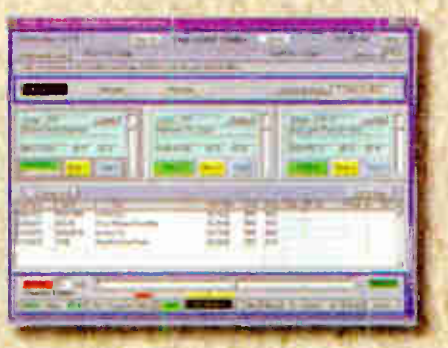


Live Assist $1,995



Hard Disk Automation
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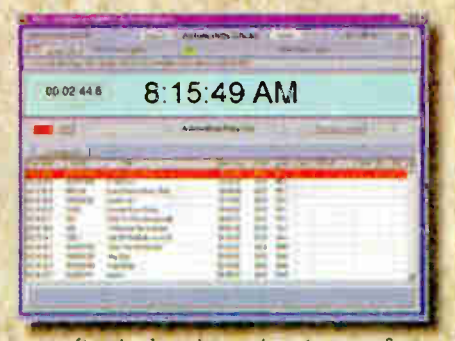

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World Radio History

Listeners Like Their Dr. Laura

▶ DR. LAURA, continued from page 18

did. I was just happy to be on the air and employed," she said with a chuckle. "I'm not that greedy."

Since going into syndication in 1994, after four years as a local host at KFI(AM) in Los Angeles, Schlessinger has been radio's loudest proponent of moral health. She is against abortion in most cases, believes that couples should wait until marriage to have sex, and does not believe in divorce when kids are involved.

"I preach, teach and nag," she proclaimed. But hers is not a "shrink show," she said. "I don't give advice. I give my never-to-be-humble opinion."

"The Dr. Laura Program" airs live 11 a.m. to 2 p.m. Pacific time on weekdays, and originates from her studio at Premiere Radio in Sherman Oaks, a suburb of L.A. For affiliates that want more, the "Dr. Laura Moment" is offered as a morning drive feature.

"I do an intro and we edit a compelling (segment) from a call, which teaches something important or moves you," Schlessinger said. "It gives a real flavor for what the show is about. 'The Dr. Laura Moment' gives the opportunity for people to sample and hopefully feel compelled to tune into the show. I think that's better than a 10-second promo."

For affiliates, Dr. Laura is a high-profile asset they can pitch in many ways.

Cox Radio station KFI, which continues to air Schlessinger, posts the "Dr. Laura Moment" script on its Web site. Like many of her affiliates, the station uses the Web to promote her heavily. KFI also lets listeners post messages to Dr. Laura's discussion forum and offers audio samples of Schlessinger's show.

On its Web site, CBS station KRLD (AM) in Dallas features a Dr. Laura page that tells listeners and advertisers that "she's the most explosive talk-radio ratings success story of the last two years."

The radio host takes part in a musical instrument donation at the launch of The Dr. Laura Schlessinger Foundation.

Those words are echoed by another affiliate, ABC's WLS(AM) in Chicago.

"She has brought a distinct sound and approach to our air that we hadn't had before," said Mike Elder, WLS operations manager. "The combination of her and Rush has been very successful in both 12+ and 25-54 in Chicago."

The talk show host has made headlines of a less pleasant sort recently. Vanity Fair published a less-than-complimentary profile in its September issue (see related story, next page). The writer of that story said she was "shocked" by the ill will she found toward Schlessinger inside the radio business.

Consolidation critic

But Schlessinger has reached a level of success and popularity that few people in broadcasting achieve. She has no reservations, however, of biting the hand that feeds her, and is a vocal critic of consolidation.

"If I were coming in to this now, I don't know that I could get to where I am," she said. "With consolidation and people buying up talent and stations, you don't have the opportunity to get on local stations; they're owned by somebody who puts on their own talent. It's very hard now."

She said stations will program "trash" simply as a way to increase revenue.

"There's so much trash on radio," Schlessinger said. She would like to hear more people on the air who have "a good personality and something intelligent to offer, even if they're not making pools of money."

"How much money do you need? There's got to be a point at which you're doing it for things other than that."

Schlessinger said she is donating the royalties from her new book, "The Ten Commandments," to her charitable foundation.

The climate in radio is "getting a little too greedy," Schlessinger said. "Everybody wants to be at the level of Rush or Dr. Laura. There is some significant, good talent out there who would be more modest successes. That ought to be good enough."

Despite such harsh words, Schlessinger is pleased that she has a platform as a voice of morality.

"You never know who's listening and what the influence will be," she said. "I'm very grateful that God put me in the right place."

■■■

Bob Rusk is a broadcast and entertainment industry writer. Among the many personalities he has interviewed for RW and its sister publications are Tom Joyner, Bruce Williams, Art Bell, Leeza Gibbons, Mark and Brian and Bob Hope.

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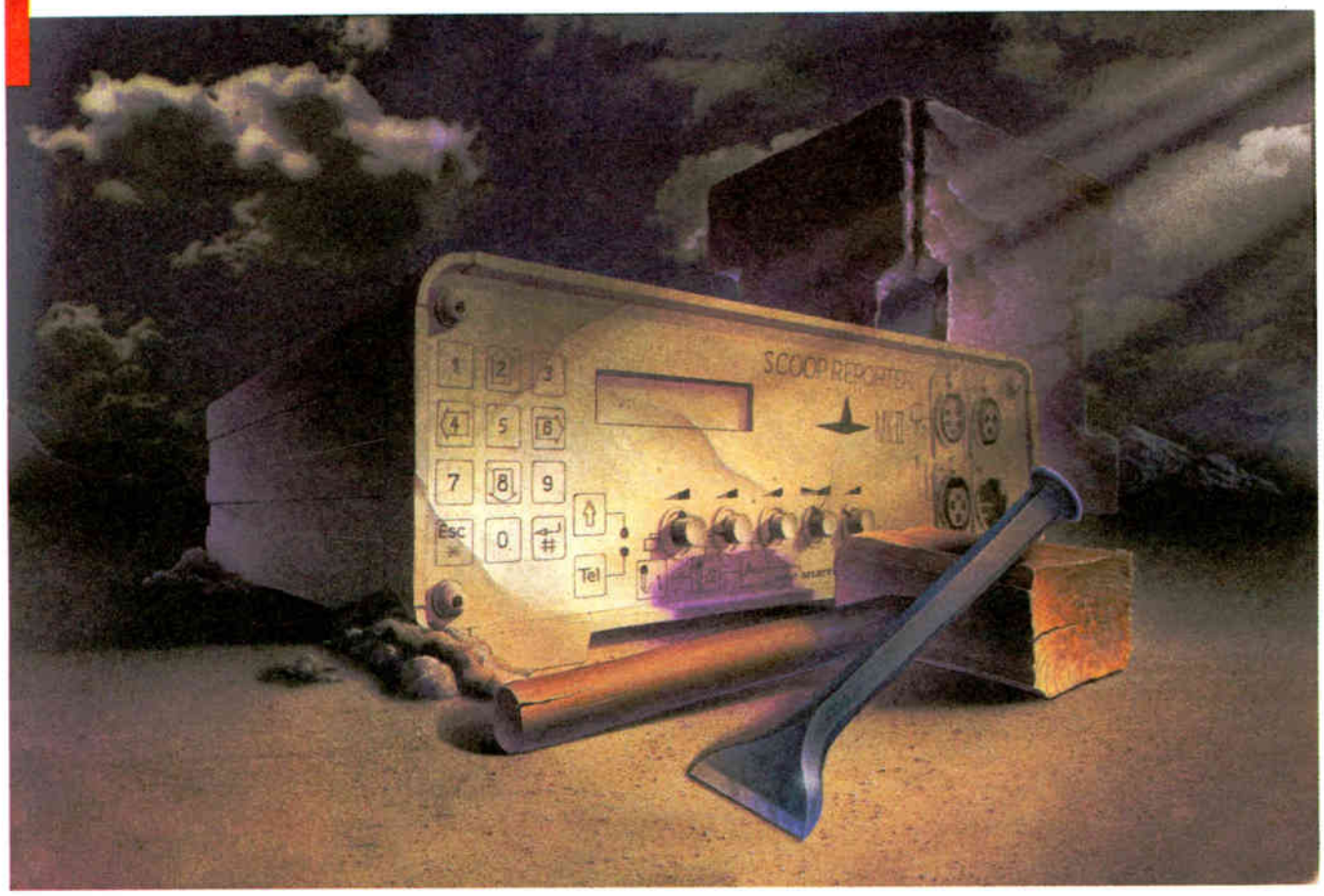

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World Radio History

Schlessinger Slammed In Vanity Fair

Bob Rusk

Dr. Laura Schlessinger was the subject of some unwelcome national attention when Vanity Fair published a scathing article, "Diagnosing Dr. Laura," in this month's issue.

Writer Leslie Bennetts reported, "Schlessinger's own life is a tangle of contradictions, from her early divorce to her recent conversion to Orthodox Judaism." Several of Schlessinger's former broadcasting colleagues were interviewed for the story.

"Everyone who knows her hates her — and on some level she knows it," the article quoted Marilyn Kagan, a radio host who "incurred Schlessinger's enmity," as saying.

Among other incidents, the article stated that Schlessinger, who worked at KFI(AM) in Los Angeles from 1990 to 1994, often brought her son Deryk with her to the station.

"You'd have to dodge him in the hallways; he was always running around the station unsupervised," said Laurie Sanders, whose show ran from 6 to 10 p.m. at KOST(FM). Dr. Laura had the 9 p.m. to midnight shift at KFI, in the same building.

"One night I was on the air and Deryk ran into the studio with another child and screamed and laughed at the top of his lungs," Sanders said. "I called my program director and said, 'This has got to stop.'"

Sanders continued, "From that point on (Schlessinger) ignored me. When I was released from the station, allegedly because of budget cuts, she ran around overjoyed, singing, 'Ding, dong, the witch is dead!' She just reveled in the fact that I was let go."

When asked about Sanders, Schlessinger claimed not to know who she is. Schlessinger told Vanity Fair that she "would never rejoice in anybody else's pain."

Schlessinger told **RW** that the Vanity Fair piece contained "wall-to-wall" lies. She did not elaborate. Her husband and manager, Lew Bishop, said Schlessinger would not discuss specifics.

Bennetts, the author of the article, told **RW** she stands by her story.

"I originally went into this assignment with a very admiring impression of (Schlessinger)," she said. "I hadn't a clue what kind of ill will existed towards her in the radio industry. When I began to hear about it I was shocked. The things that people told me she had done were so contrary to the values she espouses on her show."

The Vanity Fair article was reprinted on the Web site of the Westwood One-syndicated "Tom Leykis Show." Leykis held a Dr. Laura contest, in which his listeners were encouraged to call her program and try to get certain phrases from the article — such as "vibrating like a carp out of water" — on the air. At press time, there was not a winner of the $10,000 grand prize.

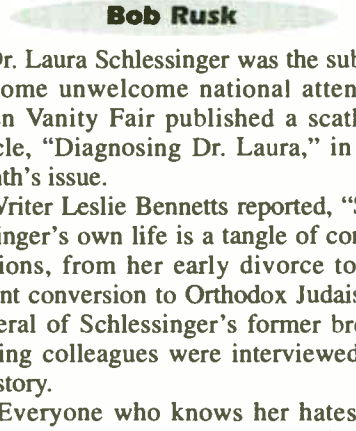
Leykis told **RW** that he started the contest because it was "a fun thing to do. We're tweaking Dr. Laura," he said.

When asked to comment on his feelings about Schlessinger, Leykis said, "I just happen to believe that when you go on the air and pretend to be perfect, you've got to expect that people are going to try to find the chinks in your armor.

"As someone with a checkered past who talks about it on the air all the time," he said, "I'm troubled by people who say one thing and do another."

Managers of several stations that air "The Dr. Laura Program" said the Vanity Fair article would not diminish her popularity. Typical was the response of Michael Spears, operations manager at CBS station KRLD(AM) in Dallas.

"Not one listener has mentioned (the article) to me," said Spears. (It) sounds like sour grapes from disgruntled former associates whose careers aren't on fire anymore. (There is) lots of jealousy in this business."



Group Heads Session
Thursday, Oct. 15
2-3:15 p.m.

The group heads session is fun every year, if for no other reason than to see how high up the radio food chain the panelists can get.

Moderator Frank Wood of Secret Communications heads a panel of industry leaders for a look at the business aspect of radio. Jeff Marcus of Chancellor, Lew Dickey of Cumulus Media, Dan Mason of CBS Radio, Larry Wilson of Citadel Communications and Mark Mays of Clear Channel Communications are among the radio Dream Team this year. Not bad.

Tip: Raise your hand early if you want to get your question in.

World Radio History

Radio Sales: Hunting and Farming

▶ SALES, continued from page 26

formatted radio stations. Just the fact that Olds and Davis will be on the same panel is eye-catching.

"That memo has injured our company," said Davis, "but we have also used it in a positive way. For the first time," he said, "Hispanic and African American stations in New York have formed a coalition. United, we represent the majority of audience in the city, yet we're still not getting our fair share of advertising. We are coordinating our effort against those advertisers who continue to exploit our audience."

Another session looks at the role of the national sales manager. At one time, that job was to open the mail and process the orders from reps. But now the national sales manager is a front-line seller, promoter, marketer and representative for a group of vastly different radio stations. "National Sales Manager: The Title is the Same, The Job is Different" is set for Thursday.

The reality is, you have a million, 2 million, or even 200,000 loyal customers. That is a powerful number.

— Sheila F. Kirby
Morrison & Abraham

A panel of marketing experts will help attendees find new ways to generate revenue money. The Friday session "Exciting NTR From Event Marketing" includes panelists from Chancellor Media, Bonneville International Corp. and Breakthrough Marketing. Moderator Speed Marriott, director of sales, Entercom Communications in Kansas City, promised several different twists on nontraditional revenue.

Sarah Willett, Cumulus Broadcasting

One sales session has a familiar ring: "What Did You Sell Today?" This Saturday session examines the balance between selling something today and focusing on client development tomorrow.

"This is a case of hunting and farming at the same time," said session organizer and panelist Sarah Willett, regional marketing manager of seven Cumulus Broadcasting stations in Wisconsin. "Radio is a big business now and we need to produce numbers today, but we also need to secure numbers for tomorrow. We have to strike a balance between both of these functions and it's very difficult. ...

"You have to have a long-term focus in order for clients to take you seriously. If you don't, they're going to look at you as any other rep that's peddling some sort of advertising. And there are a lot of those out there."

Other panelists are from Jacor Communications and Chancellor Media. The moderator is Lynn Anderson of the Radio Advertising Bureau.

Organizer Marilyn Kushak said sessions were designed to help salespeople understand the emerging trends, while also helping to improve and strengthen the bottom line.

"We offer solutions from reality-based people who are working in radio and who will have an impact. This is very results-oriented."

Other notable sessions in the Sales and Marketing track:

Wednesday:
Building a Killer Sales Team
My Computer Can't Sell Anything

Thursday:
The State of Radio Sales, Gary Fries
Making Money on the Internet

Friday:
The Blueprint for Radio Results
The DOS Dilemma: Director of Sales
Wall Street Meets Main Street
The Powerful Radio Proposal Wizard

Saturday:
1,000 Radio Success Stories
The Doctor Is In

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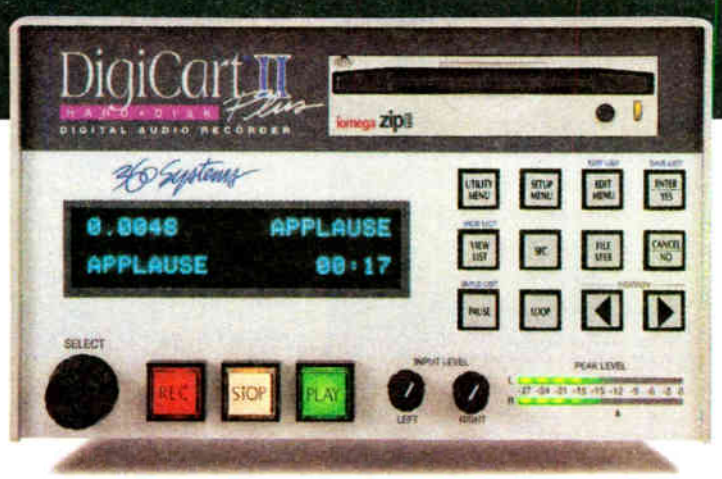

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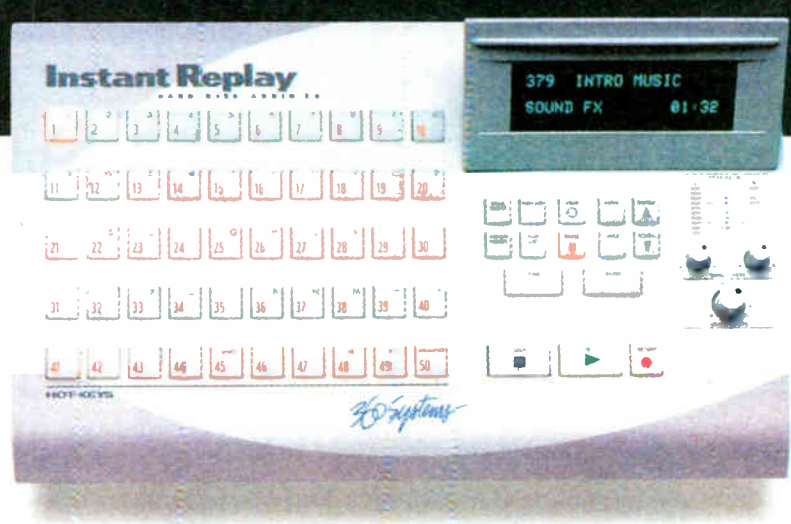

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See Us At The NAB Radio Show Booth # 138

World Radio History

Radio, Figuring Out What's Next

▶ SHOW, continued from page 18

Wood of Secret Communications.

Investor and chairman of Jacor Communications Sam Zell delivers the keynote speech this year. The billionaire entrepreneur will share his perspectives on the radio business on Thursday. Jacor was the target of much takeover speculation in the weeks — and months — leading up to the show.

Management session titles reflect the changes that have taken place across the industry. They include "Stock and Bond Analysis: The Future Evaluation of Broadcasters in Public Markets," "Wall Street Meets Main Street" and "Survival of the Independent: The Lone Wolf vs. The Pack." The latter discusses how a stand-alone station can survive in one market against a big super-group cluster.

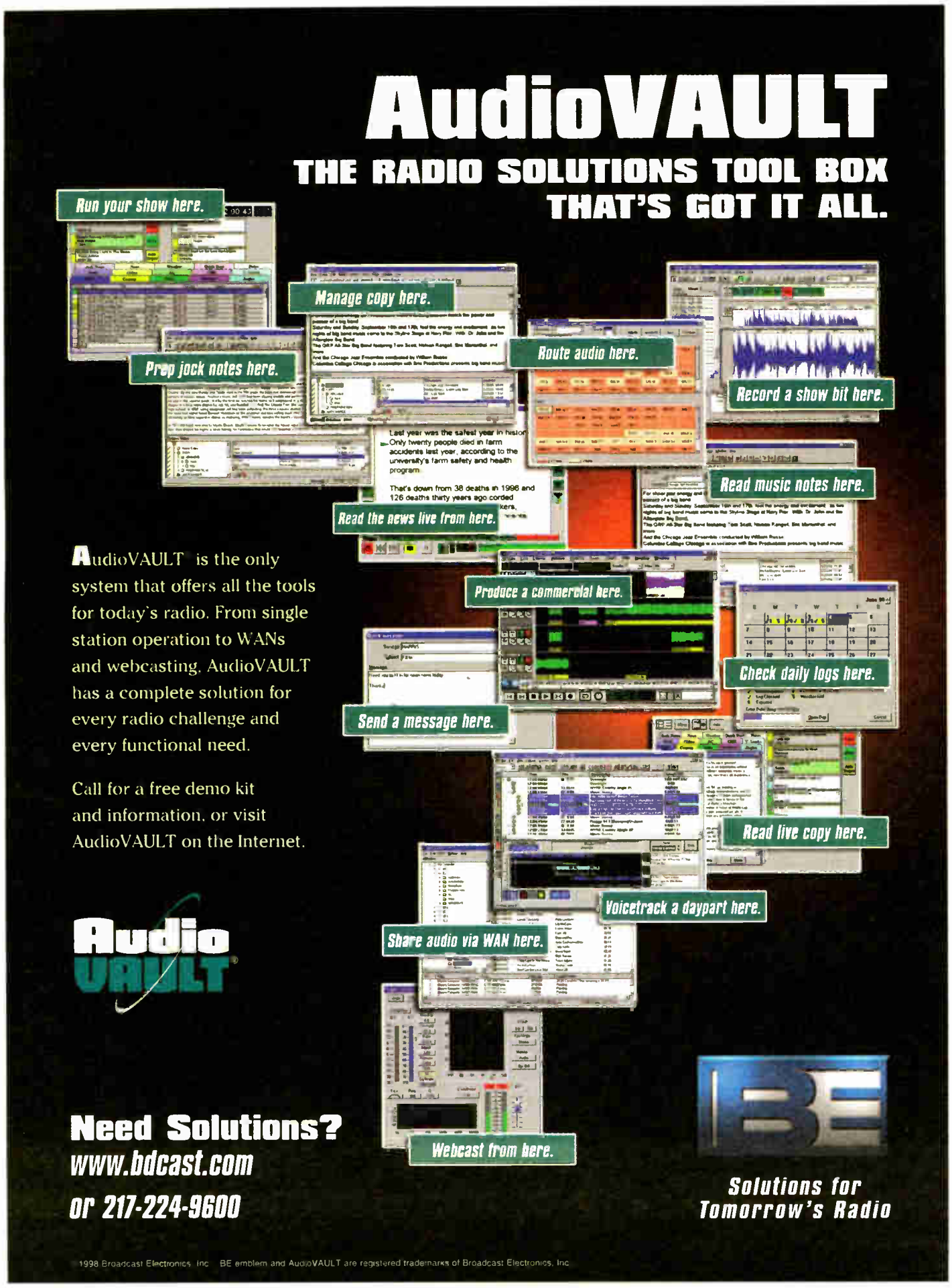
Several of the technical sessions at this year's show are aimed at managers, including a panel about digital audio broadcasting. At a Friday session, executives from all three companies developing in-band, on-channel DAB systems will discuss why they think it is the wave of the future, what it will cost to implement and how a digital future can bring in new revenue streams.

For engineers, several comprehensive engineering workshops are offered, starting with one on AM Directional Antennas on Wednesday and another workshop on building digital facilities on Thursday. A Friday workshop on maintenance and trouble-shooting techniques for AM and FM transmitters, led by **RW** columnist John Bisset, rounds out the week.

Details of the session tracks are found throughout this special section of **RW**, which also includes exhibitor listings.

The feds, the stars

One year ago, FCC Commissioner Rachelle Chong said her goodbyes at the Radio Luncheon, and Congress had not yet held confirmation hearings for the new FCC chairman and commissioners. This year, in his first address as FCC chairman to a Radio Show, Bill Kennard is expected to discuss his vision of radio's future technical development, plus details of recently completed rule changes on station licensing and facility improvement at the Chairman's Breakfast on Friday. Attendees will listen closely to hear what Kennard has to say about minority ownership, low-power radio and the impact of consolidation, all of which he or his fellow commissioners have discussed publicly in the past few months.



Lowry Mays is the latest winner of the National Radio Award from NAB.

Clear Channel Communications Chairman and Chief Executive Officer Lowry Mays will be honored with the 1998 National Radio Award at Friday's NAB Radio Luncheon, which also includes an appearance by syndicated success story Dr. Laura Schlessinger.

Among other hot topics in the session list are new ways to use the Internet; RAB figures on the state of radio sales; and Thursday's "Feel the Electricity: Utility Deregulation," in which attendees can learn how to grab some new dollars from that industry. Another new session, Saturday's "Broadcasters' Y2k Issues," includes problems and potential solutions to the year 2000 computer problem.

The show wraps up Saturday evening with the NAB Marconi Radio Awards Dinner & Show, featuring headliner Smokey Robinson performing songs from his new album "Double Good Everything." The show will be emceed by Tom Joyner and takes place at the Westin Hotel.

FCC Chairman's Breakfast
Friday, Oct. 16
7:30-8:45 a.m.

FCC honcho William Kennard will offer his views of radio's regulatory future on content regulation, station licensing, facility improvement and technological advancement.

Tip: Expect questions about his views on minority ownership, EEO and the likelihood that the FCC will allow a new class of low-power FM stations.

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World Radio History

See Us At The NAB Radio Show Booth # 306

Bulls, Bears and Lone Wolves

Wall Street's Interest, Post-Consolidation Issues Dominate Management Track in Seattle

Lynn Meadows

Cluster management, public money, digital audio broadcasting. These were terms rarely discussed by radio folk 10 years ago. Even today, the concepts remain slightly mysterious to some managers.

For instance, how does one general manager effectively manage six stations in a market without burning out? How will the rise and fall of the Dow Jones Industrial Average affect the industry now that Wall Street and radio are inextricably linked? What will it cost to start broadcasting in digital?

Is the watchful eye of Wall Street sucking the fun out of radio?

These hot new topics as well as timeless discussions like regulatory enforcement and difficult employees will be discussed during four days of management track sessions at The NAB Radio Show. Most managers will find something of interest, whether he or she operates a five-station market cluster or a small-market stand-alone.

Three sessions scheduled for Wednesday afternoon start the management track off. Bill Banowsky of Capstar Broadcasting will moderate "The Win-Win Financial Effect of Community Service." Panelists at this session will talk about ways broadcasters with solid community service programs have increased their financial interests.

At the same time, Norman Pattiz of Westwood One Radio Networks will moderate "Using Your Local Colleges and Universities to Benefit Your Station." Broadcast professionals and educators will discuss ways to use local colleges and universities both to recruit employees and to contract for radio research.

Here's a session the title of which is both tongue-tripping and attention-getting: "Your Talent Could Put You Out of Business Through Libel, Invasion of Privacy and Other On-Air/On-The-Web Content Perils." It rounds out the trio of available sessions scheduled for Wednesday afternoon.

Like many of the other management track sessions, the discussion will help you get what you want — in this case, entertainment — without getting what you don't want: a lawsuit. The panelists, billed as "grizzled veterans of the legal trenches," will discuss ways to ensure a creative yet lawsuit-free future.

If avoiding extra legal fees is high on your list, you may also want to attend the session "Special Events Management: Protecting Your Rights, Limiting Your Risk and Making Money." Scheduled for Wednesday afternoon, the session will be moderated by Steven Bookshester of the NAB. Learn about pitfalls that other stations have encountered during their special events and find out how to avoid legal problems surrounding your station's next blockbuster event.

Bill McElveen

Those interested in the challenges and opportunities for minority participation in management and ownership should attend "Minority Opportunities: Advancement and Ownership," also scheduled for Wednesday afternoon. Wayne Brown of WBAV-FM, Charlotte, N.C., is scheduled to moderate this timely session.

If you do not manage stations within a super-group, but must compete on turf surrounded by large groups, the afternoon session "Survival of the Independent: The Lone Wolf vs. The Pack" may

See BULLS, page 34 ▶

Radio's New Top 50

Can't tell the players without a scorecard? Then here it is: The top 50 radio groups, in the wake of mergers and acquisitions through the beginning of September, including the blockbuster Chancellor/Capstar deal. BIA provided the figures and ranked the groups by estimated 1997 revenue. Where does *your* group stand?

Revenue Rank	Company	# of Stations	BIA's 1997 Est. Revenues (in 000's)
1	Chancellor Media Corp (combined with Capstar)	471	1,585,400
2	CBS/ Infinity	162	1,495,630
3	Jacor Comm. Inc	205	613,660
4	Clear Channel Comm.	219	478,490
5	ABC Radio Inc	38	327,100
6	Cox Radio Inc	59	249,850
7	Entercom	41	180,850
8	Heftel Broadcasting Corp	39	163,900
9	Emmis Comm.	16	156,730
10	Susquehanna Radio Corp	23	141,400
11	Sinclair Comm. Inc	52	128,400
12	Cumulus Media Inc	180	119,855
13	Citadel Comm. Corp	96	119,670
14	Bonneville International Corp	15	109,600
15	Greater Media	14	103,200
16	Jefferson-Pilot Comm.	17	92,300
17	Beasley Broadcast Group	28	78,350
18	Spanish Broadcasting System	12	76,900
19	Saga Comm. Inc	40	64,690
20	Journal Broadcast Group Inc	37	63,030
21	Radio One Inc	13	56,800
22	Tribune Broadcasting Company	4	54,550
23	Dick Broadcasting Company Inc	15	41,450
24	Hearst Broadcasting Group	7	40,900
25	Sandusky Radio	10	38,900
26	Buckley Broadcasting Corp	16	36,710
27	Broadcasting Partners Holdings LP	35	35,575
28	Renda Broadcasting Corp	17	32,730
29	Fisher Broadcasting	24	32,430
30	Inner City Broadcasting Corp	5	30,600
31	Connoisseur Comm.	31	29,910
32	Barnstable Broadcasting Inc	16	28,930
33	Lotus Comm. Corp	15	26,310
34	Bloomington Broadcasting	17	25,400
35	Buck Owens Production Company Inc	6	24,650
36	Simmons Family Inc	19	22,710
37	Midwest TV Inc	4	22,180
38	EXCL Comm. Inc	17	21,480
39	South Central Comm. Corp	10	20,280
40	Forever Broadcasting Inc	38	19,920
41	Sunburst Media LP	19	18,780
42	Mid-West Family Broadcast Group	24	18,375
43	Midwest Comm. Inc	16	18,080
44	Ackerley Group	6	18,000
45	New York Times Co	2	17,500
46	Hubbard Broadcasting Inc	2	17,400
47	Nassau Broadcasting Partners LP	17	17,250
48	LBJ-S Broadcasting LP	5	17,000
49	Hall Comm.	18	16,750
50	Federated Media	13	16,450

Source: BIA's MEDIA Access Pro

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World Radio History

▶ BULLS, continued from page 33

offer some insight or the knowledge that you are not alone. It will be moderated by William McElveen, executive vice president of Bloomington Broadcasting Corp., chairman of the NAB Radio Board and general manager of three stations in North Carolina.

While McElveen could not be described as a "lone wolf" business-wise, his three panelists have experience surviving against a cluster or a super group. Ken MacDonald runs stations in Saginaw and Lansing, Mich. Frank DeLong operates one AM and two FM stations in Fairbanks, Alaska. Renowned operator Jerry Lee runs WBEB-FM in Bala Cynwyd, Pa.

McElveen asked them to come up with the three greatest advantages and challenges they have as independents against a big group. The three agreed that agility, the ability to act more quickly than the corporate stations in their markets, was their greatest advantage. Expect a lively discussion about other pros and cons of being a lone wolf.

Management decision

Start the day Thursday with "BCF Expectations: Increasing Profitability Beyond Topline Growth." It will explore the topic of cost control. Moderator Stan Webb of Clear Channel Communications will lead the discussion.

Wall Street is watching to see how groups find the long-discussed efficiencies of scale that are expected when they merge.

The concurrent session "Employment Law and Protected Groups" provides more guidance on how to get what you want without a lawsuit. Employment law experts will tackle how to address unsatisfactory performance by a member of a legally protected group while staying out of legal trouble.

Midday Thursday, learn more about radio's presence on the national investment stage. One of the hottest topics in or out of radio is the stock market. Bishop Cheen, vice president of First Union Capital Markets, will moderate "Stock and Bond Analysis: The Future Evaluation of Broadcasters in Public Markets."

Cheen will talk with three panelists who represent different parts of the radio equity picture: the borrower, the financier and the dealmaker. Paul Stone, chief financial office of Capstar, will represent the operator/borrower. The panelist representing the financier has analyzed publicly held radio for 12 years. And the dealmaker works at First Boston and has helped many companies go public.

Although the management track always includes a financial session, Cheen noted that this session would be the first so devoted to publicly traded stock. The reason for the focus, he said, is that radio has grown "so dramatically and rapidly on public stocks and bonds."

Cheen commented that when the session was planned, the stock market was at a record high. About a month and a half prior to the show, the market was undergoing a "significant correction."

Radio has two large challenges before it, said Cheen. On the one hand, he said, is the integration issue. Wall Street is watching to see how groups find the long-discussed efficiencies of scale that are expected when they merge all their call letters under one roof.

More debt than cash flow

The second issue, he said, is that financing and debt loads precede actually getting cash flow up to speed. With all the deals that have taken place, groups have barely taken over the keys for their new stations. The result: more debt on the books than actual cash flow at the moment.

Cheen said the panelists will discuss how change in the industry must be man-

See BULLS, page 37 ▶

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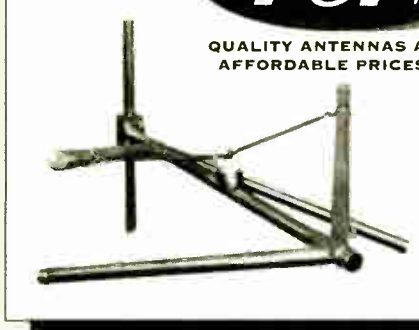

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6X1G
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SS 8.2
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8X2D
Active crosspoint switcher for 8 stereo inputs, 2 stereo and 2 mono outputs. 3 switching modes, I/O trimmers, internal silence monitor with SPDT relay, remote control/status, multi-drop RS-232 serial port, pluggable screw terminals and input expansion port.

SS 12-4
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World Radio History

▶ BULLS, continued from page 34

aged against the background of a volatile economic environment and put everything into perspective.

Also midday Thursday, Jack Goodman of the NAB will moderate the panel, "Taking Full and Lawful Advantage of the Radio Ownership and Crossownership Rules." This session is billed as a complete status report on ownership combo opportunities, strategies and alternatives. Scheduled panelists include Greg Schmidt of LIN Television Corp., Roy Stewart of the FCC and John Feore of Dow, Lohnes and Albertson.

After lunch, Goodman will moderate an afternoon panel titled "Pirate Radio and Microradio." The topic is very much on the minds of many radio managers. Low-power FM proponents staged a demonstration in front of the NAB '98 show in Las Vegas. Since then, the FCC has cracked down on dozens of unlicensed radio operators in high-profile raids. But the FCC also is toying with the idea of establishing a new class of low-power FM stations. Hear what panelist Richard Lee of the FCC has to say about this sizzling topic, which appears to be coming to a head. No one is ambivalent when it comes to this subject; expect a lively discussion.

Rounding out the Thursday afternoon management track is "Broadcast Meets Internet Multicast." Moderator Richard Ducey of the NAB will discuss the evolving technologies that allow radio stations to take advantage of the Internet.

The Holy Grail

It is the ultimate in uncharted waters: cluster management. Start your Friday with the session "Cluster Management: In Search of the Holy Grail." This topic was made possible in the first place by the Telecommunications Act of 1996 and will likely be a topic for many years to come at radio gatherings.

Panelists David Pearlman of CBS Radio and Jim de Castro of Chancellor Media Corp. will discuss their theories on how best to maximize a company's multistation market position.

Those who already have cluster management down to a science may be better served by the session "Managing the Difficult Employee," also Friday morning. Panelists Chris Wheat of WRZX(FM) in Indianapolis and David Hayes of Federated Media will offer their techniques for managing productive but difficult employees.

Meanwhile, for those who miss the old days, Friday morning concludes with the session "Has the Fun Machine Run Out of Gas?" Moderator John Cullen of Gulfstar asks if all the fun is gone from the industry in favor of financial standings. Some say the fun, or at least the variety, was gone even before Wall Street became sweet on radio. John King of SeaStar Communications, another division of Capstar Broadcasting, is among the panelists.

Success can certainly be fun. For an upbeat look at the "Best of the Best: Secrets of Successful Leaders," attend the Friday morning session moderated by Karen Carroll of KMOX(AM), St. Louis. Hear those who were recognized by leading broadcast groups as Station of the Year or General Sales Manager of the Year tell what works in their markets.

You have three sessions to choose from in the early afternoon slot on Friday. You do not have to be technically brilliant to attend "DAB for Managers: Smoke & Mirrors or the Real Thing?" Hear what the future might hold from representatives of the three digital radio proponents: Suren Pai of Lucent Digital Radio; Norman Miller of Digital Radio Express and Robert Strubel of USA Digital Radio.

Moderator Dave Wilson, manager, technical regulatory affairs for the NAB, said the two main questions general managers have about DAB is "When is it going to be here?" and "How much is it going to cost?" He said the proponents will have some answers, or at least a plan of when they would like to see the digital rollout.

The cost question, he said, probably will depend on what kind of equipment a station has today. The timetable depends on when the systems are finalized and whether or not FCC approval will be necessary in the form of a rulemaking.

"That doesn't happen overnight," said Wilson.

Wilson recommends that general managers, engineering managers and program directors attend the session. Program directors should come, he said, because DAB also involves music quality.

Meanwhile, Steve Lehman of Premiere Radio Networks is moderating the session "Negotiating with Talent." Because radio talent is becoming more and more sophisticated, this session will help managers become better at negotiating contracts with their talent.

Still another session on avoiding large legal bills shares this slot. Barry Umansky of the NAB will moderate "Running Successful Contests, Promotions and Casino Spots — Without Being Fined by the FCC." Hear from lawyers and Charles Kelley of the FCC about what contest restrictions you should be wise to and whether the FCC may frown upon your upcoming plan or promotion.

It ain't over yet

Saturday begins with another session that was not even thought about 10 years ago. The "Broadcasters Y2K Issues" will provide an eye-opening discussion of what will happen to your station's great technology in the year 2000 when millions of computer programs will no longer know what century it is. Learn what could go wrong and how to avoid an end-of-century catastrophe.

Also on Saturday is the session "Do the Crime, Pay the Fine — An FCC Rule Enforcement Primer," moderated by Karen Fullum of the NAB. Fullum's panelists include Charles Kelley of the FCC. They will discuss where the FCC is focusing its enforcement efforts and what steps managers should take to make sure their stations can pass an inspection without fear.

Three final sessions are scheduled Saturday morning. Umansky of the NAB and his panelists will describe the legal means that can make a station more competitive. Linda Blair of the Mass Media Bureau of the FCC joins the discussion in "AM and FM Station Improvements — Making Your Station More Competitive." Look for a discussion of main studio moves and an update on FCC application streamlining.

Those interested in broadcasting abroad should take in "Lessons from the Best Broadcasters in Europe." Moderator Peter Waak of Bandit 105.5 in Stockholm will talk about the biggest broadcast successes and failures in Europe.

And in the "show me the money" category comes the session "The New Generation of NTR." In this discussion, panelists will talk about nontraditional revenue opportunities for stations looking for more dollars once their inventory is sold.

"Personal Finance, Investing & the Internet"
Friday Oct. 16
1:45-3 p.m.

David and Tom Gardner, the guys that brought us the successful Web site called The Motley Fool, are now radio talk show hosts as well, syndicated by Cox Radio. They will host a Friday session at The NAB Radio Show on personal investing.

Why? According to the NAB, "these Fools have demonstrated their ability to search for quality business investments for the long term. ... You'll be laughing all the way to the bank!"

Tip: the authors will be available at the NAB Store after the session to sign copies of their books, which include "The Motley Fool Investment Guide."

Lone wolves have the benefit
of agility, the ability to act more quickly than corporate competitors.

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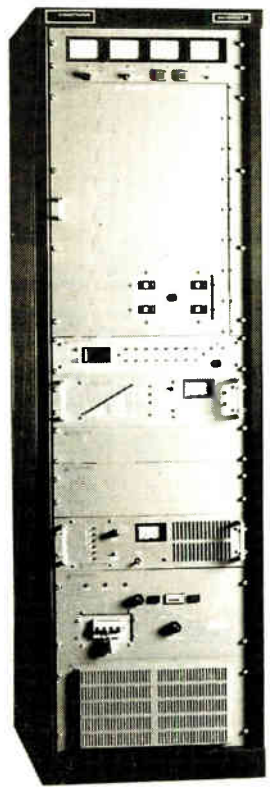

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See Us At The NAB Radio Show Booth # 125

World Radio History

Key Ingredients of Programming

On-Air Material — Even Spots — Must Connect With Your Listener for Radio to Work Best

Mark Lapidus

The programming sessions at The NAB Radio Show are targeted at managers interested in moving their stations to the next level of creativity and entertainment.

Commercials are as much a part of your programming as music or talk. During the convention's first day, you can pick up tips on improving those spots with "Ten Key Ingredients to Creating Effective Commercials." Many programmers will point to commercials as the weakest part of their product, but rarely allocate time to do anything about it.

Industry veteran Dan O'Day is ready to help you write and produce better spots. O'Day said the average radio commercial lacks a single, clear message. It focuses on the advertiser, not on the consumer, and it offers the listener no reason to listen. On the other hand, a great radio spot gets the listener's attention; has a single, clear core message; delivers that message clearly and effectively; focuses on the consumer, not on the advertiser; and involves the listener.

The challenge starts with copy. O'Day said, "The bad copywriter tries to be clever and looks for clever ideas. The good copywriter uses real-life experiences to sell the core message."

His three ingredients for creating an effective commercial are core message, pictures and emotions.

"There aren't a lot of writers — in-house or free-lance — who have much experience in writing effective radio commercials. Most in-house copywriters are young, intelligent, creative, well-meaning, lowly paid people with no training whatsoever and no meaningful support from their employers," he said. "Their job is to churn out copy immediately, upon demand — *not* to create copy that is likely to get results for the clients."

Sales people also can learn from this session. The most common objection radio sales people hear is, "I tried radio, and it didn't work." O'Day's seminar is intended to show how to overcome that objection.

"There are two kinds of local retail radio commercials," he said. "The 90 percent that don't work and the 10 percent that get results for advertisers and re-orders for the radio station. Which kind do you want for *your* station?"

By the numbers

A highlight of Thursday is "Seven Habits of Highly Effective PDs."

These habits were compiled in an interesting manner. A questionnaire was sent to general managers and program directors at all radio stations in the top 100 markets. They were asked to talk about what things they believe are important to make a PD effective. The survey queried for specific strengths and weaknesses that affect the performance of the individual in that position. That information has been tabulated by Critical Mass Media.

The session gives you a chance to hear the comparative results presented by consultant Mike McVay. The results will be offered free to anyone who participated in the study, but you'll hear the details first at this session. McVay has authored a book, "Seven Habits of Highly Successful Radio Stations," and will augment his presentation with comments from that material.

The third day of the convention brings us "Programming to the Baby Boomers." As this generation ages, what does it listen to? Organizers promise that Critical Mass Media will "deliver the facts about America's most misunderstood demo."

The session includes the results of a national study involving more than 5,000 adults between the ages of 40 and 54. The study was conducted during the first two weeks of September. Research includes information on both music and information/talk programming and radio usage habits. This information will enable you to better attract and keep this audience as well as to arm you with vital statistics for potential advertisers.

Dan O'Day says the typical spot lacks a clear message. It fails to focus on the consumer, and it offers us no reason to listen.

Why should stations want to reach the 50+ demo? Carolyn Gilbert, executive vice president of research at CMM, said, "That's where the 'rat in the (population) snake' is. As this generation becomes empty nesters, there will invariably be more disposable income. This makes the group more and more appealing to advertisers. Because of their sheer numbers, this generation has had, has, and will continue to have a disproportionate influence on American culture. It started when they were kids, and has just kept going.

"The other unique thing about this generation," Gilbert said, "is that it is really the first and last to share a youth of homogeneous experience. Before mass communication, the world was much bigger. And with all the media choices around now, the world has actually become bigger again. This generation shared the same TV shows, the same songs, the same culture. Of course, that is no longer the case, yet the history is shared."

Questions explored at this session include: What does the 50+ group want now? What might these listeners want in the future? Do they hold on to their "youth" in terms of media, or are they hungry for new things? What's their mid-life crisis like?

The study results will be presented by Gilbert and John Martin, president of CMM.

You can top off your convention experience by discovering new ways of helping talent become powerful communicators with "Creating Powerful Radio: World-Proven Techniques to Develop Your Air Talent to the Next Level of Performance." Managers in particular will benefit from this unique session with renowned consultant Valerie Geller.

"Powerful radio is like a garden," Geller said. "You can't just throw people in there and expect them to do it. They have to be managed. You have to pull weeds and fertilize. If you want to see how tall a tree people can become, that's going to take work on the part of the programmer as well as the talent. Nothing just happens."

The session will cover the five golden rules of teaching talent how to beat the competition. Rule one: Speak in terms the listener can picture; always create a word picture. Rule two: Tell the truth. Never ever attempt to fake out an audience.

"Radio is an intimate medium and if you're absolutely unpeeled like an onion and down to your bare truth, an audience will know," Geller said. "If you can hook into truth, you're in power."

For the other three rules, attend the session.

One surprise is that the essence of powerful communication is the same around the world.

"Human beings as creatures all have the same need to connect," Geller said. "We all love hearing what's new. We are alone and have a need to reach out to be with each other. We all love to laugh. We're all afraid of the same things. It doesn't matter what language you're doing it in. Good radio is good radio. The best program directors are leaders, but they know how to get out of the way. You don't have to be a genius, but you sure have to know how to hire it."

The convention programming sessions conclude with "Future Trends: 21st Century Radio." The panel includes legend Lee Abrams, now senior vice president of programming for satellite radio provider American Mobile Radio Corporation; Internet expert Lisa Osborn of Brittany Communications; and Steve Blum, president of Tellus Venture Associates.

This group will detail products and trends in radio's near future.

■■■

Mark Lapidus is president of Lapidus Media. For programming and marketing consultation, call (703) 383-1805 or send e-mail to lapidus@erols.com

Formats at The NAB Radio Show

In addition to engineering, management and sales sessions, The NAB Radio Show includes a track that focuses on specific radio formats. All will take place at the Washington State Convention and Trade Center.

Wednesday:
Active Rock
Nostalgia
Oldies

Thursday:
NAC/Jazz
Religious
Alternative Rock
Urban
Country
Hispanic

Friday:
CHR
News/Talk
AC
Classic Rock
Sports

Check The NAB Radio Show Daily or Program Guides, or visit show information booths for times and locations.

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World Radio History

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Sound Library - Program scheduling - Automated recordings - Multitrack workstation - Production -

RFI, Radio France Internationale - Radio SAW (Germany) - RPL, Radio Paris Lisboa (Portugal) - EBC, Emirates Broadcasting Corporation (Arab Emirates) -

Linear or compressed - Windows NT - Upgradability - Open architecture - User-friendly interface...

Radio Vaticana (Italy) - RTBF, Belgian Radio Television for the French Community - RMI, Radio Méditerranée Internationale (Morocco) - RTL (France)...

The NAB Radio Show
(14-17 October)

▶ *Seattle, Washington State - Booth 1330*

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World Radio History

- Audio Broadcast Group 3685 Roger B. Chaffee Boulevard Grand Rapids, MI 49548 Tel: + 1 (616) 452-1596 Fax: + 1 (616) 452-1652 e-mail: support@abg.com (800) 999-9281
- Bradley Broadcast Sales 7313G Grove Road Frederick, MD 21704 Tel: + 1 (800) 732-7665 Fax: + 1 (301) 682-8377 e-mail: info@bradleybroadcast.com
- Broadcast Supply Worldwide 7012 27th Street West Tacoma, WA 98466 Tel: + 1 (800) 426-8434 Fax: + 1 (800) 231-7055 e-mail: info@bswusa.com
- Crouse-Kimzey Company P.O. Box 155999 Fort Worth, TX 76155 Tel: + 1 (800) 433-2105 Fax: + 1 (972) 623-2800 e-mail: sales@proaudio.com
- Radio Communications Unlimited 5509 Barrington Ooltewah, TN 37363 Tel/Fax: + 1 (423) 396-3743

World Radio History

LISTEN

The first time you hear the Omnia.fm processor from Cutting Edge, you'll hear sound that's fuller, richer and louder than anything you've ever heard before: Clean, crisp highs. Tight, thundering bass that really rocks. Warmth that puts vocals and other musical elements right out there. You'll hear digital precision that's as smooth and fluid as analog, and **absolutely no digital grunge.**

COMPARE

When you compare the Omnia to other processors, it's not apples to apples. Why? Because the Omnia is designed to put you way ahead of today's competition–and includes the features you'll need tomorrow, like 20kHz bandwidth capability, an extra slot for more DSP horsepower, and an easily upgradable PC card.

Unlike other systems, only the Omnia offers a 48kHz sampling rate. Outdated 32kHz processors have a Nyquist rate that's too low for clean dynamics processing, which creates aliasing distortion. But the Omnia solves this problem by combining 48kHz sampling with 192kHz virtual-upsampling and an anti-aliasing final limiter. The result? Awesome **loudness, rock-solid peak control and positively no grunge.** Only the Omnia provides a digital stereo generator with a built-in composite clipper for even more loudness and a low-pass filter for subcarrier protection. Plus, the Omnia interfaces with D/CET™, the world's first digital composite interface.

DECIDE

The Omnia allows you to create a sound that's like nothing else on the dial. Your competition will wonder how you're doing it and your listeners will hear a dramatic difference. The Omnia gives you the competitive edge you've been looking for and the sound that tunes in and turns on your listeners. And you're the hero.

On top of the Omnia's unmatched sound and technical support, we sweeten the pot with a no-risk, money-back, 60-day guarantee*. So, choosing the Omnia is pretty much a no-brainer. Wouldn't it be cool if all your decisions were this easy?

Omnia. The promise of digital...***delivered!***

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*Contact your dealer for details on this demo program. Demo requests must be accompanied by a purchase order so our dealers know you're really serious about some serious sound.

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See Us At The NAB Radio Show Booth # 132

World Radio History

Everything in Walking Distance

A Quick Look at the Layout of the Venue and Some Products Likely to be Hot

Alan R. Peterson

That powerful Seattle coffee may give you the lift you need to "work the floor" at The NAB Radio Show, but you will not need to order the extra-large latté.

If you are a veteran of the big NAB Las Vegas shows, you can switch to decaf. The exhibits and sessions are all in one venue, the Washington State Convention and Trade Center, so there is no need to hop shuttle buses for cross-town trips. In fact, much of your commuting will be vertical.

Here's a quick look at the layout of the venue, and some of the more interesting new products to be found on the exhibit floor.

Up the up staircase

Workshops, general sessions and the Radio Luncheon will take place on the center's sixth floor, while exhibitors will be set up on the fourth. Because even escalators can take their toll on your toes, bring your most comfortable shoes and brace yourself for the ride; between workshops, you will be double-timing it back to the exhibit floor to see the latest and greatest radio products for 1998.

The opening of the exhibit hall will be marked with the official opening reception of show, right on the exhibit floor Wednesday, Oct. 14, from 5 to 7 p.m. Exhibits will also be open Thursday from 10 a.m. to 6 p.m. and on Friday from 10 a.m. to 5 p.m., but note that the floor is closed Saturday, even though there are sessions that day.

On the floor itself, one emphasis will be on ever-improving codecs that allow high-quality remotes.

The Vector POTS codec, a winner of the RW Cool Stuff Award in the spring, will turn up in the Comrex booth with something added: a third algorithm for 7 kHz response.

"Broadcasters wanted a bullet-proof voice codec," said Kris Bobo, "so we took our 15 kHz music algorithm, tweaked it for 7 kHz, then used the rest of the bandwidth for enhanced error correction and robust connections. We even left enough room for a 300 baud data port to communicate between the field and studio units."

This will be a good show for anyone looking at audio management systems. Step over to the Scott Studios display for a first look at the AXS 2000+, a Y2K-compliant version of the AXS digital audio system, as well as the Scott NT System for 32-bit Windows NT and 98 operating systems.

Play-by-play announcers finally have a digital clip editor for highlights of live sports events, courtesy of MediaTouch. The MClip records an entire game and lets producers drop in markers to isolate clips for trimming and packaging for use in sportscasts.

Digital consoles continue to find a foothold. The German-made Klotz Paradigm digital console, another Cool Stuff Award winner, now has a U.S. presence, courtesy of Klotz Digital America. After attracting plenty of attention at the Las Vegas show, the Paradigm is shipping now. Put your hands on one in the Klotz booth near the Sidewalk Café.

Digital console technology will be similarly represented at the NAB Radio Show by the Wheatstone D-500 Digital Radio Console. Wheatstone is also bringing in its line of analog air and production boards, furniture, and the entire Audioarts Engineering line of consoles.

On-air audio processing is a hot topic right now; several manufacturers are out with new or updated versions of their boxes.

Orban is shipping the Optimod-FM 8200 processor, and is readying shipment of the Optimod-DAB 6200 processor, specifically for digital audio radio and Webcasting and two-channel TV audio. Orban will also demonstrate version 2.0 of its popular Audicy workstation.

See EXHIBITS, page 43 ▶

DON'T MISS At NAB

Marconi Radio Awards Dinner & Show
Saturday, Oct. 17
6-10:00 p.m.

Tom Joyner of ABC Radio Networks hosts a wrap-up funfest at the Westin Hotel. The NAB doles out Marconis to the top stations and personalities in radio. Will the nominees for network personality show up this year?

Tickets are $50; black tie is encouraged, but not required.

Tip: If you're around Saturday, try to make this one. The music will be top-notch, with entertainment provided by Grammy winner Smokey Robinson.

We've come together

World Radio History

▶ EXHIBITS, continued from page 42

Also on the processing front, Cutting Edge has a baby sibling to the Omnia.fm, this one called the Omnia.fm.jr.

"The Junior is for smaller-market stations that don't want to dive headlong into the digital thing," said Miriam Carey of Cutting Edge. "It has different algorithms, three-band processing instead of four-band and is simpler to operate. It can be upgraded later to a full Omnia.fm."

The Broadcast Electronics booth is right by the entrance to the exhibit hall. BE has been buying other radio product lines this year, most notably in its acquisition of console maker Auditronics. In addition to the AudioVault product line and 2500 Series console, BE will display the NuStar digital console, Comet analog console and the Field SMARTI remote broadcast codec.

You may think seeing General Mills at a radio show seems incongruent, but the Minnesota-based cereal maker will be on hand to promote its new short-form daily radio features on sports, nutrition and kitchen tips.

While you are in that aisle, go next door to the Broadcast Supply Worldwide booth for a second look at another winner of our Cool Stuff Award, the RØDE Broadcast microphone, as well as consoles, software, phone interface equipment and lots of "problem solvers" for the radio studio.

Before you leave the aisle, look back over your shoulder at the 802D Digital FM exciter and the 815C, a 5kW FM transmitter at the Continental Electronics exhibit. Should your interests lie on the AM dial, Inovonics is preparing to release the Model 520 AM Modulation Monitor.

While you are still in an RF state of mind, make a note to see the new Model 2530 low-power combiner from Shively Labs. The device can diplex two radio stations with frequencies as close as 0.8 MHz.

Common ground

Intraplex found an effective way to synchronize multiple transmitters on a common frequency with its SynchroCast system. According to Broadcast Products Manager Bill Gould, "Four stations around New York are already doing this as 'Y-107.' Referencing GPS signals, SynchroCast is able to synchronize transmitter carriers and lock T1 lines. It then calculates the delay necessary at each site so the signals are synched to each other. It makes it possible to get better coverage ringing a metro with Class A FMs than putting up a single Class B."

Speaking of Intraplex, Harris is bringing its new Aurora with Intraplex ST3 to the show. Dave Burns of Harris said, "This is a wire-free T1; basically giving you a high-quality, license-free T1 solution."

Digital audio broadcasting research will again be a highlight of a radio convention.

Digital Radio Express will update its work toward creating an in-band, on-channel transmission system; its booth is inside the doors near the main escalators. The system operates at 128 kb/s to provide audio and data services. Its competition in IBOC DAB are USA Digital Radio, at the top of Aisle 600, and Lucent, one aisle over in booth 732.

If the idea of radio on the Internet appeals to you, consider the RealNetworks display at the foot of Aisle 900. The company responsible for RealAudio has been soliciting comments on its new RealSystem G2 streaming technology for playback of audio and multiple media.

And if your plant is already digital, look in on ATI. The new DDA206 and DDA212 AES/EBU digital audio distribution amplifiers can route digital signals to up to 24 destinations around your facility.

For an in-depth sense of what's new or on display in Seattle, see the booth listings in this section of RW. We will also have a comprehensive wrap-up of new products in an ensuing issue.

Survival tips

Even with all the footwork kept to within a single building, fatigue is bound to catch up with you. Pocket a supply of aspirin and chewing gum, pick up some cushioned insoles for the shoes, bring bottled water or note water fountain locations and back away from fried foods that will put you to sleep in an hour. If you need a mid-afternoon jump start, there is always the local latté.

By the way, should that Seattle coffee get to you, find restrooms at the foot of Aisles 100, 300, 700, 1000 and 1100, and by the main escalators.

Happy hunting.

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DON'T MISS At NAB

"Creating Your Next Job in Radio"
Thursday Oct. 15
9-10 a.m.

What does it mean when you say, "I work in radio"? Say it to someone outside the business, and they'll assume you are a DJ. Inside the business, we know better, but we still assume the person is employed at a station or group.

The industry offers many other jobs not actually at a radio station. This is a good time to learn about those opportunities. Helen Little of WUSL(FM) in Philadelphia helps you figure out how to stay in the business after you leave your station behind.

See Us At The NAB Radio Show Booth # 606

Exhibitor Listings

The NAB Radio Show

Exhibit Info

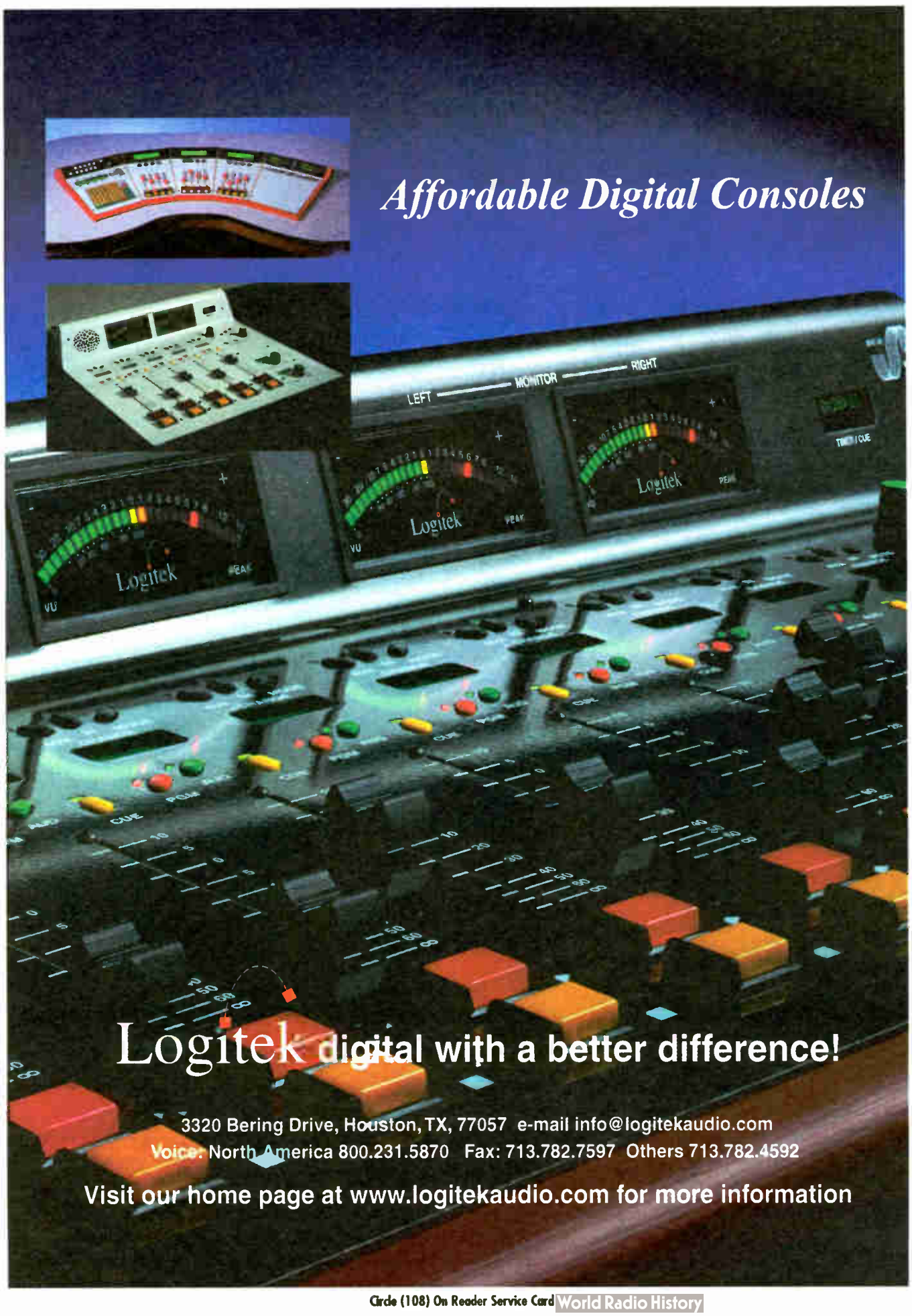
The NAB Radio Show exhibit hall is on the fourth floor of the Washington State Trade and Convention Center. Here you will see the newest radio products and technologies available to the contemporary broadcaster. The following pages contain the list of exhibitors as of press time, with booth numbers and information about products and services on display.

The exhibits will be open the following times. Note that there are no Saturday hours.

- Wednesday 5 to 8 p.m. (Opening reception)
- Thursday 10 a.m. to 6 p.m.
- Friday 10 a.m. to 5 p.m.

NAB has set up exclusive exhibit hours and "walk-around" times to view the exhibit floor with no conflicting sessions. These are:

- Wednesday 5 to 8 p.m.
- Thursday 12:30 to 1:45 p.m. ("Savor Seattle" walk-around luncheon)
- Friday 3 to 5 p.m. ("Next Stop: Orlando!" conclusion to 1998 exhibits)



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These companies will exhibit at The NAB Radio Show in Seattle. Information was provided to RW by NAB and by the exhibitors, and was accurate as of press time.

A-C

$2.95 Guys (Smoothreads) **447**

360 Systems **138**
On Display: Instant Replay 2.0, self-contained stereo digital recorder featuring instant access to 1,000 individual audio cuts of any length, audio can be recorded, titled, arranged and played with simple key strokes; DigiCart/II Plus, combines a hard disk recorder, mini audio workstation and a digital cart machine in a single, reliable hardware package that occupies no more space than an ordinary cart machine, supports two internal hard disks and a Zip drive using low cost, removable 100MB Zip disks; Short/Cut, a self-contained, two-track digital audio editor with built-in hard disk, speakers, a large waveform display and an optional Zip drive, offers true cut/copy/paste editing, a realistic scrub wheel and conventional tape transport controls.

Accuracy in Media **1242**

Acoustic Systems **346**
On Display: Modular studios, voiceover booths, control rooms and acoustically rated plug-in doors, windows. Custom available.

Air Date by TPI **107**
On Display: Programming, Syndication, Distribution.

Air Force Advertising **145**
On Display: Localized, custom radio & TV PSAs. Radio PSAs are delivered via DCI or on CD. PSAs are available in all formats.

Americalist/Div. of Haines **121**
On Display: Custom direct mail packages, cume and TSL building contest packages, Listen-At-Work and Listen-At-Home telemarketing campaigns.

American Media **119**

Andrew Corp. **1018**

Antenna Concepts Inc. **146**
On Display: Complete line of broadcast antenna systems. Home of the AnTek Design Line; the FM1 Ultra high power, broadband and tower isolated antenna and the FM Ultra Tracker single-lobe antenna.

Arbitron **706**
Intro: Arbitron measures radio audiences in 265+ markets and develops qualitative measures of local consumers through RetailDirect and Scarborough Research. Key PC applications include Maximi$er 98 which offers stations access to respondent level data, allowing them to customize survey areas and dayparts to support target marketing strategies, and MapMAKER, which generates maps of listenership within retailers' trading areas.
Also: MapMAKER, Maximi$er 98, RetailDirect, Scarborough.

Armstrong Transmitter Corp. **125**
Intro: Ultrasound FM transmitters, 100% solid state FM transmitters with CD quality exciters, available from 1 kW to 10 kW output.
Also: Complete lines of FM exciters, FM transmitters and FM antennas. Also a large inventory of rebuilt AM/FM/shortwave transmitters.

Arrakis Systems **1252**
Intro: DL4 with DL4-auto and DL4-Assist: extensive and easy voice tracking for music on hard disk, pre-loaded music available. System can survive a PC crash, and it is possible for jocks to play all audio even if the PC is not working. Live assist and automation. Also, DL4 accessories, which add functionality to all DL4 systems regardless of age.
Also: DL3 satellite and CD automation and live assist system; 22,000, 12,000 and 1,200 Series RF tight audio mixing consoles; and

See BOOTHS, page 45 ▶

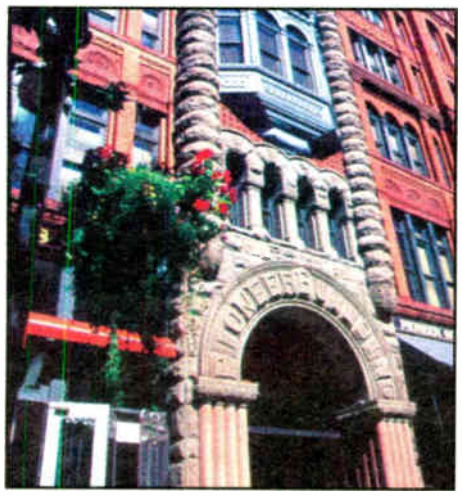
World Radio History

▶ BOOTHS, continued from page 44

Arrakis broadcast studio furniture.

Associated Press 222

ATI Audio Technologies Inc. 532
Intro: MX100 and MXS100 NanoAmp Series mono and stereo field mixers and studio mic/line input Mixers and companion Expanders - up to 11 mic inputs in one rack space; DDA206-XLR & DDA212 -BNC, AES-EBU digital audio distribution amplifiers with single or dual inputs up to 12 or 24 BNC outputs.



Historic Pioneer Square

Also: MicroAmp Series, Encore Series and NanoAmp Series of mixers, VU meters, PPM meters, microphone, line, turntable, power and distribution amplifiers. Also the Match-Maker and Disc-Patcher IHF to PRO interface amplifiers, the Emph'aSizer mic processor, single and multiple output headphone amplifiers, Press Box mic distribution amplifier, Vanguard Series of 6, 8, and 12 mixer on-air broadcast consoles and the System 10,000 modular plug-in mike, line and distribution amplifiers.

Audio Precision 1131
Intro: Portable One Dual Domain will now handle 96K sampling rate digital audio.
Also: System Two Dual Domain.

Auditronics - See Broadcast Electronics 306

BIA Companies 415
Intro: Media Access Pro radio and TV industry data base software that features both commercial U.S. radio and TV stations with over 500 fields of information on each station, including revenues, ratings, ownership, transactions, demographics, technical statistics and more. Info can be updated daily over the Internet. Also, Web Search, an on-line data base for both commercial U.S. radio and TV stations, accessed via the Internet at www.biacompanies.com; BIA research publications.
Also: Investing in Radio Mkt. Report; Investing in Radio Ownership Report; BIA's Radio Yearbook.

Biby Engineering - CDS Division 1445
On Display: RFCAD Version 2.2, a 32-bit application designed for Win95/NT. Provides contour and signal propagation mapping capabilities for engineering system planners. CDS Division provides Web Online data bases that allow engineers to access industry- related data remotely.

Bradley Broadcast and Pro Audio 126
Intro: Digital Audio Labs V8 editing suite: PC-based hardware platform configured to your specifications, using your own PC and adding an audio hardware system and software specifically designed for use with the V8. It will help your editing suite stay up to date and current without spending tens of thousands of dollars.
Also: Full line audio dealer will showcase Digital Audio Labs V8, Middle Atlantic furniture, MxTrax software and Fostex 6301 personal monitor speakers.

British Information Services 937

Broadcast Communications Group 1141

Broadcast Electronics 306
Intro: AudioVAULT version 6.6, which supports Window's NT employment of TCP/IP network protocol, and AVExplorer allows WAN compatibility; NewsBoss, which offers wire capture, word processing, audio editing, audio and WAN connectivity, and a new Spanish interface; NuStar Digital Audio Console: affordable, intuitive new look and feature set, highly configurable modular board; The Comet audio console, which removes all limits in features selection and analog performance. Employs universal motherboard system. Three mainframe widths and multiple compatible modular sets. Marti Field SMARTI (RKS-111) field portable unit that sends and receives broadcast quality audio over standard telephone lines.
Also: FM-10T 10 kW high power transmitter with advanced controller; AM-6A solid-state AM offering redundant PA amplifiers/power supply; DSTL STL system with transparent audio; RTDS (Remote Transmitter Diagnostic System) for high power FM-T Series transmitters. 2500 Series Consoles. Talk*Port micro cellular remote link; Marti's Remote Telephone Mixer (RPS-402) with four-input mixer, peak limiter and touch-tone pad; Cellcast, which eliminates line-of-sight requirements, phone line access and antenna problems; RPUs — an extensive line of transmitters, receivers and accessories.

Broadcasters General Store 514
Intro: Comrex Vector POTS CODEC with three-channel mixer, 15 kHz bi-directional audio on dial-up phone line; Hit Design "Digitable," a completely digital turntable with 24X oversampled A/D conversion, digital-optical stylus and cartridge, selectable sample rates, Hydra-glide platter transmission, Orange Book/Red Book compatible; Shure Bros. Surround Phone, Dolby-compatible Surround sound headphones endorsed by Lucasfilm Ltd., with six transducers to reproduce cinema sound with extreme accuracy.
Also: 360 Systems Instant Replay and Short/cut digital recording /playback units.

Broadcast Interview Source 1347

Broadcast Products, Inc. 622
On Display: Remote Booth, ProSet, QuickStand portable displays; Thunder Truck promotional vehicle.

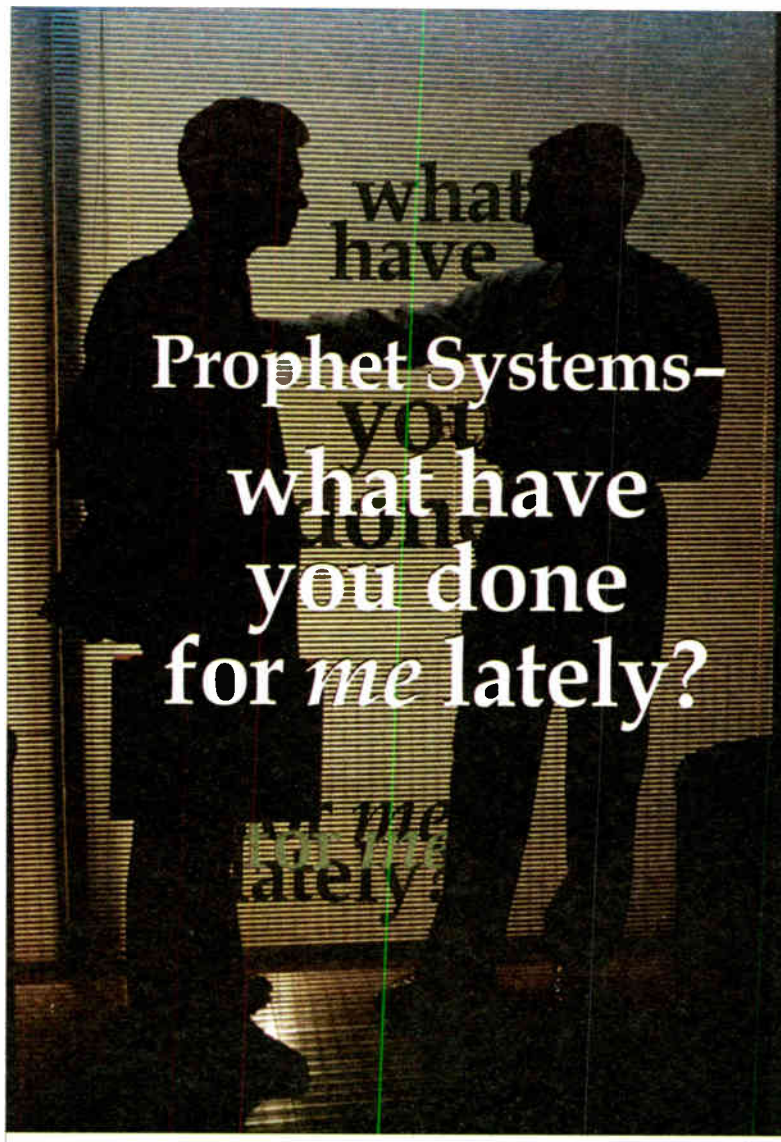
Broadcast Programming 306
Intro: TotalRadio digital music formats direct to your hard drive, hands-free — voicetracks, all components, localized.
Also: TotalRadio format systems; Delilah AC 7-12 midnight show via satellite; Neon Nights country 7-12 show via satellite with Lia Knight.

Broadcast Software International 1448
Intro: WaveStation 3.0 on-screen voicetrack editing, time shift recording, complete with digital editor. Runs on any PC. Also Stinger 2.0 for 280 instantly available files. DirectSound capable.

Broadcast Supply Worldwide 1140
On Display: Consoles; microphones; remote equipment; mixers; telephone interface equipment; studio equipment; CODECS; production software; digital workstations; and an assortment of problem solvers.

Broadcast Team Inc., The 211
Intro: REALCALL patented message delivery system that allows stations to leave thousands of messages per day on answering machines of target demo.
Also: Targeted, direct mail, telemarketing, interactive voice response.

See BOOTHS, page 46 ▶



We've gotten a great deal of press coverage in recent months.

First, Prophet Systems signed a huge contract with Capstar.

Then we joined them as their first non-station acquisition.

Recently, Prophet Systems closed a major deal with Jacor.

But what does that mean for you?

Latest and Greatest Technology
We have the experience, the people and the financial backing necessary to take a great product line and move forward in great leaps. Take the AudioWizard CFS32™ out for a test drive at the Fall show in Seattle and you'll see our point. This 32-bit Graphical User Interface combined with our powerful database engine and WAN capabilities makes for one authoritative digital audio system.

Tech Support
Our superior tech support has actually been the deal-maker in some recent contracts. You can count on us. (You can check out our client list at: www.prophetsys.com)

Your bottom line
Let us show you how you can recoup your investment, just like the big boys.

Productivity

Our systems are user-friendly–you can probably be up and running in a matter of days. But to show you all the power and flexibility, we've created the PSI Training Academy, a state-of-the-art educational facility. Get hands-on experience under the supervision of broadcasters who have relied on the AudioWizard for their bread and butter.

Together, let's make great radio.

AudioWizard™ CRYSTAL PATH psi ACADEMY WANCASTING™ WIDE AREA NETWORK 'nuff said!! PROPHET SYSTEMS Innovations PSI

Sales: (800) 658-4403 Support: (308) 284-8450 Sales & Support Fax: (308) 284-4181 E-mail: sales@prophetsys.com

Circle (134) On Reader Service Card

See Us At The NAB Radio Show Booth # 920

World Radio History

▶ BOOTHS, continued from page 45

BSW- see Broadcast Supply Worldwide **1140**

Burk Technology **314**
Intro: Autopilot for Windows: automatic transmitter control software for use with all ARC-16 transmitter remote control systems. Features include automatic functions, corrective actions and logging, easy to use Windows platform, maintains four simultaneous connections and dials over 500 sites.
Also: ARC-16 transmitter remote control system, LX-1 six-input stereo selector, EAS encoder/decoder, RX-4 EAS receiving system and LX-4 EAS audio switch.

Car Show, The **941**

CBSI - Custom Business Systems Inc. **724**
Intro: Digital Universe uncompressed audio with channel capacity for live assist/auto: 25 simultaneous stereo channels from one PC, Windows NT client-server architecture, no proprietary audio cards, standard hardware, uncluttered screens.
Also: Windows-based traffic, billing, sales management. software, including Integrated Sales Manager proposal writing/contract management package. Premier, Classic and Elite packages are scalable from standalone stations to large groups. Also, InterAcct accounting software.

Central Tower **637**
On Display: Guyed and self-supporting towers, turn-key projects, engineering analysis, and frequency matched tower sections in the area of FM for pattern optimization. All structures are custom designed per specification and manufactured with solid rod construction. Precision fixturing, certified welders and quality assurance programs ensures quality structures produced in this market.

Circuit Research Labs Inc. **520**
On Display: DP-100 FM digital processor with upgraded power user controls, plus innovative remote control package; DAA-50 digital analyzer and audio decoder.

Columbine JDS Systems Inc. **932**

Communication Graphics **613**
On Display: Design and manufacture window stickers and decals for radio.

Computer Concepts Corp. **614**
Intro: Visual Traffic 32-bit Windows NT system. Import/export flexibility through SQL data base; pro-defined and user-definable management reports; calculation of commission rates, splits and sales goals; combos, duopoly and LMA splits for stations, sales staff and advertiser accounts. MAESTRO Windows NT-based digital audio hard disk storage system with capability of multiple record/play channels with full integration of all digital audio operations. RELOGGER 32-bit Windows 95 compatible digital audio logger capable of storing an entire month of a station's audio without any user intervention.
Also: DCS; NewsRoom; Voicetracker.

ComQuest Callout **209**
Intro: ComQuest Win '98, a Windows '98 interactive callout music research system, featuring Speech Recognition, where respondents speak or push button to vote; Mapping, which displays where calls for this week's research came from on a map of the metro area; and Palm Pilot Connectivity, which sends results to the included Palm Pilot Professional.
Also: ComQuest Ver. 3.4.

Comrex Corp. **720**
Intro: Vector POTS codec, delivers 15 kHz two-way audio on one plain telephone line, operates in music, voice, HotLine or standard telephone modes, includes a three-channel mixer and an extra input for producer cues, plus an additional output for PA feeds.
Also: HotLine POTS codec; Nexus ISDN codec; other digital audio codecs; Mix-Minus Bridge; Buddy Remote Studio; frequency extenders; telephone couplers.

Kris Bobo, V.P. Development
65 Nonset Path
Acton, MA 01720

Phone: 978-263-1800
FAX: 978-635-0401
E-Mail: info@comrex.com
Web Site: http://www.comrex.com

Continental Electronics Corp. **1133**
Intro: Model 802D digital FM exciter, featuring true digital operation; Model 815C 5 kW FM transmitter, 100% solid state.
Also: Model 316D 10 kW AM transmitter, 100% solid state.

Creative Radio **1024**
Intro: Creative Edge Production Music Library, a "buy-out" library featuring theme songs that can be used for a variety of different advertisers, each theme cut includes a :30 donut, :30 instrumental, : 30 vocal close, :60 donut, and :60 vocal close. Each cut can be customized for a specific client.
Also: Custom-written retail jingles; station jingles; sweepers; liners; production music libraries; revenue builders; special requested creative audio production.

Crown Broadcast **1441**
On Display: FM exciters, translators and transmitters from 30 W to 500 W; RF amplifiers for 1 kW and 2 kW.

CUE Corp. **1346**

Cutting Edge Technologies **132**
Intro: omnia.fm.jr, provides multiband processing for budget-conscious FM stations, features three bands of limiting, a wideband AGC, thunder bass boost, warmth control, anti-aliasing distortion, controlled final clipper, digital stereo generator with integral composite clipper and baseband filter for rock solid peak control. Can be upgraded any time to a full omnia.fm.
Also: omnia.fm; omnia.net; omnia DAB; Dividend.

D-F

Dalet Digital Media Systems **414**
Intro: Team News, features PC-based integrated text and audio editing and broadcast for live news, newswire capture and filtering, real-time network chat, and an integrated Web browser; Team Radio, PC-based and featuring advanced group-wide traffic scheduling, proposal generation and order entry, integrated reporting and billing, and seamless integration with Dalet 5 digital audio software (and others); InterWeb, makes Dalet 5 audio files and data base available for sharing via the Internet, provides access to your audio library and spots for affiliates, and remote journalist can send stories via laptop with simple Internet connection.
Also: Dalet 5, an integrated suite of software for radio stations, addressing the complete range of tasks performed in radio, including live or automated broadcasting, program scheduling, production, news and traffic management.

Datacount Inc. **838**
Intro: Datacount 32, a 32-bit traffic and billing software system for Windows 95/NT designed exclusively for computer technology of tomorrow as well as the needs of multi-station consolidation and large group ownership. Flexible contract entry supports packages/group sponsors/multiple stations. Management reporting provided on corporate,

See BOOTHS, page 47 ▶

Eliminate Carts for $5,000

At last! A "cart" replacement system that *works like carts*, but with digital audio quality that *sounds like compact discs*.

It's Scott Studios' new Spot Box. It's the *easiest* hard disk digital system to use!

There are two parts: A triple-deck "cart" player on the left, and a "Wall of Carts" pick list on the right.

The triple-deck digital player has everything you would expect. Big green Play buttons, bright red Stop buttons, VU meters, large countdown timers, flashing End-of-Message signals, and large legible "cart" labels.

You can start each spot manually from the screen, from remote Start buttons (and run lights) on the console, or touch the Auto-Manual button to have Spot Box smoothly start the next deck itself.

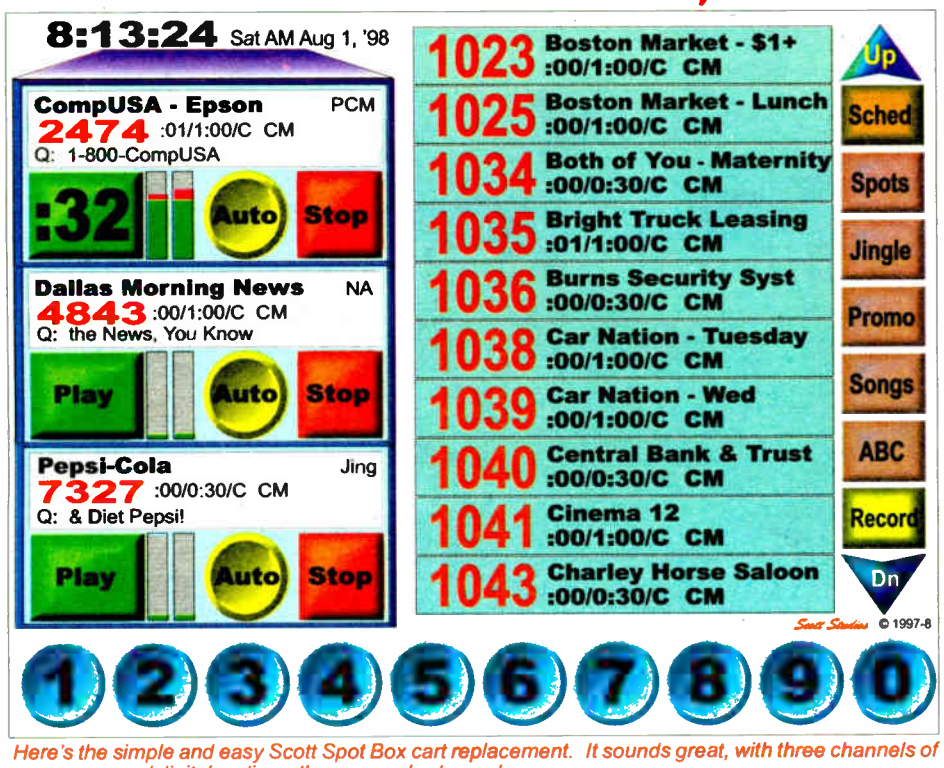
Spot Box is really easy to use. There's only the one screen, so jocks never get confused. Even though Scott Studios uses Windows 98, 95 or NT, Spot Box works like carts, *not* a computer.

If you use a paper log, load any cut quickly with the blue number keys at the bottom of the touchscreen, or type them in with a 10-key pad. Or, pick and play any recording by number or name from the scrolling "Wall of Carts" showing all your spots, promos and jingles in ABC or 123 order.

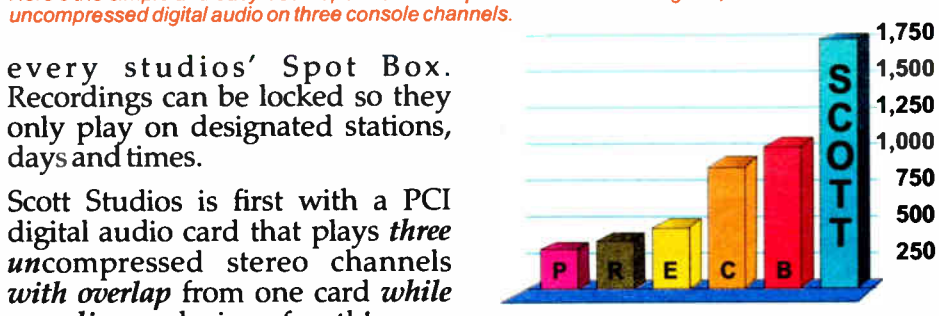
As an option, Spot Box can import logs from your traffic computer by diskette or Local Area Network.

You get detailed printouts showing exactly which spots played and when. With the traffic import option, you see at a glance the comparison of schedule and air times.

If you have several stations under one roof, record a spot only once. There's no limit to the number of Spot Boxes or hard drives you can connect by LAN for additional studios and redundancy. Every spot can be instantly played in every studios' Spot Box. Recordings can be locked so they only play on designated stations, days and times.



Here's the simple and easy Scott Spot Box cart replacement. It sounds great, with three channels of uncompressed digital audio on three console channels.



Scott's non-proprietary 32-bit audio card is superior to anything else: >90db signal-to-noise, ruler flat frequency response, and your choice of MPEG II, uncompressed or both, intermixed at all sample rates. Others use inferior 8- or 16-bit audio cards designed 5-10 years ago.

It's a fact: over 1,750 radio stations have 3,950 Scott digital workstations, including *major* groups like CBS, Chancellor, Disney/ABC, Clear Channel, Emmis, Citadel and many more.

Scott Systems are best due to:

- the easiest user interface;
- uncompressed digital audio;
- 3 product lines--Good, Better & Best.

Scott Studios' digital audio is *affordable*. A triple-deck Spot Box Pentium recorder-player with touchscreen starts at $5,000!

Call Scott Studios to see how a digital system can be tailored to *your* needs and budget.

Scott Studios Corp.
13375 Stemmons Freeway, Suite 400
Dallas, Texas 75234 USA
(972) 620-2211 FAX: (972) 620-8811
Internet: www.scottstudios.com
8 0 0 7 2 6 8 8 7 7
(800) SCOTT-77

Circle (160) On Reader Service Card

World Radio History

▶ BOOTHS, continued from page 46

management and traffic levels. Calendar and financial year reporting, multistation reporting standard, supports Intranet reporting.

Also: DARTS (Datacount Accounts Receivable and Traffic System); Super Log traffic and billing software; DARTS EL (Entry Level).

Dataworld 631

Dateline Marketing International 1251
On Display: Dateline, the world's largest radio-based dating service.

DG Systems 522
Intro: iAudio enables stations, studios and content producers to send broadcast-quality audio files via the Internet to DG for nationwide distribution.

Dielectric Communications 300
On Display: Dielectric is a leader in FM equipment for domestic and international broadcasters, offering a line of FM broadcast antennas including side mount, panel and multistation antennas.

Also: Rigid coaxial transmission line, motorized coaxial switches, directional couplers, filters, combining equipment. System solutions.

Ferries ply the area's waterways.

Digital Radio Express Inc. 1118
Intro: IBOC DAB: In-band, on-channel radio transmission and reception with 128 kbps data rates providing quality audio and data services.

Dimension Funding 1320
Intro: Audio/Video Equipment Finance. Six-month deferred payment programs. Rates starting at 7.5%. Used equipment financing available. Vendor referral programs. Master lease programs. 100% tax deductible programs.

DTN Weather Center 106

Duncan's American Radio 544

Eagle Marketing 1014
Intro: Metro MasterPlan, Eagle Marketing's exclusive multistation direct marketing campaign that mimics Arbitron's methodology; Diary Locator, exclusive targeting strategy that goes beyond hot zip codes to reach the lifestyle groups that return diaries to you and your competitors.

Also: Qualified Players; Work Perk.

Electric Village 201

ENCO Systems Inc. 240
On Display: DADpro32 Digital Audio Delivery System, a complete live-assist and automated on-air, production and inventory management system.

Energy-Onix Broadcast Equipment Co. 213
Intro: PULSAR 1000, Solid-state, modular 1 kW AM broadcast transmitter, with five preset power output levels and three hot pluggable 400 W modules.

Also: FM transmitters, solid-state, 10 W to 20 kW; one-tube FM transmitters 2 kW to 30 kW; two-tube transmitters to 50 kW; STL systems; remote pickup; AM and shortwave broadcast transmitters.

ERI - Electronics Research 501
On Display: Omni and directional FM antennas; lambda mounting systems; towers; filters; combiners; lightning protection; grounding systems; "X" series antenna, combined with lambda mounting system and tower for best possible coverage.

EWTN 223
Intro: AM/FM service, provides religious programming free of charge to radio stations around the world 24 hours a day via satellite, cassettes or CDs, attracting listeners of all faiths while serving a large Catholic audience; also, CD Vignettes, providing listeners with words of inspiration through 60-second vignettes from EWTN hosts, each CD contains spots dealing with life in the '90s, morality, and tips for living life as a Christian.

Fidelipac Corp. 609
Intro: MXA on-air console, a small, six-channel modular on-air board with 12 total stereo inputs, two stereo and two mono output busses, and full independent remote functions, solid steel construction.

Also: MX analog and digital on-air consoles; DCR digital cart machine; Broadcast Audio digital on-air console; CTR series analog cart machine; DynaTool digital interface devices; NAB tape cartridges; standard and custom studio warning lights.

Film House, The 619

FirstCom Music 413
Intro: AccessMusic Library. Mix and combine elements, access cues, hits and fills for every track. For perfect promos.

Also: The Production Edge Library; Gotham Music Library; OneMusic Library; Total Access-The Music Library; Nashville-The Promo Library+, Sound Designer, Sound Designer II.

G-I

GE American Communications 1146

General Mills Radio Productions 1130
Intro: Wheaties Sports Report, a free daily 60-second radio feature with major professional athletes offering tips, anecdotes and facts about their careers, no commercial content; Total Nutrition News, a free daily 60-second news feature explaining the latest info on health eating, diets and wellness; Ask Betty, The Radio Show, America's original Queen of the Kitchen back on the air and updated for the 1990s, with timely tips and news about food, kitchen gadgets and mealtime fun.

Also: Team Cheerios Sports Report.

Gentner Communications Corp. 144
Intro: DH30; GSC3000 Software Upgrade; TS612 Software Upgrade.

Also: GSC3000; TS612; DH20; DH22; SPH10.

Gepco International, Inc. 105
Intro: 5524TS 24 gauge, Plenum rated (UL Type CMP), AES/EBU Digital Audio Single Pair Cable; 552608GFC 26 gauge, eight-pair digital audio cable, with pair jackets color-coded for easy ID and ability to terminate to 25-pin D-SUB connectors; D5524EZ, Dual Pair (zip config.), 110 ohm AES/EBU digital audio cable, 24 gauge with foil bonded to jacked for simplified termination.

Also: Audio cables including single-pair, dual-pair, multipair, speaker, guitar/instrument, microphone and digital audio. Custom products include breakout boxes, direct boxes, patch bays and panels.

Giant Advertising 1154
On Display: Helium blimps, spheres and custom shapes. Forced air inflatables in any shape or design.

Gorman Redlich Mfg. Co. 102
Intro: EAS1 with telephone DTMF interface, ability to compose a message, store the audio and send a complete EAS message from a remote location via a telephone line.

Also: Model CRW Weather Radio; Model CMR Digital Antenna Monitors for locations requiring remote control readings on AM directional arrays; Model CM Digital Antenna Monitor for locations where studio is located at transmitter location.

Groove Addicts - See WHo DId THaT MUSiC LIBRARy? 316

Guardian Communications, Inc. 1344
Intro: "World's Greatest Promotions." Promotions that generate revenue for your station, foot traffic for the advertiser, fun for the listener. We do all the work, no up front fees, promotions are market exclusive.

Harris Corp. 606
On Display: Harris DX10 Medium Wave AM Transmitter; Harris DIGIT CD Digital FM Exciter; Harris CD LINK all-digital uncompressed 950 MHz STL; Harris Platinum ZCD solid-state FM transmitter; Harris Digital Audio Product line including the A2D2A Analog to Digital to Analog Converter and the CD2001 CD Player; Harris DRC2000 Digital Audio Console; Harris Aurora with Intraplex ST3; Harris Quest 1, Harris SuperCiter Analog Exciter, Harris DA Switch.

Also: Orban Audicy and AirTime; 360 Systems Short/cut, Instant Replay, Digi/Cart and the Audion VoxPro.

Hungerford, Aldrin, Nichols & Carter 112
Intro: Revenue Share Reports: weekly market-wide forward pacing reports, monthly revenue share reports and monthly detailed radio advertiser reports.

IMAS Publishing/Radio World 641
Publishers of Radio World, the newspaper for radio managers and engineers, reaching 18,000+ industry readers; also Radio World International, TV Technology, Pro Audio Review, Pro Video Review, Broadcast and Production, contract pub-

See BOOTHS, page 48 ▶

QEI

And You Thought You Knew Us.....

Solid-State and Single Tube Transmitters

Low Power Transmitters

Digital STL / TSL Systems

Modulation Monitors

Pre-Built Modular Transmitter Sites

For More Information Call Us Toll-Free At (800) 334-9154

QEI Corporation
One Airport Drive, P.O. Box 805
Williamstown, NJ 08094
e-mail: qeisales@qei-broadcast.com

Toll-free Sales (800) 334-9154
Fax (609) 629-1751
Emergency Service (609) 728-2020
Web Site: http://www.qei-broadcast.com

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lishing. Publications for readers abroad include Japan, China, Germany, Brazil, many other targeted countries. Total global readership in excess of a quarter of a million.

Inovonics Inc. **1042**
Intro: Model 235 AM Audio Processor with AGC, three-band compression, EQ, limiting, NRSC-compliant and AMAX-certified; Model 520 Mono AM Mod Monitor with built-in preselector for off-air use, remote peak flashers and alarms.
Also: Audio Processing Systems for AM, FM, shortwave and TV; FM stereo generators and processor/generators; FM Mod Monitor, FM rebroadcast receivers, RDS/RBDS encoders and decoders; telephone line switching equipment.

International Datacasting **1020**
Intro: SuperFlex-DVB Broadcasting System, Multichannel per Carrier digital broadcast system, DVB compatible, bit rate agile, can support broadcast data including multicast IP, data and audio. Applications targeted for use: Internet bypass, streamed multicast audio & video, multichannel audio/radio.
Also: FlexRoute Satellite Digital Audio System; DataNet Satellite Data Broadcast Network; EchoNet, Internet/Intranet Broadcasting Software; EchoCom, Multimedia Data Broadcasting Software.

International Demographics **632**

Intraplex Inc. **645**
Intro: STL PLUS System, a fully integrated digital audio transmission system for STL/TSL or intercity relay which transmits linear uncompressed stereo audio, voice, LAN and remote control over one low-cost digital T1 line. Now features an internal CSU, eliminating need for costly external interface equipment. STL PLUS also has a new Windows-based user interface and enhanced front-panel display; Also SynchroCast, which allows FM broadcasters to expand a station's coverage by simulcasting multiple transmitters on the same frequency. This keeps people listening with seamless movement between coverage areas.
Also: Outback MPEG Layer II Audio Codec; IntraLink ISDN Multiplexers; DCS-9500/DCS-9560 Digital Cross-Connect Systems.

IQ Television Group **443**

J-L

Jampro Antennas/RF Systems Inc. **516**
On Display: Medium-power Rototiller Antenna, ideal for multiuser applications; outstanding VSWR. Shunt-fed design eliminates the need to "slug-tune" the antenna in the field for optimum performance.
Also: Bandpass Filter, engineered to meet the requirements of rejection level, while maintaining optimum insertion loss with flat group delay and frequency response.

JAM TV **212**

John Boy & Billy Radio Network **1340**

Jones Radio Network/Media America **1230**
Intro: Consulting & Programming. Customized services include playlists, music libraries, & voice tracking; "Nashville Nights," live country programming, five days a week, 7 p.m. to midnight, from flagship station WSIX, Nashville; "Crook & Chase Minute," one-minute daily feature w/famous country personalities, country music news & celebrity interviews.
Also: Established products include Adult Hit Radio, Soft Hits, Good Time Oldies, US Country, Classical Collection, Rock Classics, Jimmy Carter Country/Entertainment Report, La Bonita, Crook & Chase Country Countdown, and many others.

Mt. Rainier is visible on clear days.

KD Kanopy Inc. **400**
On Display: KD Majestic, KD StarShade, KD StarStage, KD BannerPole, Party Shade.

Kelly Music Research, Inc. **1152**
Intro: Analyzer Music Pivot Table Program: simple "point and click" and "drag and drop" features enable novice computer users to sort, filter and create sophisticated music research reports that until now, required experienced data processing professionals; Living Room Music Test: library music market research conducted in the comfort of listener's own homes with new test control measures, targets diary keepers to develop music programming based on the opinions of listeners who can have greatest impact on ratings, listeners receive a cassette of song hooks at home, eliminating the hassle of commuting to a remote research facility, enabling sampling of the entire market; Person to Person Call-Out: custom call-out music research with the advantage of 100% human interaction with all listeners, stations choose target demos, music partisans and other specifications for weekly or biweekly measurement of listener familiarity, appeal and burn on current music; regional call-out in the Tracking Report now available for network barter.
Also: Music Research, Market Research

Klotz Digital America **738**
Intro: Paradigm digital radio on-air console, with voice processing and HPF on all line inputs. Mode, pan and phase reverse on all inputs. Two faders with analog/digital six-source selectors. Accept 24 sources and has both analog and digital outputs.
Also: Vadis digital audio master router, D.C. digital audio console, and DiAN fiber optic network for audio.

Label Company, The **1438**
Intro: Wristickets: one-time use, self destruct upon removal, 3 color on front, plus coupon available on back for sponsors, use for concerts, backstage passes and special events; Safety Strips, for high visibility, printed on fluorescent paper for use at Halloween or for bikers and joggers, available in red, green, pink, orange, and yellow with optional customized printing on front and back; CD Scratch-off Cards, totally customized front and back, 4-1/2" diameter, two-color maximum, plus hidden message under scratch off, back side available for sponsorship imprint.
Also: Bumper stickers, static cling vinyl decals, cassette labels, scratch-off cards, listener cards and carriers, shipping labels, reel box labels.

LDS Church Public Affairs **1153**
Intro: The Faith and Families Report: new public affairs series gives insight and information about today's religion and demonstrates the relationship between religion and family life; 14-part series is free to broadcasters by calling 801-240-4397; each program runs 1/2 hour.

Lucent Digital Radio **732**
Intro: Lucent Digital Radio's mission is to partner with broadcasters and transmitter and receiver manufacturers to develop an in-band, on-channel (IBOC) digital radio system for AM and FM Broadcast. LDR will leverage the wealth of digital communications technologies developed within Lucent's Bell Laboratories to create a system that can be integrated with the products offered by existing receiver and transmitter manufacturers, to ensure a cost-effective evolution to digital radio.

Lucent Digital Radio
184 Liberty Corner Rd., Rm. 1SC010
Warren, NJ 07059

Phone: 908-604-3923
FAX: 908-580-7226
E-Mail: nickkarter@lucent.com
Web Site: www.lucent.com/ldr

M-O

Marketeer Publishing Group **115**
On Display: The Marketeer Business-to-Business Journal, an NTR generator for radio. Exclusive partnership in your market, complete sales support and turnkey production services.

Marketron **638**
Intro: New Windows software for the broadcast industry encompassing all areas of station operation, including traffic accounting, sales, proposal research, management and demand pricing, also interactive corporate reporting via the Internet.
Also: traffic, accounting, management, research, proposal, demand pricing.

Marti Electronics Inc. -
See Broadcast Electronics **306**

Mascot Masters International LLC **500**

Maxagrid International Inc. **939**
Intro: Advanced Inventory Management System: new application with Windows 95 platform helps clients manage customer demand to improve inventory management and revenue.
Also: Maxagrid Version 2.0, 40.0 and RAYMS inventory management systems, leading consultant in revenue management services for media.

Media Professional Insurance **1432B**

MediaTouch **625**
Intro: OpLOG-2000 Touchscreen AIR controller for Windows. Features designed for major-market radio live assist, including OpBRIDGE information center, Pick N' Play audio library, Heads N' Tails voice tracking, Hook Line & Seg'er promo builder, more. Also QuicPix Touchscreen Hot Button Box for Windows, for quick access to digital audio; Mclip digital waveform "High Lite" clip editor for live sports broadcasts; W.A.A.N. Wide Area Audio Networking for the Internet and ISDN dial-up networks.
Also: Super Duopoly Software Suite for broadcasters that acquire radio formats for centralization or wide area operations.

mediatron **111**
Intro: Complete digital solution for radio. New modules include VoiceTrack Plug-In for "real feel" voicetracking similar to live broadcast; Remote Control Plug-In; MultiMedia Plug-In, for Internet, intranet, RDS and digital radio communication; JukeControl Plug-In, puts 500 or more CD-ROMs at your mouse click for the ultimate in archiving. Also AirControl NT 98 LIGHT version.
Also: AirControl NT live assist and automation system; AirControl 2000; NewsEdit recording and editing system for journalists; ProTracks multitrack recording and editing system for production; DigiReporter; AirEdit NT; NewsControl; SatControl; ComUnit; more.

Microsoft Corp. **207**

MicroVoice Applications, Inc. **1157**
Intro: Date Cast: nontraditional revenue, no out-of-pocket expense, multistation synergy, marketing management, event planning, programming supplement.
Also: Audiotext, Voice Personals

Miller, Kaplan, Arase & Co. **702**

MobilTRAK Inc. **114**

Moseley Associates Inc. **801**
Intro: SL9003Q 4S: all-digital 950 MHz STL, provides four linear audio channels.
Also: Digital studio-transmitter links featuring all-digital Starlink series: SL9003Q QAM modulated 950 MHz RF link with four uncompressed audio channels; SL9003T1 for T1/E1 telco circuits; SL9001SS 2.4 GHz Spread Spectrum link. PCL6000 analog STLs; DSP6000 digital audio codecs; MRC-1620 remote control; MRC-2 remote control with MasterController software for Windows.

Murray Co. **548**

MUSICAM USA **118**
Intro: TEAM: T1/E1 Audio multiplexing system, TEAM is a universal audio transmission system for T1/E1 leased lines. Modular construction and support of both linear and multiple audio coding standards make it ideal for studio use and future multiple audio transmission requirements.
Also: CDQ Prima, stereo ISDN Codec; RoadRunner: mono ISDN codec with built-in mixer, FieldFone/StudioFone, fhe first POTS codec with up to 10.2 kHz.

National Guard Bureau **110**

Nautel Maine Inc. **439**
Intro: Nautel XL12 AM transmitter: solid state 10 kW AM broadcast stereo transmitter, digital transmission ready, 155% positive peak modulation at 10 kW, 20% reserve power, six power levels: 10 kW-13.2 kW, modular, on-air serviceable, dual exciters with auto changeover, 84% overall efficiency. Nautel FM8 transmitter: 8 kW solid state FM stereo transmitter, digital AES/EBU or composite interface, modular, on-air serviceable, single stage combiner requires no reject loads, 65% overall efficiency. Nautel NE50 Digital FM exciter: 50 W Digital FM exciter with direct digital synthesis technology, digital stereo generator, integral, AES/EBU digital audio input via XLR or Toslink, three RDS/SCA inputs, separate emergency analog composite input, alphanumeric status/diagnostic display, 99 event alarm log.
Also: Nautel XL60 solid state 60 kW AM broadcast transmitter; FM Series 3.5 kW, 10 kW, 20 kW solid state FM broadcast transmitters; ND Series 1 kW, 2.5 kW and 5 kW solid state AM broadcast transmitters.

See BOOTHS, page 49 ▶

Time-Temp Announcer: SINE SYSTEMS
Innovative Solutions

Voice: 615-228-3500
Fax: 615-227-2367
Fax-On-Demand: 615-227-2393
Web: www.sinesys.com

A radio station is an ideal business to operate a telephone "time and temperature service." Thanks to the low cost of the Time-Temp Announcer, this is now possible in even the smallest communities. Selling advertising on the service is a new revenue source and the cross-promotion possibilities are tremendous. The basic unit answers two lines and comes complete with everything you need to get started. Expansion units allow up to 62 lines.

Circle (212) On Reader Service Card

World Radio History

▶ BOOTHS, continued from page 48

NBG Radio Network 1124
Intro: Nina Blackwood's Absolutely 80's: three-hour weekly program reliving and recalling the 80's, featuring a different flavor of the decade every hour, delivered on CD; RE-Spec (radio and television donut commercials) delivered quarterly to your station's sales department, radio spots delivered via CD and television spots delivered via Beta or 3/4"; Loyal Listener Marketing Program: bar-coded credit cards designed by your station and issued to your loyal listeners to build a database and use as a marketing tool. Use credit cards at station events/remotes with NBG's preferred listener program, or specially designed kiosks tailored specifically to your station.
Also: Syndicated Radio Programs, Teein' It Up, Fastbreak with Steve Jones, Thrive, FastTrack with Kyle Petty, Sports Memories, Eliot Stein, Dollars and Cents, Slice of Life with Richard Simmons, Country Oldies Show, Teen Tips, Outdoor Tips, Golden Age of Radio, Big Band Classics, Mic Check, Modern Rock Minute, Trivia Coast-to-Coast, Celebrity Talk, The Flip Side, Korelin/Hartfield Rept.

The Space Needle

Netia Digital Audio 1330
Intro: Full range of digital audio products, including Radio-Assist, entirely developed under Windows NT 4.0 from acquisition to broadcast, each step has been incorporated: management and production of commercials and music, logging, journalist recording and editing, manual or automatic broadcasting, user-friendly new graphic interface.

Network Music Inc. 536
Intro: Aftershock: 4 CDs of production elements.
Also: Network Production Music Library; Short Trax, Sound Effects Library; Classical Library; Production Elements Library.

NPR Satellite Services 1046

Omnia Group, The 623
Intro: Omnia Background Search: Customized pre-employment background checks make sure you know who and what you are hiring to help protect your station against expensive negligent hiring lawsuits. You only pay for the searches you need. The report is easy to understand and only one to two pages long, with results faxed back within 2-3 days.
Also: The Omnia Profile, The Omnia 720 Composite, Omnia MX3, The Omnia ProManager, Omnia Dept./Company Overview, The Omnia Position Descriptions, The Omnia Workshops, The Omnia Career Counsellor, The Omnia Career Counsellor Workshops.

On Air Digital 243
Intro: The Ultimate Digital Studio - an audio management and control system that interfaces with a variety of professional CD Changers, digital audio hard drive systems, music scheduling and traffic systems. For the total integration of on air sources including remotes and satellite feeds.
Also: CallOut- A Windows 95/NT-based music research tool; NM01 Console - small mixer designed for newsroom applications; and On Air Syndication, European syndication.

Orban 246
Intro: The OPTIMOD-DAB 6200, the first fully-featured audio processor designed specifically for digital audio broadcasting, both radio and stereo (two-channel) television and webcasting; OPTIMOD-FM 8200: digital audio processor with new Version 3.0, now comes with 21 format-specific presets, each named for a programming format, more power and flexibility than before; Audicy with new Version 2.0 Software: enabling file transfer and .WAV file interchange, allowing users to connect single or multiple audio workstations to Windows 95 or NT file servers. The upgraded software gives broadcasters instant access to a full range of remote PC resources, including file servers, storage systems, removable disk drives, CD recorders and .WAV file downloads from the Internet, accommodating multiple users and workstations.
Also: AirTime On Air Audio Delivery System.

P-R

P3 Sports Guide 109
On Display: Goalline Guide, Red Line Speed Guide.

Pacific Research & Engineering (PR&E) 438
On Display: Integrity digital broadcast console, AirWave broadcast console, Radiomixer broadcast console, BMX III broadcast console; custom studio furniture; PrimeLine modular studio furniture; Quikbilt modular studio furniture, SoundFire digital audio access engine.

Powergold 98 Music Scheduling Software 340
Intro: 32-bit advanced music scheduling software for Windows 95/98/NT. Compatibility with digital playback systems, most powerful, new music scheduling features like automatic point scaling, auto-editor, full drag-and-drop mouse support.
Also: Powergold DOS Music Scheduling Software.

Press Promotions Inc. 900

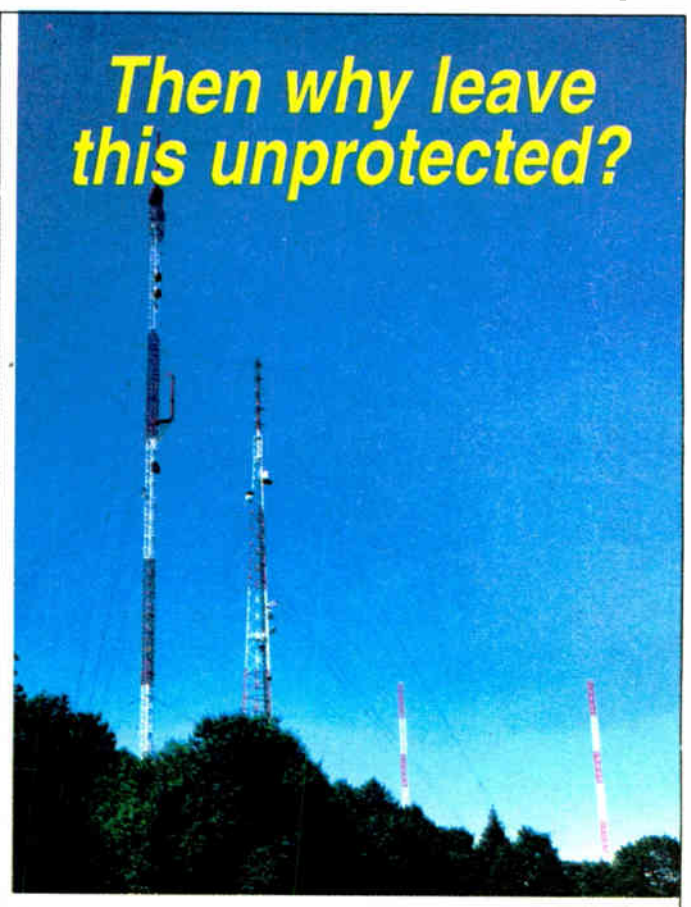
Pristine Systems 1428
Intro: RF Edit: on air waveform recorder and editor allows for the on-air recording and editing of phone calls, spots, and/or programs. It handles MPEG, Dolby and PCM audio formats in mono or stereo at a 32, 44.1 or 48k sample rate.
Also: RapidFire on-air digital studio system; Music Plus music rotation and playlist scheduler; Voicetraxx, which allows for voice tracking walkaway on-air shifts; TimeWarp, which time shift records programs for delayed broadcast; and Audio Commander, and easy-to-use hard disk audio production tool.

Promusic Inc. 1038
On Display: Production music and sound effects library with over 1,500 CDs.

Propagation Systems Inc. 1322
Intro: PSIFMT circularly polarized FM broadcast antenna. Features Internal feed points, fully pressurized series fed radiating elements, copper and brass construction and excellent VSWR bandwidth, available in power levels of up to 60 kW.
Also: Complete line of FM antennas with input power levels ranging from 500 W for single bay low power design to 120 kW for a multistation panel array. PSI also provides directional FM testing and is a supplier of diplexers, combiners, transmission line and components.

Prophet Systems Innovations 920
On Display: Digital automation systems featuring the AudioWizard for Windows. Will fea-

See BOOTHS, page 52 ▶



WHR Series STABILINE® Voltage Regulators for radio and television broadcasting installations.

Superior power conditioning to safeguard your business investment.

All delicate electronic devices, including your station transmitters, are designed to perform within a certain voltage range.

More often than not, however, the voltage that reaches your critical operating equipment is highly inconsistent or "dirty" because of power line disturbances like sags, surges, spikes and brownouts. And dirty power can wreak havoc with your broadcast system, mobile production vehicles or remote transmitter sites causing equipment malfunction, hardware/software damage or reduced power tube life.

Don't become a victim of polluted power lines!

Cost-effective WHR Series STABILINE® Voltage Regulators prevent power quality problems from attacking your vulnerable electronics. The preferred choice of broadcasters worldwide for use with transmitters, receiving stations, studios and mobile production units, these high power regulators automatically feed voltage sensitive equipment a constant voltage level – even when the power line input voltage and system load vary widely. STABILINE® – the preferred choice of broadcasters worldwide.

3-phase, 500 kVA model.

The industry's most extensive list of standard options and features:

- Output voltage maintained to ±1%
- Power ratings from 2 to 1680 kVA
- 99% typical efficiency
- High overload capacity
- No waveform distortion
- Maintenance bypass switch
- High energy transient suppression
- Zig-zag neutral generation
- Input voltage range alarm contacts
- Frequency trip meter and ammeters
- Analog or digital control
- Single or individual phase control
- Single or three-phase models
- 19-inch rack mount versions
- All voltages up to 660 V
- Tropicalization treatment

For catalog or more information, call, write or fax Ted Gladis.

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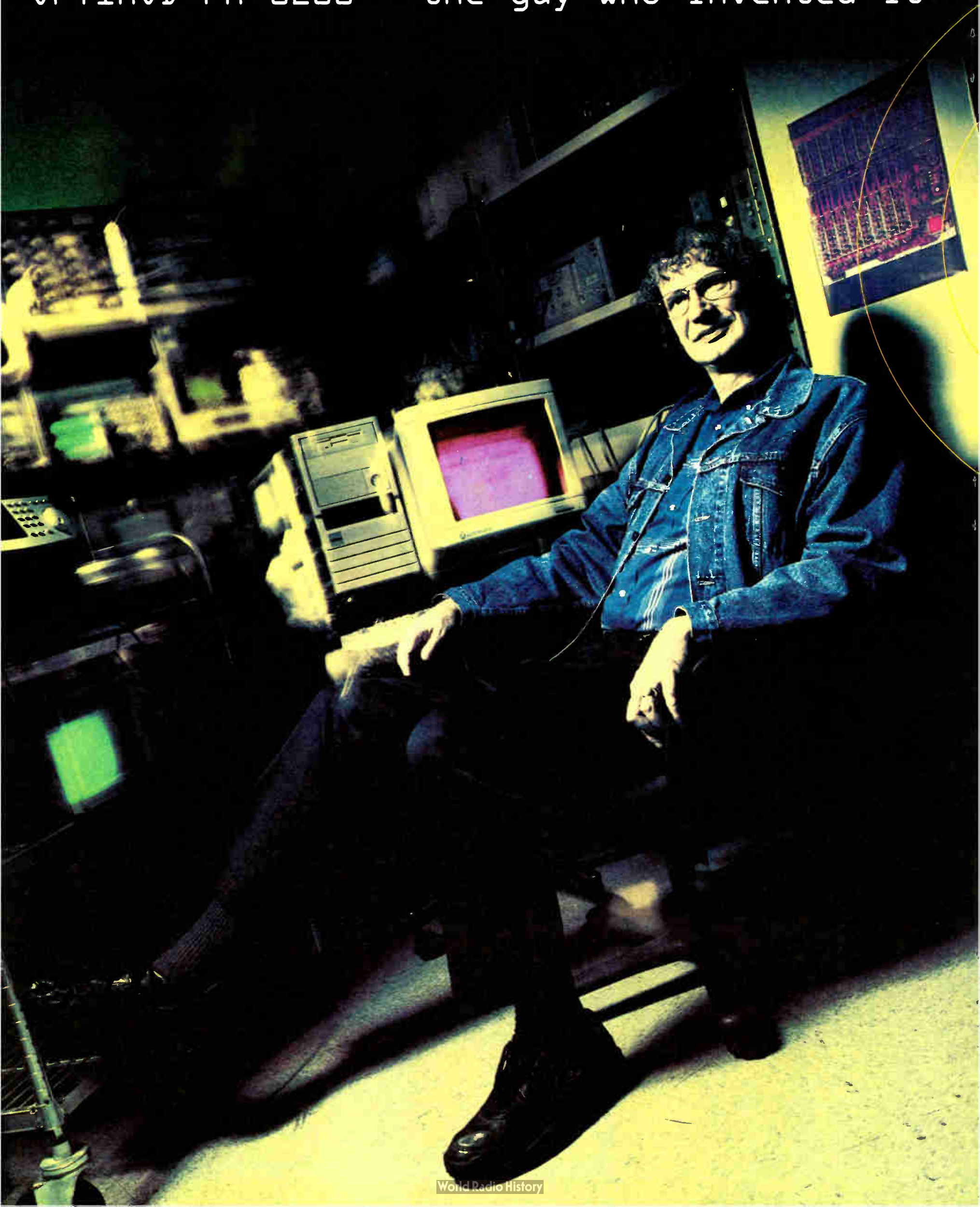
www.warnernet.com/sev_main.html

Circle (5) On Reader Service Card

See Us At The NAB Radio Show Booth # 225

World Radio History

A challenge from the greatest critic of the OPTIMOD-FM 8200 - the guy who invented it.



World Radio History

"Version 3.0 is more than an upgrade. It can take your station's signature to the next level of competitive sound. Listen to it side by side with any audio processor in existence; then, let me know what you think. Good or bad, every e-mail sent to me will be answered by me, personally. bob@orban.com."

orban®

H A Harman International Company

BOB ORBAN is known for his critical ears. In the seven years since we introduced OPTIMOD FM 8200, perhaps no one has logged more hours listening to the best and worst in digital audio processing. Even critics have called his knack for creating louder, punchier, artifact-free sound "a gift." But make no mistake. With 30 years of experience in audio, it's Bob Orban's expertise that is written into every layer of the new Version 3.0 software. It gives you a level of audio technology that no other processor in existence can match.

ON AIR

NOTHING IS NEWER.

Version 3.0 software adds five new features to OPTIMOD 8200's proven digital platform. With thousands of users and millions of on-air hours to draw on, Orban's team knew exactly how to take your station's audio to the next level. 21 new presets dramatically expand your options to create a superior competitive sound. Sonic "color" controls now allow you to fine-tune tonal balance to precisely target your desired audience. Tweak the band output mix controls to add sizzle, bring vocals up front, or mellow out instrumentals. Raise the bass clipper threshold to create a more solid bass punch for urban and dance formats. Toggle Phase Rotation on/off to minimize distortion or improve music transparency. Open up the highs to effectively remove any hint of what has erroneously been called "digital grunge."

NOTHING SOUNDS BETTER.

Cut to cut, spot to spot, announcer after announcer, nothing delivers a more consistent sound than the new Version 3.0 software. Which means that hour after hour your station's signature sound remains true to your audience's preference. The dynamic, musical presentation never fatigues listeners. Every minute you're on the air, you achieve a unique sound that brands your station with a distinct presence in the market. Loud. Clean. Clear and Punchy. Side by side, no other processor delivers higher quality sound or requires fewer hassles to achieve it.

DIGITAL PROCESSING DONE RIGHT.

After seven years of listening, tweaking and nonstop critiquing, we've confirmed what you've known all along: the biggest news in FM digital processing is still OPTIMOD-FM 8200. OPTIMOD integrates perfectly into any industry-standard STL and transmitter environment—no exciter modifications or non-standard connections are necessary. It achieves tight peak control without composite clipping that trashes subcarriers. In short, it delivers elegant, professional engineering—not junk science or marketing spin. In the words of one of the most critical ears in radio, "don't believe everything you hear." Listen for yourself.

UPGRADE NOW.

In a matter of minutes you can upgrade the 8200 to the newest, best-sounding, best-performing audio processor in radio. Call your Orban dealer for details. Visit our website for more information. And e-mail Bob to let him know what you think.

© 1998 Orban, Inc. Orban and OPTIMOD are registered trademarks. 1525 Alvarado St., San Leandro, CA 94577 USA Phone: 1-510-351-3500 Fax: 1-510-351-0500 E-mail: custserv@orban.com Web: www.orban.com

Circle (31) On Reader Service Card

World Radio History

See Us At The NAB Radio Show Booth # 246

▶ BOOTHS, continued from page 49

Radio Data Group 1034
Intro: Interactive Mail Manager: tool for stations that want to interact with their listeners off the air. Staff can be trained to create and send targeted email messages in minutes. IMM takes the information gathered from completely customizable web-based forms and gives stations the ability to email to complete listener lists, or to specialized lists from web contests, song requests, etc. It can also generate printed labels for traditional mail programs so as to help stations quickly react to promotional opportunities. AdNext 3.1 is upgraded to support the newest web browsers and multimedia ads, is custom designed for radio stations to fully manage banner advertisements sold on Web sites, rotates ads, tracks ad views, generates real-time reports, and prepares invoices. It's a fully integrated non-technical solution for stations wanting to derive new revenue from their web sites. Already used in more than 80 major radio stations.
Also: WebMaster: a comprehensive suite of software tools and services available to radio stations for barter including custom web site designs built by radio specialists, the power to update sites with simple software any station employee can use, including the ability to add photos, text, contests and promotions with no knowledge of HTML.

Michael C. Rau, CEO
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Web Site: http://www.rdg.com

ture an updated and expanded line.

Radio Computing Services 421
Radio Express Inc. 943

Radio World/IMAS Publishing 641
The newspaper for radio managers and engineers, reaching 18,000+ readers throughout the industry.

RadioWave.com 232

Ratio Architects, Inc. 1253
Ratio Architects is a designer of radio broadcast facilities. It is the lead designer of the Emmis Communications world headquarters in Indianapolis.

Real Networks Inc. 906
Intro: Real System G2: an open, extensible, standards-based system that delivers rich media experiences through the synchronization and playback of multiple media types.
Also: Real Audio, Real Video, Real Flash.

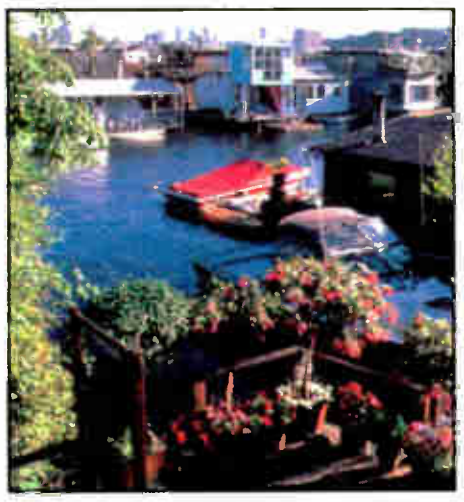
Rees Associates Inc. 542

Register Data Systems 524
Intro: System 32: multi-user, multi-station traffic, management and billing system. Direct posting to most popular Windows-based accounting packages. Windows 95/NT based.
Also: Phantom digital automation system; Traffic Master II traffic/billing software; System Six traffic/billing software; and Replicator a digital long-form program delay system.

RFS Broadcast 200

Richard Paul Evans Publishing 902

Roland Corp. 1010
Intro: VS-1680 Digital Studio Workstation for broadcast and audio post production; SP-808 Groove Sampler, a workstation that combines powerful phrase sampling and digital audio recording.
Also: DM-800 Digital Audio Workstation; AR-100 and AR-200 Announcement Recorders; Boss VT-1 Voice Transformer.



Lake Union Houseboat Community

Roll A Sign, Div. of Reef Industries 1000

Royal & SunAlliance Insurance Group 1432A

RPMC Inc. 534

Rules Service Co. 1244
On Display: Published FCC Rules, Patent and Trademark Rules, Copyright Rules, Paten Cooperation Rules, US Tax Court Rules, US Covet of International Trade Rules.

S-U

Scott Studios Corp. 721
Intro: AXS 2000+: New Y2K compliant version of the AXS digital audio system, offers new optional triple-overlap for music on hard drive. News Booth: complete multiuser news package for editing and airing news stories and digital audio, also captures wire text and network feeds automatically for the distribution to workstations. Scott NT System: 32-bit NT or Windows 98 version of the industry's leading digital audio system, with many new features, including new net catcher, graphical waveform editing, uncompressed (linear) digital audio at a compressed price, easy changes to 30 sets of 30 Hot Keys.
Also: Spot Box, Remote Recording Router for WAN; Lazer Blade Multitrack Digital Editor; PARIS Digital Editor.

David Gerety
13575 Stemmons Freeway, Suite 400
Dallas, TX 75234

Phone: 972-620-2211
FAX: 972-620-8811
E-Mail: info@scottstudios.com
Web Site: http://www.scottstudios.com

Shively Labs 344
Intro: Model 2530 low power combiner: single modules can be used to diplex two stations with frequency separations as close as 0.8 MHz, or combined with additional modules for multi-station installations. Modules are convection-cooled and can be re-tuned. Unit is designed for operation in tight quarters with a typical 1 kW diplexer having a footprint of only 33"x17".

Sonifex Ltd. 1430
Intro: Courier portable recorder: records high quality digital audio to a PCMCIA hard disk, has on-board graphical scrub-wheel editing and will transfer audio via mobile telephone, modem and ISDN communication. Light weight and easy to use; RedBox Connection Boxes: a range of five budget boxes that can be screw-mounted to surfaces or rack-mounted. They consist of (RB-DA6) 6-way stereo or 12-way mono DA, (RB-MT2) dual mic amp, (RB-SM2) dual stereo to mono converter, (RB-BL2) balanced to unbalanced bi-directional converter and (RB-SL2) stereo limiter.

See BOOTHS, page 53 ▶

25 Years Strong!

Inovonics
continues to meet the everyday needs of broadcasters the world over with sensible, top-quality audio-broadcasting products at down-to-earth prices.

Audio Processing and Air-Chain

A broad range of great-sounding processors for every AM, FM, TV and Short-wave need. From our time-honored, programmable 5-band to a very basic multi-purpose unit, feedforward-PWM technology yields a strong, clean sound that won't wear-out your listeners.

The legendary "DAVID-II" FM Processor/Generator persists in surprising users with its major-market performance at a budget price. Both the "DAVID-II" and our basic FM Stereo-Gen-only utilize digital synthesis for unassailable specs.

Instrumentation, Radiodata, Etc.

Inovonics' full-featured, off air FM Mod-Monitor gives accurate total-mod, pilot and program audio readings; a companion unit measures SCA and high-speed data subcarriers.

And our FM "Relay Receiver" is sensitive, selective and, most of all, professional. It's ideal for FM translator and other demanding off-air pickup applications.

A selection of RDS/RBDS products includes an easy-to-use PROM-based Encoder, and a "dirt cheap" Mini-Encoder that fits any station's budget. A professional Decoder-Reader works with any mod-monitor to qualify and display all data groups.

Inovonics, Inc
1305 Fair Avenue • Santa Cruz, CA 95060
Tel: (408) 458-0552 • Fax: (408) 458-0554
www.inovon.com

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World Radio History

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▶BOOTHS, continued from page 52

Also: Sentinel and range of audio loggers; range of telephone hybrids.

Sound Ideas **205**

Sound N Light **147**

SpaceCom Systems Inc. **1006**
Intro: FM Quad (satellite transmission service): MPEG-2/DVB technology.

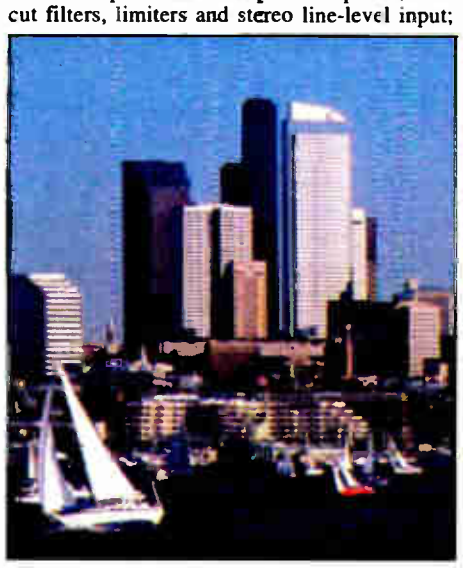
STRATA **938**
Intro: SalesPRO: ratings analysis and qualitative presentation software for radio. Users can create custom Rankers, schedules, composition reports, and more.
Also: VIEW, an Arbitron and AccuRatins scheduler and ranker; Q-VIEW, a data base analyzer, supports trending, combining and averaging surveys in addition to documenting a profile's penetration across mulitple markets; Retail Dollar$, a consumer expenditure market analysis.

Switchcraft Inc. **1354**
Intro: Audio patchbays w/new IDC terminals, available on the APP and Front Access Series, as well as standalone backpanels; 35HD Series 3.5mm stereo plugs available in nickel/nickel, black/gold, black/nickel, and nickel/gold plug fingers & handles, accommodates OD cable, includes shielded handle.
Also: Audio Interconnects: mic connectors and adapters, jacks, plugs, broadcast switches, state-of-the-art audio patchbays.

S.W.R. Inc. **1352**
On Display: Antennas: low to ultra power FM antennas, low to high power TV antennas, rigid transmission line & accessories.

Tapscan WorldWide **206**

Telos Systems **132**
Intro: Zephyr Express; Asst. Producer Call Screen Mgr. for Windows; Audioactive Production Studio. Zephyr Express combines full-featured ISDN digital audio codec, ISDN terminal adapter, and three digitally controlled mixers in a portable chassis. 20 kHz stereo audio can be transmitted from the field on a single ISDN phone line, and the mixer section features two mic inputs with 48 V phantom power, low-cut filters, limiters and stereo line-level input;



Sailing and seaplane rides are popular tourist activities.

Call Screen Mgr. allows producers and talent to manage callers while maintaining communication w/ each other. It supports Windows 95/NT; Audioactive Production Studio compresses audio files using MP3 technology, fits 14 hours of full-fidelity audio on a single CD-ROM, converts PCM files & stores them MP3 and compressed .WAV audio formats.
Also: Telos Zephyr, ONE-x-Six, Audioactive MP3 Hardware Encoder, Telos line of telephone hybrids, Telos 100 Delta, Telos Direct Interface Module.

TFT Inc. **1032**
On Display: AM/FM modulation monitors, monaural, composite and digital STLs, FM synchronous booster system and EAS equipment.

Thompson Creative **528**

TOMA Research/American Consult **1436**

UPI Interactive (Touch a Prize) **1434**
UPI (United Press International) **1444**

USA Digital Radio **646**
On Display: In-band, on-channel (IBOC) DAB technology.

USA Radio Network **1447**
Intro: Sports & Talk Programming, top and bottom of the hour news, 24 hours a day.

U.S. Census Bureau **1016**

U.S. Tape & Label Corp. **510**
On Display: Bumper strips and window stickers for the broadcast & entertainment industries.

V-Z

V-Soft Communications **844**
Intro: PROBE expert level propagation prediction software program incorporating: Longley-Rice Tirem and PTP models, FM, TV, DTV coverage and Interference mapping; also, Contour for Windows, new Win95/98/NT version of V-Soft's distance to contour program.
Also: LRStudy; InterDLG; RFHaz; SearchFM; SearchTV; PlotPath; FMCont, IDCensus; IDCity; IDAirport; IDTower; LatLong.

Valcom Ltd. **124**
Intro: AM/FM broadcasting antenna towers, which are fiberglass filament wound, only 74 feet in length, yet have an electrical length of 145 to 450 feet, depending upon the frequency. Towers are manufactured to mil-spec standards.

Paul R. MacPherson, Pres
P.O. Box 603, 175 Southgate Dr.
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FAX: 519-824-3411
E-Mail: enquiries@valcom-guelph.com
Web Site: http://www.valcom-guelph.com

Ward-Beck Systems Ltd. **1324**
Intro: R2K Renaissance radio console offers analog and/or digital configurations, automation interface, low cost compact design.
Also: AMS4; M445; MP Meter Panel Series; PODs; low cost broadcast problem solvers; Bit Buddy; Bit Splitter; and 8200 Series analog/digital audio distribution.

Warner Electric/Superior Electric **225**
On Display: STABILINE Power Protection Equipment. Products include Uninterruptible Power Supplies, power conditioners, TVSS devices and automatic voltage regulators.

Wheatstone Corp. **446**
On Display: D-500 digital radio console; SP-8 stereo on-air console; Wheatstone studio furniture; Audioarts Engineering line of on-air radio consoles; SDA; signal processing equipment; Wheatstone A-300; A-6000 analog on-air consoles; SP-4 stereo production console.

WHo DId THaT MUSiC LIBRARy? **316**
Intro: New CD updates include TL-24 Film Scores Vol. 2; TL-25 Vocals Vol. 1, a two-CD release with instrumental-only versions on the second disc; TL-26 Urban Contemporary; TL-27 Alternative Vol. 1; TL-28 Sports Vol. 2; TL-29 Holiday Vol. 1.
Gravity Music Library, a 15-CD collection, a youth-oriented, "left-of-center" library designed for those looking for tracks that will push the production over the edge.
Also: Jingle and award-winning ID packages, original music libraries to impart a custom-scored sound, production elements and beds.

Wisdom Radio **1159**
On Display: Commercial Radio Network Programming: original live programs on themes related to the body-mind-spirit connection, holistic complementary medicine, human potential, and personal and global healing. includes listener call-ins, free to affiliates with national and local commercial availabilities.

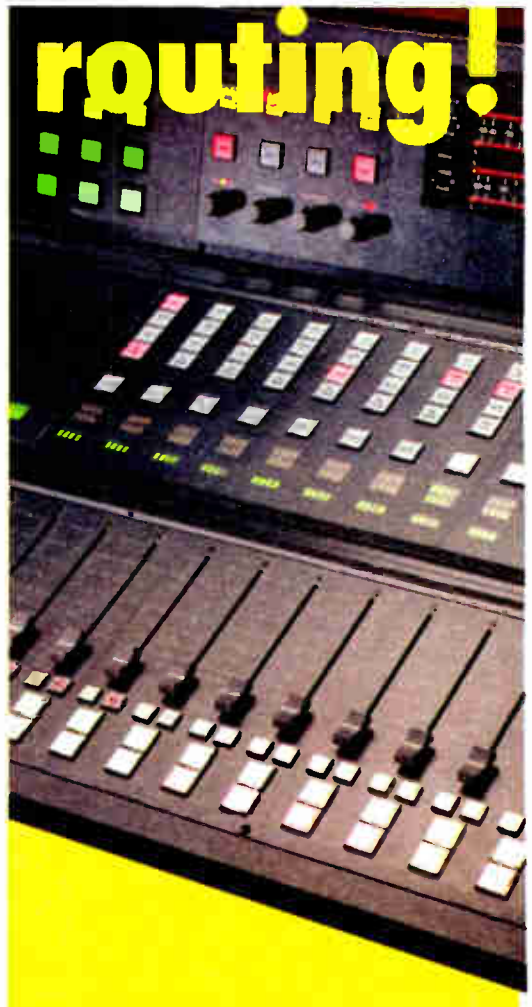
World Division **247**

WorldSpace Management Corp. **431**

digital consoles – master routing!

The World's Leader in Truly integrated digital audio master routers and audio control consoles for broadcasting

KLOTZ DIGITAL...You just have to speak to the right people



Visit us at Booth #738 during
The Seattle NAB Radio Show
October 14-17, 1998

Klotz Digital America Inc.
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Atlanta, GA 30092
Phone: 770-729-6811
Fax: 770-449-9236

Radio World Cool Stuff Award NAB 1998

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KLOTZ DIGITAL

KLOTZ DIGITAL Audio Communications GmbH
Hans-Stiessberger-Str.2a . D-85540 Haar . Germany . Phone: +49-89-46 23 38-0
Fax: +49-89-46 23 38-18 . e-mail: klotz_digital_sales@compuserve.com

Circle (83) On Reader Service Card

PRODUCT EVALUATION

Belar Harnesses Power of Digital

Michael LeClair

I installed a Belar FMSA-1 Precision Digital FM Stereo Modulation Analyzer at our FM station for evaluation. The FMSA-1 uses digital techniques to analyze the FM composite signal. This digital approach offers many benefits over the traditional analog modulation monitor.

The FMSA-1 is designed for use with a companion monitor, but can accept any high-grade composite signal.

Analysis tool

The FMSA-1 is the stereo decoder half of a modulation monitor. It is designed to take a composite input and break this down into the discrete analog left, right and pilot signals. The composite is digitized directly as it is brought into the FMSA-1. As a result, these audio signals can also be analyzed mathematically to accomplish very accurate measurements of the stereo baseband.

The available measurements are what you would expect to find on a stereo monitor: total modulation, left only, right only, L+R, L-R, pilot injection, pilot modulation (shows potential multipath interference or inappropriate composite clipping), and 38 kHz suppression. These measurements are viewed in both relative dB and percentage modulation on the front-panel LED display. A simple up/down menu with dedicated keys is used to toggle between different measurements and settings.

A few user-adjustable settings assist in analyzing the signal further. The display update time can be made faster or slower as desired. I found that the fastest setting of about 0.5 seconds was the best for me, but it can be slowed down to update only once every 10 seconds. Additionally, the unit has three modes of peak measurement. The "real" mode displays the latest peak value as soon as it occurs, while the "past" mode looks at the highest peak value in any measurement interval. Finally, the display can be set to hold the highest peak value forever in the "infinite" mode.

At first glance ...

What I noticed first while running the FMSA-1 through a few tests is its ease of use and measurement. The digital readout is a major benefit of the digital approach. Measurement of modulation peaks is so much simpler this way, and far more accurate than a mechanical meter with peak flasher. Additionally, mechanical meter accuracy is questionable below the half-scale point. Most modulation meters use a sensitivity adjustment in 10 dB steps to improve the accuracy of the meter for low-level measurements, but this approach still has limitations.

The digital readout is a major benefit of the unit. Measuring peaks is so much easier.

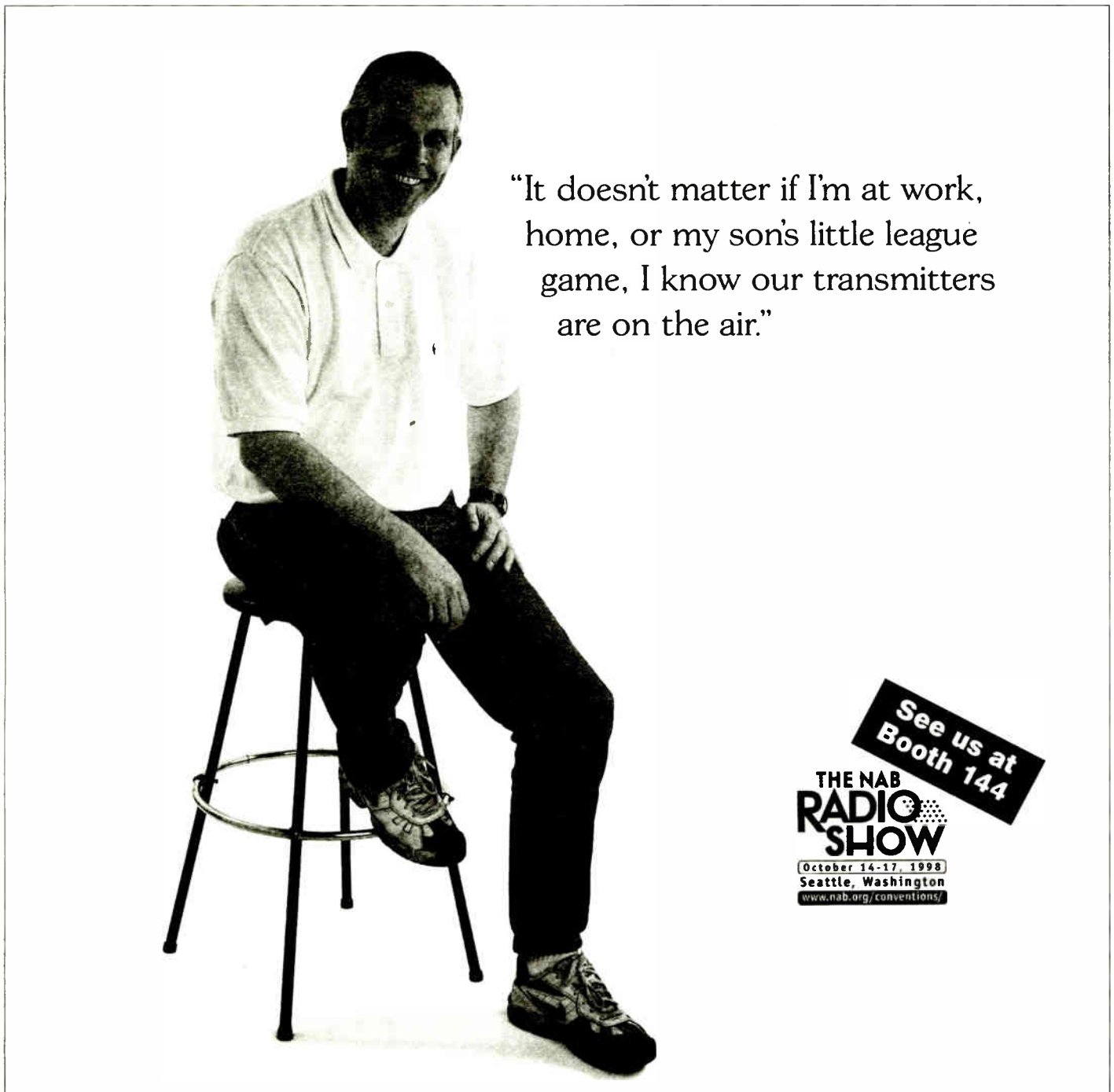
With digitized measurements, the FMSA-1 can measure with accuracy down to about -90 dB below 100 percent modulation. When making noise measurements at low levels (our stereo generator showed a noise floor of about -82 dB), it is no longer necessary to interpret the peak values of the mechanical meter to get the final measurement — these are displayed automatically. Nulling an L-R adjustment to get perfect balance between the left and right channels took only seconds, even while using program audio.

Improving sound

Secondly, a comment about the sound. Throughout my years in broadcasting it has been something of a standard that you don't use the modulation monitor to listen to the station because it doesn't sound good enough. Very few of the traditional analog modulation monitors do justice to the high-quality digital or analog signals that are broadcast today. At most stations that are not taking a feed directly from the transmitter, a high-quality tuner is usually used as a source for the house monitor.

At our facility, we use a mid-grade (approximately $400) digital tuner to

See BELAR, page 55 ▶



World Radio History

▶ BELAR, continued from page 54

monitor our air signal. I was embarrassed to notice the incredible improvement in our house monitors when I switched in the Belar FMSA-1. The noise floor in stereo dropped by at least 15 dB and the high end opened up with a clarity that I had never heard on our air monitors. Use of a lab-grade monitor such as the FMSA-1 pays off in more ways than one. Beyond the measurement capabilities, this is one nice-sounding stereo decoder.

A nice feature of the FMSA-1 is the ability to connect a computer to the monitor and statistically analyze the modulation. Although the original firmware of the FMSA-1 required that this be accomplished through the companion FMMA-1, Belar has since made this available directly from the stereo monitor alone.

Laptop talk

I received the software from Belar via e-mail. With about a half hour of work, I was able to get our engineering department laptop to talk to the FMSA-1 using an RS-232 direct connection. As I had no instructions, a certain amount of "just fiddling around" was required, but it wasn't that difficult. Set the baud rate correctly, kill the password, and up comes the display. For remote-facility connection, it is also possible to connect via modem.

Product Capsule:
Belar FMSA-1 Precision Digital FM Stereo Modulation Analyzer

Thumbs Up
- ✓ Digital display of measurements
- ✓ Ability to measure low noise floors
- ✓ Output sound excellent for house monitors
- ✓ Software that allows analysis of modulation

Thumbs Down
- ✓ LED display not easy to read at distance
- ✓ No schematic with service manual

For more information, contact Arno M. Meyer at Belar Electronics Lab in Pennsylvania at (610) 687-5550 or circle **Reader Service 219.**

The software allows a view of modulation data using bar graphs and histograms. I found this to be a fascinating way to look at the modulation of our station. By allowing an extended view of the modulation over time, it is possible to accurately read the peak modulation level relative to the average level of the signal. I liked using the histogram display to do this. As the samples build up, the number of samples that occur at a particular modulation value add up into a bar graph where the most common values form a kind of modulation density (or average modulation) display.

Also, from this display it was possible to check the peak control performance of our Orban 8200. As expected, it delivers an extremely tight control of the modulation to the maximum desired value and then nothing above that point. This software is an interesting tool to analyze modulation characteristics at your station (and, perhaps, the one across town).

The service manual I received with the evaluation unit had no schematics, so I had to pop the cover to examine the electronics. The FMSA-1 uses a switching- type power supply that is quite compact and will operate from either 120V or 240V. The analog circuitry uses modern SSM2142 integrated circuits and the venerable NE5534 series operational amplifiers. I did not see any electrolytic interstage coupling capacitors inside, but most of the signal path is in digital form where these would not be necessary or harmful. The printed circuit boards were of quality construction and most of the integrated circuits were socketed to permit easy replacement.

FMSA-1 Back Panel

Applications

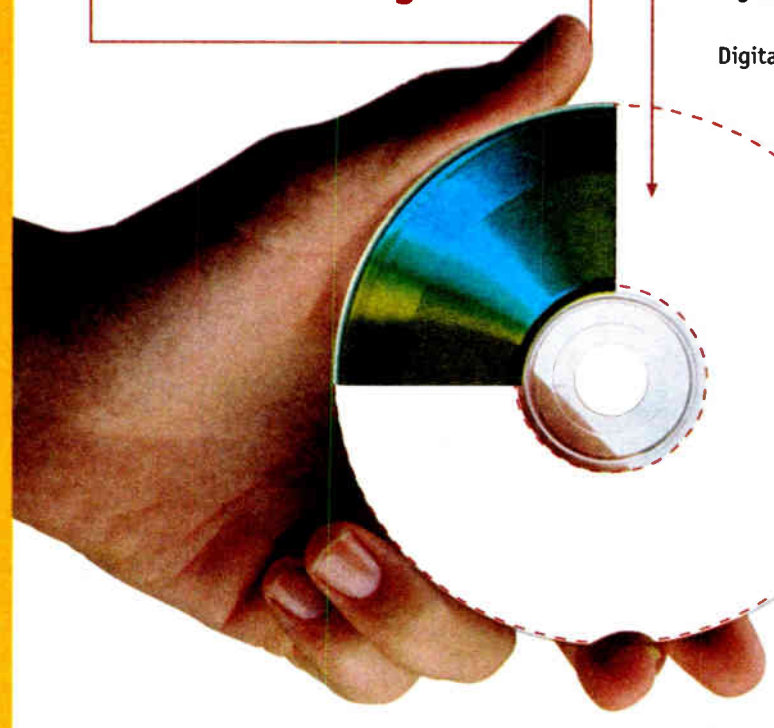
The list price of the unit I tested was $3,900. I expect that the street price might be slightly lower. The FMSA-1 is available now and can be purchased via a broadcast equipment distributor. Last, although the FMSA-1 is designed to be used with its companion monitor, the FMMA-1, it is possible to feed it any high-grade composite signal. In my case, I used the composite from my aging QEI model 695 monitor and had excellent results. If you can't afford the price tag on replacing your entire air monitor, this box makes an excellent upgrade to existing equipment.

Evaluating this monitor was a pleasure due to its ease of use and accuracy. For those with a high-quality air chain, this monitor is able to test it to its fullest potential. In addition, the software analysis tools make this a valuable addition to stations in highly competitive markets.

■■■

Michael LeClair is chief engineer at radio stations WBUR-FM in Boston and WRNI(AM) in Providence, R.I. He has a CSRE certification from SBE and has worked as a broadcast engineer since 1978.

How much audio does your digital system throw away?



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World Radio History

Levels and VU Meters: A Primer

Gary D. Sharpe

The author is an engineer with ABC Radio Networks in New York. He prepared this article to help staffers there understand the importance of watching and controlling audio levels. You may find it helpful for your staff as well. Clip and save.

This is an article about an old but often ignored subject: Levels.

Watching and controlling audio levels properly is a detail of broadcast and production operations that is very important. But because it seems so mundane and simple, or perhaps because it is misunderstood, operators often overlook it, ignore it or perform it improperly. This article will explain why watching audio levels is important, and offers guidelines for proper control of levels.

Meter banging

How many broadcast engineers have walked into a control room to see the VU meters banging against the right-hand pin, never dropping out of the red area? Simple carelessness and a lack of professionalism are often the culprit.

Many board operators and announcers think that they somehow will "reach out" further if the VU meter is reading in the red. This has no bearing on the range of a radio station, but obviously many operators (and some engineers) don't know that. This superstition, like all superstitions, is the result of a lack of understanding of the processes involved — in this case, the process behind and beyond the front panel of the mixing console. Or perhaps, as one station owner once said to me, "I paid for the whole meter, and I'm going to use it all!" Well, when you are done reading this, you should be much closer to a professional's understanding of levels and the use of the VU meter.

What *are* levels? In our world of audio, levels are the signal power levels, or the *amplitude* of our audio signals: live voice, live and recorded music, recorded news cuts, recorded commercials, telephone interviews, and the like.

Why are levels important? All electronic amplifying equipment has two important characteristics in this regard: *noise* and *headroom*. Noise is the natural noise made by electric current flowing through the components of an amplifier. It is usually very low in level, but is always present. Headroom is the amount a signal can be amplified before the amplifier runs out of capability to amplify the signal further. This is often referred to as the *clipping point*, because attempts to increase the output level further just clip the tops off the signal peaks and cause distortion.

Our goal is to operate our signals far enough above the noise so that the noise is an insignificant component, but not so high that it will distort in our amplifiers. To accomplish this, we must somehow measure these levels and do so in a manner that is easy to see and interpret.

dBs and VUs

Audio power, or amplitude, is measured in units called decibels, abbreviated as dBs. Each decibel is one-tenth of a Bel, named after Alexander Graham Bell. The device commonly used to measure audio amplitude, or level, is our friend the *VU meter*, a.k.a. "the meter" or "the needle." VU stands for Volume Units, each of which, conveniently, is equal to a decibel.

Another handy feature of the VU meter is that it can be adjusted to read 0 VU at almost any practical *reference level* of audio *voltage* or *power*, usually referred to as dBu or dBm.

> **As a station owner once said to me, 'I paid for the whole meter, and I'm going to use it all!'**

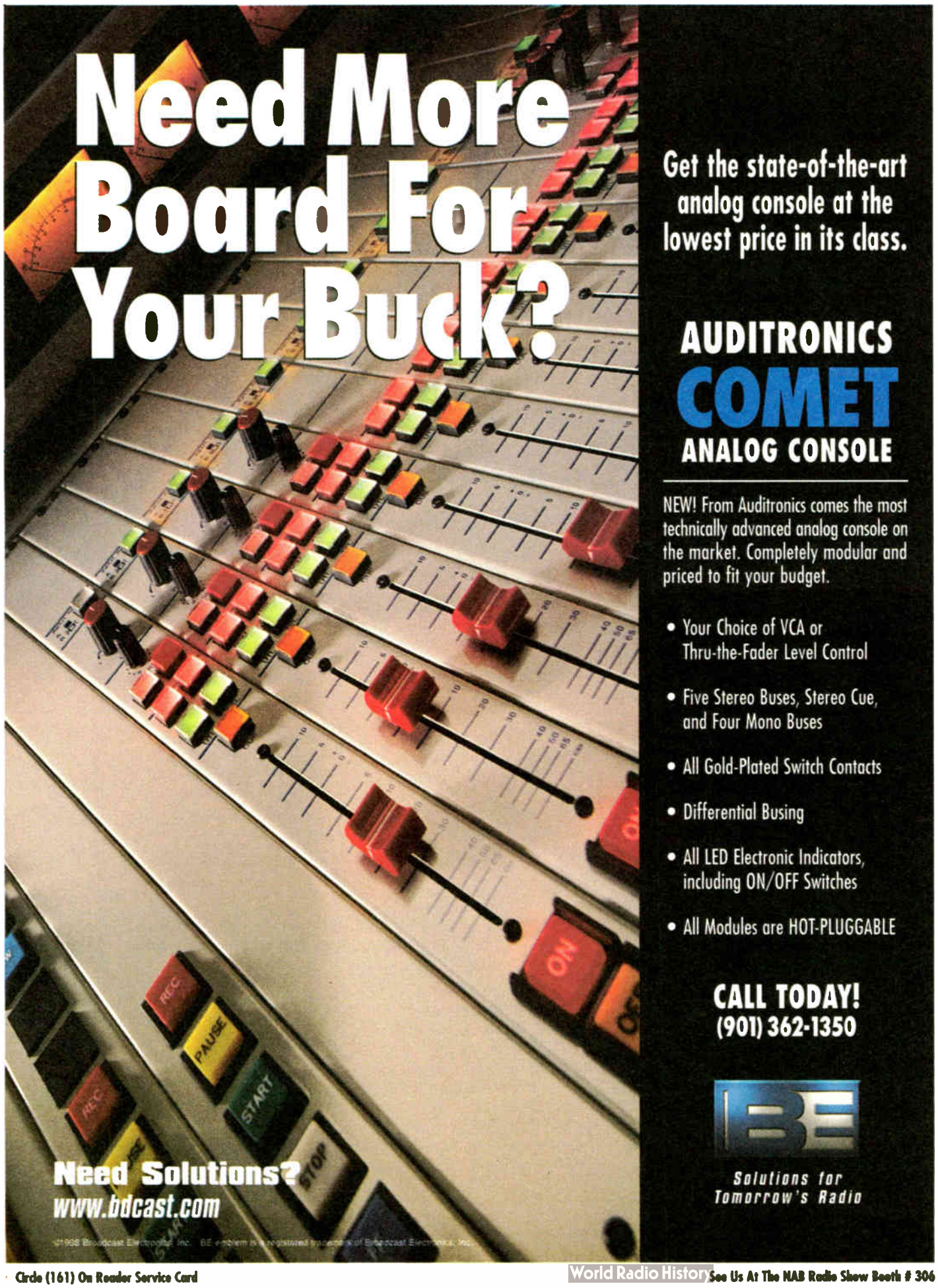
For example, at the ABC Radio Networks, our current plant reference 0 VU is +8 dBu. This is based on a system that defines a certain reference power as 0 dBu. Power above that is +X dBu, and power below that defined level is -X dBu.

For the purists, I should note that for the purposes of this article, we will ignore the slight difference in definition between dBu and dBm, and we will refer to audio power as dBu. While this is technically incorrect, the difference is not significant to our purpose and it will simplify our explanations.

The important thing to remember is that when dBs are referred to *with* a subscript (such as "dBu," "dBv," or "dBm"), the number indicates a reference to a specific reference power or voltage level. When dBs are referred to *without* a subscript (as in "6 dB"), the number indicates a change in signal level or a ratio.

As mentioned above, amplifiers have a point above which they can no longer increase the signal levels, and instead clip and distort them. This difference between the normal operating level in an amplifier and the clipping level is called *headroom*. The ideal situation would be

See LEVELS, page 70 ▶



World Radio History

FEED LINE

What to Do Until Digital Arrives

You Don't Have to Wait for DAB to Get Here To Improve Your Station's Sound and Performance

W.C. Alexander

So digital is just around the corner. Ask the DAB proponents and they will likely tell you that within three years — certainly within five — broadcasters will be pushing ones and zeros out of their antennas along with the regular analog signal. AM stations will sound like FMs, and FM stations will sound like CDs.

I don't know about you, but I'm a bit more pragmatic. I've been down that road before, first with AM Stereo, then with FMX, then RBDS. No major change comes that easily. It's not that I don't believe all of the digital promise is technically possible — no doubt it is, and I look forward to it with great anticipation — but in our free-market society, change comes hard. Build a better mouse trap and the world will beat a path to your door, but it has to be better to convince people to change.

Already darn good

Therein lies the rub. Modern FM stations, as a rule, can sound very good. Their programming comes from digital sources. The transmission path is clean. State-of-the-art receivers feature multipath-canceling circuits (such as diversity antennas) that provide a clean, noise-free signal. Sitting in my driveway with the engine off, I can tell the difference between a CD playing and the same song on a local FM station, but driving down the freeway with the air conditioner running, it's harder to tell the difference. If anything, the FM station's processed audio will probably be more listenable in that type of environment. (And my car is quiet!)

So why would a consumer want to spend several hundred dollars more for a hybrid digital/analog receiver? Some will do it just because they want to have the latest and the best, but it is my belief that most won't be willing to pay the added cost. What will be the impetus, then, for Sony, Panasonic, Delco, Chrysler, Ford and the rest to build these wonderful receivers that may or may not have a market, at least at the outset? It's something to think about.

Still, sooner or later, digital broadcasting will be here on the local level— perhaps not in five years, but maybe in seven or ten. What do we, as broadcasters, do in the meantime? How do we compete with CDs, and with the coming direct satellite audio services? What can we do to keep the playing field at least somewhat level?

At the studio...

The answer is simple: We have to clean up our act and maintain as transparent a transmission chain as possible. That sounds easy, and given the current state of the art, it is easier today than ever before. Trouble is, the standard is much higher as well. In this multipart series, we will go through a station checkup that includes steps we can take to remain competitive in this almost-digital age.

Many stations use CDs as their music source. A digital source gives us some assurance that we're starting with clean audio. Not all CD players are created equal, however. In my travels, it amazes me how many stations, some in relatively large markets, are using consumer-grade CD players. While there may not be anything wrong with the audio that comes out of these budget-priced players, they certainly present problems in connecting them to a broadcast audio console. The output of consumer-grade equipment is just about always high-impedance unbalanced. To connect it properly to a low-impedance, balanced input of a broadcast mixer requires some sort of interface. This interface, either a transformer or an active impedance converter, brings a potential source of problems with hum, frequency response, distortion and crosstalk. In many cases, consumer-grade devices are connected directly to the broadcast mixer input with no interface whatsoever. This connection seems to work, so what the heck, right? Well, maybe.

We have to clean up our act and maintain as transparent a transmission chain as possible.

To those using consumer-grade gear who want to be competitive in today's almost-digital radio environment, I strongly recommend upgrading to professional-grade equipment. It's true that the cost is considerably higher — a pair of professional-grade CD players will set you back a couple of thousand dollars — but for your money, you get ultra-clean source audio without hum, crosstalk, distortion or high-frequency roll-off. If you can't start clean, you've already got one strike against you when you step into the batter's box.

Consider each link

Is anyone still using analog carts these days? Yes. Quite a number of stations still are carting their spots, IDs, jingles and promos — not to mention music. With the technology available, there is almost no excuse for using a noisy, fluttery old cart. For the price of one cart player, a station can upgrade to a hard-disk-based mass storage device with enough capacity to hold its entire cart library. The quality difference between a tape cart and a digital source sampling at 48 kHz is substantial.

A station's on-air mixer is one area where a lot of noise and distortion can creep into its audio. Most mixers have several amplifier stages ganged, and each is a potential source for degradation. How long has it been since you took a good look at the performance of your on-air mixer? Mixer problems seldom crop up suddenly. Rather, they develop so slowly that, like the frog in the kettle of water being slowly heated, no one notices the degradation.

By and large, electrolytic capacitors are the main life-limited components in equipment of this type. Power supply filters dry up, producing ripple on the pre-regulated DC and bounce on the regulated voltage. Bypass capacitors that have lost their electrolytic paste will lead to high-frequency oscillation and flutter, and bad audio coupling capacitors will roll off the low end. Tantalum capacitors are a good choice for audio and some power supply applications, but they usually cost more than electrolytics. Re-capping a noisy mixer is a good place to begin.

House audio wiring can be done right or wrong. It's easy to create a ground loop with house audio cabling that will introduce hum onto the program line. House wiring can also make a great antenna, and improperly grounded, poorly shielded cabling can pick up all sorts of hash from nearby phone, computer and electrical wiring. Evaluate the house audio wiring for these types of problems as part of your station checkup.

How clean are you?

One good way to evaluate the overall condition of your station's audio chain is to listen to it with no source material playing. Do this by opening the chain and tapping in ahead of the first audio processor or STL. Use an amplifier and a pair of quality headphones, being careful to make sure the amplifier and hookup do not introduce noise. Crank up the volume and *listen*. With all the faders down on the mixer, what do you hear? Noise? Hum? Hash? If all is quiet, great! If not, start hunting for the source. Next, bring up the faders on the mixer one at a time and see if any noise or hum appears. Deal with the sources or mixer channels as necessary. I have found that listening to the audio chain in this way will show up problems much quicker than using all the sophisticated audio test gear in the world.

Next time, we'll talk about the STL system and audio processing.

■ ■ ■

Cris Alexander is director of engineering for Crawford Broadcasting in Dallas.

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World Radio History

Workbench

Radio World, September 30, 1998

Trace Jacks Through Color Coding

John Bisset

Our wire-bundling trick, using a drill to neatly wind a number of single-conductor wires together into one nice neat bundle, received some interesting comments from other engineers who've been using this process for some time.

Doug Smith e-mailed a comment that the process is not necessarily a two-person job as I reported. A vise will do a perfectly acceptable job of holding the far end of the bundle. When Doug has to prepare small bundles at home, where he doesn't have a vise, he's had satisfactory results using a vise grip clamped to the tabletop. (Hope that your significant other doesn't find out!)

★ ★ ★

W4UJ, Henry, passed along "thank-yous" recently for the tips in *Workbench*. He mentioned that he has learned a lot of tricks over the years that have made him look good.

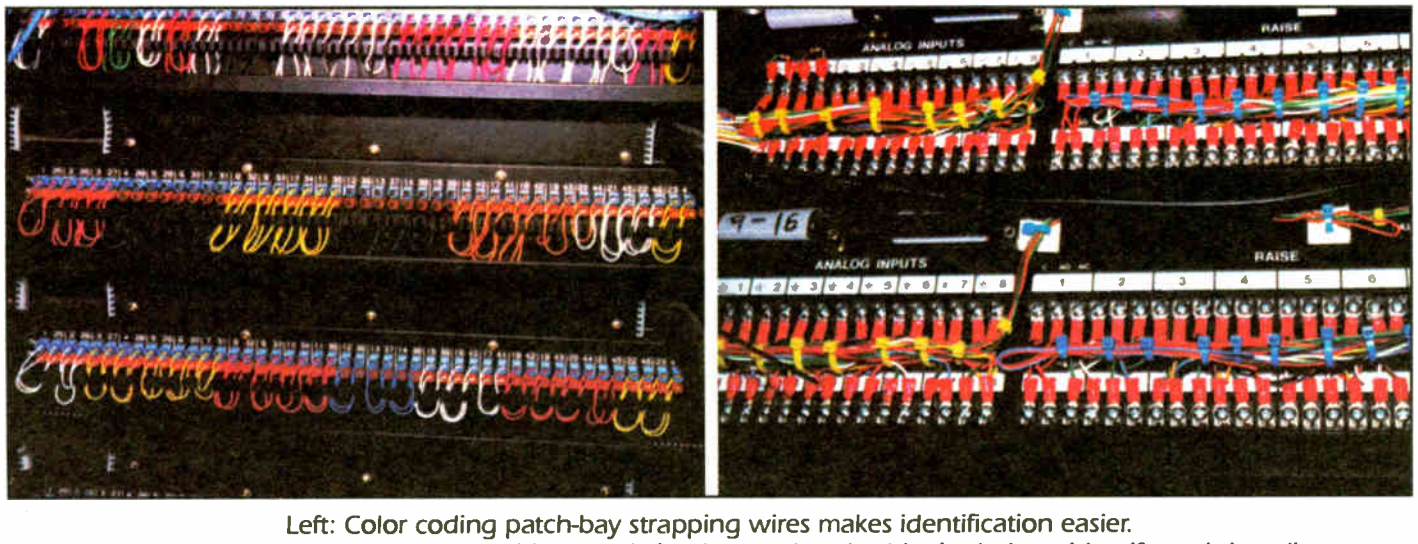
That's the purpose of this column. As the engineering ranks continue to shrink, it's important to disseminate information among those of us who are left. If you've got a tip, a modification or a circuit that has made your life easier, let me know about it. Henry also mentions he is enjoying the new **RW** Web site. If you miss a *Workbench* column, go to the Web! The address is *www.rwonline.com*

★ ★ ★

Speaking of disseminating information, time for a commercial! At last year's NAB show, I was asked to prepare an AM/FM Transmitter Workshop. We had good attendance, really great panelists, and, judging from the evaluation forms, good comments, too.

★ ★ ★

I mentioned earlier that our ranks are shrinking. I should qualify that, because there are some young-uns with a desire to be a broadcast engineer. One of them is the daughter of a former associate at Multiphase, Tom Ringer.



Left: Color coding patch-bay strapping wires makes identification easier.
Right: In addition to keeping the wiring neatly in place, colored cable ties help to identify each bundle.

You can see a picture of Kyria's work in Figure 1. Kyria did some apprentice work over the summer, working with her dad. The strapping she did on the back of the jackfields was color-coded according to the type of equipment patched on the front. What I want to show you is how easy it is to trace a particular jack using the different colors. Yes, you can use the numbers that are printed on the back, but there's something about the colors, don't you agree? Kyria's dad prepared the bundle on the back of the Burk remote control relay panels. Here, colored wire ties were used to differentiate the analog input wiring from the control wiring.

Now, before you rush to offer Kyria an employment contract (she really does want to be a radio engineer!), let her finish high school!

★ ★ ★

High school is a good place to look for engineering assistance. Get to know your high school electronics teachers, ditto for electronics trade schools and community colleges.

Many colleges offer cooperative education or internships that our programming and promotions staffs have been taking advantage of for years. Put in a

See WORKBENCH, page 59 ▶

Don't miss our informative

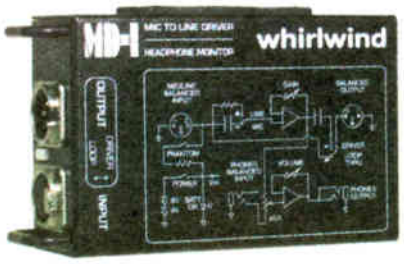
AM/FM Transmitter Workshop, coming up at The NAB Radio Show in Seattle.

Well, we're doing it again — this time for folks on the left coast! If you haven't preregistered for The NAB Radio Show in Seattle, there's still time. NAB has a toll-free number: (800) 342-2460 for convention registration.

If you're weak on transmitter troubleshooting or maintenance, this session is for you. In addition to our popular manufacturers' roundtable discussion, I'll lead you through some troubleshooting problems I've encountered over the years, and ways to solve them. Elsewhere in this issue of **RW**, you will find more info about the show and how to get around.

Hope to see you there!

TOOLKIT TIME SAVERS



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World Radio History

▶ WORKBENCH, continued from page 58

bid for some of this free or inexpensive assistance. You'll be doing the young people a service, and helping yourself at the same time.

★ ★ ★

Andy Soule isn't an engineer, but found himself in that position last weekend, when their chief was on vacation and the station took a bad lightning hit. Because there was no one else around, it was Andy on top of Mars Hill in Maine on a Friday night.

Andy's first problem was that he didn't have a lot of tools, since this isn't his usual gig. With the help of John and Gil on the telephone from Broadcast Electronics, Andy was able to trace his problem to two bad voltage regulators on a power supply in the BE-30B. He had spares, and a soldering iron, but no solder sucker or wick. After noting the placement of the leads, he clipped out the bad part, and desoldered the leads.

Now his problem was clearing the holes. After some thinking, he came to the conclusion, "If you can suck solder out, you ought to be able to blow it out too!"

Burger King to the rescue.

Retrieving his soda straw from his dinner trash, he heated the pad, and blew from the top of the board — instant success, a clean hole. Andy says it worked better than any solder bulb or spring-loaded gizmo he'd ever used. Andy adds, "I'm sure OSHA would not have approved, but ya gotta do what ya gotta do!"

Radio World adds its usual cautions, including "Don't inhale." The best part is, Andy got the rig up and running.

Andy Soule is with FM stations WQHR, WBPW and WOZI in Presque Isle, Maine.

★ ★ ★

Lynn Potter started his message with, "It was tight!" Lynn was referring to a terminal strip with all the screws tight. A few months later, checking the connections, you find they are all loose. Sabotage? No, more than likely, the culprits are tinned wires installed in compression connections such as barrier strip screw terminals or on crimp lugs. Lynn's caution is *not* to tin wires before installing them on this kind of terminal. When a tinned connection is installed tightly in a compression setting, the solder behaves like a liquid, looking to cold-flow away from that pressure. The result is a loosening connection over a period of time.

It's tight when you install it. Six months later, you can tighten the screw another half turn; in another six months, you can retighten the screw another quarter turn, and so on until the solder has been fully displaced down to copper against copper.

If splayed stranded wire is a problem, twist it tighter or use crimp brass ferrules. *Never* tin a wire before compressing it, unless it is spring-pressured to keep the connection tight. Many latent installation problems can be traced to loose connections, and they aren't because the installer was too lazy to tighten the connections. It's just a lack of understanding of the physics of the materials involved.

If you can suck solder out,
you ought to be able to blow it out too.
— Andy Soule

Thanks, Lynn, for the insight. I wired the command channels to a satellite receiver once, using tinned wire. I tinned it because the terminals were so closely spaced, each time you'd screw down the mini-screw, one or two of the strands would short to the next terminal. I formed the tinned wires into a little hook, which fit great under the barrier strip screw.

In my case, it wasn't but a couple of months before I started having intermittent firing of IDs, stopsets, and magic calls. Just like Lynn reports, I found the screws loose — and instantly wondered which jock was "playing engineer." This went on for awhile, until I found some very tiny forked spade lugs, which I replaced on the barrier strip. I never gave the tinning issue another thought, until I read Lynn's comments. Am I glad I didn't chew out the jocks! (Though some might say they had it coming, anyway!)

Lynn welcomes comments at *radiorus@ns.net*

■ ■ ■

John Bisset has worked as a chief engineer and contract engineer for more than 20 years. He is a district sales manager for Harris Corp. He can be reached at (703) 323-8011.

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

New Telco Products For Your Studio
Buyer's Guide, In This Issue

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World Radio History

The Kit Bag of the Road Warrior

Peter King

The phone rings, the beeper goes off, and moments later, you're out the door for who knows how long? You grab your bags and race to the airport, because that plane could be leaving in an hour ... or you get into your car and hope you have a full tank of gas!

That's the life of reporters we commonly call "firemen" or "road warriors" — people who drop everything to parachute into the middle of nowhere to cover breaking news, no matter how far.

The right equipment and support gear are important for reporters like me who spend weeks or months on the road each year, and certain factors become more essential: Weight, size, usefulness and reliability come to mind, because you're hauling the equipment yourself, and you're the one using them.

At times you don't have exactly what you need to get the job done, and you must improvise. These lessons can also be helpful to radio journalists in local markets, and to the managers who authorize equipment purchases.

With that in mind, we asked several reporters for their trade secrets of the road. We asked about unusual pieces of equipment they use for broadcast and wondered what items they take for personal comfort. Some may surprise you.

Automobile power inverters that convert 12V DC to 110VAC are popular with reporters who spend lots of time in their cars. Jim Krasula of CBS showed me the importance of a good inverter during his coverage of the Jonesboro, Arkansas, shootings, when he was able to run his Comrex HotLine and his laptop from a $99 Radio Shack model. You can also run a battery charger for your cassette, MiniDisc, cell phone, laptop or razor and power 'em up while you're driving or sitting with the motor idling. I bought mine days later.

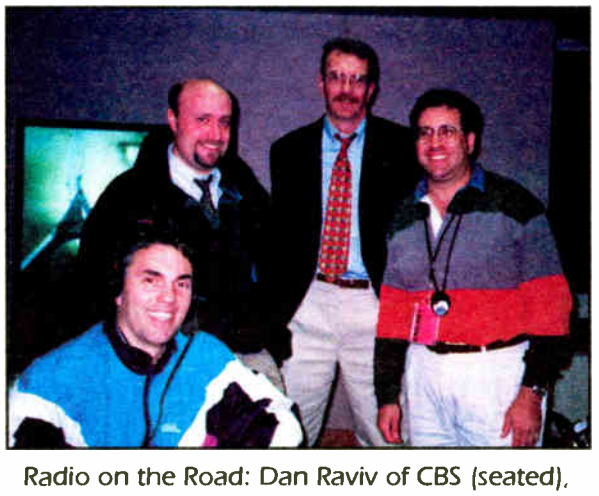
CBS freelancer Stephan Kaufman goes one step further on power, carrying an inverter *and* a 12 V "gel-cell" battery that powers his cell phone.

"It attaches to my belt and has much greater staying power than a standard cell phone battery," Kaufman said. He recharges it while it is plugged into his inverter, while driving or idling.

In a perfect world, our cellular phone signals would be loud and clear from everywhere. The real world has dead spots, and losing your connection during a live shot spells disaster for a breaking story. Kaufman carries a magnetic, roof-mounted antenna for his cell phone, which, he says, makes for a stronger signal and "solid copy" when you're in the boonies.

Metro Networks' Baltimore Bureau Chief Carol Anne Strippel, a.k.a. Cassie Anderson, sends her reporters out with prepaid calling cards as a backup for cell phone failure.

"Four of our reporters recently bought Q-Tip packages with free, 10-minute calling cards," Strippel said. Good for your bottom line!



Radio on the Road: Dan Raviv of CBS (seated), Tim Scheld of ABC, Jim Ryan of WBAP(AM) Dallas and ABC, and author Peter King of CBS.

Not everyone can plug audio directly into a cellular phone; I use a custom cable that allows me to plug my Shure mixer into the phone's headset/mic jack. CBS Washington correspondent Lou Miliano says he still gets his best results by holding his Sony TCM-5000 speaker right up to the mouthpiece if he can't do a direct feed on his Comrex HotLine. CBS Los Angeles correspondent David Dow carries "your basic Voice Act," a device that couples the speaker to the phone "in case all else fails." (Anybody know where I can buy one?)

For straight phone feeds, Metro Networks Philadelphia reporter Tom MacDonald has adapted a Radio Shack telephone handset to suit his needs. "I cracked it and added a couple of mini plugs ... makes a cheap way to send and get audio in the field." CBS Denver-based freelancer Lee Frank, who is also an audio engineer, has built his own custom, lightweight feed phone. He said it provides "the cleanest feed you can get."

It seems like common sense, but just about everybody mentioned connectors, patch cords and extension cords. I carry at least three XLR-to-mini plug cables, in both male and female XLR versions. I use these for mics and to feed my HotLine or mixer.

The NASA philosophy of always having a backup is applicable for mic cables. I also carry a plastic bag full of miscellaneous connectors (including minis, RCA-phono plugs and jacks, Y-adapters and every imaginable patch cord) to plug into any source, such as another recorder or TV monitor.

ABC's Tim Scheld never travels without a male-to-male XLR adapter, which, he said, "allows me to do everything from hooking into an ABC SAT truck to get on the air to getting a feed from TV."

How many mics should you travel with? I carry a Beyer headset mic, a Sennheiser shotgun and the old, reliable,

See KIT BAG, page 62 ▶

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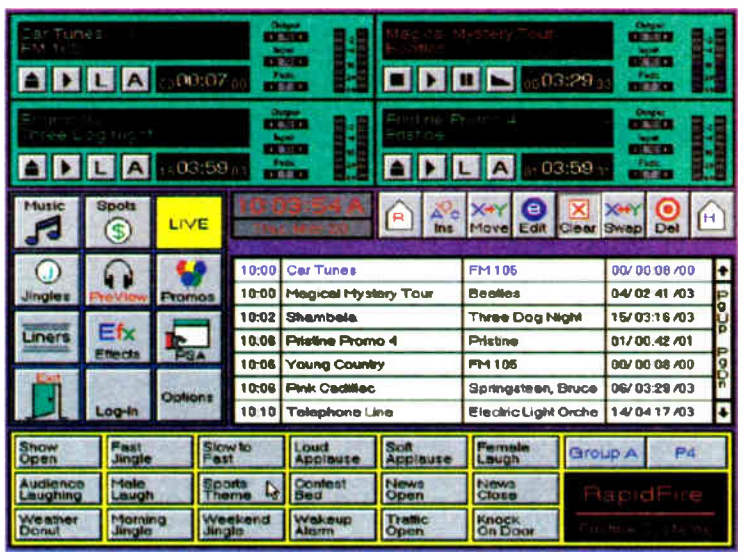

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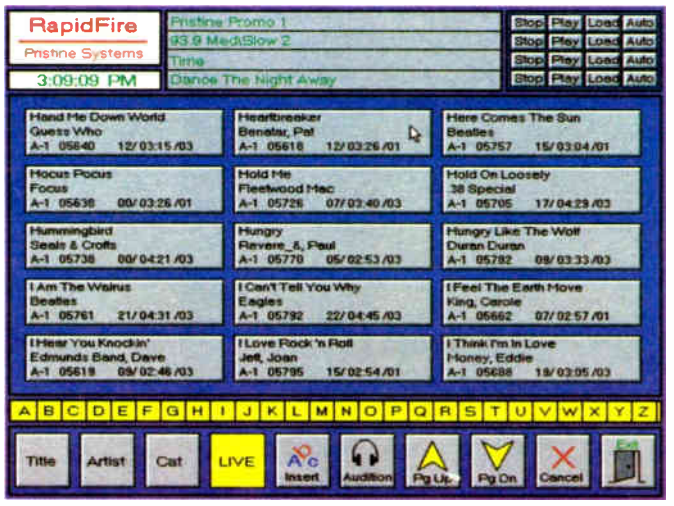

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World Radio History

See Us At The NAB Radio Show Booth # 1428

PIONEER PROFILE

A Pause for Station Identification

Barry Mishkind

It seemed like a good idea at the time.

The rock and roll era was in full swing. The radio station was located near an army base full of young men. What could be a better tie-in to that military audience than to change the call letters to commemorate their ubiquitous khaki uniforms: K-A-K-I?

Clearly, if the station management had any familiarity with Spanish, they would have chosen something other than a set of call letters that jarred every Hispanic listener with its similarity to a common, rude word.

Major Oops! And so it was that in just a few weeks, the embarrassed station requested its old call letters back.

Why do stations change call letters so often? Just what are they trying to "say" with these three- and four-letter combinations? And for that matter, you might ask, why do they all start with "K" or "W"?

Station identification

Among nations, the United Sates is one of the few that continue to use call letters as the primary identification of radio and television stations. Even the hardest-rocking Z-85 must stop at least once each hour and tell you its "official" name, using its call letters followed by its location (it is permissible to put the licensee name between the calls and location).

Most other countries have long since switched to permitting stations to identify by logos or slogans including the city, country, format, frequency, wavelength (meter), or whatever logo the station chooses, such as "Smile Radio." In fact, most the licenses of most countries don't even specify call letters, although each country has some official call letters assigned.

Where did the letters come from? To answer that, we have to go back before the earliest days of broadcasting, to the time when all communication was telegraphic, using Morse Code. As operators sent out their messages, they sought a way to avoid sending "This is Lee DeForest's Station calling from New York" over and over. Eliminating all those letters would reduce a lot of code. A simpler "call sign" was needed.

Before 1912, with few stations on the air, a station could pick and use whatever call sign it desired. Many calls were one or two letters. For instance, DeForest's station in New York was called "NY." Others used various combinations of letters and numbers. One early listing from before 1910 shows calls like "A" in Avalon, CA; "D" at Port Townsend, WA; "G" at Los Angeles; and "S2" at Seattle.

Coordination begins

As more stations and countries began transmitting, participants found it necessary to find a way to prevent 412 different stations using "ME" as its call. The predecessor of the International Telecommunications Union met, and among its assignments, "W" and most of "K" were assigned to the United States (along with "N," which was not used in commercial service, being reserved for governmental and military stations).

Beginning with The Radio Act of 1912, call signs of three letters were generally issued in sequential order, with no meanings attached. By 1922, four letters were needed to keep up with the demand for new stations, and essentially the last new set of three-letter calls was issued in 1930.

It didn't take long, however, for stations to want calls that better reflected their particular station.

Among the first stations to receive "requested" call letter assignments was station KOP in Detroit. Yes, KOP was run by the Detroit Police Department. Other stations soon sought their own personalized calls, including WGN, WLS, WHT and WOW. We'll get to the meanings of these calls in a moment.

First, let's answer the question, "Why do stations in the east start with 'W' and in the west start with 'K'?"

K or W?

Originally, combinations beginning with W, with a few exceptions, were reserved for *ship* stations on the Pacific and Great Lakes and for *land* stations on the Atlantic and Gulf coasts, and in the Great Lake region. Other stations would start with "K."

The dividing line between "W" and "K" for land stations was way out in the west, along the Texas-New Mexico border, where relatively few stations existed. Actually, "W" signed land stations originally existed as far west as El Paso.

In 1923, as more stations came on the air, the Department of Commerce moved the "divider" eastward. In 1934, the new FCC decided on the arbitrary use of "W" east of the Mississippi River (as the "logically easiest place" to call the "middle"), and "K" to the west. This policy has more or less held, aside from some areas that straddle the river.

Existing stations were allowed to keep their calls, even if on the "wrong" side of the river. Hence we find KDKA and KQV in Pittsburgh, and KYW in Philadelphia, all east of the Mississippi. WOW in Omaha, WKY in Oklahoma City and WOAI in San Antonio are

See CALLS, page 63 ▶

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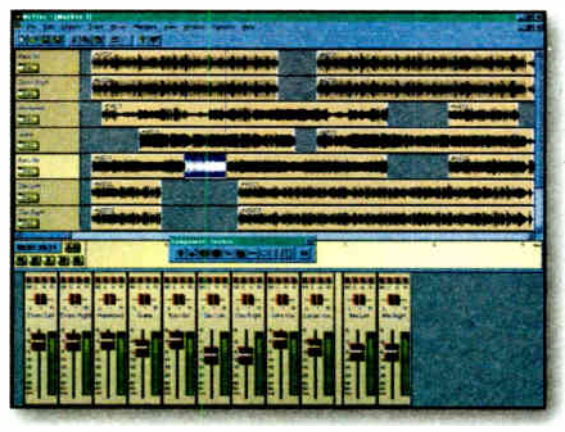

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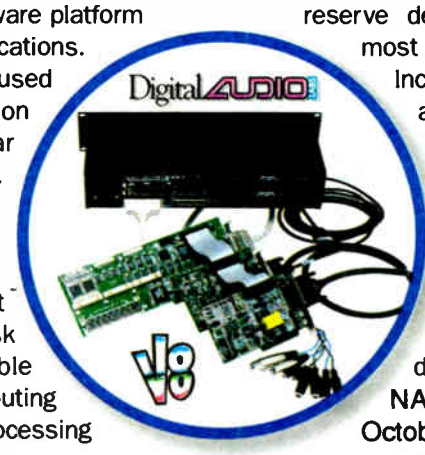

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World Radio History

Kit Tips of the Pros

▶ KIT BAG, continued from page 60

omnidirectional ElectroVoice 635A.

Lee Frank, sounding like a latter-day John Cameron Swayze, says, "You can use the 635 as a hammer and it still works!" For group situations, Frank favors the AT-835A short shotgun mic, because it gets great sound and "doesn't splatter."

Scheld tells us that Washington correspondent John Bascom uses a wireless mic and mic block he uses to plug into mult boxes, which saves on bringing all that cable. Along with his hand mic, Miliano uses a lavalier-mini microphone clipped to a pants leg for ambient sound. That's why you hear so much nat sound in his wraps.

Safety nets

Just about everyone swears by the Rowi mic clamp, which allows you to attach your mic to any surface, including podiums, tables and mic-stands.

Most reporters also swear by the Swiss Army knife. But I'll bet few know what Strippel does with her nail clipper.

"The cutting edge helps you if you don't have a razor blade to cut duct tape, and the straight-edge file helps if you need to wind your cassette tape forward or backward a bit," she said. "It also helps pick your tape out of the heads if the cassette jams, and once, I had to file down a connection to get some gunk off it. And you can pry apart small things and unscrew just about anything in a pinch."

Frank carries a Leatherman tool, which includes pliers and "just about everything you need in a small case." ABC's Slade brings a small pocket flashlight with him. Along with my Swiss Army Knife, I carry a tiny screwdriver set I got for free at some radio promotion years ago.

Everyone's got at least one standout, must-carry item for broadcast, or something you might not readily think of.

"I always carry my own alarm clock," said Scheld. "It keeps me aware of my scheduled calls and RTG (ready to go) times — everything is on Eastern time for us. I also use it to wake up because I don't trust hotel wake-up calls. Even my pager isn't foolproof."

MacDonald says his Domkey camera bag is a must-carry item, because it's well padded, has lots of pockets and is waterproof. Slade carries an atlas and brings a compass on his road trips.

Some people are compulsive when it comes to safety nets. I carry a pair of Sony MiniDisc recorders, as does AP's Tony Winton. Miliano carries two Sony TCM-5000 cassette decks, as well as a Sony Pro Walkman to edit cuts in the field, while Frank carries a five-year-old Sony AM-FM cassette recorder to edit his cuts, hear local stations and use as a backup machine.

Frank also carries a package of handy-wipes, because almost all reporters eat on the road, "and the last thing you want to do after you eat is touch your equipment."

Strippel equips her reporters with accordion-style file folders (the smaller, check size) to keep tapes in order and keep them from getting caught on something.

So what do these road warriors take along to make their lives more comfortable and less tedious?

Books, books, books! Dow carries at least two, including a "dog-eared Bible." Slade buys his reading material at airport bookshops, and uses his boarding pass as a bookmark (he leaves it in the book permanently as a reminder of where he's been). I try to grab whatever I'm reading, but I've also had copies of Day of the Jackal and 3001 packed in my bag since last December as safety books, and have yet to read them.

Food, glorious food! Before trips to Russia, Slade goes to Hickory Farms and stocks up on nonperishable processed and dried foods. "Beats the local food," he said.

Bring clean clothes

Frank carries Clif Bars or Power Bars for quick energy. Dow stuffs his suitcase pockets with peppermint breath mints, the result of quitting a three-pack-a-day cigarette habit. I carry a collapsible cooler I bought for six bucks at a drugstore — good for packing a sandwich and a bottle of soda or water with hotel ice, of course.

Clothing is also important. It may be the middle of summer, but Dow won't be caught without a warm jacket.

"I once did Tucson, Arizona. and Yellowstone National Park on the same three-day journey. It was 102 in Tucson, down to 35 at night in Yellowstone," Dow said. Kaufman recommends comfortable shoes, which would be the equivalent of your car's "mud and snow tire." Slade plans for three days, but packs for seven. I have T-shirts from many of my own assignments, evidence of what happens when you run short and forget to send out your laundry. I've also known reporters who sent out laundry, only to be told to "bail out" before it returns!

Odds and ends

No matter where he is, CBS Washington correspondent Dan Raviv surfs the Web for baseball games via his laptop (he follows the Florida Marlins, a loyalty left over from his days in Miami). CBS reporter Jim Krasula travels with his own pillow, while Strippel puts a fabric softener sheet in her suitcase to keep her clothes smelling fresh. Slade leaves the bathroom light on in his hotel room because, he said, "I never know where the damned thing is!" I bring reminders of home with me, like a small album with pictures of my fiancée and my cats.

What's the toughest part of being on the road?

"Sometimes, it takes four or five minutes to remember what city I'm in when I wake up," Slade said. Raviv said his biggest problem is that "we haven't figured out a way to broadcast live at 5 or 6 a.m. without waking up people in neighboring hotel rooms."

■■■

What do you or your reporters keep in your radio news kit bags? Tell us at radioworld@imaspub.com

Peter King is a reporter for CBS News Radio, based in Orlando. In our Aug. 19 issue, he wrote about how radio journalists covered recent fires in Florida.

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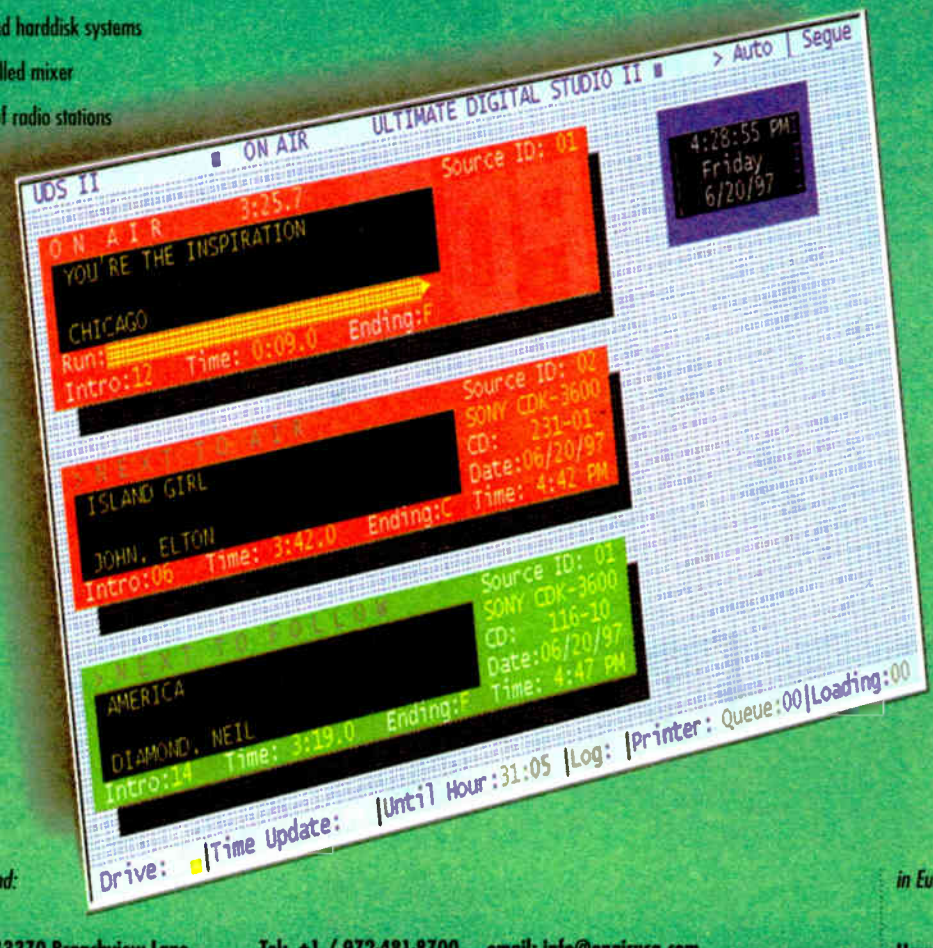

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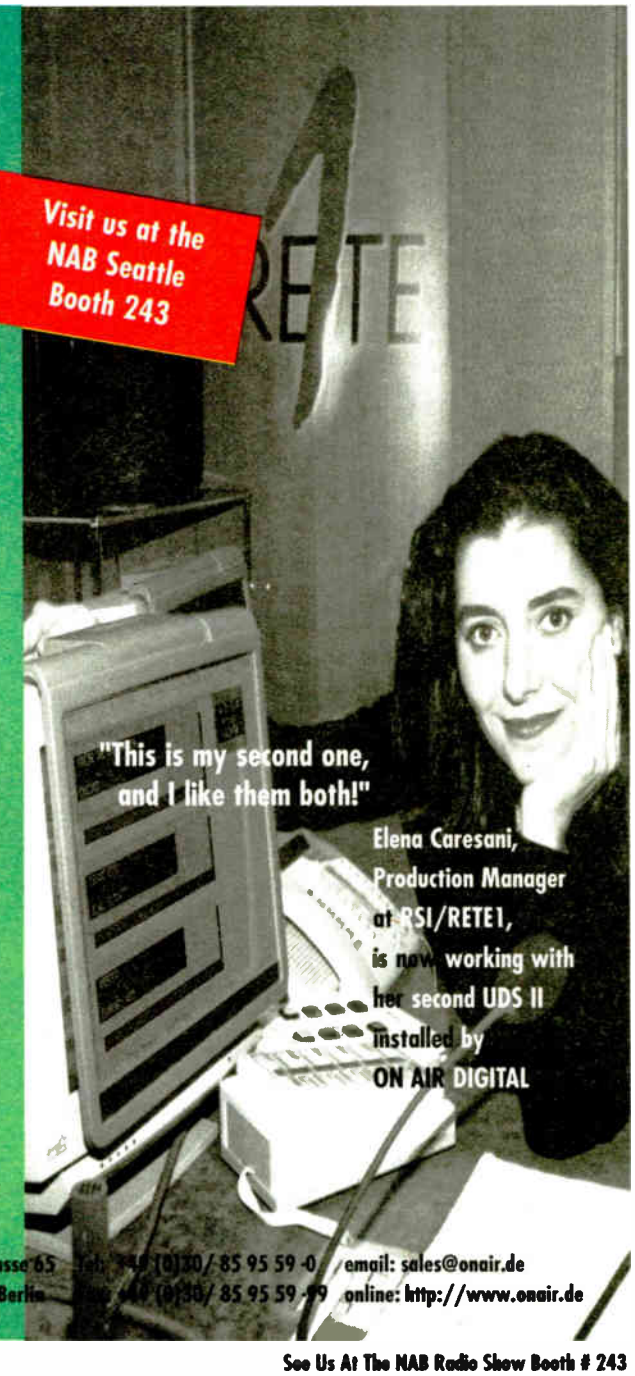

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World Radio History

The Romance in Four Little Letters

▶ CALLS, continued from page 61

among stations that begin with "W" and were grandfathered way out west. (WOAI is the westernmost "W," and KYW the easternmost "K.")

Although call letter changes are common today, usually they settle and stay on one side or the other of the K/W boundary. On the other hand, some stations appear unable to decide which they are "K" or "W." The station at 1380 kHz in St. Louis was first KFVE. It has also been known as KWK, KGLD, KASP, WKBQ, KRAM, WKBQ again, WKKX and now KKWK.

Over the years, the Department of Commerce, the Federal Radio Commission and finally the FCC continued to churn out sequential call signs for most new stations. That provided two options for stations: develop a slogan to match their calls, or request a new set of call letters for the station.

Some early stations ran contests, like WSB in Atlanta, to find a good slogan for their given call. It was a listener who came up with the famous "Welcome South, Brother," which was used to accompany the friendly programs broadcast up and down the eastern United States.

Others companies wanted to ensure their businesses would be remembered in the call letters of their radio outlets. To this day, radio trivia discussions often begin with questions about the meaning of WLS, WGN and other legendary calls.

Originally assigned WBBX, Sears Roebuck asked for WES, and then WLS to signify their enterprise as the "World's Largest Store." WGN was the "World's Greatest Newspaper," referring to the owner's Chicago Tribune.

Another station in Chicago, WHT, was named for the owner, Mayor William Hale Thompson. WOW might seem like an exclamation (!), but it actually referred to the Woodmen of the World Insurance Company.

Other stations operated for a while with their original sequential call letters until they developed an identity. WJAD became WACO, one of two stations whose calls spelled out their city of license. The station gave up that distinction in the 1990s and is now KKTK.

Sometimes it took a few tries to get it right: WPAB near Norfolk, Va., went through several iterations before settling on WGH — World's Greatest Harbor — as its image.

One could overdo these things, and after four changes in their call sign in just a few years, one Minnesota station was warned by a stern DOC that enough was enough, and they would not be issued any further changes for a while.

It seems like there is no end to interesting call letters and the stories behind them. So many, in fact, that we'll return soon to take another look at some of the history found among call signs. If you have a favorite call sign/story, or a question about the history of a call, please let me know.

Next time, among other things: the famous "wandering call sign," call letters that were "parked," silly call letters, some places on the Internet to find more background, and other delights.

■■■

Barry Mishkind has information on lots of old call letters at www.oldradio.com/

You can also contact him at (520) 296-3797, or via e-mail to barry@broadcast.net

K/W CALL BOUNDARIES. RED MARKS THE ORIGINAL LINE, BLUE THE LATE JAN., 1923 SHIFT TO THE MISS. RIVER

This map shows W and K stations on the AM band, by state. In red are the 12 states, including Hawaii, that have only had stations starting with K. Green designates Alaska and Ar-kansas, which had one or more W stations in the past, but now have only K stations. Yellow highlights the 15 states that have both K and W stations. Dark blue marks the 19 that have only had W calls. Light blue marks the two states, Mississippi and Ohio, that once had one or more K stations, but now have only W stations.

Map courtesy of Thomas H. White.

NAB Radio Show Hospitality Suites

Visit these suites at The NAB Radio Show in Seattle. For any last-minute changes, please check the RADIO SHOW DAILY NEWS. The company sponsoring the hospitality suite is followed by the hotel and suite number.

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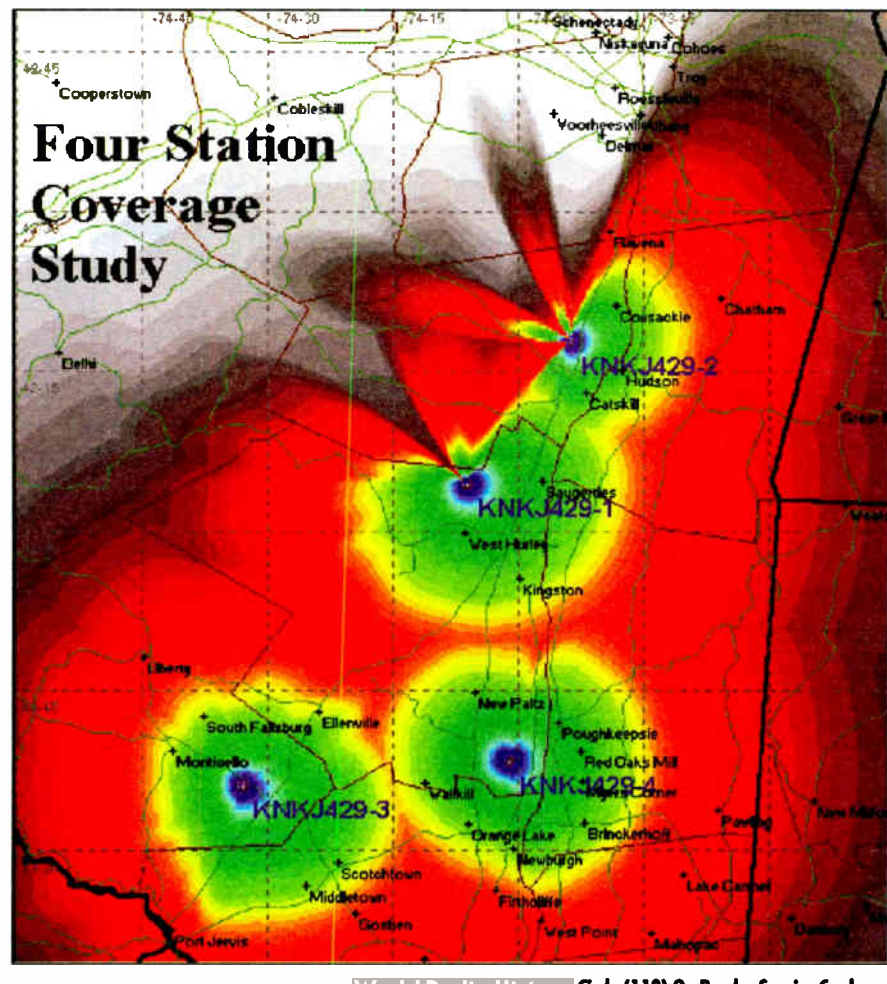

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Is Radio Ready for Linux?

A Home-Brew Operating System Gains Popularity, But Radio Is Slow to Pick Up on It

Alan R. Peterson

For an estimated 7 million computer users, Linux is *it*.

Linux — pronounced "*Linn*-nucks" — is a powerful UNIX-like operating system (OS) that runs on commonly available Intel-type computers, even lowly 286 boxes. Linux can multitask; it is robust and resistant to crashes, and can make a five-year-old 486 PC cruise as if it were a higher-end workstation.

And it is free.

In the past few years, Linux has gained popularity among users looking for something more than Windows on which to run their machines, and with owners of "obsolete" computers. Commercial Linux distributions can be found next to Windows 98 on computer store shelves, at about one-third the price. Articles in the popular press have helped increase awareness of the operating system. Oracle, Informix and Intel have cultivated an interest in the OS, and some computer manufacturers offer Linux instead of Windows in the machines they sell.

But in spite of its rising popularity, it may be a long time before any radio-specific uses are created for Linux.

What's so special?

Linux was created nearly eight years ago by Linus Torvalds, a student at the University of Helsinki. He wanted to run his new 386 computer under a version of UNIX, rather than DOS or Windows. Torvalds eventually wrote his own UNIX-like "kernel," the actual code that makes computers tick, then posted it on the Internet and invited other UNIX programmers to begin adding to it and refining it. The project became known as Linux and picked up speed.

Today, the OS seems to be everywhere. The U.S. Postal Service scans addresses with a Linux-based network. Palm-sized pocket computers run under Linux. An e-mail message you send today is likely to pass through at least one Linux machine on the way to its destination.

Linux mascot 'Tux' is familiar to 7 million computer users.

Web sites and Web server machines run under this operating system. Multiple Linux machines are what digitally split the Titanic in half in the 1997 blockbuster movie.

The most appealing aspect of this OS is that it is free; the kernel is not proprietary and is available to whoever wants to use it. The code can be opened and examined by anyone, and new code is constantly being added by the Linux community to suit its purposes. CD distributions of the OS are available and inexpensive, but the kernel must remain free to anyone who wants it.

The most appealing aspect of the Linux OS is that it is free.

This open-ended approach and its stability have made the operating system popular with hackers, programmers, network server administrators and Webmasters. The fact that it is free and not a corporate product has endeared Linux to self-proclaimed computer freaks and alternative users. Most Linux programs are free or inexpensive: Apache, perhaps the most popular Web server software available, is one such product.

Little interest

Despite these benefits, there is little current interest on the part of broadcast manufacturers to port audio storage and playback system technology over to Linux.

A recent thread on the popular online forum *broadcast.net* addressed the Windows vs. Linux issue at great length. But an Internet site maintaining a Linux "wish list" shows only three entries requesting a radio automation system.

Manufacturers contacted by **RW** related similar impressions: While they note a certain "curiosity factor," they say actual client demand for a Linux-based audio system simply does not exist.

Neil Glassman, vice president North America for Digigram, said, "We've seen more people talking about it, due to a level of frustration with Windows," yet the company has no Linux drivers written

See LINUX, page 65 ▶

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World Radio History

▶ LINUX, continued from page 64

or planned for its high-end line of soundcards. John Zolkoske, developer of the DOS-based Auto-Mate system, said, "There are probably some experimenters out there, but I don't know of anyone doing anything commercially."

Eileen Turri, marketing and communications manager for CBSI, put the situation in perspective: "People are tentative about moving to a new OS." This observation was echoed by Toussaint Celestin, product manager for the Orban On-Air Audio Delivery System, when he said, "People want to stick with what is familiar. We have had no requests to build or develop anything." And a technical representative from Antex Electronics reported only one request for a Linux driver.

Besides the absence of any real client demand, there is the issue of time spent on development. Digigram recently updated all of its drivers, which was a chore in itself.

Making it work

Glassman said, "This is not a small amount of work. The tools are very different. Our new drivers for Windows 95/98/NT took us 20 engineer-years to create. For a closed system such as a radio automation system, it means an entire suite and I'm not sure enough of us will take the leap."

Nothing is stopping a broadcast manufacturing employee from compiling a Linux automation system in his or her basement on weekends, just for fun. But given the tendencies of the Linux community to "make do" for itself, it is more likely that an independent programmer will be the first to create a functional system that attracts any attention. If so, it is possible that such a system would also be offered for free or at low cost.

This scenario is not without precedent: Two Windows-based radio automation software packages are available on the Internet — Raduga and Radio Wolf — with the functionality of much larger systems, but offered at prices ranging from $99 to $400. Not surprisingly, these programs are popular in the micro-broadcast community.

There are already a handful of Linux audio recording and editing programs available, with many of the same features now found in more expensive programs. One such program is SLab, a multitrack digital recording and mixing program with DSP effects and control over dynamics.

Routing audio

This is not to say Linux is not in use in radio. As reported in **RW** last month, Bill Eldridge, the director of technical operations for Radio Free Asia in Washington, has Linux threading its way through the RFA facility, running parallel with other operations.

"We're using its standard UNIX features to automate the audio chain into data support," he said, "to set up schedules to start timed events; to automate 'grabbing' shows in MPEG-3 off serial ports and dropping audio into a Web site."

Eldridge also uses Linux to receive and route audio uploaded from the field to the Radio Free Asia FTP site. "When audio is uploaded, it drops into a directory which is accessible via SAMBA (which integrates Linux into Windows for Workgroups). When somebody uploads to the FTP site, all our people have to do is click 'Network Neighborhood' on their Windows machines and an MPEG file can be played directly or copied right into the BE AudioVault server."

This is a mixer surface of SLab, a Linux-based multitrack recorder/editor.

Can it be done?

Eldridge became a Linux user after working on larger UNIX-based Sun systems. He would download and employ free software such as the Sendmail mailer program and the Apache Web server, available from the Free Software Foundation. "As you get into more and more systems, you get less and less free time. When you get the Linux CD-ROM, you also get all the precompiled software; so why not just install that instead of messing with a proprietary Sun system? I've been quite happy with Linux performance."

Is a Linux-based audio system for radio feasible? Eldridge said yes. In fact, he is almost doing that.

"I'm essentially using that for the Web distribution now," he said, "but there are certain issues with real-time support. You want to make sure you don't get dropouts."

At least one major radio user is putting Linux to work right now.

In general, out-of-the-box UNIX machines are not real-time devices, except for offshoots such as QNX, which drives the Orban On-Air delivery system. Latencies in Linux performance keep it from being an "I need it now" OS. But this is being worked on, as is soundcard compatibility.

"A group called Forefront Technologies has done a lot of work for writing soundcard drivers for Linux," said Eldridge. "In terms of using Linux as a broadcast distribution system, the biggest problems I have are ins and outs. What I would like to have are powerful audio cards that will let me run AES/EBU, and enough DSP to do some serious compression if I wanted to."

What about compression? Eldridge said, "What I would love to see for Linux are non-proprietary compression algorithms — much like MPEG-3 promised to be, but without the licensing restrictions that have dampened its use."

With a community and support structure of more than 7 million Linux users and programmers, these wish-list items may soon come true. And if the popularity of the operating system continues, a Linux-driven radio station, while not under serious consideration at the moment, might be closer to reality.

■ ■ ■

Are you putting Linux to use in your facility? Tell us about it via e-mail to radioworld@imaspub.com

Linux Info

Find out more about Linux and where to obtain free copies of the operating system at *www.ssc.com/linux/what.html*

Free software for graphics, audio and Web servers is available at *www.ssc.com/linux/apps/index.html*

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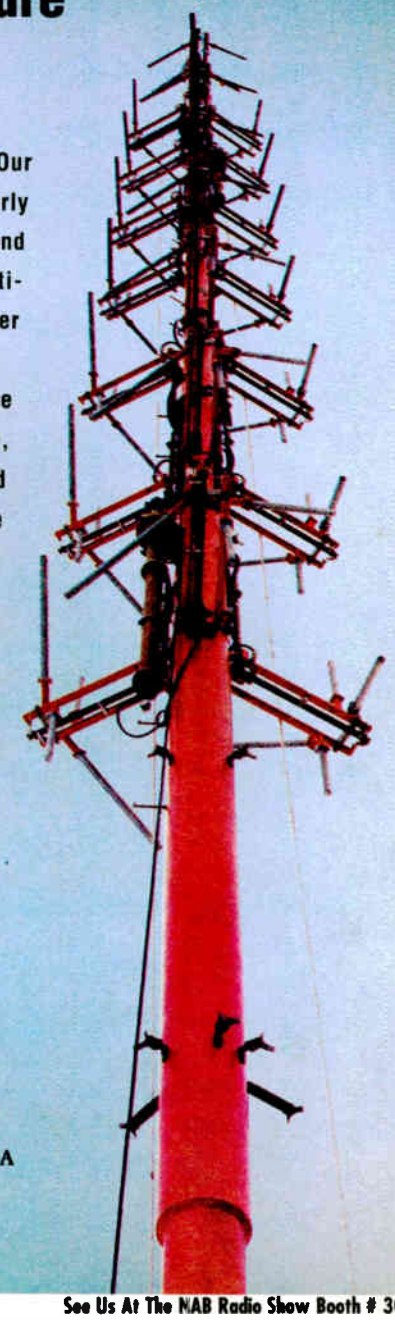

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World Radio History

BUSINESS DIGEST

ABG Adds Cole Grace

GRAND RAPIDS, Mich. Equipment supplier Audio Broadcast Group has opened a new sales office in Duluth, Minn.

Vice President Dave Howland announced that Cole Grace will cover the north central part of the United States for ABG. Howland said Grace's experience with digital audio management systems was one reason he was brought on board.

"He's well versed in the ENCO DAD systems. He worked there for a while and was involved in the design of their new satellite system," Howland said.

Grace has been in the broadcast business since 1972. He was an engineer at WCCO for 11 years, including service as an assistant RF engineer.

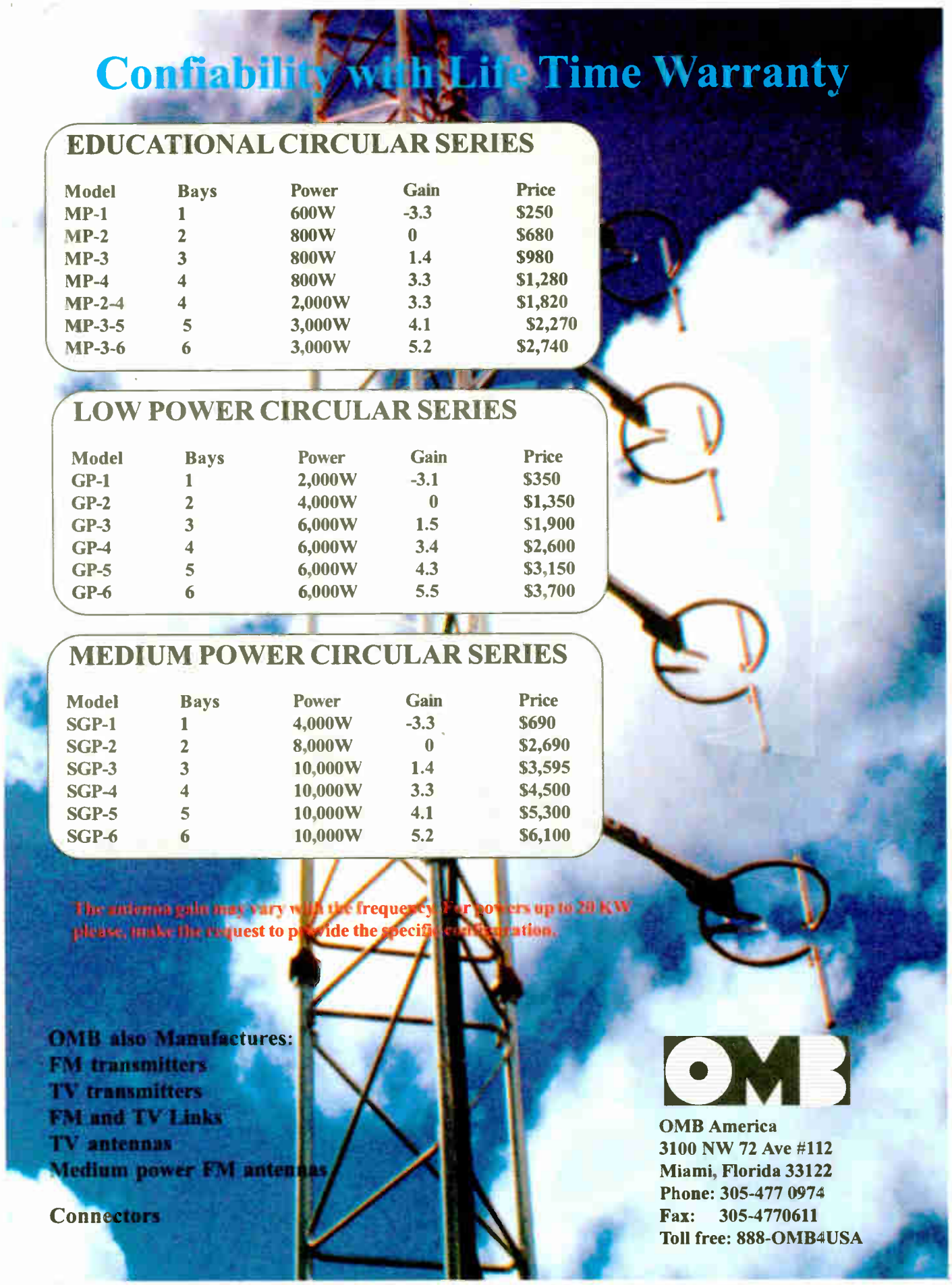
"He had his own consulting company called Delivered Audio Systems Inc. and was a customer of ABG," Howland said. "He had been buying gear from us for the stations for which he had been consulting."

Grace is expected to serve stations in an area that includes all or part of Minnesota, Wisconsin, Michigan, Iowa and Illinois.

The announcement brings to five the number of ABG sales offices. The company is headquartered in Grand Rapids, Mich., and has salespeople in North Carolina, South Carolina and southern California.

The phone number of the new office is (800) 788-8759.

Cole Grace



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World Radio History

Now That's A Corker

In 1942, National Association of Broadcasters President Neville Miller received this patriotic plaque in the mail, sent by a prisoner in a Pennsylvania penitentiary. The prisoner stated that the design came from a picture in a trade magazine of a button being used at WJAR in Cleveland. He carved it by hand out of cork, he said, and if NAB members would like one — with their call letters instead of the three stars — he would be glad to make more for $5 each.

Too much business

Miller took the plaque on a trip to district meetings around the country. "Anyone who's interested," he would announce, "should send $5 to my secretary in Washington to place an order." He was away for several weeks, and when he returned, a letter from the

prisoner was on his desk. The craftsman had received so many orders through Miller's office that he would be hard-pressed to finish them in the two years remaining on his sentence. He was sorry, but if Miller could tell the broadcasters he wasn't taking any more orders, he'd appreciate it.

As Paul Harvey would say: If you've seen a plaque similar to this at your radio station, now you know the rest of the story.

This image is provided by the Library of American Broadcasting, which welcomes questions, comments and donations. Contact them at (301) 405-9160 or via e-mail at *bp50@umail.umd.edu*

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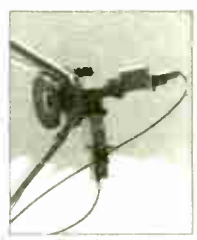

Photo of 7892's mounted between antenna feed and LNA's (both Vertical and Horizontal Polarization).

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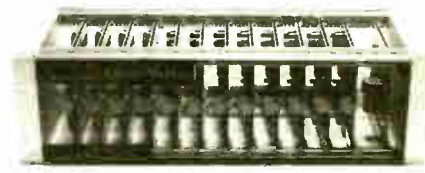

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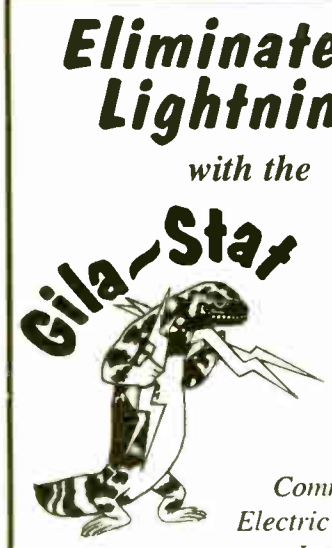

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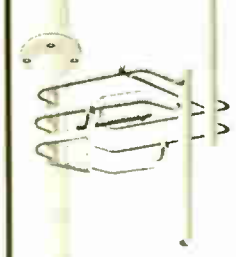

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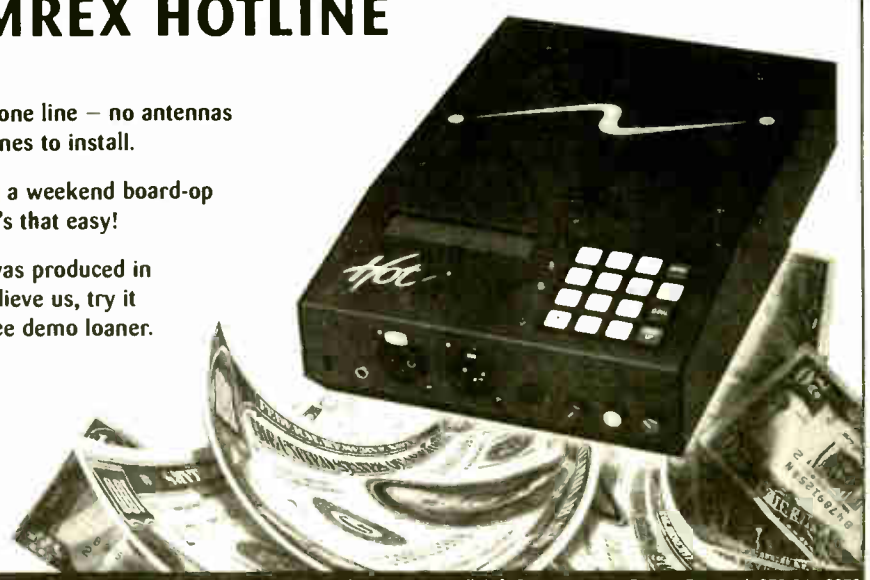

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World Radio History

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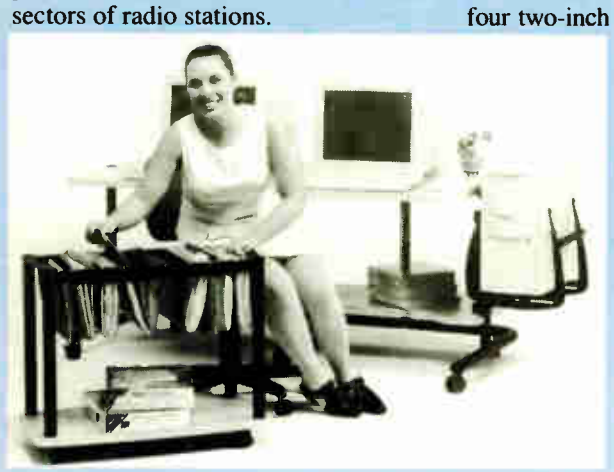
Anthro

Anthro introduces the File Caddy, designed to hold letter-size files. This piece of furniture is ideal for business sectors of radio stations.



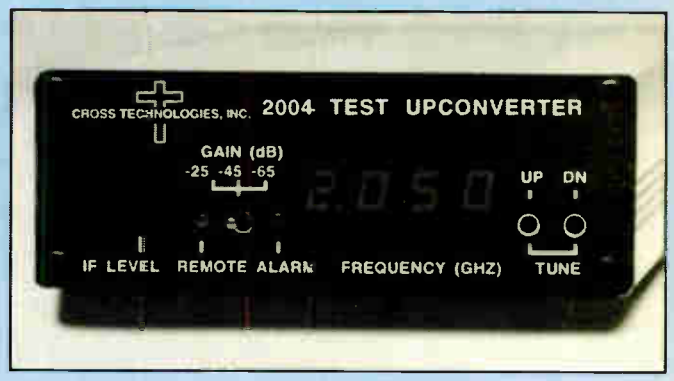
Open in design for easy access, the File Caddy includes a metal frame to hold files with a bottom shelf for additional storage. The unit measures 15-1/4 x 23-3/4 x 29-1/4 inches. It comes with four two-inch soft rubber castors to roll the Caddy around inside work areas.

The File Caddy comes with a lifetime warranty and ships in 24 hours. It is available in bone, black, light gray and wood to match other AnthroCarts.

For more information, contact Anthro in Oregon at (503) 691-2556; fax (503) 691-2409 or circle ***Reader Service 116.***

Satellite Test Upconverter

Cross Technologies manufactures the Series 2000 Satellite Test Upconverters, which provide a solution for looping 70 or 140 MHz modulators to L-band satellite receivers. It is useful as a testing device for satellite-delivered radio programs.

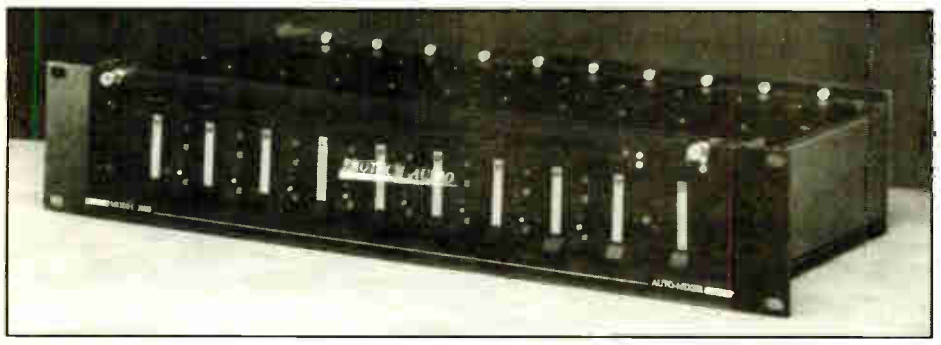


Features include low phase noise, 950 to 2,050 MHz output frequency, one-MHz- step synthesized tuning, and optional RS232C remote control of frequency and level. The unit is available in an economical benchtop package or with an optional rack-mounting kit.

For more information, contact Cross Technologies in Georgia at (770) 886- 8005; fax (770) 886-7964 or circle ***Reader Service 90.***

Automatic Mixer

The Model 2000 Automatic Mixing System from Protech Audio was developed in partnership with Dan Dugan and incorporates full implementation of the original Dugan Speech System patent.



The automixer features mix-minus outputs inherent in the automixer design. Each card frame allows up to eight separate mix-minus outputs, as well as two master outputs. Multiple chassis may be linked for larger systems. Mic and line input cards may be added to frames as necessary for future expansion.

Other features of the automixer include optional automatic level control, tone controls on each input, remote level controls for each input and master output, mute-group and all mute functions, logic outputs, phantom power capability, and high-pass filters on each channel.

For more information, contact Protech Audio in New York at (516) 584-5855; fax (516) 584-5904 or circle ***Reader Service 142.***

New RDL Catalog

The 1998 Imagine Design Build catalog from **Radio Design Labs** contains information on the expansion of several RDL product groups.

The new products were designed for the daily needs of project design teams and the catalog establishes contacts who offer quick response for damage control. Of course, the catalog also showcases the extensive line of established products from the company.

New products highlighted in the catalog include the Stick-On series (amplifiers and preamps), the Rack-Up Series (equalizers, audio selectors and serial converters) and the TX Series (combiners and mixers). A line of several accessories is also new to the RDL family of products.

For a catalog or more information, contact Radio Design Labs in California at (805) 684-5415; fax (805) 684-9316; or circle ***Reader Service 168.***

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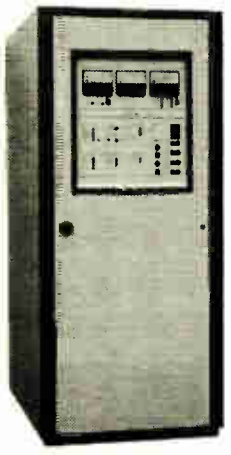

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World Radio History

A Level-Headed Discussion

▶ LEVELS, continued from page 56

to operate our amplifiers just short of the clipping point, keeping it out of distortion and thus maximizing the signal above the noise floor. In order to do this, we must monitor the signal levels constantly. And here is where things get a little more complicated.

Audio signals have a lot of *peak* voltages. These peak voltages spike up above the overall average levels. They are usually of very short duration, but occur rather often. The difference between the overall average levels and the peak levels is known as the *peak-to-average ratio*.

The most accurate window we have to observe actual instantaneous audio levels is the oscilloscope. This is a relatively expensive and bulky piece of test equipment that can capture and display an audio waveform, including these short duration peaks, on a picture tube, completely and accurately, in real time. An oscilloscope is nice, but it's very impractical to mount on our mixing consoles, tape recorders and the like.

Watch the needle

Enter the VU meter. Compact and reasonably inexpensive, the VU meter provides a repeatable and reliable standard.

But instead of an instantaneous electron beam on a screen, the VU meter is a mechanical device subject to physical laws such as *inertia*. This is the force that, in an automobile, for example, tries to slide our bodies across the seat in a turn, or keeps our bodies moving forward when the car is slowing down or stopping suddenly. This is why we wear seatbelts.

Photo by Alan R. Peterson

The red range is there for a reason.

When a signal peak comes along, it starts moving the indicating needle in the VU meter up the scale. Alas, the needle *starts* to move, but the peak has passed by and the signal voltage is back to the average. The needle stops moving up the scale and starts to fall back. (For the purpose of this discussion, we're talking about the familiar analog VU meter, rather than peak-reading meters, which work a bit differently.)

To use another automobile analogy, imagine driving at 40 mph and suddenly stepping on the gas. Are you now instantly at 70 mph? Of course not, because it takes a while to get to that speed. And if you now suddenly take your foot off the gas, you are not instantly back to 40 mph, but you do discontinue accelerating and start to slow down.

The Bell Telephone engineers and broadcast engineers took this effect into account when they devised the VU meter in the 1930s. They came up with a *ballistic* characteristic that *indicates that the peaks are there* while acknowledging the fact that the meter will never be fast enough to directly indicate the actual peak level.

Interpreted correctly, the VU meter can indicate to us just how fast we could have been going had we kept our foot on the gas.

Pulling it together

Remember headroom? Remember peak-to-average ratios? Remember inertia and VU meter ballistics? OK, excellent.

As mentioned above, the 0 VU reference in our plant is +8 dBu (your plant may well be +4 dBu). The maximum power our audio devices here at ABC will put out before the clipping level is +24 dBu. This gives us a headroom of 16 dB. The peak-to-average ratio for a live voice is often as much as 12 dB. And telephone voice peak-to-average rations can be 2 or 3 dB higher because of certain frequency characteristics of telephone audio.

Ate up that headroom pretty quickly, didn't we? Not much left over for errors, is there? And the VU meter often shows *only the first 3 dB* or so of those 12 dB peaks!

So, how do we read a VU meter and set our levels so that we can maintain reasonable headroom and get maximum signal above the noise? Well, we know that the VU meter may show only the first 3 dB of a voice peak. That means there is about 9 dB of peak signal that we now know is there but cannot see on the VU meter. We know that our maximum signal level is +24 dBu. We also want at least 8 dB of "guard" range to give us some extra headroom for errors and unusually high peaks, which do happen from time to time.

Start with our maximum level: +24 dBu. Subtract our guard headroom of 8 dB, leaving us at +16 dBu. Now subtract the peak dBs that we can't see, which is 9 dB. The result is +7 dBu.

Remember our plant standard 0 VU indication is +8 dBu actual signal power level. So you can see that +7 dBu is -1 VU. This is the *maximum level* your VU meter should ever read on peaks, and now you understand why.

The inventing engineers thought about this and decided that the area on the meter face above 0 VU should be in red, to remind the user that one should *never* go there.

Tape and digital recording

Magnetic tape is similar to amplifying equipment in that it has a noise floor and a maximum allowable peak level. The difference is that the span between the two is smaller. The maximum headroom of magnetic tape is usually only about 10 dB above the 0 VU reference point. There is no "guard" headroom. On voice peaks, when your VU meter is reading 0 VU, you are very close to the clipping level of the tape (known as the *saturation* level of the tape, or the point at which increasing the input to the tape recorder does not increase the signal on the tape, but instead distorts on the tape).

In the world of digital audio, 0 level is the point at which the digital system has no more digital bits to quantify the audio. Digital recorders are set up so that there is 16 dB of headroom. In other words, normal average level in a digital recording system is referred to as -16. Note that, no matter how you refer to the numbers, 16 dB of headroom is all you get.

A final word

After reading this, you probably realize there is one more very good reason to keep the VU meter indicating needle out of the red area. Once you are past the +3 VU point on the meter, there is no longer any way to tell what your levels really are because the meter is now off the scale. No matter what the levels really are, the meter reads the same: slightly over +3 VU. You cannot determine any longer how close you are to the end of your headroom and consequent beginning of distortion.

Obviously, there is much more than just the preceding overview on the subject of reading and interpreting the VU meter's indications. This article should help you to avoid the more common and fundamental mistakes many operators make. I hope you find this helpful in improving your operating technique and increasing your professional skills in broadcasting and production.

■ ■ ■

Reach the author via e-mail at gsharpe@abc.com

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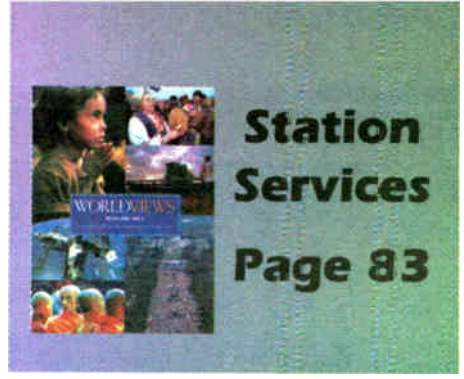

MARKET WATCH

'Hello Seattle, I'm Listening'

Disposable Income and a Growing Population Help This Consolidated Market Grow

Randy Stine

As Kelsey Grammer, also known as Dr. Frasier Crane on the Emmy-winning NBC sitcom "Frasier," might say, "Hello Seattle, I'm listening."

That will be the refrain of thousands of radio and industry professionals descending upon the city for The NAB Radio Show Oct. 14 to 17. While Dr. Crane's imaginary KACL(AM) does not exist, broadcasters will find the nations 13th largest radio market in a boom time, with projected end-of-year revenue nearing $160 million.

Amid the grandeur of Puget Sound and the Olympic Mountains, "unsettled" best describes the radio market over the past two years as consolidation took effect. Five radio groups dominate the scene, now that the selling and trading have quieted. They are Entercom, CBS Radio, Sandusky Radio, Fisher Broadcasting and New Century Media.

These corporations own 24 radio stations and earn nearly 97 percent of the revenue in the Seattle market, with Entercom and its eight stations alone accounting for nearly 40 percent.

The scoop on Seattle

The city rests along the backdrop of water and mountains with the Space Needle and Pike Place Market among its landmarks. Nearly 550,000 people live in Seattle proper, with another 200,000 in nearby Tacoma, 30 minutes to the south. The population base is a well-balanced white-blue collar mix.

Microsoft is based in Redmond, just outside of Seattle. The computer maker has drawn many high-tech firms to the area, most of those relocating from California. Microsoft and associated high-tech companies are perceived by many as what drives the region's economy. Boeing Corp., based in nearby Renton is also a major employer in the region.

Lifestyle and jobs have lured thousands to the Puget Sound region. According to the Washington State Labor Area Summary, employers in the area added 76,000 jobs last year. Hiring at Microsoft and Boeing accounted for 14,000 of those jobs. The unemployment rate for both Seattle and Tacoma is less than 4 percent.

Fake Radio: Kelsey Grammer as Dr. Frasier Crane

Real Radio: KLSY's Murdock, Hunter and Alice at a Fourth of July Remote

Radio in the Emerald City is finally getting noticed, while the music scene in Seattle has always been influential. Bill Virgin covers both scenes for the Seattle Post - Intellingencer. "Seattle has some heritage radio stations that have dominated the local market and been noticed nationwide — for example, KIRO(AM), a news/talker that's been around since 1927 and has become legendary," said Virgin. "And the classical station KING-FM is a special story. While many cities have lost their classical outlets, KING-FM is one of the few of its kind that has thrived with that format."

While Seattle gave us grunge and Nirvana, both are gone. "Actually, the alternative station KNDD(FM) is really struggling right now. They have dropped from the top 10 quite dramatically. The one surprise I see in the ratings is how well oldies does here in a city that is perceived as being overly young," said Virgin.

FM oldies KBSG-FM was a top-three station in the Spring '98 Arbitron book, while nostalgic KIXI(AM) is top 10.

A majority of Seattle radio stations report earnings to Miller, Kaplan, Arase & Co., LLP of San Diego. George Nadel Riven is director of broadcast services for the CPA firm. "The NAB will be coming into Seattle to meet at a very good time. Through the first seven months of this year, radio advertising revenue is up 16.3 percent in the market," said Nadel Riven. The Seattle-Tacoma radio market billed almost $150 million in 1997. As Miller, Kaplan calculates it, that was an increase of 14 percent over 1996.

Driving the advertising market is telecommunications business. "US West, MCI, AT&T, and all of their different plans and services, from credit cards to travel, are just huge right now. US West

See MARKETWATCH, page 78 ▶

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BOTTOM LINE

Radio Craze South of the Border

Large Group Owners See Broadcast Property Investment Opportunities Outside of U.S.

Frank Montero

Perhaps because of perceived opportunities, or because of a race to beat the competition, or even because the number of available U.S. radio properties is dwindling, more and more we are seeing large radio group owners looking south of the border for new acquisitions. In the past year several broadcast groups, including Chancellor, Clear Channel and Hicks Muse, have announced initiatives to purchase radio properties in Latin America, especially Mexico.

Analysts took notice last year when Hicks Muse announced the formation of an investment fund called Ibero-American Media Partners to invest in broadcast media properties in Latin America, Spain and Portugal. Coming from a company that immediately catches market attention whenever it initiates investment strategies, the Hicks Muse announcement did not go unnoticed by its competitors in the United States.

Then, last year, Hicks Muse paid a reported $120 million for a 20-percent stake in MVS Communications, S.A. of Mexico. This year MVS purchased Radio Group Met, S.A. which owns six radio stations and a TV station on the Mexican side of the Mexico-U.S. border. In the spring of this year, Clear Channel followed suit with its investment of $57.5 million for a 40-percent interest in Grupo ACIR, one of Mexico's leading radio group owners with 164 stations in 72 cities throughout that country.

In the summer, Chancellor announced that it would buy 50 percent of Mexico's Grupo Radio Centro for $237 million, or roughly eight times 1999 broadcast cash flow, to be paid in cash and Chancellor stock. This acquisition followed Chancellor's $25 million investment for a 25-percent interest in Z-Spanish Media Corp., an American

Julio Rumbaut

Spanish-language broadcaster, and was immediately followed by Chancellor's $75 million acquisition of Puerto Rican radio group Primedia with its eight FM stations on the island.

Arbitron has responded by announcing that it will begin providing services in Puerto Rico. Also, Arbitron representatives have met with broadcasters and advertisers in Mexico to probe starting up service in that country.

Clara Carneiro, Arbitron's Director of Latin American Market Development, also states that agencies in Guatemala and Argentina have expressed an interest in having Arbitron enter those markets.

According to industry watchers, the current Latin American radio craze is not just a passing fad. In fact, it the result of several bottom-line factors, including the relative strength of the dollar in the global economy and the fact that radio investments in Latin America can be had at multiples that are far more favorable than in the United States, where radio prices have inflated considerably since the passage of the Telecom Act in 1996.

Duane McKnight, a partner in SYNCOM, a Washington-based venture capital group that invests in the communications industry, attributes the interest in Latin America to a variety of considerations.

"There is certainly the arbitrage issue given the strength of the relative currencies as against the dollar and the higher-trading multiples in the U.S.," said McKnight, "but there are also operating synergies due to the continuity of the

See BOTTOM LINE, page 75 ▶

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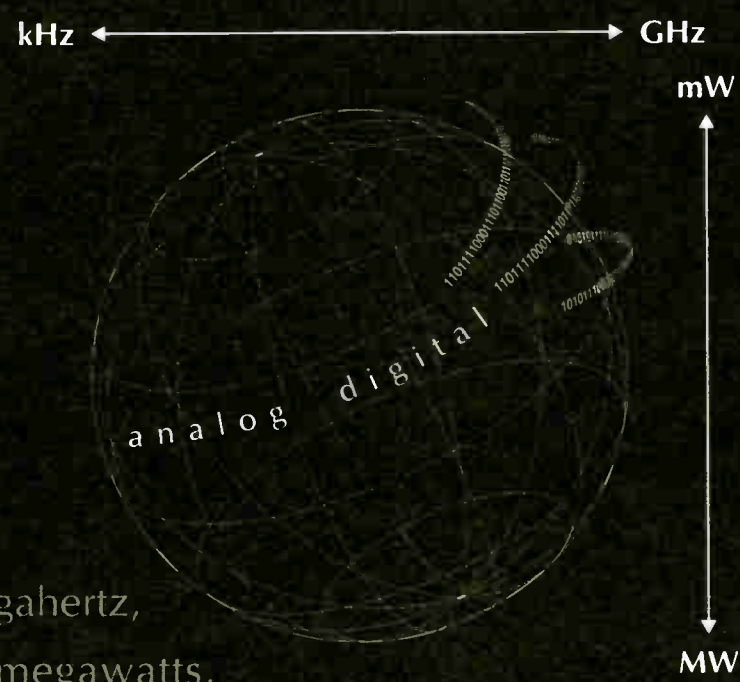

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World Radio History

STATION FINANCING

The Wait: The Clock Stops Ticking

Dain Schult

This is one in a continuing series of articles on financing the purchase of a radio station. The most recent part appeared June 10. You can also read previous parts at www.rwonline.com

You've probably been wondering what happened to the rest of this series? We decided to give you a flavor of how it feels to wait for the license transfer approval by the FCC. Got a little lonely, didn't it? Now, several months later, here we are again, ready to mush on toward the Promised Land of radio station ownership.

While you are waiting for approval, you can do one of two of the following things.

First things first

The first option is to sit and watch the station run and wait your turn. It's the more frustrating of the two choices as you can't really do a whole lot to positively affect the future of the station. The alternative choice is to rev up your communication law counsel, work out an LMA, or Local Marketing Agreement, with the seller, and actually be able to move forward a bit faster.

An LMA is really a Time Broker Agreement, or TBA, which is yet another agreement to be negotiated and executed and then filed with the commission. Contrary to street parlance, an LMA is not a lease on the station. The FCC takes an extremely dim view of someone who wants to try to take control of a station before the commission grants permission to do it. Illegal transfer of control charges are the last thing anyone wants to face. An LMA can be an effective transitional period for you as you move into ownership, and in many cases a seller may want to effect an LMA to help cement the signing of the Asset Purchase Agreement (APA). But remember that the seller is still the licensee. What the licensee says, goes.

Striking the deal

The seller has to maintain at least one full-time employee and one part-time employee on the premises at all times. You are merely buying air time on the seller's station. You will be allowed to collect the revenue generated by the commercials you run on the station but you have to follow the seller's directives and stay within the parameters of the TBA. An LMA doesn't make the station "yours" yet.

How much can an LMA set you back? It depends on the deal you've struck with the seller on the APA. It may be a fee that totals all of the fixed operational costs of the stations plus a fee to the seller. The fee can range from a friendly "$1 in consideration" to something more like $5,000 or $10,000 a month for the term of the LMA in smaller markets. In larger markets the fee grows in comparison to market size. Sometimes that fee will be applied against the sales price of the station, but it doesn't have to. The application of an LMA fee to the sales price is a negotiation point. Another concern is whether or not you get the existing Accounts Receivable on the day you execute the LMA. If you don't get them, be prepared to show up with working capital to cover the fixed operational costs plus additional expenses that will pop up.

Sometimes an LMA is used as a prelude to signing an APA. At times, a "try it before you buy it" approach can be useful in making sure that a station's performance is as advertised before APA execution. In that respect it's the greatest of all versions of due-diligence. An LMA also can bridge the time spent waiting from when the APA is signed and filed with the FCC to the time of closing.

An LMA can even be used as a bridge for when the closing date is approached or has already arrived but there are unresolved issues that must be settled before the closing can occur. (Funding may fall through at the last moment, for example.) An LMA can hold everything together in a case like that. Just don't expect a seller who has already mentally spent the closing proceeds a thousand times and has his luggage packed for the vacation of a lifetime, to want to hang around for too terribly long to get to the closing. Don't come to the closing table only to propose a two-year LMA instead and expect anyone on the other side of the table not to start doing bad out-takes of Nikita S. Khrushchev banging his shoe on the table at the United Nations.

LMAs can be used as a bridge
for when the closing date approaches, but unresolved issues must be settled before closing.

Make it personal

Once in an LMA, you may choose to identify the station with some moniker or logo other than the existing call letters, but only the licensee can receive FCC approval for call letter changes. You can change the format but unless this station is a turnaround, you have ask yourself why you would change it.

This same rule applies regarding the existing personnel.

The seller has to maintain his or her own employees, but the rest of the staff may or may not be hired by you. If you choose not to hire certain employees of the seller, just make sure you worked this out with the seller before taking action. Many sellers get real skittish about this. There are several immediate concerns on their part: What happens if there is no closing and they end up owning the station? What about the possible negative PR impact this may have? Will they have to restaff the station? Of major concern are the high costs of unemployment benefits credited against the former employer, which in this case would be the seller's company. Most sellers don't like getting stuck with the expense on their dance cards.

LMAs can help you get better acquainted with the staff you will inherit, as well as provide an excellent way to diffuse stress and anxiety among employees as to how the station will be run post-closing. The longer everyone is together in an LMA, the quicker you can cut past the "best behavior/courtship dance." Once the agreement is in place and everyone knows the score, you should be able to see the employees more candidly. The blade on this sword does cut both ways. You will be judged by these employees just as completely as you do it to them.

Properly used, an LMA can be an effective arrangement for both seller and buyer. But now the clock has stopped ticking, so it's time for a closing. We'll hunker down with the lawyers again in the next installment.

■ ■ ■

Dain Schult is a 30-year broadcast veteran and consultant with experience as a DJ, general manager and group operator. He is based in Austin, Texas. Reach him c/o RW.

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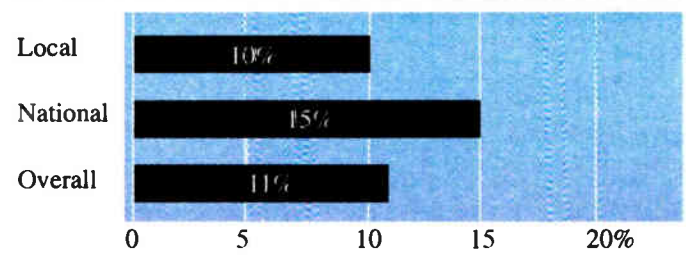

National Sales Driving Strong Radio Gains

Sales in the radio industry continue to register impressive gains. In July alone, overall radio ad revenue was up 13 percent from July of 1997, according to the Radio Advertising Bureau. Part of that month's gain was a 23-percent increase in national sales, which the RAB termed "stunning."

Year-to-date numbers indicate a healthy 11 percent increase in national and local combined, as shown in the chart. This marks 71 straight months of sales gains.

All regions in the nation are gaining. Local ad gains were strongest in the Southwest and West, each gaining 15 percent for July over a year ago. The East benefited from a 28-percent increase in national revenue for July.

— Laurie Ann Cebula

World Radio History

Investors Eye Latin America

▶ BOTTOM LINE, continued from page 72

(Spanish-speaking) audience."

On the latter observation, McKnight points out that several of the groups that are investing in Latin America, most notably Clear Channel and Chancellor, are coordinating their acquisitions with investments in Spanish-language radio groups here in the United States, specifically Clear Channel's interest in Heftel Broadcasting and Chancellor's recent investment in Z-Spanish Media.

For advertisers, who are looking to reach the Spanish-speaking consumer, both in the United States and in Latin America, these companies can offer economies through their holdings on both sides of the border. In a nutshell, if you are looking for a Spanish audience, why pay a fortune for Los Angeles when you can have Mexico City or Buenos Aires for a fraction of the cost?

While investments in Latin America can be tricky, given the unpredictability of the economies, and the frequent limitations placed on foreign investment under domestic broadcast regulations, many large groups consider the risk worth taking.

Julio Rumbaut, president of Rumbaut & Company, a Miami-based international media brokerage firm which represents clients in both the United States and Latin America for transborder investments and acquisitions, has his own thoughts.

"The (Latin American) market has tremendous upside resulting from lack of consolidation, potential improvement in selling techniques, in programming and audience research and in applying viable U.S. broadcasting expertise to the rapidly developing broadcasting industries of those countries.

"Further," Rumbaut said, "Entry multiples are considerably below those of the United States broadcasting industry and all of this creates a significant potential for asset value accretion to both entry pricing and improved operational considerations."

For whatever the reason, look for continued investments in the Latin American radio industry in the months and years to come. Both Clear Channel and Chancellor are reportedly looking for additional such investments. Moreover, in the early negotiations for the NAFTA treaty, proposals were put forth (never adopted) to allow greater foreign investment in broadcast properties by companies from the member countries: Mexico, the United States and Canada. Don't be surprised if you see a revival of such a proposal in years to come. If so, the day may come when radio broadcasting is dominated by international companies with broadcast holdings in several countries across the Americas.

■■■

Frank Montero is a communications attorney and partner with the Washington law firm of Fisher, Wayland, Cooper, Leader & Zaragoza. Reach him via e-mail at fmontero@fwclz.com

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ONLINE RADIO

Increase Listener Interactivity

Kim Komando

Until the Internet came along, radio was primarily a one-way medium. Now, with the advent of the World Wide Web, listeners can interact with their favorite radio stations like never before. And the more they can interact and feel a part of something bigger, the more likely they are to stay tuned to one particular station.

The key is making your Web site as interactive as possible. Two ways to do this are with instant Web-based listener polls and in-studio Webcams.

An instant online poll is a great way to let hundreds of people — more than you could ever reach taking phone input from listeners — put in their two cents on whatever topic seems appropriate for the day. For example, you could ask readers whether they think President Clinton should be impeached over the Monica Lewinsky affair, and then invite them to vote "yes" or "no" on your Web site.

On your Web site, you would need two pages to handle the poll. The first would be an online form where each listener could vote. The second page would show the cumulative results of the poll as people voted. Each time a listener cast a vote, the information on the results page would change accordingly.

There are two ways to accomplish this, and they are similar in that they both involve a CGI (Common Gateway Interface) script. A CGI script is simply a mini-program that handles the information submitted by each user as they complete the online form. The difference between the two techniques is what the CGI script does with that information.

The easiest way to set this up is to create a static results page and then have the CGI script update the page each time a vote is cast. In other words, you would create the original page showing zero "yes" votes and zero "no" votes. Each time a listener casts a vote, the script would add a "1" to the appropriate value.

The second option is to have the CGI script update a database of results and then have the results page generated "on-the-fly" as people attempt to access it. The primary advantage to this approach is that, with the poll results stored in a database, you can do some post-polling analysis. For example, if you wanted to, you could look at listener response according to which Web browser they use. If you include other demographic questions along with the survey question, you can also analyze those answers to learn more about your listeners.

In either case, you'll need some custom CGI programming and in the latter case, you'll also need your Internet service provider (ISP) to build a database to store your poll results. Your ISP will likely charge a fee to set this all up, but once the system is up and running, the recurring costs should be minimal.

A little or a lot

An in-studio Webcam — a camera that displays live pictures from the studio on your Web site — gives listeners a sneak peek at the on-air personalities that they are used to only hearing. As with most online endeavors, you can spend a little or you can spend a lot.

The time and money involved to implement a Webcam depends on your answer to one question: Do you want your Webcam to simply take a still picture every so often — say, every 15-30 seconds — and update that picture on your Web site, or do you want to have live, streaming video?

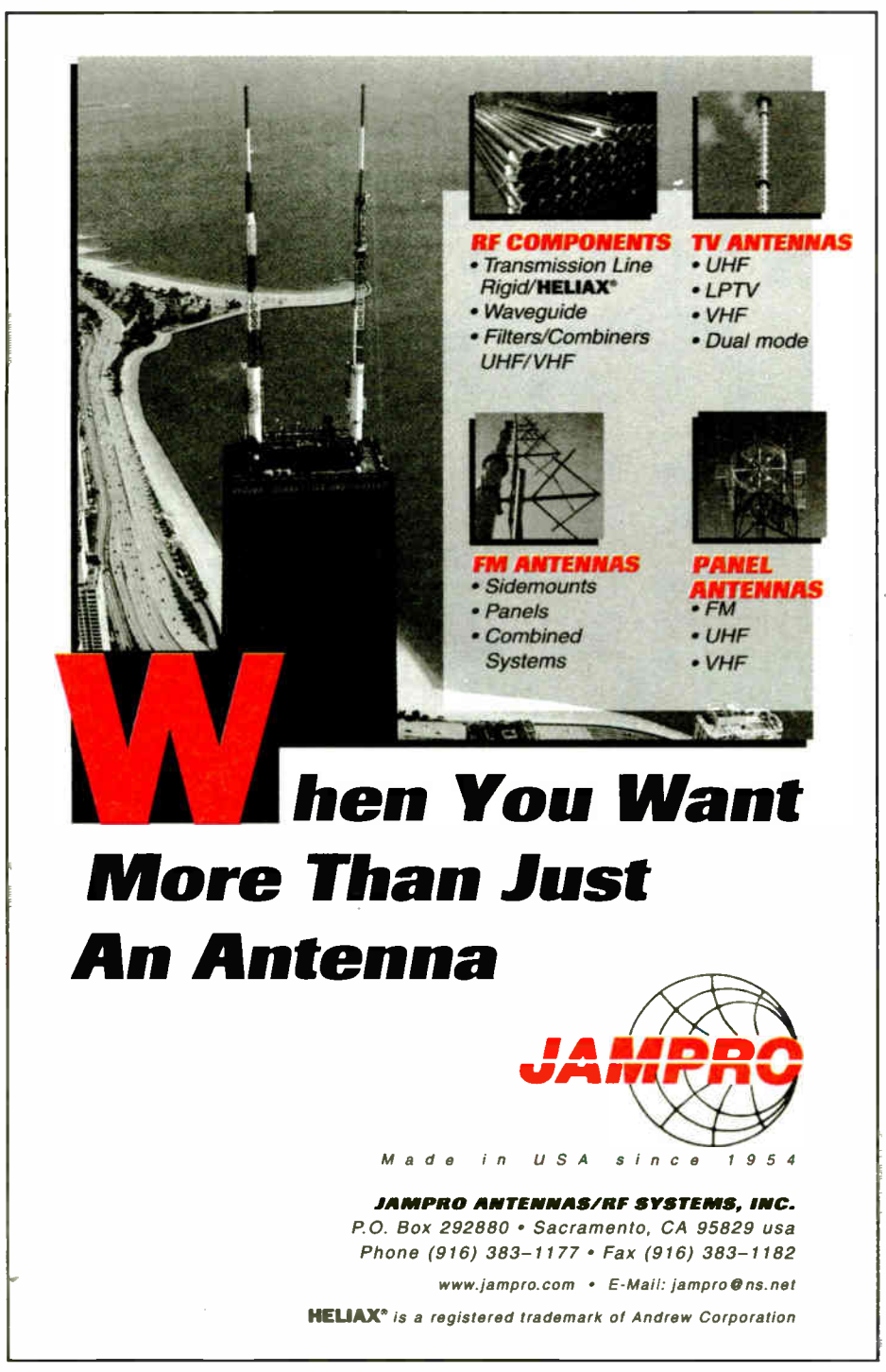
The first option is very simple and inexpensive. All you need is a cheap PC-mounted camera like Logitech's Color QuickCam (about $130), some software to get the image from your station to your ISP's Web server (such as DCN's CamRunner, shareware that costs about $40), and a connection to the Internet. For this type of Webcam, even a dial-up modem connection will do. If you plan to keep the connection "hot" all the time, you can have the image updated as often as every 10 or 15 seconds. If you want the computer to dial into your ISP each time, you'll be limited to updates about every 30 seconds.

Once you get everything set up, the process is simple. You tell the software how often you want the picture updated, and it snaps pictures at that interval. The software then uses FTP (file transfer protocol) to update the image file on your ISP's Web server. That's all there is to it.

If you're interested in live streaming video, you're into a whole new league compared to simple still-image Webcams. First of all, you absolutely need a dedicated connection from your station to your ISP. If you're satisfied with choppy video that plays at about eight frames per second (fps), you may be able to get by with a standard modem connection (keeping in mind that it still must be online all the time). However, if you want true, full-motion video (30 fps video), you'll need at least an ISDN line, which can get a little pricey.

Next, your ISP will need to set up a streaming media server to handle the traffic. This is a complicated process and something your ISP isn't likely to do without charging you a pretty penny. If you're already Webcasting the audio portion of your programming over the Internet, the additional setup to add video streaming may be within reason. My best recommendation is to get a price quote on this service from your Internet provider before you get too closely attached to the idea of streaming video.

How effectively you make use of online technologies may very well impact your bottom line as the industry moves to a more Net-centric focus.



Circle (12) On Reader Service Card
See Us At The NAB Radio Show Booth # 516

Radio Managers Grapple With Year 2000 Issues

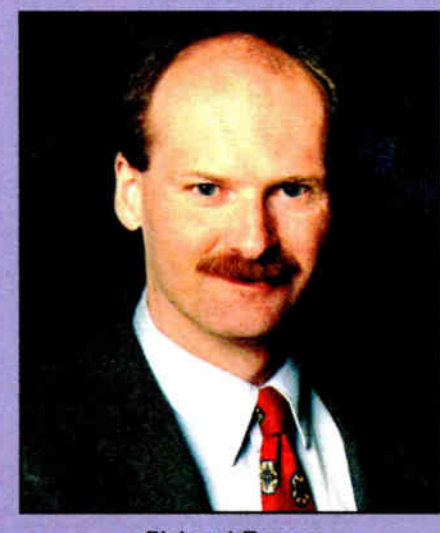
Dee McVicker

When the ball drops in Times Square come Jan. 1, 2000, microchips everywhere are going to have one heckuva New Year's party. There's no telling what these tiny time bombs will do to our telephones, automation systems, even air chains as 1999 — represented by two nines — rolls over into 00 for the year 2000, and the electronic clock reverts to 1900.

At best, the so-called Y2K bug will be nothing but a hiccup in the timeline, a minor annoyance. At worst, it could cause satellite equipment to stop running, computers to freeze mid-schedule and entire antenna farms to go dark.

Bill Murray with Tribune Broadcasting in Chicago, for one, isn't waiting until the final countdown on New Year's Eve to get a handle on Year 2000. Nor is Roger Graves, the head of the Y2K task force at Bonneville International, Salt Lake City. Both are looking into the future through the eyes of the microchip, and they're making some interesting discoveries, foremost among them that the future isn't all that far off.

"We were focusing on the stroke of midnight 1/1/00. We now think the problems are going to be staged a little at a time, because systems look ahead. You're going to encounter problems as soon as you schedule for the Year 2000," said Murray, the director of Business Information Systems in charge of Y2K readiness for Tribune Broadcasting, which owns four radio stations, 18 television stations, a TV network, and a cable news station, and is involved in several other broadcast ventures. Tribune Broadcasting is a division of Tribune Company, which also owns a publishing division and an education/new media division.


Richard Ducey

Graves, too, sees a truncated future: he has been given a deadline of Dec. 31, 1998, to scout out, plan for and fix any Year 2000 gremlins that may be lurking in Bonneville's 15 radio stations and one television station.

"I really think there will be some outages, and I think it will be similar to

See Y2K, page 84 ▶

World Radio History

Gilliard Joins Jones

There is a new addition to the team at **Jones Radio Network**. **Judy Gilliard** has been named regional affiliate sales manager.

Judy Gilliard

Gilliard formerly worked at Westwood One Radio Network and KPSI-FM in Palm Springs, Calif.

Jones Radio Network provides satellite-delivered music programming.

Harris Names Beeler to New Post

Harris Corp. has announced the promotion of **Scott Beeler** to the position of director of North American radio sales.

Scott Beeler

Beeler, based in Richmond, Ind., was promoted to replace the retiring Don Taylor.

Beeler's new responsibilities include all aspects of Harris' North American radio sales effort, including field sales and Harris Broadcast telemarketing sales.

PRI Taps Winking

Public Radio International has announced the addition of **Sue Winking** to the PRI staff as director of station relations.

Winking worked with Minnesota Public Radio for 15 years in programming and newsroom positions. Winking also served as MPR's program director of the News & Information Service.

Sue Winking

In her new position, Winking will be responsible for the PRI station relations team, building and maintaining relationships with individual public radio stations nationwide.

Premier Picks Krane

Premiere Radio Networks has named Stuart Krane to the position of executive vice president and general manager.

Krane's new responsibilities include managing various Premiere programs and services, as well as handling marketing and affiliate relations.

Krane previously served as a principal and partner of EFM Media, the syndicators of the Dr. Dean Edell and Rush Limbaugh programs. He also has worked as the vice president of affiliate marketing for the ABC Radio Network.

Stuart Krane

Krane will be based in New York.

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See Us At The NAB Radio Show Booth # 1046

World Radio History

Seattle Radio Ad Revenue Soars

▶ MARKETWATCH, continued from page 71

alone increased its radio ad budget for Seattle by 30 percent last year," said Nadel Riven. He added that Seattle radio gets its fair share of ad dollars from most every business sector.

"For instance, restaurants spend 30 percent of their media dollars on radio in Seattle. And department stores some 18 percent. Both of those figures are well above the national average."

There are several reasons why businesses spend a higher percentage of ad dollars on Seattle radio than other advertising avenues. According to Bob Gad, vice president of western stations for Christal Radio in Los Angeles, several local issues favor radio.

"There is very little outdoor advertising in Seattle. That's because local ordinances prevent it. Plus the terrain is not very suitable for it and the weather plays a role too," he said. Christal, a division of Katz Radio, is national sales representative for the Sandusky Radio group.

The AM 880 KIXI Crew

With the lack of billboards, busboards are a popular means of reaching the downtown populace. In competing media, the television market has its usual complement of network affiliates and several independents. There is a joint operating agreement between the two major dailies, the Seattle Times and Seattle Post Intelligencer.

Gad said Seattle radio is popular with national advertisers for several reasons. "These are major radio groups that operate in Seattle. They know what they're doing and advertisers like dealing with major players. The market is also perceived as being on the move. By that, I mean a growing population, people with disposable income and a very upbeat economy." Gad can get from $300 to $500 dollars per unit for morning drive in Seattle.

KEZX
BUSINESS • TALK
AM RADIO 1150

Christal Radio

At Sentry Radio in New York City, Loren Chiamonte handles West Coast accounts for the national sales representative. She agrees that Seattle is hot right now, but said it's more of a Pacific Northwest thing.

Warm
106.9fm
Continuous Soft Favorites

"Portland, Ore., is up even more in national business, nearly 35 percent. That's phenomenal. Seattle certainly is doing well and is extremely attractive to advertisers right now," she said. Sentry reps for Fisher Radio's three Seattle properties.

Stiff competition

At KIRO(AM), the news-talk giant has been winning ratings battles on a consistent basis for decades. As one of the eight properties owned by Entercom, KIRO is home to the Seattle Mariners and Seahawks. Dick Carlson, vice president for Entercom Seattle and KIRO general manager, said station heritage and community trust are two things money can't buy.

KOMO NEWS TALK 1000
News·Traffic·Weather

"We know our listeners and what they want," Carlson said. "We don't fool around and mess with a winning formula. KIRO has a great identity with the area, especially with the Seahawks and Mariners. We are Seattle." Entercom owns a total of 34 stations in 10 major cities.

Entercom intends to consolidate operations for most of its stations into offices in the west tower of the Metropolitan Park Towers near downtown Seattle. "That is the plan for next year," said Carlson. "As leases come up at different properties, we will form clusters of stations to help streamline operations a bit." The Entercom stations have not consolidated sales staffs.

Carlson sees only good in Seattle's future. "This economy continues to grow at an incredible rate. Everywhere you

See MARKETWATCH, page 80 ▶

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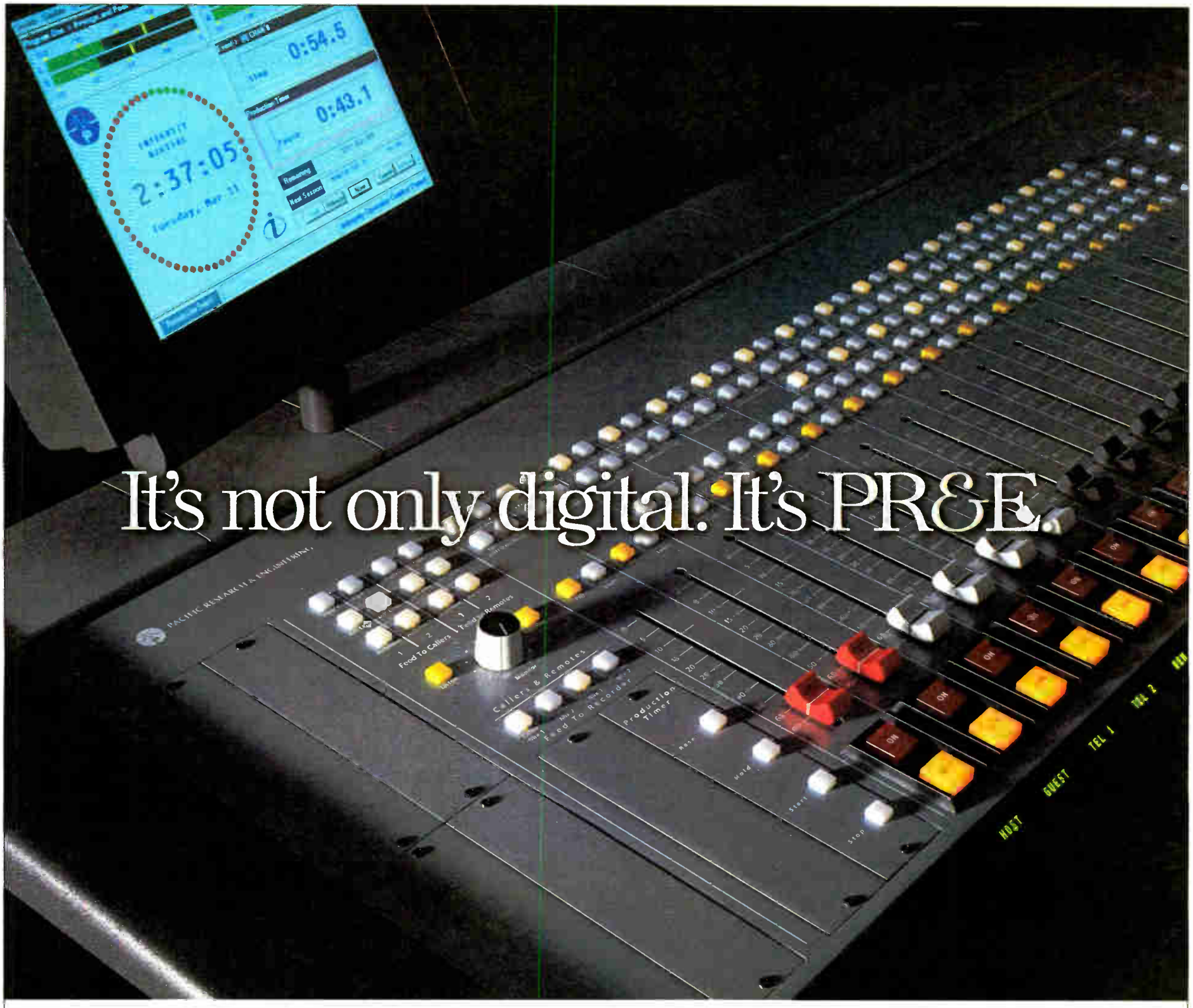
World Radio History



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World Radio History

Radio in Washington's Emerald City

▶ MARKETWATCH, continued from page 78

look you see cranes and new construction along the skyline. Real estate is very expensive right now. Tourism is up and the high-tech business moving to town means a solid base is being formed along with Boeing," he said. New baseball and football stadiums are being built on Seattle's south side.

Entercom has a joint sales agreement with KING-FM. According to Peter Newman, general manager for the classical station, it's a unique situation. "We get a guaranteed dollar amount from Entercom every year; in return they sell our time. And since any profit we make goes to a nonprofit corporation, our board of directors likes the fact that this guarantees them a dollar figure at the end of the year that they are happy with," said Newman. KING-FM is owned by a non-profit consortium that includes the Seattle Symphony.

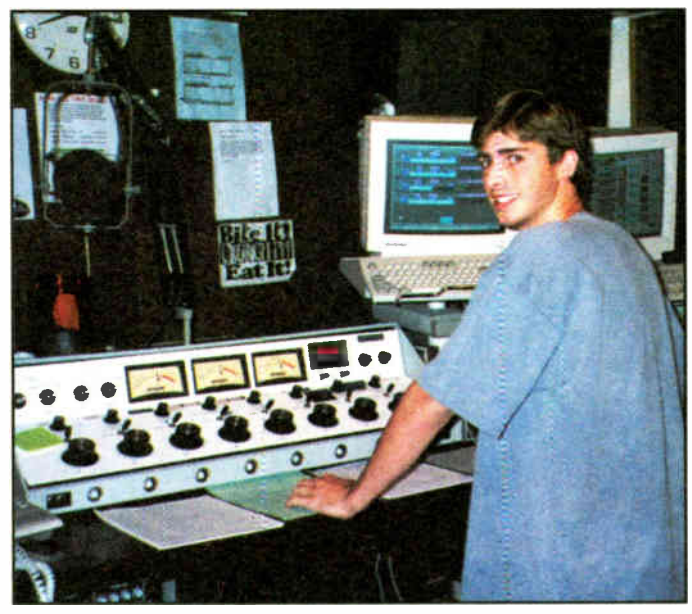
Sandusky Radio owns and operates five Seattle radio stations, including nostalgic KIXI(AM). Marc Kaye is general manager for the five properties. "The demand for product in Seattle is incredible. Many of our stations are sold out on most days," said Kaye. "Our national dollars are up over 50 percent from two years ago."

Kaye identified several causes. "Seattle seems to have emerged from a small-market mentality. You now have major players in town to operate these stations. I think we were always viewed as small-market radio with a large-market population," he said. "Plus, we have the third-longest commute time of any major city. That means a lot of in-car listening which benefits us directly."

Sandusky Radio plans to move all five of its radio stations into a new multimillion dollar facility later this fall in Bellvue, just across Lake Washington from Seattle. It will measure nearly 20,000 square feet.

At the 98.9 Smooth Jazz Festival

Fisher Radio is the only major owner in the Seattle market with roots in the city. Fisher owns three stations in Seattle. They include KVI(AM), KOMO(AM), and KPLZ(FM). J. Shannon Sweatt is general manager for all three stations; he said he never would have believed the market could be this strong. "We are literally doing television-type business now. We were always viewed as secondary medium support for TV and newspaper, but now I think advertisers are looking to radio earlier in the process," Sweatt said.



Inside the Studios of KNHC(FM)

All of those additional radio dollars are coming from a multitude of places. "Telecommunications is certainly number one for us. Followed by things like medical, which used to use only print. Retail, including furniture stores. And restaurants. Banking is the only area that is down because of consolidation in the field," Sweatt said.

The Home of KIRO-AM-FM and KNWX(AM)

For competitive reasons, both inside and outside the company, the Fisher stations have maintained individual sales staffs, with three general sales managers and one national manager. The radio stations will move to new facilities inside the new KOMO-TV building currently

See MARKETWATCH, page 81 ▶

Seattle-Tacoma Radio Snapshot

Market Rank: 13
Revenue Rank: 13
Number of FMs: 20
Number of AMs: 31

Estimated Revenue:
1994: $115,400,000
1995: $125,400,000
1996: $136,000,000
1997: $146,900,000
1998: $157,900,000

Revenue Growth:
'91-'96: 8.4%
'97-'01: 7.4% (projected)

Local Revenue: 82%
National Revenue: 18%

1996 Population: 3,349,400
Per Capita Income: $19,427
Median Income: $41,795
Average Household Income: $50,264

Source: BIA Research

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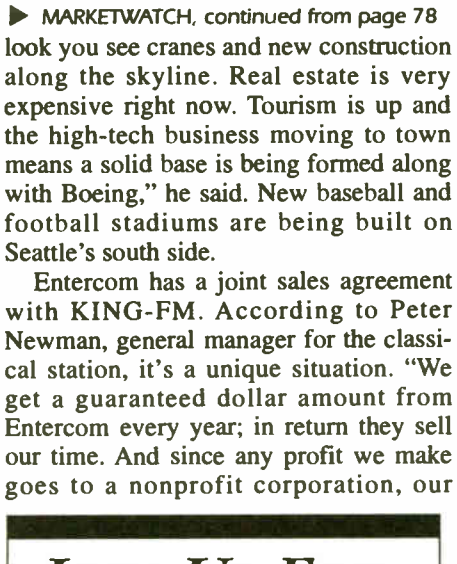

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World Radio History

▶ MARKETWATCH, continued from page 80

under construction.

CBS Radio and New Century Media constitute the other two major station owners groups in Seattle. CBS purchased their five stations from

The KING-FM Live-Performance Studio

American Radio Systems earlier this year. "We've yet to see exactly what CBS will bring to the table," said Sweatt. "But, you know they'll be competitive and good operators." New Century owns three properties.

Bill Jenson has sold radio in the Seattle-Tacoma market for more than 25 years. He is local sales manager for Sandusky Radio. "Our local sales are up 13.3 percent from last year, while the groups national sales are up 26.4 percent. That is the kind of growth we have never seen before last year," said Jenson.

One area of sales growth that has amazed Jenson is ad dollars from local TV. "The television market here has seen so many ownership and affiliation changes that they market like crazy to break through the clutter. Right now, the November sweeps will be huge for us. I wish I had more inventory to sell them," he said.

Jenson said in these times of consolidation, sales can be challenging. "There are definitely more toes to keep track of. What I try to do as local sales manager with three separate sales staffs, is not to play any favorites. We all have the same goal in mind. You try not to dampen the competitive nature of the business," he said.

Programming a radio station in Seattle is a dream job for Tom McGinty, program director at soft AC station KRWM(FM). "With all of the people I speak to in the industry, Seattle now seems to be the wish spot for a lot of them to work. I think this will be a top-10 market before long. We nearly do top 10 in revenue as it is," said McGinty.

McGinty said there seems to be no shortage of air talent in Seattle. "The morning talent pool is very deep. You have Robin & Maynard at KZOK-FM, Murdock & Hunter at KLSY-FM, T-man at KUBE(FM), Bob Rivers at KISW(FM), and Tom McCarthy here. We have some big dogs out here," he said.

With a newcomers perspective on Seattle radio is Barry McKay, program director at KLSY-FM, a mainstream AC. McKay has been in Seattle since the middle of summer, arriving from Richmond, Va. "I find the radio market to be very conservative. There seems to be an expectation from the audience for us not to cross the line of good taste. KUBE(FM) is a bit risqué. But, even the rockers are quite tame," McKay said. KUBE(FM) is a CHR/rhythm station.

The Seattle-Tacoma radio market has a strong public radio presence. According to the Post-Intelligencer's Virgin, both KPLU-FM, at Pacific Lutheran University in Tacoma, and KUOW(FM) at the University of Washington in Everett, are NPR affiliates and do well in the local ratings. Virgin said, "Over 38 percent of people in Seattle have a bachelor's degree or better. That's very high thanks to the computer industry and high-skill jobs. I think that is why these stations do well."

So, if you're visiting the NAB Radio Show in Seattle, be prepared to hear some major-market radio and hope for the best in the weather department. As they say in Seattle, it doesn't rain every day, it just looks like it could.

■ ■ ■

Randy Stine is the production director at WXIK(FM) in Lansing, Mich.

The demand for product in Seattle is incredible. Many of our stations are sold out on most days.

— Marc Kaye, Sandusky Radio

Seattle-Tacoma
Radio Market Overview

Stations	Owner	1997 Est. Station Revenue in $mil.	Format	Winter 1998 12+
KIRO(AM)	Entercom	20.9	Nws/Tk/Spts	7.5
KUBE(FM)	Ackerley Group	8.0	CHR	6.2
KBSG-FM	Entercom	11.9	Oldies	5.7
KMPS-FM	Infinity	9.5	Country	5.2
KLSY-FM	Sandusky Radio	7.6	AC	4.6
KVI(AM)	Fisher Broadcasting	6.0	News/Talk	4.5
KPLZ(FM)	Fisher Broadcasting	6.2	Adult CHR	4.2
KWJZ(FM)	Sandusky Radio	3.8	Smooth Jazz	3.8
KING-FM	Beethoven	4.0	Classical	3.8
KBKS(FM)	Infinity	3.0	AC	3.8
KIXI(AM)	Sandusky Radio	2.0	Adlt Stndrd	3.7
KISW(FM)	Entercom	7.6	AOR	3.5
KZOK-FM	Infinity	8.5	Clsc Rock	3.5
KRWM(FM)	Sandusky Radio	3.8	Soft AC	3.2
KOMO(AM)	Fisher Broadcasting	4.7	News/Talk	3.2
KNDD(FM)	Entercom	7.2	Modern Rock	3.2
KJR-FM	Ackerley Group	6.0	70s Oldies	2.7
KMTT(FM)	Entercom	8.0	Adult Rock	2.3
KJR(AM)	Ackerley Group	4.0	Sports	2.3
KYCW(FM)	Infinity	5.0	Country	2.1
KIRO-FM	Entercom	3.8	Talk	2.1
KCMS(FM)	Crista Ministries	1.2	ChrsContemp	1.6
KNWX(AM)	Entercom	1.4	News	1.1
KKBY-FM	Joy Broadcasting Inc	N/A	Country	1.1
KXXO(FM)	Three Cities FM Inc	0.8	Soft AC	0.6

BIA RESEARCH

Stations are ranked in order of Arbitron Winter '98 12+ ratings. Copyright 1998 The Arbitron Company. May not be quoted or reproduced without the prior written permission of Arbitron. Other information provided by BIA Research through its MasterAccess Radio Analyzer Database software.

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World Radio History

BOTTOM LINE

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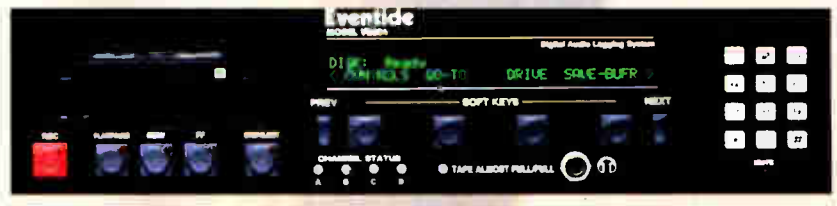

Eventide's **BD500 Broadcast Delay** makes talk shows run smoother and sound better, for less. The BD500's multiple dump feature divides the delay time into several "slices" so you're still safely in delay even right after dumping an offensive remark. It's the hassle-free talk solution... even when air talent is working without a producer. No other delay offers Eventide's high quality patented catch-up technology for clean audio combined with fast catch-up. And it's the only delay with optional digital inputs and outputs for new all-digital studios. Yet the BD500 costs thousands less than our previous model. See how much easier talk shows can be with Eventide's 4th generation BD500 Broadcast Delay.

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World Radio History

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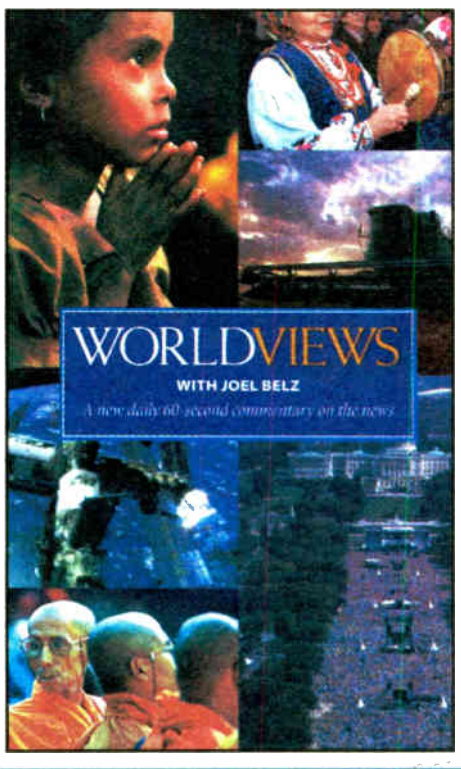
The CD is arranged in stand-alone hours so that your station can program each hour individually or together where you need them and as often as you like.

Newer artists featured include Big Bad Voodoo Daddy, Squirrel Nut Zippers, Brian Setzer, Michael Civisca, Cherry Poppin' Daddies and George Gee and His Make Believe Ballroom Orchestra.

For more information, contact Webster Audio Products in Colorado at (800) 757-9464 or circle ***Reader Service 194.***

World Views with Joel Belz



"World Views" is a new daily 60-second commentary on the news. This feature is intended to inspire listeners to live more dedicated Christian lives. From the founder, first editor, and publisher of WORLD magazine comes this daily perspective on current events for a radio audience.

Joel Belz's editorial topics range from Japanese economics to body piercing, jury trials to eating meat on Friday.

WorldViews, a radio version of Belz's editorials, arrives once a month in CD format with a :60 feature for every weekday during that month.

For more information, contact Bev Singleton in Colorado at (719) 598-1733, fax: (719) 598-3713 or circle ***Reader Service 13.***

London Radio Launches New Service

On Aug. 3 London Radio Service (LRS) launched its new daily Russian language Newsbreak service. Radio stations that broadcast in Russian or stations that want to expand their international news gathering capabilities will be able to access this service.

This new service by LRS is an addition to the already existing news services in English, Arabic, Spanish and Portuguese. The service will cover many topics from the U.K. including politics, business, the environment, the arts, sports, science and technology, fashion and medical developments.

Broadcasters will be able to access these Russian language Newsbreaks in one of two ways. Those who have Internet capabilities can review LRS's Russian Newsbreaks in the RealAudio format at their Website *http://www.lrs.co.uk* Those without Internet access can call +44 141-412-1004 to access the Newsbreaks though LRS's AudioTex system.

For more information, contact Tim Ayris in London at +44 171-453-7511, e-mail lrs@abc.com *or circle* ***Reader Service 39.***

Trivia Fun with Wilson Casey

Wilson Casey hosts "Trivia Fun" weekdays, live from noon until 1 p.m.

This program features entertaining trivia which may be a nice change-of-pace for folks used to hearing bad news on the radio.

For more information, contact Wilson Casey in South Carolina at (864) 573-1400 or circle ***Reader Service 220.***

AMPT Radio Wins Silver Microphone Award

AMPT Radio, a nationally syndicated issues and music radio program, recently won a Silver Microphone Award in a national competition.

AMPT Radio is produced by Jim Haviland, a Seattle audio engineer and manager of the recording facility, Studio Litho.

AMPT Radio presents interviews, commentaries and music relating to censorship, the environment and feminism.

The Silver Microphone was awarded to AMPT Radio for its show on housing, entitled "Give Me Shelter." This show won in the Political/Government category and was also a finalist in the Education category. "Give Me Shelter" included an interview with Stone Gossard of Pearl Jam on his involvement with The Red Feather Development Group.

The Silver Microphone was awarded to Sound Vices, Inc., which is the firm that produces AMPT Radio.

For more information, contact Laurie Campbell-Nunez at (773) 244-9982 or circle ***Reader Service 169.***

Circle (86) On Reader Service Card

World Radio History

Is Your Station Y2K Compliant?

▶ Y2K, continued from page 76

Galaxy 4 going out and also the AT&T frame relay problem a while back. They're not related, but I think that's the kind of thing we're going to see," said Graves.

Counting down

Even under the best of circumstances, there's not much time until the clock strikes 2000. Once a month Murray reports his progress to Tribune Company's board of directors, which deem this initiative to be of huge importance, as does the FCC.

"The FCC has pointed that out to us, by the way. They already asked us — and I presume all the other broadcasters — to explain to them what our readiness is going to be. They were interested in the emergency (alert) system. They wanted to know if that was compliant," Murray said, adding, "The equipment is."

Both Murray and Graves have inventoried studio and transmission equipment, contacted manufacturers and are now in the process of either "flashing" firmware, replacing potentially errant Year 2000 gear, or building in system safeguards.

"One of the buildings we just moved into, the main phone room is not on the generator and has no backup power at all," said Graves, who, along with Murray, feels backup power is Year 2000 Readiness 101.

Automation software is also on the Y2K potential problem list, as are the computers they reside on.

"What surprised us ... is that one out of three new computers we purchased was not Year 2000 compliant, yet they were the same model, from the same manufacturer, and they were brand new," said Murray. How is that one of three BIOS chips was not compliant? "Because some PC manufacturers are really assemblers," said Murray, who runs all station computers through Year 2000 diagnostic software (TF2000 for standalone PCs and BindView software management system for network checks). "What you run into is a lack of consistency of pieces in the PCs. And there's no obvious way to know," he said. Fortunately, many PC manufacturers have Web sites broadcasters can visit to download a "flash," a computer code that will update BIOS chips.

Other Y2K computer problems aren't as easy to remedy. "The less straightforward part of it is broadcasters have to go through all of their homegrown systems and find out if they're compliant or not, and what to do about it," said Rick Ducey, senior vice president, Research and Information Group for the National Association of Broadcasters, which posts Y2K information relevant to broadcasters at *www.nab.org/Year2000/*

Graves has a Dec. 31 deadline to fix any gremlins at Bonneville's 15 radio stations.

Graves said most of Bonneville's software applications are off the shelf, and the broadcast equipment he's checked into has checked out for the Year 2000 bug. His biggest frustration to date is that some broadcast equipment manufacturers simply do not have adequate information. "They've been very helpful getting us started, but not very helpful getting us specific information on their product," said Graves of one equipment manufacturer.

Adding to the frustration is that the Y2K fix could be as damaging to operations as what it's fixing, as there are several ways the manufacturer can remedy the problem. One might fix it by simply changing the field from two to four digits. Another might fix it by doing what is called "windowing," a technique that tricks the chip into marking a number such as "51" to be the 1900 century mark, effectively enabling it to recognize "00" as 2000.

"That's all well and fine. But in real life, systems have to talk to one another," said Murray. "If one is passing a file with four digits and the other is looking for a file with two digits, is the system overall compliant? Yes. But will it work? No."

Ideally, Murray said he'd like to test out the air chain in a trial Year 2000 run to try to catch any of these interface problems before they become catastrophic. "If the station is automated all the way from the traffic department, we could download a log and make it go through all the steps," he said. Murray has picked a hypothetical test date of Feb. 29, 2000, because he's discovered equipment in his Year 2000 sleuthing that doesn't recognize this date, even though it is on the calendar.

"There are some other things we'd test for, too. One is Sept. 9, 1999," said Murray. The time stamp of 9999 is not a problem in and of itself, he said, but it has been used by equipment manufacturers as a popular trigger date to test program routines, and there could be problems lurking here as well.

When the chips are down

There are other, less obvious problems lurking around the station. Take elevators. At the strike of midnight on Jan. 1, 2000, microchips whose job it is to monitor elevator safety inspections may suddenly come awake, shutting down elevators all over Manhattan, Los Angles, and Chicago for a long-overdue — 99 years to be exact — service inspection.

"Is that a big deal?" asked Murray. "Well, if your office is on the 16th floor that may be a problem. But you may not have to worry about the elevator. You may not even be able to get in the building." Smart chips used in building security systems in effect bar anyone from entering who hasn't entered the building in, say, a few weeks, months, or, in the case of Year 2000, 99 years.

Murray said the biggest Y2K surprises are found outside the building, particularly for stations that are not automated. He reasons that the more automated the station, the more susceptible it is to internal Year 2000 problems. The less automated, the more susceptible it is to external Year 2000 problems.

"Do we know our employees can get to work? That the trains are running? That our employees are able to get to an ATM? Are telephones going to work?" he asked. "Our initial focus was internal. It was black boxes, devices, switches, and control panels. But it turns out that the threat that is at least as big is outside." Murray isn't leaving any of the above to chance. Transportation, phone, cash-flow and power alternatives are built into his contingency plan.

"We can't guarantee that the cell-phone network is going to work any better than the land-line network, but our contingency plan is to make sure there's a cell phone in the control room, one in the transmitter site, and one at the chief engineer's house," said Murray, who is planning for all possibilities — even an interruption in cash flow. "We told our people to build into their budget process the possibility that accounts receivables (will slow down), that the people who pay us may encounter problems."

The Year 2000 expense will definitely be a "noticeable number" in Tribune Broadcasting's next annual report, he said.

Will there be a few surprises come New Year's 2000? Absolutely, said Murray and Graves. And not a minute goes by that they're not thinking about that.

■ ■ ■

What is your station, group or supplier doing about Y2K? Tell us about it at the address on page 5.

Dee McVicker is a regular contributor to ***Radio World****.*

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World Radio History

Studio Sessions

Boards and Chips
Page 86

WaveLab Edits, Masters and Burns

Eric Lewis

Mention a two-track digital audio editor and thoughts will generally drift toward discrete devices such as VoxPro or Short/Cut; or computer-based products with names like Sound Forge, Cool Edit, Fast EdDit and a handful of others. Drop another name into that cluster: Wavelab 2.0 from Steinberg North America.

What exactly is Wavelab? It is a PC-based audio editor, a sample editor, a CD grabber/ripper, a CD burner, a mastering tool, an audio database and an effects processor, all in one.

Wavelab 2.0 runs on any 32-bit Windows platform. Steinberg recommends a minimum 133 MHz Pentium with 32 MB RAM. The program worked perfectly with my 233 MHz Pentium MMX machine with 64 MB.

There is one caveat you should be aware of. Wavelab 2.0 will work to its fullest extent on machines with Intel processors and SCSI-based hard-disk media driven by Adaptec controller cards.

Wavelab is compatible with most audio formats, including all formats based on the Microsoft Audio Compression Manager.

Screen layout

The layout of the screens is fairly straightforward. One window displays the units: percent, decibel (dB) and decimal for level; time, samples, time code, meter — bars/beats/ticks — and MB for time.

Another window contains special zoom controls for tightening or widening the perspective with the mouse. Eight snapshots can be predefined to store preferred windows layouts.

All operations can be effected on either channel or in both channels for stereo operation. Snap-to-zero crossings can be switched on/off for smoother splices.

Markers allow the user to set certain positions within a recording for editing or for locating important points in a recording. These markers also can be generated automatically and can be set as punch-in-out locations.

Wavelab can read regular audio CD tracks and convert ("rip") them directly into WAV files. This works only with certain CD-ROM drives: Steinberg recommends Plextor.

There is no way to import a part of a track, which I do regularly when all I want are short samples for a piece of production. However, Wavelab can import several tracks quickly, and the program names them automatically. This is a very handy feature.

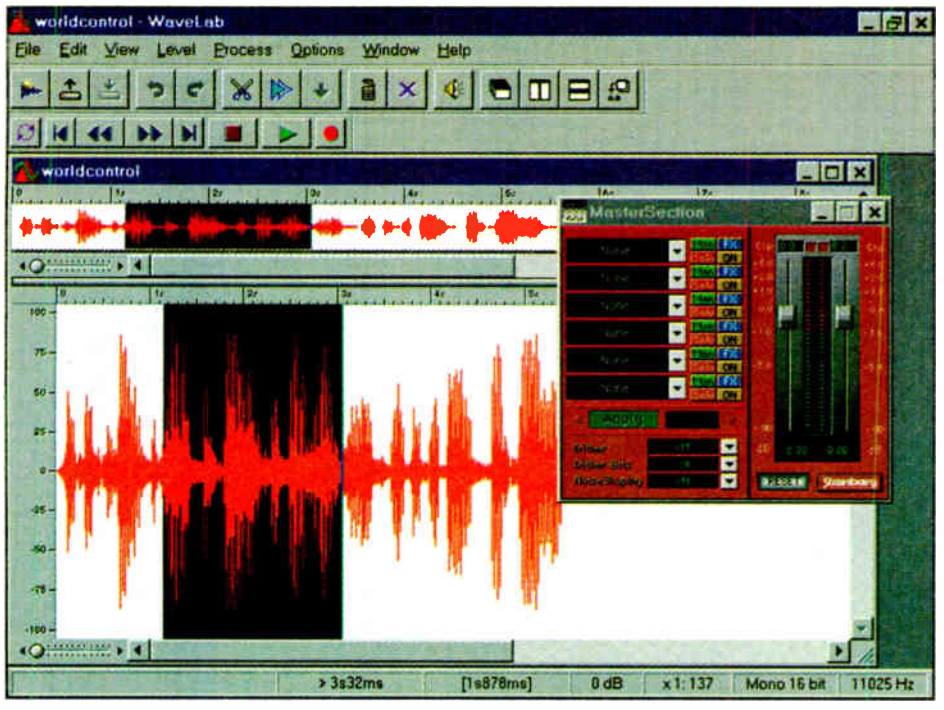
Effects and processing

Burning CDs is another matter: Wavelab burns Red Book CDs, which can be used as CD masters for production. All the necessary codes can be edited: PQ, indexing, ISRC, owner information, UPC/EAN, product number, emphasis and copy protection.

Furthermore, one can create cue sheets filled with dynamic data from the CD. With an additional driver, Wavelab can also create Exabyte tapes.

The program supports three standards

See WAVELAB, page 87 ▶



A WAV file being prepared for a burn to CD in Steinberg Wavelab. Note effects module window.

Fostex FD-4 Recorder Offers Choice of Media

Alan R. Peterson

Part of selecting a personal recording device today includes a choice of preferred media. Various products offer cassette, MiniDisc, ADAT and DA-88 compatible technology. Others begin and end with a nonexpandable hard disk, offering only limited recording time.

Fostex has taken a new tack with its FD-4 Digital Multitracker: let the user pick a preferred digital medium to record to.

With the introduction of the Fostex FD-4, the portable personal four-track recorder has grown up and is living large in the computer age.

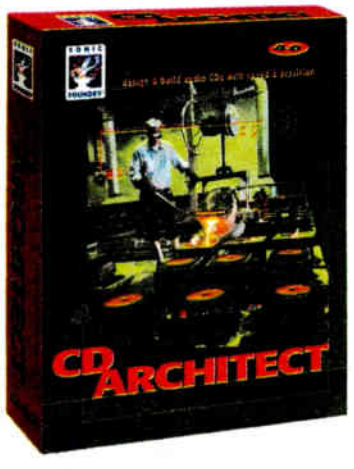
Fostex FD-4 Digital Multitracker

Valid reasons

The FD-4 Digital Multitracker records to a built-in 2.5-inch IDE drive or to a commercially available external SCSI drive — such as a common Iomega Zip drive or a SyQuest "ezflyer" — where media can be removed and stored.

This is a valid decision. Fostex now gets behind other companies already making Zip- and Jaz-compatible products, such as the E-MU Darwin and Roland VSS digital recorders. Hardware and media compatible with the FD-4 is readily and inexpensively

See FOSTEX page 89 ▶



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World Radio History

STATION SKETCHES

High-Tech Sci-Fi Effects on CD

Sallie Schneider Sauber

Okay, so I may not be the biggest science fiction freak you have met. I really have never seen "Star Wars" and the only episode of "Star Trek" I have ever watched in its entirety featured the fuzzy Tribbles.

I *have* seen "Plan Nine From Outer Space," however. I enjoyed seeing how many cheesy effects I could detect but I suppose compared to Star Wars, "Plan Nine" does not count. Although science fiction flicks offer me little in the way of emotional stimulation, I will give them this: from them have come some of the best sound effects ever produced.

Martians and More Inside the Sound Ideas Sci-Fi Effects Collection

Movies without the movie

Now imagine hearing all the sound effects from a good Sci-Fi flick without seeing any of the pictures. Actually, this is way more exciting than the other way! Especially when listening to Sound Ideas' newest sound effects collection, "Sci-Fi Series 8000."

The whole thing about science fiction for me is that if it is not believable, I am not affected, and if I am not moved by the storyline or the characters, the motion picture is meaningless. I mean, where *did* Darth Vader pick up those threads anyway?

I will bet most people take the sound effects of their favorite flicks for granted. You never see those guys on TV saying, "Gene, the incoming battleship phaser with heavy explosion sound effect was very compelling," or, "Roger, the warped metallic squeaks and creaks really added an element of suspense to the opening scene."

The point is, these kinds of movies are larger than life due to the great images on the screen as well as the sound effects created for them. By themselves, the sound effects carry a lot of impact and can now be used in radio production, courtesy of Sound Ideas.

This little four-CD set comes in a display box featuring awesome graphics and packs a lot of sonic punch. All killer, no filler. In fact, some of the best sound designers in the world were part of this project.

According to project producer and Sound Ideas President Brian Nimens, "We basically went out and contacted the best sound designers, purchased their effects and put them together for this collection."

Some of these names include academy award nominees Randy Thom and David Yewdall, famous for their sound design work in the movies "Contact," "Alien" and "Starship Troopers"; and Alan Howarth, who worked on "Star Trek" movies as well as the series.

Make it real

Creating sounds for science fiction is much more than just banging some wooden blocks or rattling tin foil in front of a microphone, then adding a bit of reverb in hopes that it sounds real enough. Which is exactly why Sound Ideas opted not to start from scratch when the idea to create this library came up.

"Because one single Sci-Fi sound can take days to produce," said Nimens, "we knew that going into the studio to create a library ourselves was an impossible feat."

Whether or not these sounds were actually used in the movies mentioned here is not certain. According to Nimens, "The sounds are raw material that could have been used in some of the pictures."

The project's chief engineer, David Lukezic, took me through the creative process behind an approaching battleship.

"The basis for a big ship coming up is the hum," said Lukezic. "We use a mixture of them, and the best place to get sounds like this is at an electrical or nuclear power plant. The sound of the big motors along with the overall ambiance of the plant is what you want."

Lukezic combines different hums with choral voices and a lot of wind. "Those sounds are then put through a Harmonizer. After tweaking a bit, we finally get what we want. The next step is to put the sounds into a sampling keyboard, pitching them up or down to make it sound as if the ship is coming at you."

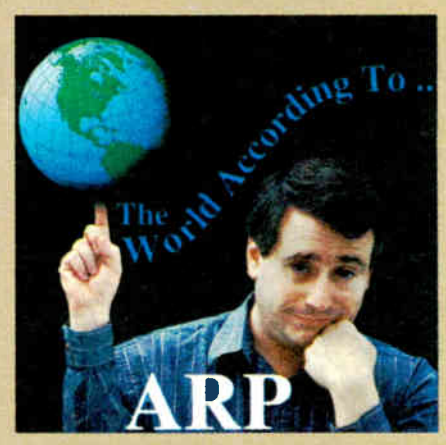
Lukezic and company sometimes do "pitch on the fly," meaning each pitch gets assigned to a key on the sampling keyboard. When that key is played, the pitch goes down. "This is how a lion roar can sound like a huge monster growl," he said.

On the other hand, some Sci-Fi sound

See SCI-FI, page 87 ▶

The Fairfax Follies Roll On: Episode II

Alan R. Peterson



It is now one month into the WEBR Cable Radio construction project in Fairfax, Va., and we appear to be moving along reasonably well.

In the Sept. 5 **RW**, I confessed my longing to get back into a room and begin doing a new studio buildout. Most engineers around the country must think I am out of my mind, as they are up to their hips in multiple buildouts for one facility, under the gun to have the project completed in time for the next ratings book (or the next owner, whichever occurs first).

In our case, a small group of enthusiastic volunteers have been entrusted with the design and construction of a whole new main studio, with the intent of having it done "around Labor Day." For us, it is not a task, but the chance to build a studio the way we want it and not have it look like a shop project.

Roc and Roll

It is normally at about the halfway point in a project when the exploding cigars go off and the snags are revealed. Ours are not too severe, but they have slowed us down a little.

One has been the reconfiguration of the Logitek Roc-10 console we are using. The former radio coordinator for Fairfax Community Access Corporation (FCAC) sent the company his choices for the board layout, which included a staggering six guest mics for the studio and several incorrect operating levels for some of the studio components.

We ditched the six-mic idea because of expense and the violation of the 3:1 microphone distance rule. The levels required a little more effort.

In the past, a reconfiguration simply meant popping a few Molex connectors or spade lugs off the terminal block and moving them around, rebalancing the L/R levels and tacking down some Dymo label tape showing what the new inputs were. Again, digital technology has changed all the rules of the game.

For the time being, the only way to redo the Roc-10 mixer is to obtain an EPROM upgrade direct from Logitek. We were sent three ROM chips: one to relabel a function on the mixer display, another to change a +4 balanced input to a -10 unbalanced one and another to change relay logic to a new port.

Because Logitek built the Roc-10 mixer in two parts — controller surface and external rackmount audio engine — getting inside to swap the EPROMs meant popping a panel on the studio furniture to get at the engine, rather than climb around a jock to unbolt and tip up the mixer surface to get at the wiring.

The video industry has been using separate controller/engine components for years. With the exception of some early thinkers like Ramko who did it that way back around 1981, I am quite happy that today's console manufacturers are considering this sort of construction.

Although the chip-burning and shipping process took a couple of days to complete, the actual task of pop-and-swap took 20 minutes.

Anyone who has ever looked inside studio cabinetry a few years old knows

See STUDIO, page 88 ▶

Circle (164) On Reader Service Card

World Radio History

WaveLab: Editing Power on PC

▶ WAVELAB, continued from page 85

for effects and plug-ins: Wavelab, Cubase VST and DirectX. There are two ways to apply effects or processing to a file in Wavelab: off line or in real time. In the off-line mode, the operator actually changes the WAV file by calculating the effect into it. Real time works only in the master section and changes the Wavelab audio output without affecting the original file. However, if the PC processing power is not completely up to the task, it is actually possible for real-time changes to permanently alter a WAV file.

Processing options

Off-line processing options include normalizing, gain change, phase invert, reverse, eliminating DC offsets when the center of the WAV file is not exactly at the zero level, fading and/or crossfading with custom curves and sample rate conversion.

It also covers three-band equalization (EQ) with two shelving filters and a parametric mid-band, a chorus, a harmonizer and three additional effects.

The dynamics section lets a producer apply compression, expansion, limiting and noise-gating to the audio. The input-to-output ratio can be changed graphically; a detailed on-screen curve shows the compression response.

One thing I miss, however, is frequency-specific dynamics (multiband compression), which is included in the Sonic Foundry Sound Forge system.

Pitch correction allows the changing of a pitch with or without affecting the length of a cut, depending upon need. It also can do this while preserving the frequency relationship (timbre) that characterize a sound. Similarly, time stretch lets the user change the length of audio without changing its pitch.

Real-time processing takes place in the Master section. There are slots for six serially switched effects. Steinberg includes a limiter, an intelligent compressor and a reverb. A number of third-party plug-ins, some of which are freeware, are available too.

In my opinion, it is unfortunate that the Steinberg programming team missed the opportunity to create an intuitive user interface. Most Wavelab effects appear as rack units, showing pages of written parameters, Page/Parameter buttons and a data entry dial. However, some of the plug-ins have a nicer interface.

For processing a number of files simultaneously with similar settings, it is possible to use *batch* processing. The user can apply the same processing across several files all at once, automate tedious tasks and even compress the resulting files into a zipped archive for easy backup.

Kangaroo and fiddle

One of the best features of Wavelab has become essential to me: an audio database.

I remember I had this great recording of a kangaroo playing the fiddle, but wondered which disk I had put it on. If you too have ever experienced this, you will be pleased to know Wavelab comes to the rescue.

This is the one feature I have not seen in any other editor, and I do not know how I could do without it anymore. The audio database locates a file from any media, then catalogs and sorts the files by name, date, audio type, size, sample rate, bits or other criteria. The database window shows the folder hierarchy on the hard disk or a CD-ROM, the files within each folder and the logical hierarchy.

The database structure is predefined by Steinberg and is easily customized. It is also possible to add keywords to any file, making it even easier to find that kangaroo-and-fiddle file.

Similarly, it also is possible to group files into a logical project. For example, if a sound effect is used on several occasions, it is possible to incorporate it into different projects without duplicating the file into each project folder.

This project feature also can be used to store window settings, allowing the user to stop a project for lunch without having to worry about wasting time resetting the system later in the day. It is a very handy way to keep work organized.

Other features

Wavelab includes some features that may not be necessary in the radio production studio, unless the studio has a sampler. The program can transfer audio as a sample to most samplers either via MIDI or SCSI. SCSI is much faster, but not all samplers support the format.

Users can set the pitch within the keyboard range and define loops. This helps identify segments that can be looped nicely. If all else fails, a *crossfade loop* which changes the data can be created.

For looping what Steinberg calls "those unloopable sounds," the company provides the Wave Equalizer, which drastically evens out level and timbre changes.

These are just some of the features that help set Wavelab apart from the competition. It also includes a host of normal functions, such as CD burning and audio-editing capabilities.

My only quibbles with Wavelab are that the program has a quirky feel at times and I feel that Steinberg should rework its user interface.

The company has a tendency to try to enhance the standard Windows interface. Some people might appreciate that, but it trips me up. For example, when part of a recording is selected, it cannot be deleted with the Delete key; instead, you have to use the Backspace key. But on the other hand, all the keys are customizable so this inconvenience can be dealt with.

Still, after working with Wavelab for a couple of weeks, I think this is a stand out product, especially considering its price. Steinberg seems keen on integrating everything one could need, and I am sure more is to come.

■■■

For information on Wavelab 2.0, contact Steinberg North America in California at (818) 993-4091; Web site www.steinberg-na.com *or circle* ***Reader Service 91.***

Eric Lewis is the owner of "Livingroom, 1 Presume" studios in Wabern, Switzerland. Contact him via e-mail at 100707.2211@compuserve.com

Spaceships, Creatures Abound on Sci-Fi CDs

▶ SCI-FI, continued from page 86

effects are quite a bit simpler than one might expect.

"On the old Star Trek series, the sound of the ship doors opening up was nothing more than the sound of an air gun played backwards," said Lukezic.

The stereo quality of most of these sounds is so good that listening through a pair of headphones would drive any reasonable Martian insane.

Zaps and zings

From lasers and phasers to spaceships and alien creatures, Sound Ideas Sci-Fi 8000 is everything you would need for the perfect radio drama. Production directors will have a heyday with promos, liners, commercials and other imaging stuff.

The lasers, phasers and spaceship fly-bys are great imaging elements. This collection is better than any synthesized laser or sweeper I have used before.

I used a couple of lasers and phasers as accents in a hard-sell spot for a car dealership. Because the effects did not sound like most cheesy synth-generated whooshes, the spot was pretty powerful.

There are several very effective ambiance tracks, everything from ghostly howling straight from a bad dream to the steady howling of a cargo bay from a spaceship larger than Athens, Ohio.

After listening to a few tracks of this library, I fear there just might be a "Skullasoraus" lingering in the midst of the woods behind my house, or that the "Pit Creature" at some point will certainly wander upstairs from the depths of my basement.

Sound Ideas' Sci-Fi Series 8000 contains sounds much larger than life, amazingly believable and like nothing you have ever heard before. In the right mood, they might be enough to make you turn your head to look behind ... just to be sure. Enjoy!

■■■

For information, contact Sound Ideas in Ontario at (905) 886-5000 or circle ***Reader Service 117.***

Sallie Schneider Sauber is the production director of WATH(AM)/WXTQ(FM), Athens, Ohio.

Circle (190) On Reader Service Card

World Radio History

Cable FM Studio Coming Along

▶ STUDIO, continued from page 86

how wiring and cabling tends to multiply if left by itself. In the current WEBR studio, the equipment turret at the jock position contains a Gentner phone interface, three CD machines with remote interface, a pair of DAs, a DAT machine and an air return FM tuner.

As the demands on equipment changed over the years, new gear was brought in and old gear simply clipped free and removed. You could knit a bed quilt with the amount of cable behind the rack: unbundled, unlabeled and undocumented in the studio operations manual.

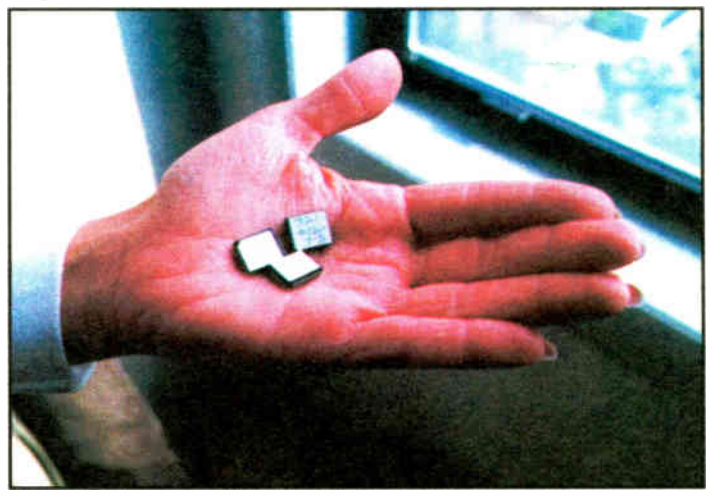
AC lines run parallel to audio cables and outlet strips are tacked up wherever there is space. In some cases, the cable used is essentially budget mic cord with extremely leaky copper-braid shielding.

In the new room, the decision was made to use the digital capabilities of the DAT and CD machines. Four coaxial S/PDIF cables replaced yards of shielded twisted-pair. Adhesive Rip-Tie fasteners bundled cables to each side of the cabinet: AC on one side, audio and machine logic on the other. Plain, clear labeling will help future engineers to figure out just what we did way back in the days of '98.

Steve Lampen at Belden Wire and Cable heard about our volunteer project and gifted us with 200 feet of AES/EBU digital twisted-pair cable. The specs he provided showed this was the stuff to use in a digital plant, but is an outstanding performer for analog audio too.

Someday, somebody at WEBR will take the studio in an all-digital direction, and when that happens, he or she will find a digital infrastructure already waiting for them inside the cabinetry.

By the way, the digital revolution has brought with it another new innovation: D-Sub connectors for audio ins and outs. These are the same 9- and 25-pin trapezoidal connectors found on the backs of computers. All audio sources in the WEBR studio enter the Logitek audio engine on male D-Sub connectors.



The new way to wire a broadcast board: Three EPROMs do it all.

Wiring these little connectors is tedious and it is extremely easy to cause a solder bridge across the solder pins. Liberal use of heat-shrink tubing and a fine-point soldering iron — as well as abstaining from caffeine during the process — keeps connections well-isolated.

Oh yes, the cabinetry. As I stated previously, there is something quite satisfying about drilling holes in expensive furniture that somebody else owns. Just be sure the holes are the correct size.

Wooden you like to know?

When the original plans went out to the folks at Spacewise Broadcast Furniture in Arizona, the diagrams included a cutout for a pair of turntables and a club-style deejay "scratch" mixer for anyone wishing to do a mix show. We were assured by the radio coordinator at the station that the measurement for the holes were 100 percent correct, so off went the plans.

When the tabletop arrived, the holes were too small.

The mixer spec sheet did not take into account the added distance of the phono plugs sticking out of the rear. Nobody stopped to notice the turntable bases were tapered and were wider in the middle than at the rubber-footed bottoms. The old axiom of "measure twice, cut once" was proven once again.

FCAC Board Member Dick Banules came to the rescue with a small router and a gouge to trim away some wood where the phono plugs would be. A nearby business that manufactures bars and entertainment centers generously sent a fellow over with a huge plunge router to really kick up some dust.

By the way, it helps to have air filtration or ventilation running when a project such as this is going on. Spacewise uses a manufactured lumber product similar to thick Masonite for tabletop surfaces, and the brownish taste of the dust will stay with you for hours.

When having furniture custom-built for your operation, insist on long screws with a lot of "bite" holding your doors in place. Fresh out of the box, we had a tilt-down access panel strip its holes when a sudden gust of gravity caught it. If this happens to a relatively careful group of installers, it will most certainly happen to the first jock using the room.

Lift your cup

You may also find larger horizontal laminated surfaces "cupping," or curving slightly out of true following shipping. Likely causes include wet glue warping the laminates during manufacture, self-weight causing warpage or stresses pre-built into the surface that settle out when assembled.

Highway bridge plates and poured concrete panels are built in this manner, with some cupping in them. Their own weight settles them out horizontally when placed in position.

In our case, we left the console work surface horizontal for two days before mounting it to the cabinetry beneath. By then, much of our cupping had evened out.

Messy but Functional: WEBR Under Construction

Much in the style of computer furniture, we opted to cut round holes in the top surface and send mic cables down through decorative grommets with caps. This way, we were not locked into having four XLR plugs on the top surface and had the option to send whatever we wished down through the hole as part of future growth.

But did you ever try to find those grommets anywhere? Office stores do not sell them separately and they watch you like a hawk if you try to pry some off the floor models ... don't ask me how I know that.

Grommets, and being foiled by my own black-box wiring job ... the next time we get together at WEBR.

Circle (216) On Reader Service Card
See Us At The NAB Radio Show Booth # 645

World Radio History

Fostex Deck Uses PC Hardware

▶ FOSTEX, continued from page 85

available at any computer chain store in the nation and is easier to locate than the Data MiniDiscs used in MD-based multitrack recorders.

The FD-4 mixer includes three-band EQ with sweepable mids. Inputs can be routed to mono Aux 1 or Aux 2 jacks for effect sends, returning in stereo at the Master fader strip. All volume faders are short-throw types.

The transport section includes all Play, Wind and Record buttons; the Record Track arming buttons; editing and punch-in keys; and a data/scrub wheel. The wheel scrubs for edit points, sets vari-speed values, titles each recording project and changes settings in the FD-4's Setup mode.

The wheel advances audio on the sub-frame level and can be nudged right up against the announcer's breath or tongue click. The FD-4 scrub feature works like a paused CD going *"na-na-na,"* rather than the *"murp"* of analog tape.

For all the work it must do, the rotary encoder wheel lacks a serious feel. Anyone who has used a weighted scrub wheel, such as on the Fostex Foundation or 360 Systems Short/Cut, will wish for something more substantial here.

For my test, I recreated a recording I did ages ago on my original personal multitrack cassette machine.

My old rackmount Tascam 234 Syncaset deck helped me produce about eight years of radio bits and spots and some freelance narration tracks at home. It has since been retired, but the comparison intrigued me.

Even in Normal mode (32 kHz with Digital Audio Acoustic Coding compression), the Fostex FD-4 gave me a dead-quiet, good-quality recording. Equalized audio on the Fostex FD-4 was comparable to what is found on many small mixers and personal recording devices today. For those who may not know, EQ stages on most portable multis are analog circuits, completely outside of the digital process, so the complaint of "it sounds digital" may only be a subjective reaction.

Hush up and drive

The internal IDE drive and the SyQuest drive made little whine or chatter, making it possible to use my Sennheiser 421 mic within six feet of the FD-4. I did note the SyQuest drive making a peculiar whistle during spin-down and before ejecting the disk.

The one thing about digital recording is its relentless accuracy: if you have something humming or buzzing, it will let you know as it did me, with a badly shielded electric guitar.

Then there is the editing power that comes with digital recording. The FD-4 Erase function allowed me to remove the hum between passages, down to the sub-frame.

The Paste feature let me copy a passage to the FD-4 Clipboard and repeat it 99 times. This trick is useful in stretching out a music bed, but is limited by available drive space.Previous edits can be changed with the Undo and Redo features.

Do four tracks seem a little limiting? Back in the Stone Age, we used to bounce tracks and ping-pong them in small sub-mixes, just to open up more space to record on. The FD-4 lets you do this very well, but check your settings before you do: you don't want to find out you applied the same corrective EQ twice or even three times to the same track.

Product Capsule:
Fostex FD-4 Digital Multitracker

Thumbs Up
- ✓ Uses conventional computer storage products
- ✓ Versatile editing features
- ✓ Optical digital connections
- ✓ XLR and quarter-inch inputs

Thumbs Down
- ✓ Time display small
- ✓ Scrub wheel feels flimsy
- ✓ Manual needs changes

For more information contact Fostex Corporation in California at (562) 921-1112 or circle **Reader Service 143.**

The FD-4 includes a pair of optical S/PDIF digital ports on the reverse panel. You won't find that on many other portable multis.

Audio can be moved in and out from DAT, CD or other digital storage medium. Fostex gives a copyright advisory in the manual, warning against using copyrighted CDs or videos in a direct digital transfer process.

Finale

Fostex made personal digital recording simple through its use of commonly available computer hardware. A ten-pack of ZIP or SyQuest disks can be used for both your computer and an FD-4, if you happen to own both. Data MDs will likely stay on an MD multitrack — for all it has going for it, I do not personally know anybody who uses Data MD on their computers.

Your choice of media and record mode will affect how much disk time your FD-4 will give you. Squint at the display, because the clock numbers are quite tiny.

The manual is in need of a "Quick Start Up" guide for users with a working knowledge of multitrack machines. The index also needs to show a lot more topics.

Finally, Setup mode may be quite daunting. An odd football-shaped pixel display represents functions that can be altered in some manner. Without the manual, you may accidentally change a setting that will come back to frustrate you later.

Still, a tip of the hat goes to Fostex for this one. The FD-4 is a neat product.

SHORT TAKE

SAWPro: 32-Track Recording on PC

Alan R. Peterson

The original Software Audio Workshop (SAW) four-track editor from Innovative Quality Software quickly became a radio favorite. It could run on a 386-40 PC and did most anything a reel machine could. The latest incarnation, SAWPro ($950), makes use of contemporary PC hardware and processor speeds to deliver up to 32 mono or stereo tracks.

SAWPro requires Windows NT, 98 or 95, a Pentium II-266 or better with 128 MB RAM and one or more Windows-compatible soundcards. For maximum disk read/write speeds, Ultra IDE or ultra-wide SCSI hard drives are recommended.

SAWPro operates at 16-, 20-, or 24-bit resolution and supports up to 12 stereo sound cards, for up to 24 physical inputs and outputs. As in previous versions, SAWPro automatically converts 16-, 20- or 24-bit mono or stereo files of any sample rate, playing them in sync and in real time.

The use of several soundcards allows SAWPro to perform simultaneous multi-channel recording, similar to a multitrack reel recorder. Each track armed for Record automatically lays down mono audio data and up to 24 soundfiles can be written to disk simultaneously.

For multiple-take recording, SAWPro features a "KeepTake" button. When clicked, all data belonging to the recording is appended with a Take Number and the Sample Position insertion point.

The SAWPro environment maintains the feel of earlier versions, including the ability to control volume levels and pan positions for each track with pop-up faders.

Mix changes can be programmed non-destructively, one at a time, and played back without modifying the original soundfile. Mix curves can be moved, copied, expanded and compressed. Level and pan settings can be programmed live during playback.

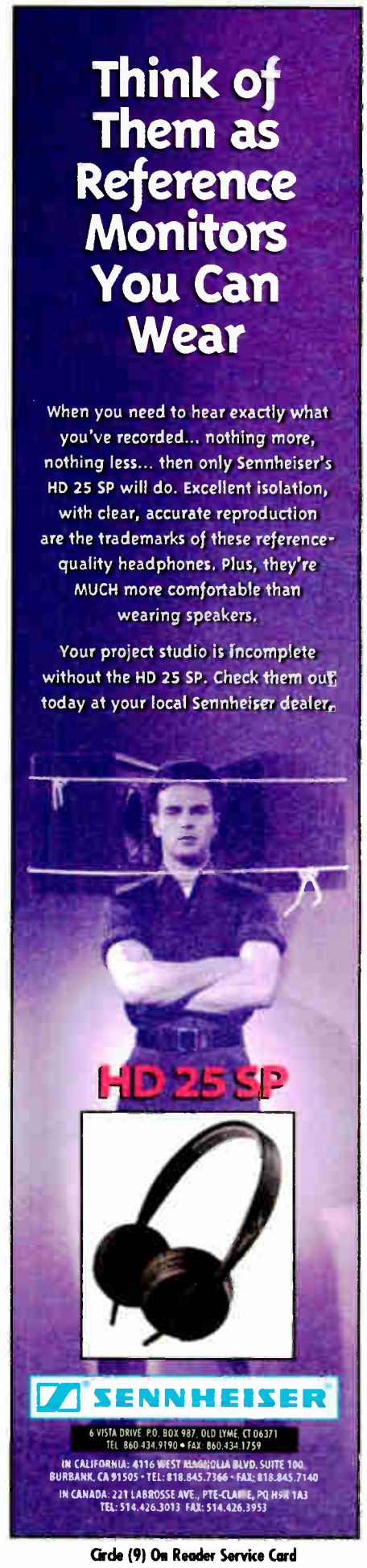
SAWPro features non-linear, non-destructive editing with up to 99 Undo levels. Software-emulated DSP functions provide parametric EQ, noise gating, peak limiting, compression, delay effects, vari-pitch, vari-speed and reverse audio.

The new 24-bit recording format is beyond most Soundblaster cards, so IQS recommends using the Event Electronics Darla, Gina or Layla audio interfaces; the WaveCenter from Frontier Design Group; the DIGI 32/8 Prodif Series of interfaces from RME Intelligent Audio Solutions or the Sonorus StudI/O.

Because PCs generally do not have enough available slots or interrupt requests for discrete stereo cards, use of cards with multiple I/O is the only option for multi-channel recording.

SAWPro is only available from IQS, and a full-featured demo (limited to one minute of recording) can be downloaded from its Web site. The site contains information on optimizing hardware and configuration settings to run SAW programs at top efficiency.

For information, contact Innovative Quality Software in Las Vegas at the company Web site *www.iqsoft.com* or circle **Reader Service 14.**



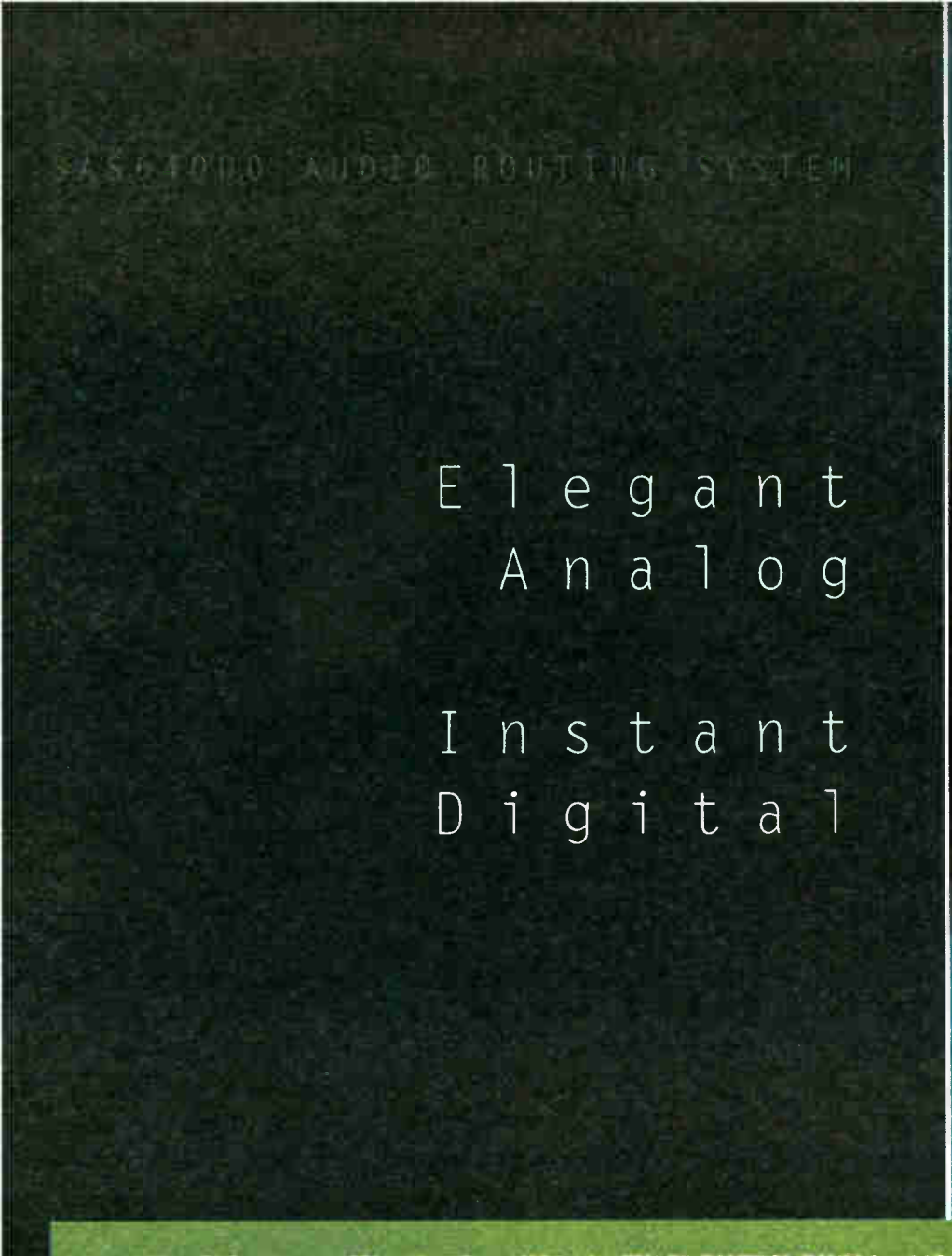
Circle (9) On Reader Service Card

World Radio History

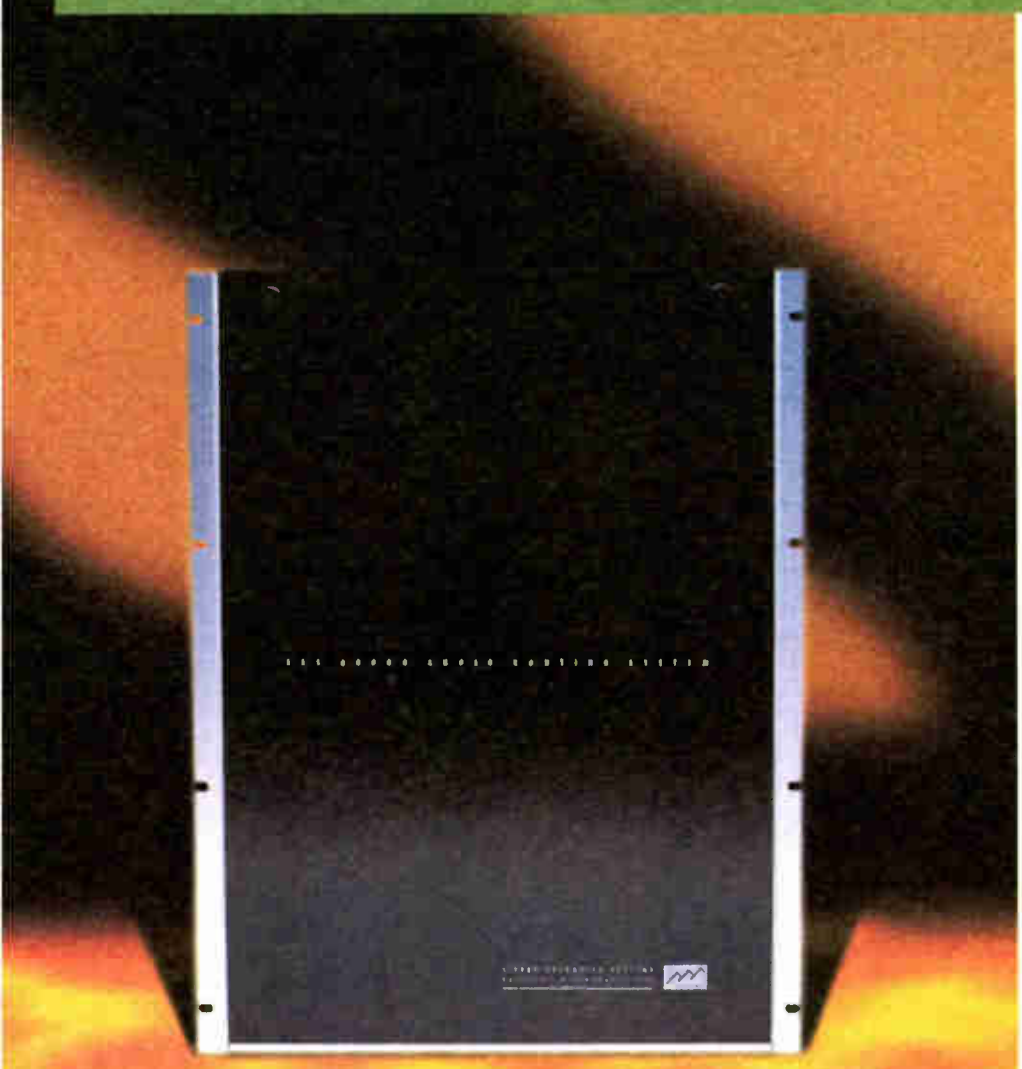
SAS 64000 AUDIO ROUTING SYSTEM

Elegant Analog

Instant Digital



256 X 256 LARGE • MONO/STEREO • WIDE VARIETY OF CONTROL PANELS • 118dB ANALOG DYNAMIC RANGE • DISTRIBUTED MULTI-PROCESSOR ARCHITECTURE



If the migration to digital is in your future, then this is the route to take. Introducing the large size, big performance analog router that also speaks fluent digital. A true hybrid that allows you to scale the number of analog and digital ports as needed, now and in the future. And even better, the SAS64000 creates a forward path to AES/EBU digital audio without creating analog obsolescence.

This means you can mix your analog and digital I/O in the same router frame. Go direct analog to analog, or digital to digital. Or mix it up with 24 bit conversion analog to digital and vice versa. Either way, this unique architecture sports flawless signal integrity and non-blocking flexibility.

And it's wonderfully simple, just plug in our new digital port expander and that's it. Welcome to digital! —co-existing richly with analog in the same framework.

There's lots more to tell. Call us: 818 840 6749. Fax us: 818 840 6751. E-mail us: sales@sasaudio.com Check the Web site: sasaudio.com And of course, snail mail: 2112 North Glenoaks Blvd. Burbank, California 91504 USA

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Circle (64) On Reader Service Card

World Radio History

SPECIAL REPORT

Equipping Your Talk Radio Studio

by Thomas R. Ray III

The author is the director of engineering at WOR(AM) and the WOR Radio Network in New York City.

Studio telephone systems have come a long way since the days of tapping the speaker on the telephone company's speakerphone — which was never supposed to be done in the first place.

For "phoners" between records in a music-intensive format, the old speakerphone tap worked out quite well. So did tapping the phone line. Quality was not of paramount importance, as the object was simply to get a quick request or dedication from a listener on the air and get back to music. In the world of talk radio, however, quality of the phone calls is a priority. We live and die by audience participation.

Today, there are several options available to equip a studio for talk. Quality goes from Yugo to Cadillac, and costs range from bargain basement to budget busters. The basic components include a "call director," to allow the talent to switch calls; a hybrid, to interface the console to the telephone company; and a computer in the control room running a basic word processing program, or one of several specialized call screening programs to allow the producer to communicate who is on what line to the on-air talent.

Ken Dolan selects the next caller on WOR Radio Network.

To simplify the process of getting studio audio to the hybrid and therefore to the caller, your console should be equipped with at least one "mix-minus" bus dedicated to feed the hybrid. Ideally, two mix-minus buses should be available for conferencing callers.

Of course, if you're not in the No. 1 market in the country and are under severe budget constraints, you have to get creative. I know of one national radio show host who utilizes a Radio Shack speaker phone in his home studio. He has a mic directly in front of the speaker for call audio, while he talks into his normal mic. Some stations use the old speakerphone system. Depending on the circumstances, there is no "one-size-fits-all" solution to studio telephone systems for talk. The trick is to keep the operation of the system as simple as possible, yet have the system remain flexible for various situations.

WOR(AM) is an old facility. Being a typical radio station, we have a hodgepodge of telephone gear. It is all built around an old 1A2 phone system. This system serves both WOR and the WOR Radio Network. There are three banks of five lines each coming into the 1A2. Any bank can be switched to any studio/control room combination at any time. This is done to separate phone numbers for various shows. Would you want to call Dr. Joy Browne for advice and end up telling your problems to Joan Rivers? Probably not!

We have three studio/control combinations. Each talent studio has two Telos 10 digital hybrids, with custom button panels built into the Pacific Research BMX-III console. Each control room uses a standard 1A2 phone as

See TELCO, page 95 ▶

USER REPORT

Assistant Producer: Auto-Pilot of Radio

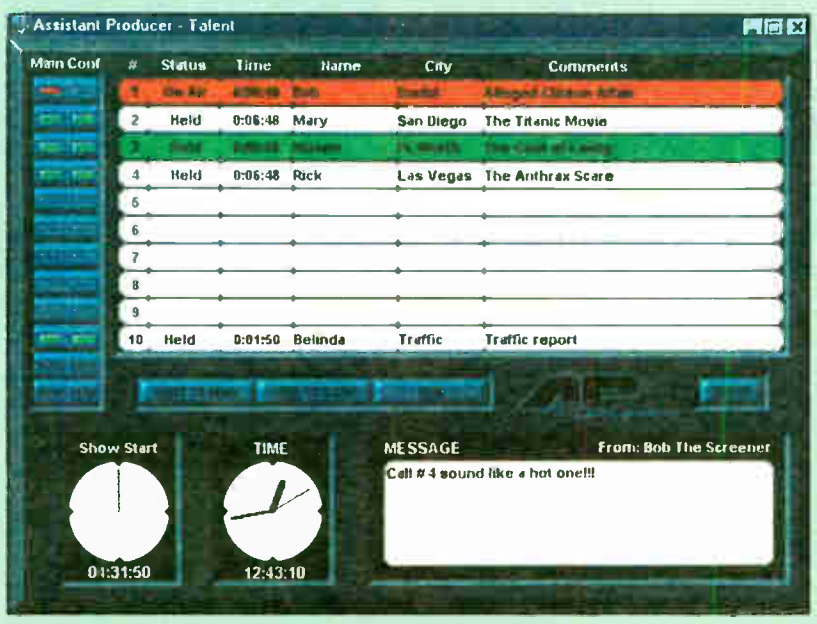
by Scott Fenstermaker
Assistant Chief Engineer
WFBQ(FM), WRZX(FM) and WNDE(AM)
Indianapolis, Ind.

In the increasingly popular world of talk radio and wacky morning shows, the on-air telephone system is the link between the studio and the listeners.

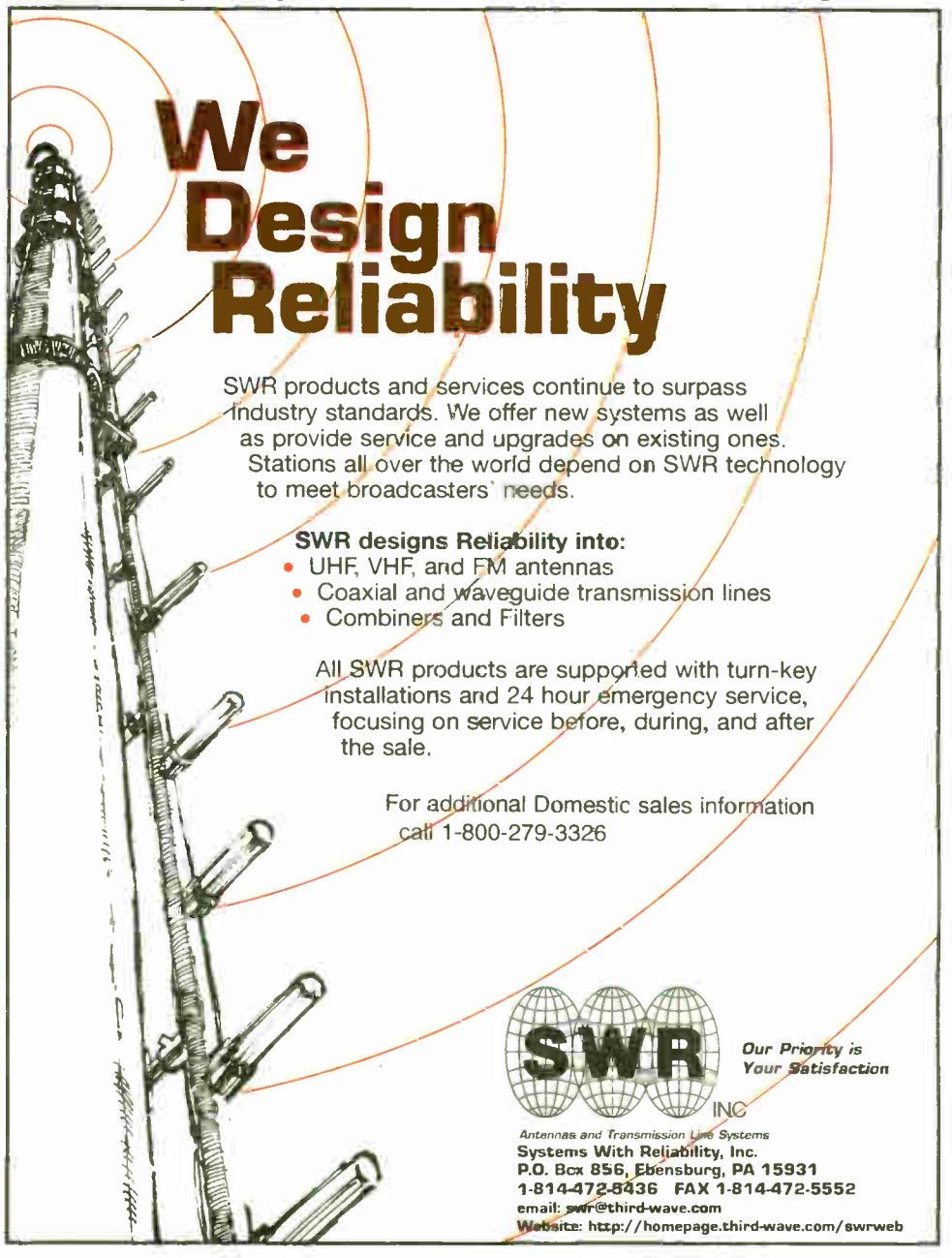
While the standard POTS line has not changed much over the years, when and where our audience calls from certainly has expanded — calls from cars, trucks, boats, grassy knolls and even airplanes are no longer uncommon.

In our building, we produce several sports-talk shows, as well as the nationally syndicated Bob & Tom morning

See PRODUCER, page 92 ▶



Assistant Producer Software From Telos Systems



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See Us At The NAB Radio Show Booth # 1352

World Radio History

USER REPORT

TS-612: A Better Way to Talk

by Jim Gilmore
TNN/CMT and CBS Cable
Nashville, Tenn.

If you have been in the broadcast industry for some time, you have dealt with telephone audio. You have experienced the difficulty in extracting clean signals from POTS lines, not to mention the arduous task of configuring a system for live telephone talk shows using multiple lines.

New tools, like the Gentner TS-612, have made telephone-related production much simpler and technically superior.

If you have never experienced telephone audio prior to the days of auto-nulling analog or digital hybrids, or when talent/operator-friendly switching systems and digital profanity delays became available, allow me to reminisce about the way it used to be. This may give you a true appreciation of the features the Gentner TS-612 offers.

History lesson

The first telephone audio coupling device I remember was the familiar gray box provided by Ma Bell. The quality was marginal, with an infernal "beep" every 10 seconds to let the caller know a recording was being made. It was annoying at best.

A better device was imminent. Many of us constructed our own hybrid networks with various filters and line-seizing circuits. These networks required constant re-nulling. We even went as far as to design a duty-cycle FET switching device, which time-shared the Caller and Send audio. The distortion figures were not impressive, but were suitable for AM radio.

That still left the problem of addressing multiple lines and, if one dared, conferencing and audio-on-hold. It was necessary either to construct a switching system or modify a key system. We generally used a Bell 1A2 unit.

Then came profanity delay, originally done with a modified Ampex 351 tape deck. Two 351s could be set a certain distance apart and at a specific tape speed for a desired delay interval. The board operator generally had the responsibility of switching the delay when required.

Setup for a talk show was always a sizable task and the staff needed retraining each time it was used. It was a constant job to maintain the gear, keep it nulled, check the switching, change switch lamps, make new tape loops and so on.

Were those the Good Old Days? I don't think so.

Good new days

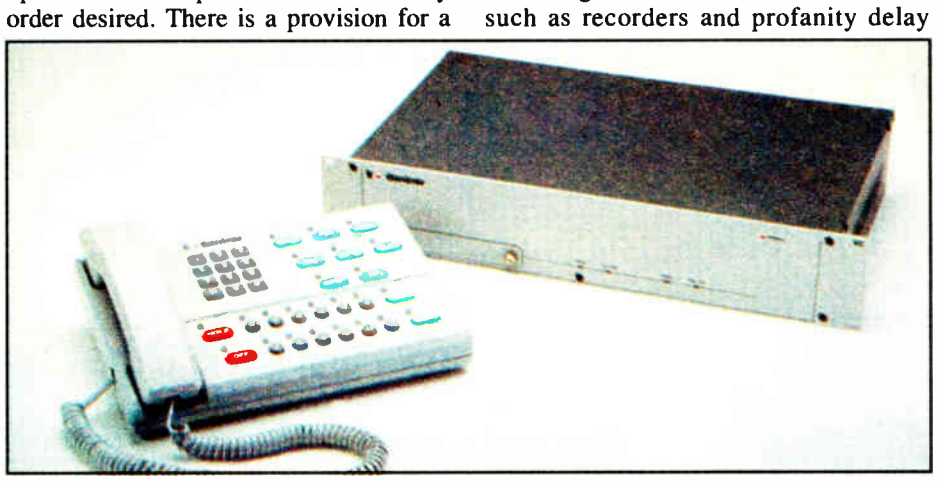
When we were to configure a system for TNN, self-nulling hybrids had just become available. We purchased one and integrated it into, of all things, another modified 1A2 key system. When the first Gentner Digital Hybrid became available, we replaced the original hybrid and noticed an immediate improvement in everything but the switching.

One day we heard about "this new box that Gentner has on the market." We bought one after another until we finally expanded the units to 12 lines and updated the firmware in our older ones.

So what does the Gentner TS-612 do? Mainly, it makes setting up and running a talk show, managing a media tour, remotely producing a session, or just recording a simple actuality a lot easier and much more predictable.

The TS-612 will switch up to 12 conventional POTS lines. It allows conferencing of up to four lines at once, provides On-Hold audio for waiting lines, and allows the host, co-host or board operator to manipulate the calls in any order desired. There is a provision for a screener to ready the calls for air, freeing the host of the uncertainty of who is on what line. The screener is not normally allowed to switch the call to air, but this is an option (with special programming) in the new firmware.

Additional features of the 612 system are plentiful: a protected mode for a VIP guest, which makes it impossible to accidentally disconnect the VIP; the ability to use the TS-612 in a split-studio configuration (two shows at once); summed host and caller audio for recording; control of external devices, such as recorders and profanity delay units, from the control surface; a choice of internal generation of mix-minus or external mix-minus, multi-color LED illuminated soft keys, which by their color and flash rate, give the host and screener immediate indication of the status of the associated button, and an optional package called Screenware.



The TS-612 from Gentner is a popular phone system for talk radio.

The Screenware package gives the screener the ability to convey any information about every caller on every line. Line status is viewed via video display and callers can be routed to the show host and others involved in the production. We have found this to be a very handy feature, avoiding the hassle of constantly writing caller line information on slips of paper, or having to use headsets to get this information to the proper places.

It seems that the people at Gentner have designed and built a system which covers just about any situation in broadcast and production telephone interfacing needs. But there are two areas that I would like to see addressed.

First is an improved and more comprehensive way to distribute caller line information data to a remote site. The ability to send limited information via modem is available, but could stand some attention. The second area would be the addition of digital inputs/outputs to and from the console.

The TS-612 has been and continues to be a reliable and time-saving device, with excellent technical support. Overall, I feel it is a great product.

■ ■ ■

Jim Gilmore is an audio engineer.

For more information, contact Gentner in Utah at (801) 945-7730; fax (801) 977-0087 or circle ***Reader Service 36.***

A Strong Assistant Producer

▶ PRODUCER, continued from page 91

show, where specific phone caller information is critical to the flow of the normally fast-paced shows.

Steve Church and the folks at Telos Systems have been building some fine telephone interfaces for years. The problem has been getting that important caller information from the producer to the show host in another room or at a remote.

We have tried a couple of generic call screener programs with mediocre results. These programs required the producer to manually select the telephone line in use, enter and delete caller information, and to keep a close ear on which line or lines were free or in use at any given moment. "Call on-air" timers were optional in one program, so you had to remember who dialed in first.

Telos has virtually eliminated these problems with their PC-based Assistant Producer call screening software.

Assistant Producer not only allows caller information to be passed between multiple studio/producer terminals, but it allows control of the Telos 1A2/Hybrid phone system itself. Additionally, it tracks the status of all calls, whether ringing, on hold or on the air. The Assistant Producer software runs on a Windows NT network, or any network OS which supports TCP/IP traffic.

Easy as 1,2,3

If you have ever set up a network workstation, setting up Assistant Producer is a breeze. The Assistant Producer system consists of two pieces of software: Assistant Producer, the client software; and TeloServe, the server software. TeloServe runs on a 586-133 PC with Windows 95, 98 or NT (or better), and a direct null-modem connection to the RS-232 port on the Telos 1A2, 1X6 or Direct Interface. Multiple interface units can be connected to the server if you use a large number of incoming phone lines.

After assigning the TeloServe server an IP address on your network, the TeloServe software is installed by answering a few questions and assigning an alphanumeric name to each Telos interface unit attached. The configuration of TeloServe is straightforward; assign user-friendly names to each line, indicate which available lines are to be used by Assistant Producer, and indicate the computer COM port that is being used for each interface unit.

In the background

This PC server can also be used to run the Assistant Producer client software; however, the TeloServe program must be running in the background at all times Assistant Producer is in use. All other workstations used for call screening need only run the Assistant Producer client.

The Assistant Producer software is installed on each workstation where it will be used — a 486 at 100 MHz or better — and must be individually configured at each machine. Once Assistant Producer knows which IP to look for, it searches the network for a TeloServe server, allowing one producer's area to serve multiple air studios throughout the day simply by entering the appropriate IP address. Other options let you customize the various on-screen caller information fields and configure other useful features to smooth the flow of caller data from producer to show host.

Each Assistant Producer client can send messages to the group via a text-input box at the bottom of the screen. The status of each call, along with any information input from the producer or talent, is displayed on all screens and automatically updated as the status of each line changes based on data from the 1A2 or other Telos interface.

You can also run the Assistant Producer client software on a laptop computer and connect remotely to the TeloServe server through the Internet or via dial-up access to your network. This allows the acquisition of caller information while at a remote broadcast site. We use this on our many out-of-town broadcasts for the Bob & Tom morning show, and we can use the text message feature for real-time communication between studio and remote.

As with their other products, Telos offers strong support for the Assistant Producer, and they continue to improve the product through software upgrades.

The only flaw in the system is the necessity to keep the TeloServe program running in the background. Either accidentally or through ignorance, someone will invariably close TeloServe and disable the Assistant Producer Program. It is not a major flaw but just enough of an annoyance to the air staff to be worthy of a mention, and a little note to the jocks goes a long way in solving the problem.

■ ■ ■

For more information, contact Telos Systems in Ohio at (216) 241-7225; fax (216) 241-4103 or circle ***Reader Service 10.***

World Radio History

USER REPORT

JK Audio: InLine Phone Reporting

by Lee Shephard
Vice President
News Broadcast Network
Falls Church, Va.

Ask almost any radio reporter to name his or her favorite piece of equipment. Chances are, it is a "box," custom-made by a station engineer that allows the reporter to feed tape-recorded stories over the telephone. The possibility it may be ugly with loose wires hanging out the back makes no difference to the reporter, as long as it works.

It is strange to me that, in all the time radio and telephone have been going steady, equipment manufacturers have not fallen all over themselves to design a simple, inexpensive magic box of their own. Newspeople crave products that assist in feeding stories over the phone without having to put on headsets, plug in a mic or add a preamplifier.

I believe that long-awaited box has finally arrived in the form of the INLINE PATCH from JK Audio. On the market since January, this analog phone hybrid is about the size of a paperback novel, with features that will appeal to radio and TV news operators, audio-visual and multimedia producers — basically, anyone who wants to record or send audio over the phone.

Lee Shephard in His Home Studio

It took longer than it should have for me to decide this device was what I needed. The enclosed instructions were a bit unclear, perhaps because the device does so much. But I sure know what hum is, and right out of the box, the INLINE PATCH was giving me about 20 dB of steady, uninterrupted hum.

Having just gone through three months of finger-pointing with a computer sound-card company, I was surprised and pleased when the JK Audio representative said, "Yes, I know exactly what the problem is. That was our fault. You got one of the early units that contained a wiring mistake. We thought we had caught all of them, but apparently we missed yours. Send it back and we'll correct it and ship it out the same day."

The unit came back minus the hum, and I started using it on the road and as a backup in the studio. It performed very well in both situations.

An equipment problem in the studio required that the INLINE PATCH be routed into the console for over two weeks. The problem was solved, but the INLINE PATCH stayed. I liked the sound better than on the old unit and discovered how easy and seamless it is to use.

With the INLINE PATCH connected to the console via the XLR jacks and, with the phone connected to the front of it, I can establish contact with the newsmaker and conduct the interview over the phone without missing a beat. Both sides of the conversation are recorded with equal balance, although this feature can be fine-tuned with the separation control.

Note that doing it this way allows the phone handset mic to become part of the on-air equipment. This is both good and bad. I concentrate much better on the interview if I am not making constant adjustments.

Make sure you are using a good, name-brand phone. Keep in mind that the phone will color the sound of your voice, but not that of the newsmaker. The signal from the incoming side of the line is not filtered by the phone, the way it is with a handset interface.

Using the INLINE PATCH this way really suits my interviewing style, but there are times when I want to isolate the soundbite from distracting noise in the studio. The separation control balances the incoming and outgoing signals nicely, but does not completely isolate the incoming voice. When that feature is needed, a toggle switch on the front allows you to seize the line, hang up the phone and work through the console as if a normal phone line hybrid coupler.

The eighth-inch mini-jacks in the back allow you to feed a stereo signal into a recorder or soundcard with the caller on the left channel and your voice on the right. Another mini-output jack combines the caller and your voice on both channels. A third mini-jack allows you to play soundbites into the telephone line, while you are talking on the phone. These desktop features make the INLINE PATCH very appealing to newsrooms. Its outstanding professional sound is the icing on the cake.

■■■

For information, contact JK Audio in Illinois at (815) 786-2929; fax (815) 786-8502 or circle ***Reader Service 62.***

News Broadcast Network is a provider of corporate audio materials. The author has worked as announcer, newsman and personality for WTOP(AM) and WMAL(AM) in Washington.

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World Radio History

USER REPORT

Audio OnLine: KPWR Caller Power

by Tom Koza
Chief Engineer
KPWR(FM), Los Angeles

For the past several years, KPWR(FM) has offered its audience several listener information services via phone line.

We often have information about "Power Listener Parties" and other local music events, as well as our address and driving directions to KPWR, contest rules, office hours, and information about how to make a music request.

In the past, we always used "orphaned" cart machines with phone couplers to make the system work. But as the maintenance cost of these tired cart decks got significant, I figured there had to be a better way.

In addition to retiring the old decks, I wanted a system that would be more user-friendly. Instead of a different phone number for each message, listeners should need to call *only one* phone number and then choose from a menu of messages. The product that met these requirements was Audio OnLine, by Henry Engineering.

An overview

Audio OnLine is a PC-based telephone information system. Henry Engineering supplies software and a special modem card that can be installed in a PC's spare ISA slot. The modem is not actually a data modem, but a "call-processing board" which provides all interfacing to the telco line while handling the D-to-A conversion of the audio files stored on the computer's hard drive.

According to the manufacturer, the DOS-based Audio OnLine will run in any 386, 486, or 586 series PC.

Audio OnLine can be ordered to support a minimum of two phone lines up to a maximum of 16. KPWR ordered the eight-line system. The software, contained on two floppies, was installed in our 486 PC in only a few minutes. The two 4-line modems took about 10 minutes to drop into the slots in the computer.

We recorded our audio messages into the system using the optional Line Simulator, a device that simulates a phone line to load audio directly into the system without using an actual telco line. We set up our system to greet callers with an opening menu describing the various informational messages that can be selected by the caller.

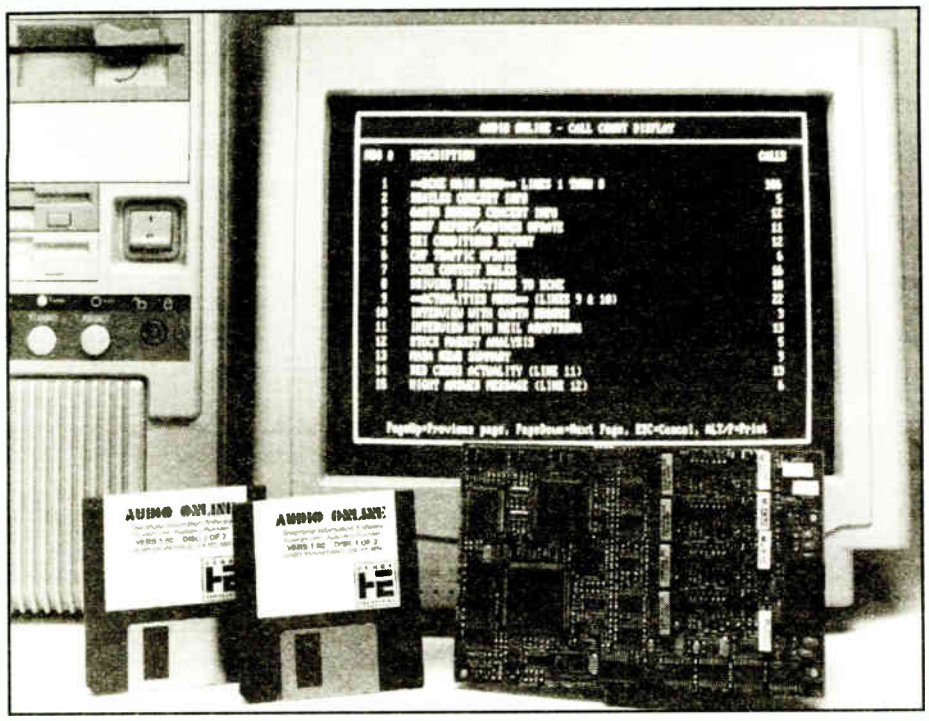
After loading the audio, the system runs by itself. It answers the call, plays the menu and then lets the caller select which message or messages to play.

The system lets you enter an on-screen text description of each message so you can keep track of which message is which. The screen shows a "Call Count" for each message, so you know how many hits each message receives. The screen also tells which message is playing on each phone line.

Versatile bonus

One Audio OnLine feature we found useful is its ability to assign different phone lines to different messages.

In our eight-line system, seven lines are answered with our Main Menu, but the eighth line is used for the "night answer" line of our PBX. After-hours calls to our business line get a special message that is not part of the listener information menu. Audio OnLine can be split in various ways, so that any line is answered with any message or menu.



The Audio OnLine System from Henry Engineering is a hit with callers.

Our Audio OnLine system has been operating for almost two years now, averaging a few thousand calls per week. With virtually no maintenance costs, it is a definite improvement over the old cart decks we were using to accomplish nearly the same thing.

Callers like to listen to the message they want, without wasting time hearing something they do not wish to hear. Because audio is stored on the hard drive, messages always play from the beginning, and there is no re-cue time; yet another advantage over the old cart system.

The software was recently updated to Version 4.0, which allows nested menus and adds a few other enhancements. We have never had a case of someone hacking into the system because the Recording Message function is double-password-protected.

Audio OnLine is a great way to provide a valuable public service with a minimal investment of cash and employees' time. It has worked well for KPWR.

■ ■ ■

For more information, contact Henry Engineering in California at (626) 355-3656; fax (626) 355-0077 or circle ***Reader Service 88.***

SPECIAL REPORT

WCRB(FM) Expands With Intraplex

by Lee Feldman

During the summer months, large numbers of Bostonians head for Cape Cod. This summer migration of classical radio listeners to the beaches prompted WCRB(FM), a commercial classical station in the Boston metro area, to consider an acquisition of a Cape Cod-area station to expand its market reach.

When WCRB completed the purchase of WFCC-FM, a Class B classical station in Brewster, Mass., WCRB Chief Engineer Rob Landry faced a challenge. To increase operating efficiency, management wanted a single transmission infrastructure to allow individual programming for both stations to be produced in and originate from Waltham, while providing support for local sales, marketing and station management in Brewster.

Rob Landry works in the WCRB(FM) studios.

The requirements included program audio transmission capability, as well as telephone switchboard support and remote access to LAN-based business systems for traffic, billing and sales records.

Time to choose

"The mandate from our management was to find a way to operate WFCC on a remote, automated basis, but we were also concerned about the reliability of a solution that was dependent on the public network," said Landry. "We did not want to get into a situation where we could not get programming to the transmitter."

Landry's evaluation of various options led him to select a combination of the Intraplex STL PLUS digital broadcast multiplexer, a digital T1 line connecting Waltham and Brewster, and Scott Studio workstations.

The Intraplex STL PLUS provides a key element by allowing all 24 T1 channels to support telephone and LAN access in addition to a live 24-hour program feed from WCRB to WFCC. The Scott Studio workstations — one for each studio — are used to access music stored on a hard-disk array and to integrate music, voiceovers and commercials into a single feed onto the T1. Programming is then multiplexed to WFCC using four of the 24 T1 channels. If required, the Waltham studios can be switched directly to the T1 channels for live programming.

The local sales and marketing staff in Brewster also uses the T1 to access traffic and sales support systems, which run on a Novell-based local area network in Waltham. Additionally, staff members can use the T1 channels for high-speed Internet access for news gathering and weather forecasts, and to upload and download commercials between locations. Ten or so of the remaining T1 channels are used for these types of data communications.

Transfer is arranged

Voice telephone lines are run over the same T1. Six incoming extensions are available to outside callers to WFCC, connecting them to the main switchboard in Waltham. Calls can then be transferred directly to staff in either location.

"Intraplex has enabled us to accomplish what we set out to do, namely to operate two stations primarily from one location, without adding staff," said Landry. "We've been able to follow our listeners during the summer months, and even build the overall audience for WFCC on a year-round basis."

WFCC was the top-rated station on the Cape during the Spring 1997 ratings period and has consistently performed in the top five in its market.

"The quality and economy of what we have been able to pack onto a single T1 has been central to our overall business performance; the resulting savings from combining traffic have been significant," said Landry. "One of the things we're looking at now is using ISDN service to back up our STL. We're definitely digital converts."

For more information, contact Intraplex in Massachusetts at (978) 692-9000; fax (978) 692-2200 or circle ***Reader Service 114.***

World Radio History

What Next for Studio Telco?

▶ TELCO, continued from page 91

a call director feeding a Gentner DH-22 digital hybrid. Depending on the program, either the talent or engineer switches the calls. It is the engineer's responsibility to make sure that the studio/control room is set up properly to feed the phone hybrids correctly and do on-the-fly conferencing.

The producer uses a basic word processing program to communicate caller information and other items to the talent. In this way, the talent knows who is on what line, and the order the producer wishes the calls to be taken. All it takes is one person to not do his or her job properly, and you have a telco disaster on national radio. It's important for everyone to be in sync.

Moving on up

Besides the old speakerphone taps, one could have used a telephone company hybrid. While the older hybrids did indeed interface the broadcast world to the telco world, it became a gain-riding nightmare on the board for the talent. The return loss of the old hybrid was only 15-20 dB. Once this was combined in the console, the talent mic would sound "phasy." This effect would change from caller to caller, as the phone line impedance would change between calls.

Not one to be between a rock and a hard place, Steve Church, president of Telos Systems, set out some years ago to come up with a better way of doing broadcast telco. What he discovered became the Telos 10, the first digital hybrid.

The main problem with analog hybrids is that they connect to an imperfect telco world. The impedance of the typical phone line is extremely complex, and the simple resistor/capacitor combinations used for balancing an analog hybrid could not filter out the leakage caused by the complex impedances. Church found a way to utilize DSP chips that would constantly analyze the phone line and leakage signal. The DSP chip would continually adjust the impedance of the hybrid, therefore minimizing the leakage audio and allowing the talent to sound like a human being.

In addition to the digital hybrids offered by the likes of Telos and Gentner, several manufacturers still make analog hybrids. I find these hybrids useful in situations where it is not important that the announcer's voice be perfect, such as gathering news actualities.

If you have a digital phone system in your facility, such as an AT&T Merlin, and have wondered how to interface it to the console, you could consider the Gentner Telehybrid. The Telehybrid connects to the handset cord of your telephone. The typical telephone has only 6 dB isolation of send to caller audio at the handset. The Telehybrid effectively increases this isolation.

"The Telehybrid sounds as good as anything we've had in that studio," said Chuck Dube, chief engineer of WDRC-AM-FM in Hartford, Colo. "I certainly would recommend them as the only real choice when interfacing to a digital telephone."

With the station's setup, the WDRC studios have the functionality of the main office system, while not having to maintain a separate phone arrangement for broadcast operations. Dube also said that being in a high RF field, he had to transformer-isolate the inputs and outputs to eliminate the RFI because of the plastic case used. Otherwise, they work out nicely.

Curt Hahn, owner, general manager and morning personality of WNNZ(AM) in Springfield, Mass., has yet another configuration for talk telephone use. Hahn's major consideration for phones in the on-air studio: "Convenience. When you want to go to the phones, you want them fast and easy to put on the air. We even have a speaker tied to our Gentner Digital Hybrid so in-studio guests do not have to wear headphones to hear callers."

WNNZ routs the call-in lines through a Gentner Teleswitch in the studio, and then into its house phone system. In this way, office staff can use the lines when WNNZ is not doing live talk. The Teleswitch disconnects a line from the house system when that line is selected for air preventing someone from picking up a line in use on the air.

Digital service

What I think would be useful is a true digital connection on the broadcast side to telco. Ideally, having digital service at both ends would be wonderful.

Brooks Gibbs, director of technology of Gentner Communications, thinks we will be living with analog on the caller end, "for quite a while. All the typical user wants to do is pick up the kitchen phone and dial family." Brooks sees immediate uses of digital on the broadcast side, like the ability to interface Caller ID with caller-management software, making call screening easier. "A prime example of this would be a crank caller could be blocked out or a contest winner blocked out for four weeks."

When asked about the possibilities of utilizing either ISDN or T1 technology to interface telco to broadcast, both Gentner and Telos responded by saying that, "this is an interesting concept." Both are looking into the feasibility of utilizing T1 and ISDN rather than analog lines in the studio.

"This will be much better for audio quality as it eliminates a stage of A/D conversion and it keeps the studio side entirely in the four-wire domain, so isolation will be much improved," said Church. A hybrid would most likely still be involved, however, as the caller will probably be on an analog line.

No rush

Martin Boysen, president of Innovative Devices, cited reasons all-digital phone services have not caught on. "The reason there hasn't been a large push to digital ... is because we have what works," said Boysen. "Three kilohertz bandwidth is plenty for someone to talk to their mom. The reason broadcasters haven't been in a rush to convert to digital telephone is the phone companies haven't provided the flexibility or the services broadcast stations need."

Innovative Devices manufactures a phone system that is open architecture, having the ability to use analog lines, digital (T1) lines, or directly interface to a PBX for greater flexibility. While the demand slowly grows for digital services on the broadcast end, Boysen said his company will be ready. However, Boysen doesn't see a big push from the telephone companies to make digital services user-friendly. "Larger bandwidth means giving up copper in favor of fiber cable, and the telcos have a big investment in the copper on the poles," said Boysen.

In the next few years, the caller quality on talk radio should improve dramatically through the use of digital telco interfacing and utilization of digital interfacing between the console and hybrid. Getting the caller on the air will become easier as software and hardware is developed for better call management. While your analog equipment won't become obsolete in the near future, you should expect the need to replace it once the phone company makes digital more readily available. Now, if they could only do something about some of the callers ...

■■■

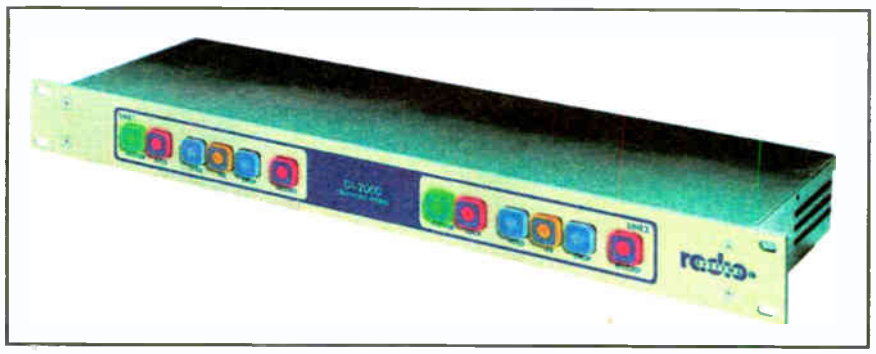
Tom Ray designed and built the talk facilities for WVWI(AM) and WWKS(FM) in St. Thomas in the U.S. Virgin Islands, as well as the former United Nations Talk Radio Network in New York City. Reach him in c/o RW.

TECHNOLOGY UPDATE

Radio Systems

The new DI-2000 telephone hybrid from **Radio Systems** works with any console in multiple operating modes.

The hybrid automatically answers the phone, puts callers on hold, connects the producer or host to the caller for cueing purposes, then puts the caller on-air. The unit can operate as two separate hybrids, or in a conference mode that requires no additional mix-minus circuitry. The DI-2000 also supports a speakerphone for console-free call previewing and a single-line phone for producer screening.



The DI-2000 utilizes digital DSP technology to achieve send-to-receive null. It samples line impedance on call pickup and then resamples during the conversation for constant real-time null adjustment and maximum host/caller separation. Caller audio is equalized and compressed to enhance intelligibility and can be selectably "ducked" below the host audio.

Complete audio signal path mode switching is another feature of the hybrid. Callers are automatically switched between cue and when answered, program on hold, and mix-minus on air. The multiple outputs to the studio include caller cue on answer, main output, and a mixed caller/host output for recording.

*For more information, contact Radio Systems in New Jersey at (609) 467-8000; fax (609) 467-3044 or circle **Reader Service 140.***

Circle (113) On Reader Service Card

World Radio History

TECHNOLOGY UPDATES

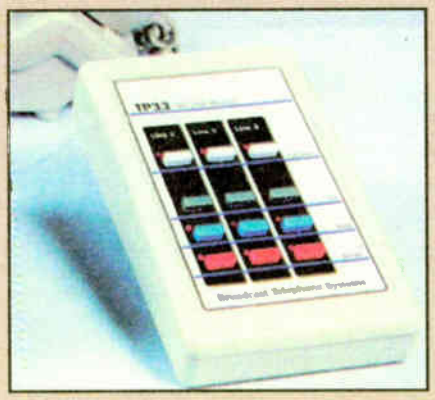
Innovative Devices

The TP33 TriLine phone interface from **Innovative Devices** accepts up to three incoming phone lines and has the capability of taking all three callers to air simultaneously using DSP-based Digital Hybrid technology.

Caller audio levels are maintained and adjusted by the system to provide a natural sound on-air and back to the caller in full duplex without objectionable "ducking." A set of clear status LEDs and one-key-per-function controls eliminate a learning curve.

The TP33 allows the talent to use any telephone features desired. Any regular telephone can be used for its handset. Other features include send-and-return audio level controls, "next-caller" capability and a separate Hold Audio input. The "B" option includes a pre-fader microphone input so the system can be used through a console as a speakerphone; and a mix output of caller plus microphone can be used for recording and off-air editing.

Most of the electronics of the TP33 are mounted in a remote rack unit. The 4-by-7-inch desktop control unit is connected by a slim four-conductor cable to the main rack unit, which can mounted up to 100 feet from the desktop unit.



For more information, contact Innovative Devices in British Columbia, Canada, at (800) 661-2861; fax (604) 260-2871 or circle ***Reader Service 166.***

Sine Systems

The Time-Temp Announcer (TTA-1) from **Sine Systems** is a self-contained, two-line time and temperature system that does not require a computer or outboard equipment to operate.

The system comes with a weatherproof temperature sensor, 100 feet of cable, a microphone to record messages, a pair of headphones to review recorded messages, power supply and comprehensive instruction book. Optional items include a 100-foot extension cable for the temperature sensor and the TTA Expansion Unit, which adds six telephone lines to the system.

Messages can be recorded directly into the Time-Temp Announcer using the included microphone. The instruction book shows how to fabricate a cable for dubbing from a production room to the Time-Temp Announcer. This way, a station can produce an even more professional message complete with music.

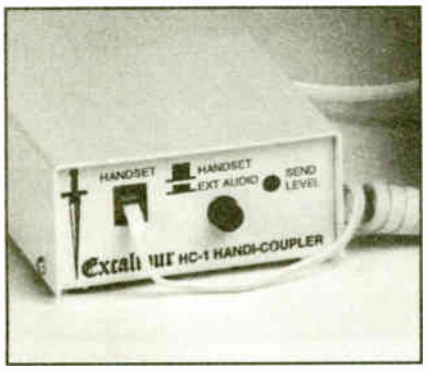
The TTA-1 features a base system that delivers messages on two tele-

phone lines. Outgoing messages are stored in a solid-state digital chip recorder with no moving parts, and the outgoing message recorders can store messages in a variety of ways — for example, one opening message up to 30 seconds long; two rotating opening messages at 15 seconds each; three rotating messages at ten seconds apiece, and one closing message up to 15 seconds long.

For more information, contact Sine Systems in Tennessee at (615) 228-3500; fax (615) 227-2367 or circle ***Reader Service 11.***

Excalibur

The HC-1 Handi-Coupler from **Excalibur** provides a quick, easy and convenient means to connect audio to a telephone.



The HC-1 connects in series with the handset of any telephone using modular connectors. Since a connection to the telephone line is not required, the HC-1 can be used with almost any telephone, single or multiline, modern electronic or older key systems. No power is required.

External audio In and Out are connected to the user's telephone by pressing the front panel on-off button. Upon releasing the button, the handset is once again connected, allowing for normal telephone use. Separate in-and-out jacks are located on the rear panel. Both inputs and outputs are TRS jacks, wired for either balanced (TRS) or unbalanced (TS) connectors.

For more information, contact Excalibur in Maryland at (301) 231-7800; fax (703) 222-1940 or circle ***Reader Service 192.***

Eventide

The BD500 digital broadcast delay from **Eventide** incorporates features suggested by users of Eventide broadcast delay products, including an enhanced version of the company's patented automatic catch-up circuitry.

Previous Eventide broadcast delay products would drop the delay time to zero when the DUMP button was

pushed. This would eliminate objectionable material but would create a few moments of real-time on-air audio with no protection until the automatic catch-up rebuilt a large portion of the delay. The BD500 lets the user divide the total available delay time into several distinct segments, with the amount decided by the user.

Each time the DUMP button is pressed, only one segment is dumped, leaving the user with several seconds of delay protection. That way, if another obscenity follows directly after the first DUMP, the user can block the next round of obscenities while still leaving extra time before the unit catches up to maximum delay.

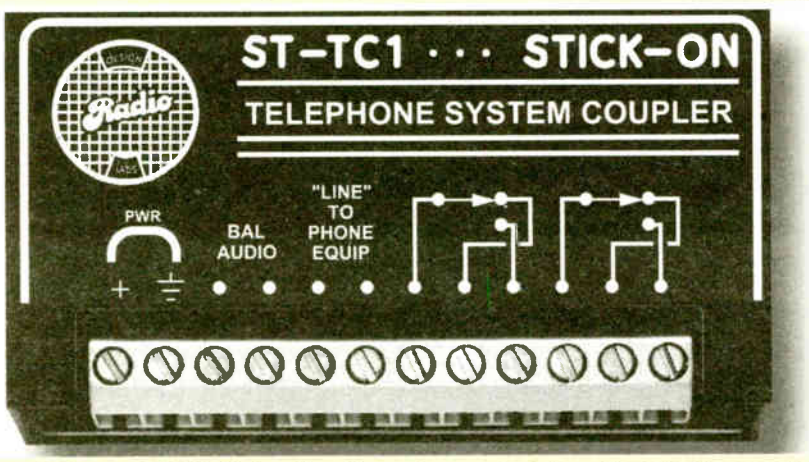
Another feature of the BD500 is the Sneeze button, which momentarily edits audio entering the delay, allowing the host to sneeze, cough or make a short comment without the event being heard on air or causing dead air. The unit displays an exact digital readout of delay time as well as a "quick read" bar graph which instantly confirms when the coast is clear.

The BD500 comes standard with analog XLR-type inputs and outputs and 8.5 seconds of delay. Additional delay time can be added in the field.

For more information, contact Eventide in New Jersey at (201) 641-1200; (201) 641-1640 or circle ***Reader Service 37.***

Radio Design Labs

The ST-TC1 telephone system coupler from **Radio Design Labs** is intended to be connected to an on-site telephone-system switching unit KSU. It should not be connected directly to a telephone line.



Connections from the ST-TC1 go into the telephone switching unit as if the ST-TC1 were an incoming telephone line. If the phone is off the hook when connected to the unit, a relay contact closure is provided. This controls a variety of equipment, including paging or radio systems. The closure is maintained as long as the line is selected.

A 600-ohm transformer-isolated audio feed is available for audio input to or output from the telephone switching unit. The maximum switching current is 2 A, and the maximum carrying current is 3 A.

For more information, contact Radio Design Labs in California at (805) 684-5415; fax (805) 684-9316 or circle ***Reader Service 218.***

CircuitWerkes

The AC-3 hybrid telephone autocoupler from **CircuitWerkes** is ideal for a variety of telephone tasks such as listen lines, concert lines and remote broadcasting. A set of dry relay contacts provides an interface to most external devices, including cart machines.

The remote inhibit input can be interfaced to prevent the AC-3 from picking up the line until the user is ready. This feature allows a cart machine or other device to re-cue before the coupler answers the line. The AC-3 also has a simple active hybrid circuit that provides separation of incoming and outgoing telephone audio. The unit has a bridging, unbalanced audio input with a send-level control and a low-impedance output.

For applications requiring security, an optional combination lock is available. Once installed, the caller must enter a four-digit password set by the owner. Once the password is entered, a second internal DPDT relay latches for the remainder of the call.

For more information, contact CircuitWerkes in Florida at (352) 335-6555; fax (352) 380-0230 or circle ***Reader Service 63.***

World Radio History

TECHNOLOGY UPDATES

Symetrix

The 610 Broadcast Audio Delay from **Symetrix** gives a talk show host or producer the means to block unwanted profanities or comments from going over the air.

The 610 gradually and unobtrusively delays or stretches the program until 7.5 seconds of 14 kHz bandwidth stereo audio are stored in memory. When a caller says something deemed inappropriate by the host or producer, the memory is cleared by pressing the DUMP PROFANITY button, preventing unwanted audio from reaching the air. The host releases an offending caller from the telephone line and continues the program. The 610 will automatically begin stretching the program audio once again until the full 7.5 second delay is reached.

A bonus feature of the 610 is the Cough button, which allows the host to make impromptu interruptions for up to 7.5 seconds — all of which go unnoticed by the audience. To put this program into action, the COUGH button is pushed and the 610 plays from memory while the button is held in. Upon releasing the button, the memory begins to automatically refill. During this time, the host can cough or make a brief comment without any perceptible program interruption.

*For more information, contact Symetrix in Washington state at (425) 787-3222; fax (425) 787-3211 or circle **Reader Service 89.***

Radix

The TLM500 telephone line mixer from **Radix** is a portable, battery-powered mini-console that turns a modular telephone into a remote-broadcast studio link or telephone interview control center. It can be used in the studio as a mic/line input mixer or line driver with headphone monitor, or as a headphone amplifier.

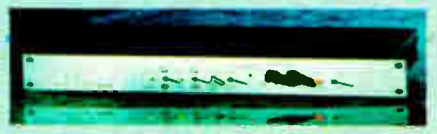
For use with a telephone, plug the handset cord into the TLM500 along with a studio-quality microphone and headphones. The telephone will operate normally while dialing out or receiving calls with hands-free operation and increased audio quality and control. The unit has inputs and outputs for an outboard tape recorder.

Other features of the TLM500 include mic and line inputs with separate level controls, a peak-reading LED, and a low-battery indicator.

*For more information, contact Radix in Washington state at (206) 565-4546; Broadcast Supply Worldwide in Washington state at (253) 565-2301 or fax (253) 565-8114 or circle **Reader Service 115.***

AEV

The ITB 201 from **AEV** is a dual telephone hybrid designed to solve interface problems between telephone lines and consoles.



The hybrid connects two individual telephone lines during transmission with clear audio quality. The user may call or receive on both lines by using an optional microtelephone that plugs into two special connectors. The Send and Receive levels can be independently adjusted.

The ITB 201 allows the user to call out or receive a call confidentially from another line, or to place a caller over the air. To prevent personnel from making unauthorized phone calls, the optional microtelephone can be used, activated only by management.

AEV also offers the ITB 202 dual-telephone hybrid, which is designed for the studio and can be integrated into any system. The ITB 202 allows the connection of several units independently or in conference.

For more information, contact AEV in Italy at +39-51-950350; fax +39-51-950201; visit their Web site at www.aev.net *or circle **Reader Service 141.***

AEQ

The TH-02 EX from **AEQ** is a Mk-II digital hybrid with a frequency extender that can work with a one- or two-line system.

When working with two lines, the user can take advantage of the mix-minus bus in the hybrid. The bus makes multiplex and full-duplex communication between the studio and remote site possible.

The unit incorporates an extended mode which splits frequencies, then shifts them upwards and downwards 250 Hz during transmission. The bands are shifted back at the receiving end, creating a 50 Hz-to- 3,150 Hz response. For correct application of this function, the conversion should be applied at the receiving end with another TH-02 EX or its portable partner, the TLE-02.

*For more information, contact AEQ in Florida at (954) 424-0203 or circle **Reader Service 167.***

Zercom

The ZH-2 telephone hybrid from **Zercom** is an interface designed for connecting a telephone line to a studio console.

The ZH-2 does not switch audio between send and receive, but provides full duplex (simultaneous two-way audio) for good results. The hybrid sends audio to a telephone line and receives audio from the line. To make up for a telephone line's innate 15 dB send-to-receive level difference, the ZH-2 has a nulling circuit to reduce the local send audio as heard in its receive output.

Adjustable input and output gain controls are provided to accommodate virtually any situation. Audio inputs and outputs are active-balanced, and the telephone line tip-and-ring connection can be capacitor-isolated to prevent DC flow through the hybrid telephone line transformer.

The ZH-2 features two null controls for reducing the audio input-to-output transfer. The hybrid also has an audio processor to lower receive gain by 10 dB while audio is being sent to the caller. This lowers trans-hybrid leakage to a point where it is mostly inaudible to listeners.

*For more information, contact Zercom in Minnesota at (218) 765-3151; fax (218) 765-3900 or circle **Reader Service 193.***

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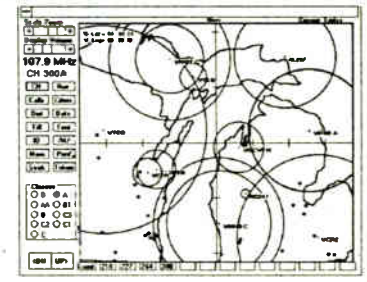

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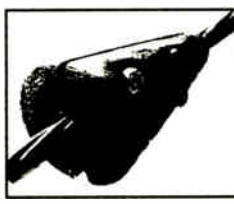

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RADIO! The beat goes on!
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kkannapolis@worldnet.att.net

World Radio History

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300B (*See SV300B*)	3CX10,000H3	4CPX800A	5CX1500B	SV572-3
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3CX400A7	3CX15,000A7	4CX1600B	6550C (*See SV6550C*)	SV572-30
3CX2500A3	3CX15,000H3	4CX3500A	6AS7G	SV572-160
3CX2500F3	3CX20,000A7	4CX5000A	6BM8	SV6550C
3CX2500H3	3CW20,000A1	4CX5000R	6D22S	SV6L6GC
3CX3000A7	3CW20,000A7	4CX7500A	6L6GC (*See SV6L6GC*)	SV811-3
3CX3000F7	3CW20,000H3	4CX10,000D	6N1P	SV811-3A
3CX4500F3	3CW20,000H7	4CX12,000A	811A	SV811-10
3CX6000A7/YU148	3CW30,000H3	4CX15,000A	812A	SV811-10A
3CX10,000A3	4CX250B	4CX15,000J	833A	TH5-4
3CX10,000A7	4CX250BC	4CX20,000A	8161R	TH5-6
	4CX250BT	4CX20,000B	8560AS	TH6-3
	4CX250R	4CX20,000C	EF86	TH6-3A
	4CX350A	4CW10,000A	EL34	YC130/9019
	4CX350AC	4CPW10,000R	EL509	SK300A
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Want to Buy

US/British KT66, KT77, KT88, 6550, 6CA7, EL34, GZ32, GZ34, 845, 300 A&B, mutual cond tube testers, etc. R Cobb, 813-634-1940.

TURNTABLES

Want to Sell

Technics SL-1200MK-2, OK cond, $100 ea or $150/both. P Wolf, 941-458-3777.

Stanton 310 preamp w/input load matching, mint cond, $100 ea. M Shea, 212-989-2684.

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ACTION-GRAM

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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. Simply send your listings to us, following the example below. Please indicate in which category you would like your listing to appear. Mail your listings to the address below. Thank you.

Please print and include all information:

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.

Are you currently a subscriber to Radio World?
❑ Yes ❑ No

Signature _____ Date _____

Please check only one entry for each category:

I. Type of Firm

- ☐ D. Combination AM/FM station
- ☐ A. Commercial AM station
- ☐ B. Commercial FM station
- ☐ C. Educational FM station
- ☐ E. Network/group owner
- ☐ F. Recording Studio
- ☐ K. Syndicators/Station Providers
- ☐ G. Audio for Video/TV Station
- ☐ H. Consultant/ind engineer
- ☐ I.Mfg, distributor or dealer
- ☐ J.Other _____

II. Job Function

- ☐ A. Ownership
- ☐ B. General management
- ☐ C. Engineering
- ☐ D. Programming/production
- ☐ G. Sales
- ☐ E. News operations
- ☐ F. Other (specify) _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
_____
Price: _____

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 800-336-3045 • Fax: 703-998-2966

TRANSMITTERS

Want to Sell

BROADCAST EQUIPMENT
USED: FM/AM Transmitters, RPU's, STL's, FM Antennas, Consoles, Processing, etc. CONTINENTAL COMMUNICATIONS, 3300 Chippewa, St. Louis MO 63118. 1-800-664-4497 FAX: 314-664-9427.

Collins 930D 1 kW xmtr w/Collins exciter w/composite input, working, $3000/BO. K Kushnir, 707-545-8300.

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✓ ALL - Instruction Books
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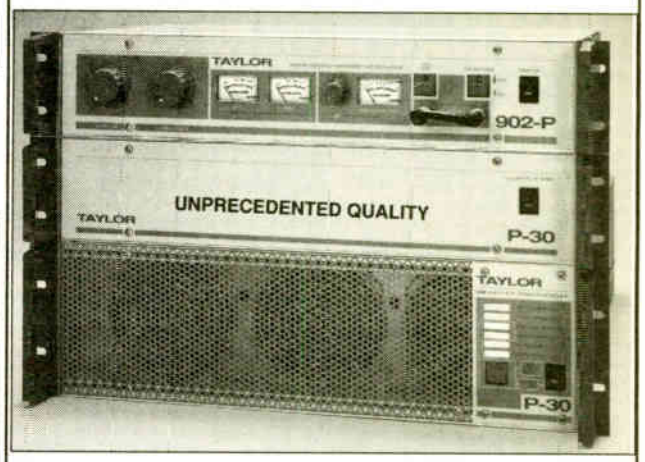

TV TRANSMITTERS		FM RADIO TRANSMITTERS Including Stereo Encoder	
1Watt	$1,114	1Watt	$1,138
2Watt	$1,664	30Watt	$1,499
4 Watt	$2,138	300Watt	$3,174
20 Watt	$3,880	600Watt	$5,960
40 Watt	$5,046	1KWatt	$8,716
100 Watt	$6,206	2KWatt	$11,905
200 Watt	$9,874	4KWatt	$20,741
400 Watt	$13,171		
800Watt	$18,295		
1KWatt	$22,900		
2KWatt	$38,900		

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Peter Dahl single phase 10 kW plate transformer & chokes to convert 10 kW FM 3 phase xmtr into single phase, $4800/BO. J Bahr, 340-719-9336.

Gates BC5P AM xmtr, working when removed from service, some spare parts, some solid-state mods, BO. L Knight, 541-747-5673.

Henry 6000D, 6 kW FM xmtr, no exciter, 4 yrs old, modified for interstage tuning via tuned lines, working on 88.3 when removed, $4000. T Blankenship, 805-832-2800.

Want to Buy

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10KW	FM	1970	Harris FM10H3	5 KW	AM	1978	Collins 828E-1
20KW	FM	1977	RCA BTF 20E-1	50 KW	AM	1978	Continental 317C-1
25KW	FM	1981	Harris FM 25K	50 KW	AM	1982	Harris MW-50B
25KW	FM	1981	Harris FM 25K	50 KW	AM	1981	Harris MW-50B
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EMPLOYMENT

HELP WANTED

Technical Director-WXPN, Philadelphia, PA: Responsible for managing, developing, maintaining all station technical, computer and communication facilities. BA/BS preferred with at least three years experience in Network Systems Administration. Candidate must have a strong background in Novell or Windows NT environment and HTMI/WWW server hardware/software. Knowledge of high-quality broadcast and studio equipment and digital sound recording and processing is strongly preferred. Send Resume to: Dept IT, WXPN, 3905 Spruce St, Philadelphia PA 19104.

IS Manager/ Tech support **Immediate Opening.** Maintain and upgrade WGUC's computer network and PC's. Bachelor's Degree in computers or equivalent work experience; enthusiastic to learn broadcast technology. Microsoft, Novell and other certifications, a big plus. Salary range 38k to 45k plus benefits. See www.wguc.org for complete info. Send/fax or email your resume' to

Don Danko
VP of Engineering and Operations, WGUC, 1223 Central Parkway, Cincinnati OH 45214-2889. ddanko@wguc.org, fax 513.241.8456 EEO.

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If you have a technical degree and proven sales, marketing and management experience in the field of radio broadcasting equipment, please email your resume in confidence to cosma@neta.com. Excellent compensation package. Location in an East Coast city, to be determined.

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HARRIS

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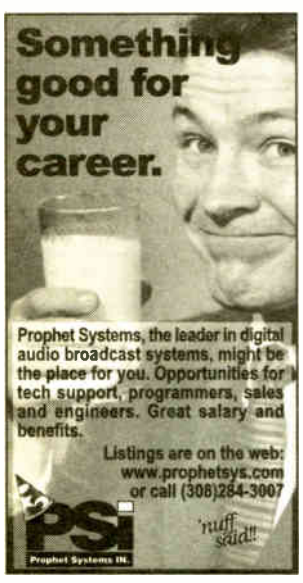
Hard working, friendly, outgoing CE seeks employment, FT, PT, contract work, Northeast, TV/FM/AM, cable station, exper CET & FCC licensed, avail immed. M Rakoff, 718-969-5224.

Seasoned, affordable AT, news anchor, production talent, engineer avail. Alex 513-777-8423.

Creative 15 yr AC/Oldies pro seeks on-air PD/MD position; computer literate, Selector expert, digital prod guru, marketing, promotions & engineering exp; avail immed & willing relocate. Mike 609-848-0074.

Seasoned, dependable AT, production, news anchor like me, attracts loyal listeners & sponsors, salary above poverty level appreciated. Alex McKuen, 513-777-8423.



To advertise in Radio World

Contact Simone Mullins
Phone: 703-998-7600
FAX: 703-998-2966

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Production Manager ..... Jeff Fisher
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Showcase Coordinator ..... Vicky Baron
Ad Traffic Manager ..... Kathy Jackson
Marketing Manager ..... Heather Harris
Production Assistant ..... Anastacia Stornetta
Ad/Classified Manager ..... Simone Mullins
Circulation Director ..... Sheryl Unangst
Circulation Manager ..... Robert Green
Accounts Receivable ..... Steve Berto

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U.S West Dale Tucker916-721-3410 Fax 916-729-0810
U.S. Midwest Sandra Harvey-Coleman 765-966-0669 Fax 765-966-3289
Southwest Sales Christopher Rucas 415-922-5595 Fax 415-922-5597
Other Regions Stevan B Dana703-998-7600 Fax +1-703-998-2966
Latin America Alan Carter+1-703-998-7600 ext 111 Fax +1-703-998-2966
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Europe, Africa, Middle East Raffaella Calabrese +39-2-7030-0310 Fax: +39-2-7030-0211
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Wouldn't you rather Get what you WANT?

*We've taken the very **best** technology, components and field engineering input to make this the FINEST console available.*

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Wheatstone

315-452-5000

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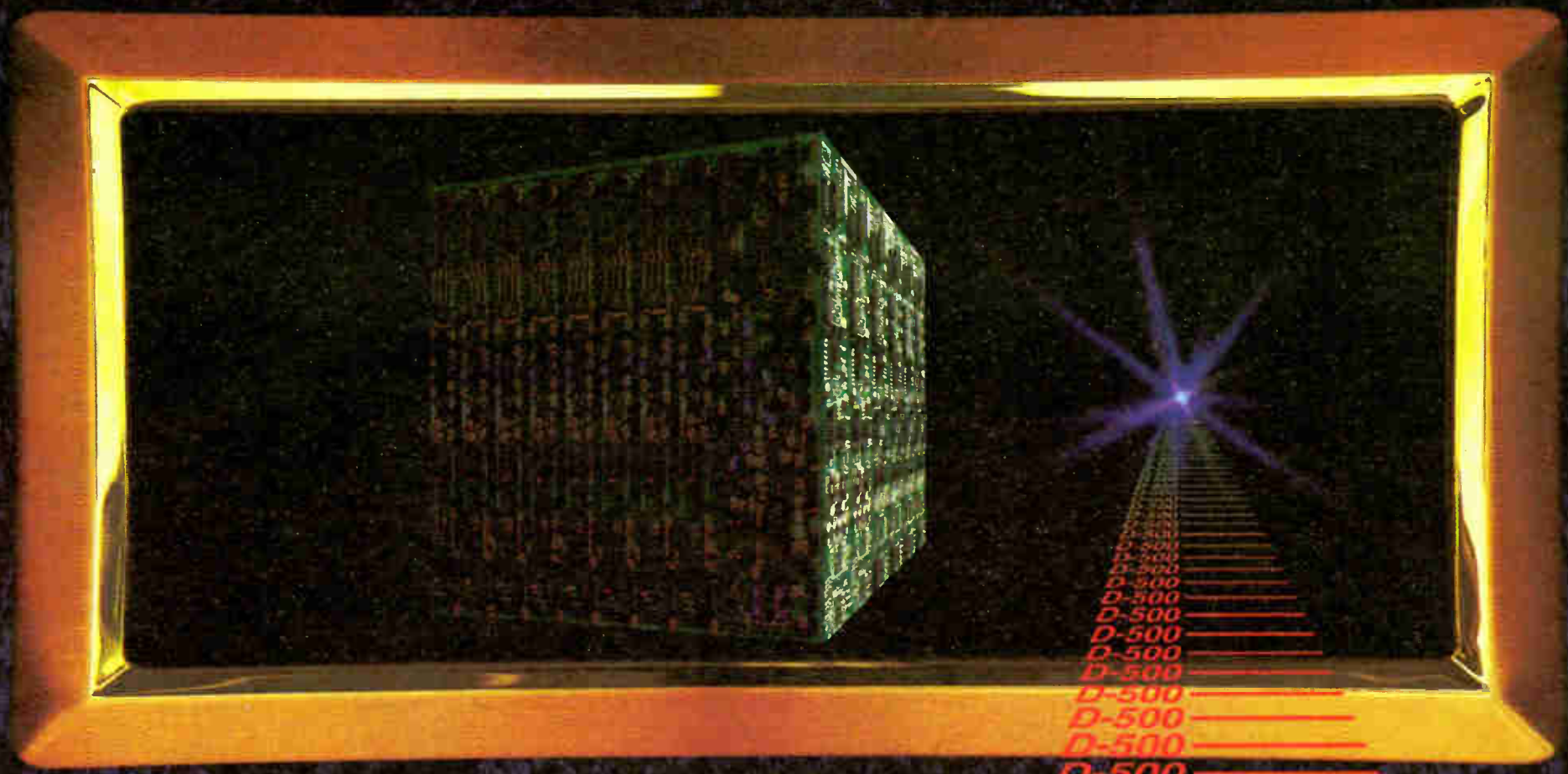
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