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UPI Radio's Rich History Affordable, Recordable

Tom Foty looks back at four decades of UPI on the air.

Ready to burn your own CD's? Here's a look at what to expect.

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Radio World®

The Newspaper for Radio Managers and Engineers

September 15, 1999



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▼ This Cheetah SCSI Drive is a screamer.

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NEWS ANALYSIS

AMFM Inc.: Largest Radio Group Formed

by Lynn Meadows

DALLAS Chancellor Media Corp. and Capstar Broadcasting Corp. have completed their merger and changed their name to AMFM Inc. Now, executives of both face how to integrate the facilities and operations of approximately 465 stations.

The company has grown from 20 stations in less than five years. "Logistics in coordinating that are mind boggling," said Mark O'Brien,



vice president of radio and TV consulting group BIA Consulting in Chantilly, Va. Organizing the wide variety of computer systems used by different stations acquired to create meaningful financial statements is a major challenge, said O'Brien.

But Chancellor Media and Capstar Broadcasting apparently did create meaningful financial statements because the two companies became one in July forming AMFM Inc.

UPI Leaves Radio News Business Behind

by Randy J. Stine

WASHINGTON In the wake of its decision to leave the broadcast news arena, United Press International will focus on re-inventing itself as a World Wide Web wire service capable of supplying on-demand real-time breaking news.

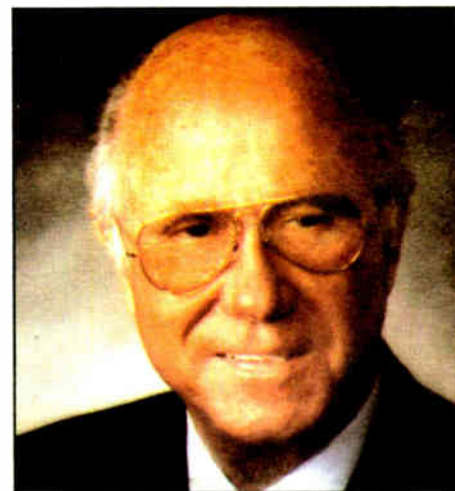
In August, UPI sold its broadcast wire service and radio division to the Associated Press. The selling price of the often-financially strapped UPI was not disclosed.

AP acquired more than 400 customer service contracts from UPI in the deal. The AP now has a client list of nearly 4,000 radio stations. All of UPI's broadcast affiliates were moved to AP services in late August.

Forty-seven UPI staffers were laid off following the changeover, including reporters and editors.

(NYSE:AMFM), which claims to be the largest radio group in the world with some 66 million weekly listeners. Press releases stated the new name is intended to reflect the company's status as the "nation's largest radio broadcasting entity." The group serves 105 markets with approximately.

Most observers saw the merger as



Arnaud de Borchgrave

AP spokesman John Jones said the displaced UPI employees could apply for similar positions at AP, but his

See UPI, page 6

inevitable long before it was announced in August 1998. First, the investment firm of Hicks, Muse, Tate & Furst was the largest stockholder of both companies. It owned approximately 15 percent of Chancellor and 59 percent of Capstar. Second, Capstar went public in the summer of 1998 and

See AMFM, page 8

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◆ NEWSWATCH ◆

Casino Ad Ban Dies

WASHINGTON The Department of Justice and the FCC have said they will no longer enforce bans on broadcast casino ads in any state. Government attorneys filed a brief in the U.S. Court of Appeals for the Third Circuit that said in light of the recent 9-0 Supreme Court decision declaring casino ad restrictions unconstitutional, the government would abandon pursuit of those ad restrictions nationwide.

"The government has concluded that

(the ban) as currently written, may not constitutionally be applied to such advertisements, regardless of whether the broadcaster who transmits the advertisement is located in a state that permits casino gambling or a state that prohibits it," stated DOJ and FCC attorneys in the brief.

NAB applauded the decision. "This completes a nearly ten-year battle against these advertising restrictions, which culminated with the recent 9-0 decision from the U.S. Supreme Court proclaiming that the ban was clearly unconstitutional," said President and Chief Executive Officer Eddie Fritts.

In its June 14 decision, the Supreme

Court agreed with a lower court ruling that said the government failed to connect casino gambling and compulsive gambling with broadcast casino ads (RW, July 21).

Rohde Nominated To Head NTIA

WASHINGTON President Clinton has nominated Gregory Rohde as assistant secretary for communications and information at the Department of Commerce. Rohde has served as senior

legislative assistant for Sen. Byron Dorgan (D-N.D.) since 1993.

If confirmed by the Senate, Rohde would replace Larry Irving, who announced he intended to leave his post by the end of the summer. Irving, the first African-American to head the agency, was appointed in 1993. He played a role in passage of the Telecommunications Act in 1996 and was a key player within the Clinton-Gore Administration policies

See NEWSWATCH, page 3 ►

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XM's IPO Lists Risks, Hopes

by Leslie Stimson

WASHINGTON XM Satellite Radio expects it will need approximately \$1.1 billion to develop and implement its satellite-delivered digital audio broadcasting system, targeted to begin commercial operation in the second quarter of 2001.

In a filing to the Securities & Exchange Commission that outlines plans for an initial public stock offering, XM did not disclose how many shares would be offered, nor their price. XM applied to have the class A shares traded on NASDAQ under the symbol XMSR.

The offering, likely this fall, is expected to net XM \$138.7 million.

"After we receive the estimated proceeds from this offering, we will have raised an aggregate of \$469.5 million since our inception (net of expense and repayment of debt)," stated XM in its filing.

XM estimated it will need about \$610.6 million to finish building its pay radio system and to provide working capital until it begins commercial operations.

"The funds raised in this offering are expected to be sufficient in the absence of additional financing to cover our funding needs into the first quarter of 2000," stated XM. But XM needs more money to make it to commercial launch in the second quarter of 2001.

Several factors can affect its ability to generate significant revenues to become profitable:

- whether XM can develop its satellite-delivered DAB system in a timely way,
- whether manufacturers successfully develop receivers,
- whether XM can attract and retain enough subscribers and advertisers,
- whether it can compete successfully; and
- whether the FCC grants the necessary

authorizations in a timely manner.

XM also notes in its filing that competitor CD Radio expects to begin receiving revenue from commercial operations in the first quarter of 2001, ahead of XM, which could help CD gain a competitive advantage over XM.

XM has incurred losses to date and expects those to grow as it nears commercialization of its service. As of June 30 of this year, it had incurred costs of about \$261.7 million. The company expects its net losses and negative cash flow to grow as it builds its system, makes payments to various vendors and begins to incur marketing costs.

XM has several investors, including Clear Channel Communications, DirecTV and GM Corp. (see story pg. 10) XM expects Clear Channel to provide programming, technical and advertising sales support.

GM deal

The deal with GM is more complicated. For 12 years, GM will exclusively distribute and market the XM service and install AM/FM/XM radios in GM cars beginning in 2001. XM has to pay GM a total of approximately \$35 million over a four-year period following the beginning of commercial service.

"Additional annual fixed payment obligations beyond the four years range from \$35 million to approximately \$130 million through 2009, aggregating approximately \$400 million," stated XM in the filing.

XM also agreed to subsidize a portion of the cost of XM radios and to make incentive payments to GM when the owners of GM cars with XM receivers subscribe to the service. Under the agreement, GM would also receive a portion of the subscription revenue attributable to GM vehicles with installed XM receivers. The percentage

increases until there are more than 8 million GM vehicles with installed XM radios.

The agreement is subject to renegotiation if GM does not achieve specified installation levels of GM vehicles capable of receiving the XM service, starting with 1.24 million units after four years.

XM plans to install about 1,700 terrestrial repeaters to cover urban areas where buildings or other obstructions would inter-



SATELLITE
RADIO

fer with its satellite signal (see story "Unique Designs," page 10). Some markets may need 100 repeaters installed on rooftops, while other areas would need "as few as one to three" repeaters. XM hopes to gain from the expertise of parent company American Mobile Satellite Corp. by using a portion of American Mobile's terrestrial two-way data network base station sites.

Among the satellite launch risks XM lists are launch failure, satellite destruction or damage during launch and improper orbital placement. XM noted there is "virtually no track record" for the

Zenit-3SL rocket that will be used to launch its two satellites.

In its push towards commercialization, XM has contracts with several advertisers, advertising agencies and media buying companies offering "charter" ad packages at reduced rates for a limited time.

XM has commissioned several studies to determine demand for its service. One study, conducted by Strategic Marketing And Research Techniques, concluded that about 50 percent of after-market receiver purchases would be for AM/FM/satellite radio units with a single-disc CD player. That figure assumed a radio price point of \$399, a \$75 installation fee and a \$10 monthly subscription fee.

A study conducted by Critical Mass Media concluded 34 million consumers would be willing to subscribe to satellite radio with a \$400 equipment price point and a \$9.99 per month subscription fee. At a price point of \$200 for the receiver, and the same subscription fee, the number of consumers willing to subscribe grew to 43 million, according to the study.

For OEM receivers, Yankelovich Partners conducted a study that indicated 28 percent of people ages 16 and older were "definitely" and "probably" willing to pay \$9.99 per month and an additional \$150 for a satellite radio when buying a new car. The study projected the size of this market to be about 38 million consumers.

Both XM and CD Radio have projected they need 1 million to 1.5 million subscribers to break even.

NEWSWATCH

► NEWSWATCH, continued from page 2 designed to promote diversity in broadcasting and the emerging digital economy.

The NTIA manages the federal portion of the nation's spectrum and provides telecommunications facilities grants to public users.

Court Tells FCC To Justify Rules

WASHINGTON The U.S. Court of Appeals for the District of Columbia has asked the FCC to justify retaining its broadcast personal attack and political editorializing rules, which make stations give air time to opposing viewpoints.

In an opinion written by Judge Judith Rogers, the court said the FCC's analysis for keeping the rules was "insufficient to permit judicial review." The court placed the burden on the commission to prove why the rules should remain.

NAB and the Radio-TV News Directors Association have challenged the constitutionality of the rules, which they say are outdated in

an age in which there are so many media outlets.

The personal attack rule requires broadcasters to notify a person whose honesty or integrity is attacked and provide that person an opportunity to respond. The political editorial rule requires any station that endorses or opposes a political candidate to provide opponents an opportunity to respond.

Ness Appoints Goodfriend To Staff

WASHINGTON FCC Commissioner Susan Ness has appointed David Goodfriend as legal advisor for mass media and cable TV issues. Goodfriend currently serves as deputy staff secretary at the White House. Prior to that, he practiced telecommunications law in the Washington, D.C., office of Willkie Farr & Gallagher.

Anita Wallgren, who previously handled mass media issues for Ness, has left the FCC.

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The House That Broadcast Built

Who says there's no such thing as a free lunch anymore?

The Harris Expo '99 will offer that and more at the company's annual event Oct. 1. This year's gathering is notable because it will be held at the Broadcast Communications division's new 165,000-square-foot worldwide headquarters facility in Mason, Ohio, near Cincinnati.

"Vendors will make an appearance

I'm always impressed with the people that the Harris events attract. When I attended last year, I saw plenty of friends of *RW*, including top-notch engineering readers and a big group from the supplier community.

Harris' new facility will house the division's radio distribution business, as well as the systems integration function where Harris' mobile news-gathering trucks are manufactured.



Entrance to Harris Broadcast's New Worldwide Headquarters

with popular products," Dave Burns, Harris studio product manager, told *RW* Managing Editor Sharon Rae.

"Attendees will get to see over 50 manufacturers of broadcasting's best and brightest. Companies include Leitch, Comrex, Enco, 360 Systems, Telos, Sierra Audio, Orban, Bird, Miranda, Snell and Wilcox, and Intraplex."

No doubt Harris also will promote its recent big acquisition of Pacific Research & Engineering, which combined two of the most familiar names in our industry.

Big turnout expected

Burns said this event began 15 years ago as a "thank you" for customers. That tradition continues.

"We're expecting a record crowd," Burns said. "Typically about 250 attendees show up."

In the past, the Harris Expo was held in Richmond, Ind., where its Allied predecessor had its roots.

Aside from lunch, attendees can tour the new facility, including the adjoining administration/engineering building, which houses management, sales, marketing and engineering staffs. Hands-on demos will also be available, as will factory reps to answer questions.



At Work in the New Harris Shop

For registration, call (800) 622-0022. I'll have more photos after the event.

Although the CD has been around for years, its significance to broadcasting is apparent as it becomes a more affordable recording and distribution medium.

As we report in *Studio Sessions* in this issue, the choices for CD-Recording technology are broad.

Paul Sorensen, channel manager of the Pro Audio Division for Microboards, told *RW* recently that broadcasters are looking to expand their capabilities in areas related to CD-R use.

"1999 is the year of the second-generation CD-R user," said Sorensen. "Any pro audio/broadcasting customer who has bought a desktop or standalone recorder will be looking to do one of two things this year: increase volume or improve on his/her feature base."

A huge area of growth is the duplication market, suppliers say, as software becomes more powerful and affordable.

Another explanation for the surge in CD-based recorders comes from David Beesley, president of HHB Communications USA.

"CD recorders have become so popular recently because musicians can deliver their music in a format that is widely available. It's digital and very cost-effective. CD-R discs are relatively inexpen-

From the Editor



Paul J. McLane

sive. If you waste one it won't cost you more than \$4 or \$5, maybe less."

And despite the advent of DVD, the CD-R market is still growing, according to suppliers. CD-R is now an established, accessible mastering format.

No overview can list all of the available products. If you offer a CD-R product that you'd like our readers to know about, drop me a line.

Auctions for radio station authorizations become a reality this month.

In a major change in how it doles out spectrum space, the FCC no longer relies on the traditional comparative hearing process.

As Barry Umansky explains in our *GM Journal* section, there will be up to 880 applicants in the first auction, many of whom are vying for about 120 FM construction permits.

Analysts will watch to see how much the auction raises, who the winners and losers are, and how the system will work in the future.

Also, don't miss Tom Foty's look at three decades of news coverage at UPI Radio, which ceased to exist when UPI sold its broadcast wire service and radio division to AP in August.

I can't help being saddened by the demise of a familiar player in the radio news business. Is there a place for vibrant competition among national providers? Or is UPI right to focus its energies on the Internet? What do you think? E-mail me at pmclane@imaspub.com

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DIGITAL NEWS

NRSC Rules Updated

WASHINGTON The Consumer Electronics Manufacturers Association and NAB have revised some of the rules governing the National Radio Systems Committee. The updated rules include more formal definitions of member obligations, an improved subcommittee structure and updated vot-

ing and standards-developments procedures.

"With this change, the NRSC rules are now in agreement with CEMA procedures that have been overhauled in recent years to support a more streamlined approach to standards development," stated Lynn Claudy, senior vice president, NAB Science & Technology and George Hanover, vice president, CEMA Technology & Standards, in a letter to committee members.

The NRSC, jointly sponsored by CEMA and NAB, is the forum for receiver manufacturers and broadcasters to

evaluate, standardize and promote new AM and FM technology. NAB Senior Engineer David Layer said it was good to revise the rules before the NRSC determines whether it will set a standard for in-band, on-channel digital audio broadcasting.

Highlights of the changes include:

- A three-fourths majority of subcommittee members voting on an NRSC standard is required for approval.
- When the NRSC is evaluating competing technologies, NRSC members must divulge any partnerships with or investment interests they have in the proponent technology being offered to the NRSC for consideration.
- In such cases, those members will be considered representatives of the proponent company for voting purposes on any vote that has a bearing on the NRSC's evaluation of those technologies.
- A new member earns voting status at the third consecutive meeting. In general, voting status is revoked if two consecutive meetings are missed. Attendance by telephone conference is acceptable. Each company gets one vote, even if more than one representative of one company attends the meeting.
- Members of the full NRSC must now formally request membership in subcommittees.



- There is now a \$25 annual fee for each subcommittee that neither CEMA nor NAB members participate in.

Alpine Signs On With CD Radio

NEW YORK Alpine Electronics of America Inc. will design and develop OEM and aftermarket receivers for CD Radio, one of two companies developing a satellite-delivered DAB service.

"Satellite radio will revolutionize in-car entertainment," stated Akira Kurihara, Alpine's managing director, research and development. Alpine develops and manufactures car receivers for several auto companies, including Ford, Honda, Acura and BMW.

CD Radio has an agreement with Ford Motor Company to install AM/FM/CD receivers in its vehicles by 2001. CD also has receiver alliances with Recoton Mobile Electronics and Delphi-Delco Electronics Systems.

XM Satellite Radio, the other SDARS license-holder, also has a receiver deal with Alpine, as well as with Pioneer Electronics Inc., Sharp and Delphi-Delco. General Motors Corp., one of several XM investors, will equip its new cars and trucks with AM/FM/XM receivers starting in late 2001 (RW, July 7).

GUEST COMMENTARY

Considering LPFM? Don't Forget Reading Services

by David W. Noble

The author is president of IAAIS, the International Association of Audio Information Services, formerly NARRS, the National Association of Radio Reading Services.

With the entire debate over low-power radio coming to a peak, are we forgetting the primary reason the FCC is considering the LPFM idea to begin with?

The premiere argument is that the LPFM stations will provide currently unheard groups with a voice on the air. To support this, we're told that inter-

zines, grocery store circulars and other very current print news that a blind or print-disabled person can't get any other way.

When adjacent-channel protections are removed and the sheer numbers of infringements reduces the FCC's enforcement abilities, then sub-carriers will be the first to "feel" the effects. That means that wherever one of these reading services exists and an LPFM comes online, the current service for one minority group is diminished or eliminated to serve the needs of some other group.

It would be a good bet that LPFM

It would be a good bet that LPFM does not seem like a good idea to the millions of Americans using a reading service on the radio.

ference would be minimal — if any occurs at all. But let's review some valid points.

This proposal is well-intentioned. More community-owned stations providing local programming content would be a good thing.

Let's remember, though, that it's through the FCC's own actions we now have fewer locally owned stations than ever. If we are now looking on consolidation as an FCC plan that didn't work, should we atone for it through a second, poorly planned action?

Additionally, the timing is poor. Digital FM, and the impact it will have on spectrum space, is too near to begin playing with the spectrum now.

Sub-carrier treasure

Hidden away on many FM radio stations' sub-carriers are services for people who are blind or living with some other print-disabling condition. Those services are all non-profit services.

No matter if in Weathersfield, Conn., New York, Los Angeles or Anchorage, they are all working on a shoestring budget. Volunteers from the community provide vocal talent to read aloud from newspapers, maga-

zines, grocery store circulars and other very current print news that a blind or print-disabled person can't get any other way. There is no replacement for the Radio Reading Services at this point or under the LPFM proposal.

The shame of it all is, we likely won't ever know what those listeners think. Most are elderly men and women who have lost their vision late in life as a part of the aging process. Typically, they occupy a lower income bracket and depend on a radio reading service to keep them in touch with the world.

They seldom write letters to the government, and now that they have suffered a sudden and severe vision loss, they don't feel they can.

There are hidden threats in LPFM that were never intended to be threats at all. Let's take a moment to consider what losses LPFM is going to inflict before moving ahead with a plan that is not a sure bet.

■ ■ ■
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RW welcomes other points of view.
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UPI's Move Away From Radio

► UPI, continued from page 1
company would not hire additional staff because of the purchase.

"What you have is essentially a sale of customer service contracts. We purchased the contracts of UPI's affiliates and will provide them with similar programming and wire needs. We did not take on any of UPI's facilities or people," Jones said.

UPI Radio's demise

The sale marked the end for UPI's broadcast news service, once recognized for its reporting excellence. Its demise followed years of management shuffles and changing business plans. It filed for bankruptcy in both 1985 and 1991.

"I don't think you have to look much past the very top of the company to place blame," said veteran news programmer Holland Cooke, news/talk specialist for McVay Media. "Clearly the company suffered from a lack of direction from management. Or, it may be better to say it was pulled in too many directions."

Current UPI President and Chief Executive Officer Arnaud de Borchgrave has only been with the company since January. Prior to that, James Adams held the same position for just 14 months before leaving the company (RW, Dec. 23, 1998). He served as a consultant to UPI until July.

De Borchgrave said the constant turnover at the management level certainly did not help the company. He said erratic funding from investors was partly to blame.

"It's the function of management to coordinate with the investors, most of whom don't lack for cash, to implement budgets and determine how much the owners are willing to spend. I think most of my predecessors grew tired of doing that," he said.

He called it a case of UPI not so much selling itself to AP, but rather "getting out of the AP's business."

"What I've been trying to do since the day I took over was to get out of radio news because it's manpower intensive. You produce headlines and breaking news stories that range from a celebrity being arrested in Los Angeles for drug possession to some person getting kicked off a plane in Boston.

That's the kind of news UPI is getting out of," de Borchgrave said.

UPI plans to position itself as an Internet wire service capable of supply-

employees with different skills than those who were laid off, de Borchgrave said.

"We will be looking for a new breed

Trust me when I say that no one else was interested in buying UPI's radio services other than AP.

— Holland Cooke

ing on-demand breaking news.

The company's Net development projects will mean it will hire 26 new

of newperson. Our specialized Web newsletters, which people will subscribe to, will require people who can

UPI Radio: 40 Years of Sound

by Tom Foty

WASHINGTON It was the network created with and held together by leader and splicing tape. It was also the last network, radio or TV, to report the end of the Vietnam War from the scene.

It started out as UPI Audio in 1958, became the UPI Radio Network in 1983 and followed the NBC, Mutual and RKO-Unistar networks into broadcast-

ing's graveyard just before the expiration of the century it helped document.

A quarter century ago, Americans heard a president of the United States resign his office. Many radio listeners heard that history on some of the 1,000-plus stations carrying the audio news coverage of United Press International.

Almost to the day, 25 years later, UPI itself resigned as a broadcast news service.

The final words on the 40-year-old

news network were read by Craig Smith, one of its first newscasters when top-of-the-hour broadcasts were added to an actuality service by UPI in 1971:

"This is the final broadcast from UPI Radio," he said, "United Press International is getting out of the broadcast news business and has sold its contracts to Associated Press Radio. For those of us suddenly out of work, it's been fun. We feel UPI Radio has done its job well overall, even as we struggled with fewer and fewer resources. So we sign off now with smiles, memories, a few tears, but no regrets."

Smith was speaking for the hundreds of radio newsmen who worked at the little "smoke and mirrors" network in the four decades of its existence.

Little publicized, the service was a kind of "stealth network," rarely mentioning its own name, which did not even include the word "radio" until 1983. It was marketed as a news service — not a commercial network.

At a time when "network radio" meant the "big three" of CBS, NBC and ABC plus the Mutual Broadcasting System, UPI structured itself differently. It sold its service for cash, not commercial time. Its emphasis was on the sound of news, not

See NETWORK, page 12 ►



Shown is a view of UPI Audio's combination newsroom and transmission center in New York in 1974. The console was a modified vacuum-tube Altec-Lansing.

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► UPI, continued from page 6
paying UPI to get out of the radio business.

"It's akin to Ted Turner buying the Satellite News Channel about 10 years ago and turning it off because it competed with CNN. Trust me when I say that no one else was interested in buying UPI's radio services other than AP," Cooke said.

Cooke said one legacy UPI Radio leaves behind is a pricing structure that forced AP, a membership cooperative, to review how it prices source material.

"I think AP was forced to become more responsive to its clients and leave behind a pricing system that was arcane, confusing and inefficient. We have UPI to thank for that," he said.

UPI clients get switched

Jones said the former UPI affiliates will remain under the terms of their old contracts until they expire.

One industry analyst, who asked not to be identified, said the new affiliates should expect to pay a little bit more for the AP's service when their contracts are up.

"If it's a case of 'you get what you pay for,' they should be satisfied. I would think they'll be very happy with AP," the source said.

The changeover for UPI affiliates came on Aug. 19. One of those stations affected was WJYY(FM) in Concord, N.H. Laura James is the station's news director. She said the switchover went very smoothly.

"We have been very happy with the way AP has handled our needs. We have a peculiar situation in that we also needed wire service at a remote location in our New London (N.H.) office. That system was not compatible with AP, but they made it work with a temporary solution," she said.

WJYY received both the UPI wire and UPI's four-minute top-of-the-hour newscasts.

Jones said AP set up a special command center with a special toll-free telephone hotline to handle questions regarding the switch from the former UPI stations.

"I believe it went very smooth. The pace at which we enacted the changeover to AP was incredible. Originally, we had given ourselves a timetable of around 90 days. Instead, we accomplished it in about two weeks," he said.

James said she and WJYY were always satisfied with UPI, but have been thrilled with the change so far.

"However, we were sad to see UPI go and I think it's a real blow to the news business to lose such a historic influence."

Former UPI staffers speak out

Along with managerial changes over the years, UPI also struggled to retain the rank and file. Many left for better paying jobs or became dissatisfied with the direction of the company.

Thomas Caldwell, a UPI Radio correspondent from 1994 until 1997, said the way he sees the deal, AP is basically paying UPI to shut down.

"If anything, UPI is a little more out of its misery. UPI for all practical purposes does not exist any longer."

Caldwell, now a Tokyo correspondent for Radio World, said the blame for UPI's demise lay at the feet of ownership.

"De Borchgrave clearly doesn't like

radio, he's a newspaper guy. It's sad because the people on the talent side in UPI radio were the best in the business at

He points to 1996 as the year UPI gave up hope of being competitive in radio news.

What I've been trying to do since the day I took over was to get out of radio news because it's manpower-intensive.

— Arnaud de Borchgrave

one time. I think the ownership would kick themselves if they knew what a treasure they squandered," Caldwell said.

"We called it the Christmas Massacre," Caldwell said. "(UPI) closed bureaus all over the world, cut back on

the wire and let people go. Then it was clear the end was in sight."

Bill Clough, a former UPI producer and anchor for six years in the 1990s, said he saw one management team after another promise to reposition UPI for the 21st century.

"It was constant chaos during my tenure. I saw executives come in who didn't have a clue about broadcast," Clough said. "They had no concept of what we had to be. I just hope they know more about the Internet than they did radio if they want to survive."

Clough now is program director at KEDT-FM in Corpus Christi, Texas.

Clough and Caldwell have developed a Web site called The Dead Microphone Club for former UPI staffers and stringers. The address is www.deadmicrophone.org

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'One Large Operating Company'

► AMFM, continued from page 1
making two public companies into one was seen as a way to reduce paperwork such as quarterly reports and Security and Exchange Commission filings.

In this age when brokers and owners rarely attend the closing when stations change hands, the excitement really comes in the first announcement. The recent announcement that Entercom Communications Corp. (NYSE:ETM) will buy 43 radio stations from Sinclair Broadcast Group for \$821.5 million in cash is a good example. The closing almost seems anticlimactic.

However, the AMFM closing is "significant because it will finally create one large operating company out of what was perceived as a company focused on acquisitions and mergers," said Steve Pruett, managing director of the New York-based investment bankers Communications Equity Associates.

Good management

Pruett said AMFM has good management in place with James deCastro who serves as the chief executive officer of the AMFM Radio Group. Well regarded within the industry, Pruett said deCastro is a "radio person from the get go."

AMFM Inc. includes the AMFM Radio Networks, the Chancellor Marketing Group and the AMFM New Media Group, which includes Katz Media and AMFM's Internet operations. Thomas O. Hicks will serve as chairman and chief executive officer of AMFM Inc. His brother R. Steven Hicks serves as chief executive officer of AMFM's New Media Group.

In the engineering departments, little has changed due to the merger. No engineers were hired or fired as a result of the merger. Mark Stennett, vice president, engineering for the

Capstar division, said there are a number of projects underway and under consideration, but they are not related to the AMFM merger.

Capstar, founded by Hicks, Muse in 1996, had focused its purchasing efforts in mid-sized markets while Chancellor bought properties in the large markets. The result is a company with a presence in both large and small markets.

The Capstar star system underwent some restructuring this year. First,



James DeCastro

GulfStar Communications merged into Pacific Star Communications. Then, in mid-summer, Southern Star Communications officially became part of SEAStar Communications. Observers speculate Capstar did the restructuring to make the merger more efficient.

Chancellor also appeared to be trying some different strategies in the 11 months between the merger announcement in August 1998 and closing the deal in July 1999. At one point, the group appeared to be up for sale. Then, in the spring, Chancellor announced it would sell its outdoor advertising business to Lamar Advertising Company

for approximately \$1.6 billion in stock and cash.

"By further reducing debt through the sale of the outdoor assets, we are creating a more flexible financial structure, positioning the company to take advantage of growth opportunities in our core radio operations," deCastro said in a press release.

Stations, billboards

Other groups such as Infinity Broadcasting Corp. and Clear Channel Communications Inc. remain in the billboard business, which is considered synergistic for radio because of cross-promotion opportunities in markets where the one company owns both billboards and stations.

When announced in August 1998, the stock-for-stock transaction was valued at about \$4.1 billion — roughly 15.5 times 1999 projected broadcast cash flow. In the original deal, each share of Capstar common stock was to represent 0.48 shares of common stock of AMFM. In the end, the ratio was 0.4955. When announced, the merger was expected to close in the second quarter of 1999. It missed that target by just days.

From its initial public offering price of around \$22 per share in 1998, Capstar had inched up to about \$26 per share by June 1999. Initially, the swap ratio was a bonus for Capstar shareholders, but by Aug. 10, the AMFM stock price had slipped to \$48 per share from more than \$54 per share when the merger closed.

O'Brien of BIA Consulting said he thinks the impact of deals such as the Chancellor/Capstar merger and Clear Channel/Jacor purchase is multifold.

These groups are changing the economics of the industry, said O'Brien. When a group owns 465 stations, its clout when it comes to buying technical equipment "is unprecedented" said O'Brien. Groups have a completely different bargaining power now, he said, which is good for radio.

Also, groups with stations in multiple markets can take advantage of technology, he said. With wide-area networks, a production person in Des Moines can cut spots for a Miami station. With WANs, groups can transfer voice talent, data and copy in seconds by computer.

Advertising is more flexible with large groups, he said. In the old days, he said, sales people could offer customers spots on the AM station if they bought FM. Today, if someone buys Dallas, they can also offer Miami.

Plus, large radio groups are able to sell against television much more effectively now, said O'Brien. In the past, advertisers viewed radio as a targeted medium while television was considered a reach medium. Now, with up to eight stations in the largest markets, radio groups have a greater reach than television. Sales people can now offer reach or target advertising.

As for what is next, Pruett said he expects see most of the next set of big deals to take place between and among groups ranked 5 through 25. He said he thinks the industry will now see the "mid-level large groups" doing some "opportunistic merging."

LDR Gets Non-Lucent Funding

by Leslie Stimson

WARREN, N.J. Lucent Digital Radio Inc. has taken a step towards what may become independence from its parent company Lucent Technologies.

LDR has received investment financing from Pequot Capital Management Inc., a Westport, Conn.-based firm that invests in public and late-stage private companies in information technology, telecommunications and healthcare.

PequotCapital

How much money Pequot invested and the percentage of ownership stakes were not disclosed. Lucent Technologies still holds a majority ownership stake in LDR.

Ralph Faison, vice president of Lucent New Ventures Group, said Pequot's claim was a "multi-million" dollar investment.

"We believe in the vision," said Jerry Poch, principal of Pequot Equity Funds, the private placement/direct investment arm of Pequot Capital. "Broadcasters have been waiting to hear a real working IBOC system for years. Lucent Digital Radio has this problem solved."

When asked what Pequot brings to LDR besides funding, LDR President Suren Pai said, "Pequot

Lucent Digital Radio has this problem solved.

— Jerry Poch

has experience in dealing with the media industry. It also brings an understanding in how to create value in ventures like this one."

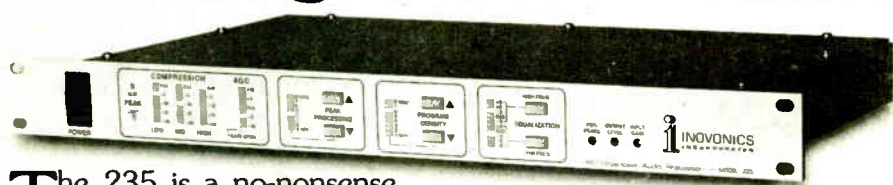
A five-member board of directors will be created for what will be known as Lucent Digital Radio Inc. Two members will be from Pequot, two from LDR, in addition to Pai.

Formed in May 1998, LDR is one of 12 new ventures of Lucent Technologies. Faison said LDR was following the typical Lucent business model of spinning off new technologies.

Lucent said the Pequot investment was just the first round of

See LDR, page 10 ►

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DIGITAL NEWS

\$250 Million XM Investment Closes

The previously announced \$250 million investment in XM Satellite Radio, a subsidiary of American Mobile Satellite Corp., by several investors has closed. GM and Clear Channel Communications Corp. invested \$50 million and \$75 million respectively. DirecTV invested \$50 million and a private investment group comprised of Columbia Capital,

Telcom Ventures L.L.C., and Madison Dearborn Partners invested a total of \$75 million.

DirecTV, a satellite TV service provider, is a unit of Hughes Electronics Corp. General Motors Corp. is the parent company of Hughes.

At the same time, American Mobile completed its acquisition of WorldSpace Inc.'s interest in XM. American Mobile agreed to acquire all of WorldSpace's debt and equity interest in XM, to return XM to its previous status as a wholly-owned subsidiary of American Mobile. WorldSpace's position in XM was acquired in exchange for about 8.6 million shares of American Mobile stock following the retirement of \$75 million in debt from XM to WorldSpace.

Unique Designs XM Hardware

MARKHAM, Ontario Unique Broadband Systems Inc. has been awarded an interim contract by XM Satellite Radio to design the hardware for XM's terrestrial repeater network.

UBS is one of two companies bidding on the contract, which was expected to be awarded by mid-November. XM could not comment as it is in a "quiet period" due to its filing with the Securities & Exchange Commission for a public stock offering (see story page 3).

Incorporated in 1990, UBS engineers designed microwave systems and components. The company initially marketed waveguide components with designed

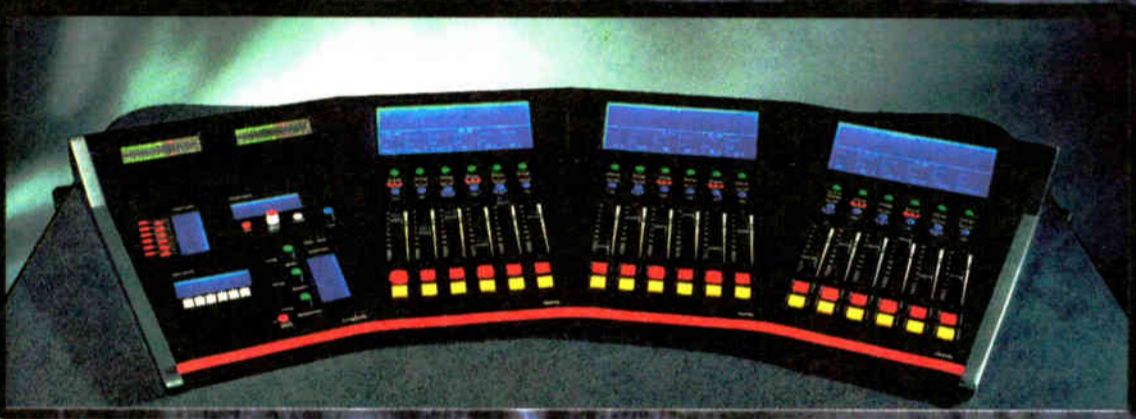
and manufactured RF devices for commercial and military projects. The company has added digital audio broadcasting products, including an MPEG encoder, a COFDM modulator and a digital power amplifier, to its product line.

In June, XM extended a contract with LCC International, which is providing the design, site acquisition, zoning and architectural services for the network of approximately 2,000 terrestrial repeaters. XM will have antennas and corresponding repeater network hardware placed on rooftops in areas where its satellite signals may be blocked.

The FCC has not yet issued a final order governing repeater deployment or use. It has proposed a blanket license system and service rules prohibiting local content origination. NAB has asked the FCC to delay consideration of the rules until XM and CD Radio provide more information, require individual repeater licensing and limit the number of repeaters that may be deployed.

— Leslie Stimson

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Lucent Wins Pequot Investment

► LDR, continued from page 8

financing and no decision had yet been made on future outside funding Faison said, "In future rounds of financing we will see what is best for Lucent."

USA Digi Radio, one of Lucent's competitors in developing in-band, on-channel digital broadcast technology, announced in January that 13 radio groups had taken equity positions in the company along with media investment firm Chase Capital Partners. USADR plans to eventually become a publicly-traded company.

Lucent Technologies stock is traded on the New York Stock Exchange under the symbol LU.

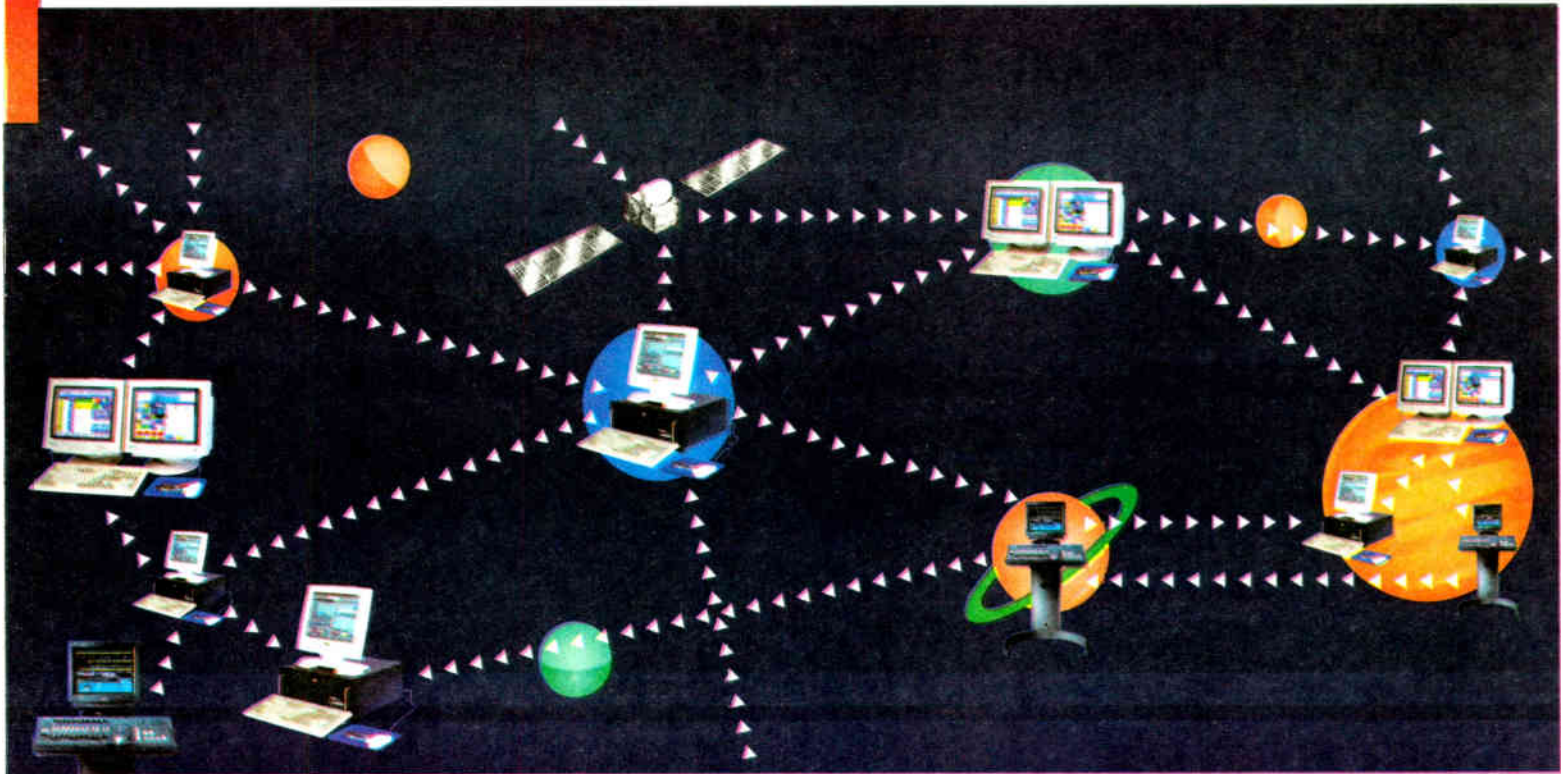
Poch said that although Pequot is not a broadcast company, it has expertise in the field through investments. That expertise plus Pequot resources, he said, will help LDR continue to grow.

LDR has forged relationships with several equipment manufacturers to test its prototype IBOC system: Telos/Cutting Edge and Orban (audio processors); Electronics Research Inc. (analog/digital RF combiners); Armstrong Transmitter Corp., Broadcast Electronics Inc., Harris Corp., Nautel Ltd., and QEI Corp. (transmitters); and Harris Intraplex and Moseley Associates Inc. (STLs).

Orban and Moseley were added to LDR's roster of alliances recently. LDR and Orban will test LDR's IBOC DAB system, including its PAC perceptual audio coder, with Orban's Optimod audio processors.

"Because PAC can be enhanced, the tests will ensure that both audio processing and audio coding are mutually developed and optimized," stated LDR.

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The Legacy of UPI Radio Network

► NETWORK, continued from page 6
the sound of entertainment or commerce. And for most of its existence, it made little attempt to establish a "brand identity."

UPI correspondents signed off their pieces without any network identification, allowing local stations to leave listeners with the unstated impression that it was the far-flung newsgathering staff of the local carrier-current college station, or the small-market 500-W daytimer or the 50-kW top-40 rocker that was deployed at world hotspots in the interest of its listeners.

For a long time, that bit of slight-of-hand worked. Without "network lockouts" that would have signified market exclusivity or rating diary confusion, UPI reporters could be heard on multiple stations in the same market, even on stations in direct competition with one another — made simple by the printed "billboards" that ran on UPI's broadcast wires, identifying every numbered "cut" of actuality or correspondent report.

UPI Audio actually was a partial outgrowth of United Press' attempt to get into the television news business at the dawn of the TV era.

With 20th Century-Fox, it started a newfilm syndication service, UP Movietone, in 1948. After United Press acquired the International News Service in 1958, adding the "I" to "UP," that became "UPI Movietone" and later still,

UPI-TN. While the rest of UPI was based at the Daily News Building in New York, the new audio service originally was housed with the newfilm operation.

Audio editor Phil Bangsberg joined from the film service in 1960 and recalled the early operation:



UPI Audio Election Night Staff in the Washington, D.C., Bureau in 1982. Left to right: Bill Small, Pye Chamberlayne, Bob Hoening, Rob Navias and Tom Foty.

"A client would phone in, give his ID (for billing) and be dropped into the running tape. He simply waited until it recycled, then rang off. Clients were notified of audio availability by an AUDIO BULLETIN on the wire. The charge (per cut) wasn't much,

and the novel service drew a consistently strong response. "As we got more ambitious," said Bangsberg, "we did live remotes. Those sorts of things were offered both as live feeds and as excerpted cuts.

"High-tech, it wasn't," said Bangsberg. "We had two Wollensak tape recorders and

10 phone lines. The cuts were recorded on small reels with long leaders at each end. Each leader had a narrow metallic strip pasted on. When it hit a sensor in the Wollensak, it automatically rewound and played again."

At about the same time, UPI gained a temporary competitor doing much the same thing. So UPI bought out Radio Press International and brought over many of the key RPI staff. Out of that mix evolved the national audio service.

Some of the ex-RPI people played key roles, including Pye Chamberlayne, who would spend most of the next 37 years with UPI and some engineers, one of whom, Frank Sciortino, would later run the whole operation from New York. In the late '60s,

Some of the network's most memorable broadcasts came from Vietnam. In one, Roger Norum was rolling his tape recorder in the field as his colleague, UPI photographer Charles Eggleston, was fatally shot by a sniper. Seven years later, UPI's Alan Dawson filed the final broadcast reports from Saigon as the helicopters were taking off from atop the U.S. embassy. Dawson's reports aired on Walter Cronkite's CBS TV special the night of the city's fall.

Terrorists and hostages

Pye Chamberlayne so angered Lyndon Johnson with his mid-'60s White House coverage that the president made an overt, if unsuccessful, effort to get UPI to fire him.

Audio General Manager Pete Willett was arrested several times when his detailed eyewitness account of the terrorist hostage drama at the 1972 Munich Olympics was transmitted back into Germany. Dressed in a track warm-up suit and believed to be a competing athlete, he got himself into a position with clear line of sight of the terrorists and the hostages.

Rob Navias ad-libbed for hours alone in UPI's memorable coverage of the Challenger disaster, recycling information from suitcases full of briefing materials he had memorized.

UPI used a single phone line, held open for four days, to transmit audio, text and pictures from a cramped hotel room in Guyana after the 1978 Peoples Temple mass murder/suicide. The radio reporter returned home without a hotel bill on his expense account — the result of using the floor instead — to "downhold expenses."

And it was all being done with a skeleton staff with decades-old equipment in competition with network staffs five times as large. New York headquarters would be staffed by two people or even one. Weekends would have Washington staffed by one reporter and London by another.

The equipment? Headquarters had two



Tom Foty reports from the 1984 Winter Olympics in Sarajevo.

UPI had another temporary competitor when the large Metromedia radio group formed its own news service. Chamberlayne briefly left UPI to head its Washington bureau. But Metromedia did not stay in the field long and sold its affiliate contracts to UPI much the same way UPI just did with AP.

At its peak in the '70s, UPI Audio was a major force in radio news. Its material was appearing on more than 1,200 radio stations, including most CBS, Bonneville, RKO-General and Metromedia properties.

Later, foreign broadcasters and even other networks sometimes subscribed: state networks, RKO, National Public Radio and Bloomberg. The audio quality might have been a bit cheesy, mostly 3 kHz "voice grade," but the quality and the quantity of the material were not.

reconditioned vacuum tube Altec-Lansing consoles and a half dozen mid-1950s Ampex decks which had come from RPI. The Ampexes would stay in service until the early 1980s. UPI was not known for not getting its money's worth.

What New York did have in abundance, however, was paper leader tape. It was used to separate news material interrupted by manually spliced "beep tones" which preceded every cut. The reels were archived, but UPI lost much of its library through the decades and the splices are breaking on what little of its history remains.

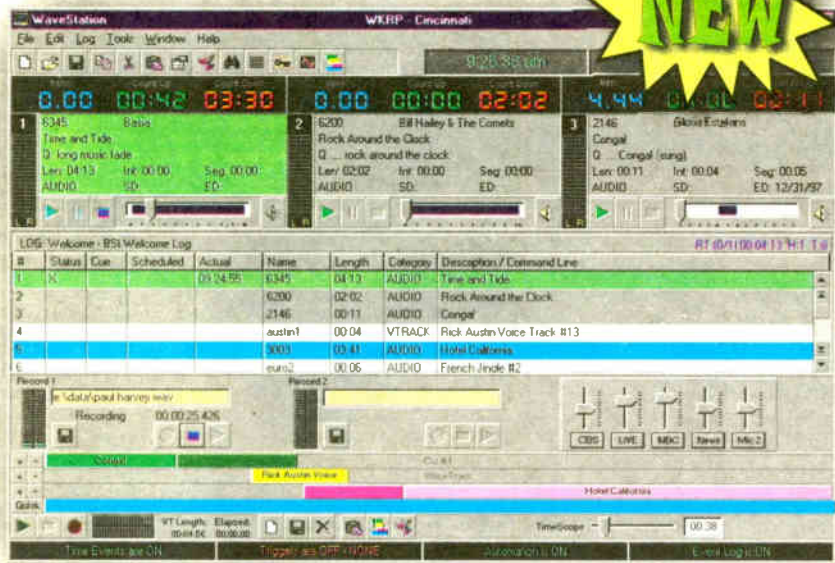
The keys to the long run was the multiple-affiliate presence in major markets and UPI's ability to bundle the service with its broadcast wire. The AP had unsuccessfully supported the efforts of

See NETWORK, page 15 ►

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UPI Radio: A Network at Its Best

► NETWORK, continued from page 12
UPI competitors RPI and Metromedia in the 1960s by carrying their billboards.

In 1974, facing a difficult job of competing with UPI's wire/audio package, it went into the same business. It copied the UPI service to a remarkable degree and offered it at sometimes drastically lower rates.

A few years later, both services faced a threat from a now-defunct commercial network, behind in its wire payments and in heated disputes with the parent wire agencies. In retaliation, it petitioned the FCC to formally declare UPI Audio and AP Radio "networks" in the regulatory sense. That would have meant the elimination of the multi-affiliate service that was the wire audio services' bread and butter.

The FCC ended up declaring them "networks," but eliminated the ban on multiple station contracts.

A changing marketplace

Just as UPI was upgrading its audio quality and product by adding staff in Washington and re-launching long-dormant radio bureaus in Los Angeles and Chicago (later Dallas and Miami too), the marketplace was changing.

AP's lower rates for big station groups were having an impact on UPI's ability to hold onto those customers at its higher rates. Then came more competition from new radio networks: RKO (which subscribed to the audio service), additional "demographically targeted" networks from CBS, NBC and Mutual; even a radio network from CNN. Perhaps most crucially, the FCC did away with public service requirements that kept the news product on many stations.

UPI's ownership change in 1982 from the Scripps company to two Tennessee businessmen soon brought an imminent threat to the re-named UPI Radio Network. The haphazard and poorly planned move of the company's editorial headquarters from New York to Washington resulted in millions of dollars of unanticipated costs and a major financial crisis in 1984.

UPI Radio hung on, despite threats to repossess unpaid equipment.

The new owners were forced out in bankruptcy, but UPI's downward spiral continued. At one point, it was under the control of Earl Brian, chairman of cable's soon-to-be bankrupt Financial News Network. UPI Radio was put up for sale in the early 1990s, but survived again as Brian's financial empire collapsed. He was later convicted of fraud.

Since 1984, UPI has undergone two bankruptcy reorganizations, frequent ownership and management changes with different executives stressing different kinds of services. Its current ownership is made of a group of Saudi Arabian investors who bought the company's assets out of its second bankruptcy.

Even as UPI was retrenching as a news service, its radio network and its broadcast wire continued their transmissions until the lights were finally put out, quite literally, by radio editor Rod Bower in mid-August.

At the news conference announcing the sale of UPI's remaining 400 broadcast contracts to the one-time arch-rival Associated Press, current UPI CEO Arnaud de Borchgrave made it clear he had little faith in the broadcast services United Press inaugurated.

Referring to the broadcast wire started in 1935 by UP (not yet UPI) when the AP refused to anger newspapers by doing

likewise, de Borchgrave said "what was brilliant pioneering work on the part of UPI prior to World War II, with radio news, is now a static quantity and, so far as I'm concerned, certainly doesn't fit into my plans for the future."

His plans call for the UPI name on an Internet-delivered paperless newsletter service, focusing on technical and diplomatic specialties, rather than general news.

The UPI Radio Network, nee UPI Audio, ceased operations at 12:32 p.m. EDT Thursday, Aug. 19. Two minutes later, AP material was flowing on the UPI broadcast circuits. The AP said it was approached by UPI to take over its contracts, but not any of its services or personnel.

Throughout the years, the path from UPI Audio/Radio led staffers on some unusual detours. One, Art McAloon, became a comedy writer for Johnny Carson; Brian Lamb went on to create C-SPAN. Jim Russell did the same with public radio's business program "Marketplace."

Space reporter Navias fulfilled his dream and joined NASA. Others moved into TV, including a son of actor Gregory Peck. But many stayed in radio and former UPI Audio/Radio staffers later moved into management positions at the other networks; some are at CBS and ABC now. And then there were some who left and returned.

Thirty-two years after starting with UPI and twenty-three years after leaving it,

Don Fulsom was back covering another presidential scandal. He was in his White House broadcast booth in the days before the final shutdown and had to end a nostalgic conversation saying "I've got to feed some cuts."

Three days later, he would feed the last news cut UPI would ever transmit:

65 :35 V Wh Hse (UPI's Don Fulsom) President Clinton is celebrating his birthday and preparing to fly to Massachusetts to start a nearly two-week family vacation.

Paraphrasing "Naked City," an old TV cop show: There were about 2 million UPI Audio news cuts. This has been one of them.

■ ■ ■

Tom Foty has spent more than 20 years in network radio news including 12 years with UPI, 1972 to 1984.

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CEMA Seeks Digital Alternative

Carl Lindemann

It sounds like a science fiction fantasy: digital broadcast that provides cars with 5.1 channel digital audio along with a wide range of data and information services.

But this describes a potential new service the Consumer Electronics Manufacturers Association is urging the FCC to create.

CEMA submitted an outline of this next-generation digital broadcast medium, the "Mobile Multimedia Broadcast Service," in a filing to the FCC in July. The proposal was in response to the com-

mission's call for comments regarding proposals to adopt rules to permit new wireless and broadcast services using UHF TV channels 60-62 and 65-67 (WT Docket No. 99-168).

This was one of more than 20 filings including comments from companies like Motorola and Disney.

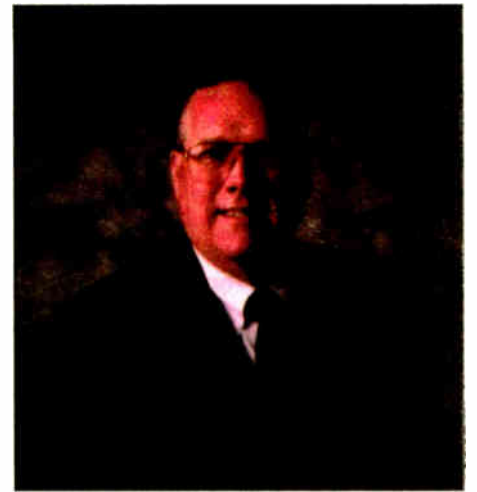
The bandwidth is targeted to become available in 2006 as part of the transition to digital TV. The bandwidth may be auctioned off as early as mid-2000.

'New' spectrum

"We hope broadcasters will embrace this opportunity to form a new service

that meets listener expectations and needs," said Ralph Justus, director of technology and standards for CEMA. "Spectrum opportunities like this don't come along very often. MMBS provides the best of all worlds — multichannel sound, 'CD-plus' quality, a host of data offerings, free, over-the-air with robust mobile coverage," he said.

The CEMA proposal anticipates a rising level of consumer expectation in audio quality as DVD and other formats replace CDs — expectations that Justus said in-band, on-channel digital radio, even if implemented, is unlikely to meet. "Some equipment manufacturers are



Ralph Justus

concerned about IBOC because it promises 'better-than-FM quality' or 'near-CD,'" Justus said. "The market research for consumer electronics manufacturers is clear: 'better-than-FM' or 'near-CD' is not good enough from the listener's perspective.

"It's difficult to imagine paying hundreds of dollars for a receiver to get something only marginally better than what's already available over FM," said Justus.

MMBS offers a significant improvement in quality as well as a wealth of additional services.

"We see huge benefits to the American public. Of course, we represent manufacturers of receivers. Our members have a strong interest in promoting something that will be attractive and compelling to listeners and users," he said.

75 data channels

The shape of the proposed service is, as yet, just a broad outline.

"What we're placed before the FCC is a concept design of what the possibilities are. If all 36 MHz of spectrum is available, we think that is ample and sufficient to institute the MMBS," Justus said.

This bandwidth could support up to 75 channels of data. According to Justus, part of the concept is to bundle these into five-channel "ensembles."

"There's the potential for 15 new voices or 'multimedia outlets' in each market. National services like CD Radio have their attractive features, but the real value of the MMBS as a terrestrial service is the local component," Justus said.

"Data services can be tailored to it for navigation and emergency alerting. With these kind of data rates (more than 300 kilobits per second) the value and potential service offerings are virtually unimaginable," said Justus.

The proposal also calls for scalability in services.

"Headers on the data would let you dynamically change the data rates provided for each element in that ensemble. For example, if you're going from a format that's heavily processed, like rock, you don't need full bandwidth. A talk show in mono is even less. Or you could broadcast the entire full-complement CD-plus audio in multichannel with the data services and give the listener the option of selecting how much they want to access," Justus said.

"Maybe they just want stereo for their Walkman-style player or a single aspect of one of these data services with a specialized mobile product delivering it," he said.

The technical challenges for implementing MMBS are considerable. But a CEMA study shows that the suggested spectrums (746-764 and 776-794 MHz

See CEMA, page 22 ▶

Good, Better and the Best Digital Systems

It's a fact: *More* U.S. radio stations choose Scott Studios' than any other digital system! 2,125 U.S. stations use 4,916 Scott digital workstations. Nine of the ten *top-billing groups* have Scott Systems. They're the *easiest to use!* Scott Systems are intuitive, straightforward, simple, yet the *most powerful!*

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Scott gives you industrial quality 19" rack computers, but *nothing* is proprietary: functional equivalents are available at computer stores. You also get 24 hour *toll-free* tech support!

Scott lets you choose your operating system: Linux, Novell, NT, Windows, DOS or any combination. You also choose from *three* systems: Good, better, best. One's right for *you!*

The screenshot shows a digital interface with a grid of song titles and artists. At the top, it displays '8:15:38A' and 'R-E-S-P-E-C-T Aretha Franklin'. Below this, there are several rows of song information, including 'Ferry Cross the Mercy Jerry & the Pacemakers', 'Home Depot Q: Better at Home', 'McDonald's Q: Prices may vary', 'Eckerd's Q: Safe Ends Saturday', and 'Cool 105 Fast Jingle Q: Cool 105'. At the bottom, there are navigation buttons for 'Stack', 'Artists', 'Time', 'Year', 'Cat.', 'Auto', 'Back', 'Forward', 'Pre-view', and a digital display showing ':04'. A search bar at the bottom contains the letters 'A B C D E F G H I J K L M N O P Q R S T U V W X Y Z'.

The Scott System is radio's most user-friendly. You get instant airplay or audition of any song simply by spelling a few letters of its title or artist. You see when songs played last and when they'll play next. You also get voice tracking while listening to music in context, hot keys, automatic recording of phone calls and graphic waveform editing, all in one computer!

Good Spot Box

The screenshot shows a digital interface for a spot box. It displays a list of spots with their call letters, times, and categories. For example, 'CompUSA - Epoon 2474 09:00-10:00 CM', 'Dallas Morning News 4843 09:00-10:00 CM', and 'Pepsi-Cola 7327 09:00-10:00 CM'. There are also buttons for 'Start', 'Auto', and 'Stop'.

Scott's Spot Box delivers the *simplicity* of a triple-deck "cart" player plus *compact disc quality* digital sound.

Spot Box has only the one screen, so announcers always know what's playing. On the left of the screen, three digital players have legible labels for each spot and VU bars show levels. Buttons show countdown times and flash as each recording ends.

At the right of the screen, "Cart Walls" let you pick and play any recording by name, number or category. Or, number keys at the bottom load spots quickly from your log.

Scott's Spot Box includes a recorder and is *very* inexpensive. Options include log imports from traffic computers and music on hard drive.

Better AXS 2000+

The screenshot shows a digital interface for the AXS 2000+ system. It displays a list of stations with their call letters, times, and categories. For example, 'Hotel California 7:25', 'Hotel California 8:00', and 'Hotel California 8:30'. There are also buttons for 'Start', 'Auto', and 'Stop'.

AXS (pronounced ax'-cess) 2000+ is radio's premier digital audio system for automation and live assist. AXS 2000+ is fully featured, with 99 sets of 28 instant play Hot Keys, log editing in the studio, live copy on-screen, big countdown timers, recording and editing of phone calls, spots and network shows.

You also get auto-fill of network breaks to cover missing spots, a Real Time Scheduler, unattended net recording, timed updates, macros and optional time announce and WAVE file imports.

For stations with large CD music libraries, AXS 2000+ can also control inexpensive consumer CD multi-pack and 300 CD juke box players.

Best Scott' System

The Scott' System (pictured above) is radio's most powerful digital system!

Your log is on the left side of the LCD touchscreen. Instant access Hot Keys or spur-of-the-moment "Cart Walls" are on the right with lightning-quick access to *any* recording. Phone calls record automatically and can be edited to air quickly. You can also record and edit spots or voice tracks in the air studio or go on the air from production.

Scott' options include *Invincible* seamless redundancy with self-healing fail-safes, newsrooms, 16-track editors, time and temperature announce, and auto-transfer of spots and voice trax to distant stations over WAN or Internet.

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World Radio History

Workbench

Radio World, September 15, 1999

Time for a Transmitter Tune-up

John Bisset

Now that we're getting a break from the heat of summer, I thought it would be

a good time to take a look at some maintenance issues "pictorially." Run through your facility and with eyes wide open, look for potential problems.

This issue's column will look at the transmitter. Next time, we'll head outside to the tower site.

Figure 1 shows what happens when tubes are starved for air. In this case, the filter on the outside air vent was solid black with bugs and crud. The transmitter air filter wasn't much cleaner. The blower motor tried to keep the tubes cool, but in our example, the tube got so hot, the plating is flaking off.

Look for discolorations of the tube surface — compare to a new tube if



Figure 1: Tube life is quickly lost when a tube is starved for cooling air.

First, if the transmitter is running with full power, take a composite set of transmit-



Figure 2: Keep the power supply vault clean.

ter readings. Read *every* meter and gauge, and record the measurement, date and time. This will be useful information one day.

Now, let's focus on the inside of the transmitter. Downtime for cleaning and inspection is rare, I know. But the argument for your manager or PD is running a car with no oil changes. It will run, but eventually it will fail.

Work with your managers to determine

you're not sure what you are looking for. Check especially the filament connections. Even though it's only 10 volts, the filament is drawing substantial current. Loose connections, or poorly fitted (or missing) filament spring contacts will cause heat to build up.

I've seen situations where sometimes a transmitter will turn on, sometimes it won't. The solution was corrosion that built



Figure 3: Check all wires for good, tight connections and intact insulation.

the best time for maintenance. I'd suggest you ask for two sessions. The first, perhaps only two hours for cleaning and inspection, and the second to occur a couple weeks later to permit repairing the problems you find. Trying to do it all in one night puts too much pressure on you, and can result in a sloppy job "just to get it done."

Of course, major problems must be addressed, but scheduling a time to complete the repairs when you have all the proper parts and all the right tools is the best way.

up on the filament contact bolts. Remove the leads, washers, and nut/bolt assembly, and clean the surface with Scotchbrite. Reassemble, and tighten firmly.

If the spring fingers are missing inside the tube socket (you'll need to remove the tube to check this), get a replacement set and install. You'll need a long small-tip Phillips driver to get the little bolts started. Replacement is a job you'll never forget — it's time-consuming and nerve-wracking.

I've used a little piece of dried rubber
See WORKBENCH, page 20 ►

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Coax: From Diversity to Digital

Steve Lampen

We ended last installment (RW, July 21) talking about installation of cable for extending antennas for diversity wireless microphones. When you buy some low-loss coax to extend at least one (if not both) antennas, the farther apart the antennas the greater the difference will be between the two received signals and the better the system will work.

And, while you're at it, why don't you put one antenna (or even both) closer to the location of the wireless transmitter?

In a theater, for instance, you could put one antenna on either side of the stage and run coax to the receiver next to the mixing position. Or you could put one up center stage and one back in the house.

Don't forget the inverse-square law: Halve the distance between the mic and the antenna and you increase the signal strength by a factor of four.

You can mix and match antennas too. You might leave one a whip for omni pickup, and the other could be a yagi for directional pick-up.

This can be especially helpful in a stage production where you have a difficult pickup in one particular area. You could put one antenna right in that area, and leave the other for omni pickup of everything else.

Remember Elizabeth Dole at the last Republican convention? As soon as she

walked off the stage, her body-pack wireless was no longer line-of-sight to the receivers' antenna and stopped working. A little extension from the receiver, and judicious placement of antennas, would have solved that prob-

lem before it even happened.

Digital audio on coax is a hot topic. In fact, it is so hot that the Audio Engineering Society made a modification to its AES3 standard and added AES3id, which specifically addresses digital audio on coax.

This is a confusing subject for many because there are, in fact, three versions of digital audio on coax. The first is a conversion from the twisted-pair AES/EBU standard to a coax format. This is done with baluns which convert from balanced (twisted pair) to unbalanced (coax). That's why the device is called a "balun," BALAnaced to

UNbalanced. So don't call it a "bay-lun."

The signal on coax, in this instance, is identical to the original on the twisted pair, just the format (cable type) has changed. But why would you want to change from twisted-pair to coax? Here

Because they use only one kind of cable, their wiring diagrams are a lot simpler. The only thing that might be different is cable color, which can be used to identify which cable is audio and which is video. And, since the overall volume of that particular cable will go up, the price they pay for each roll might be considerably lower.

It's the simple things ...

And wouldn't it be great to use one kind of wire to do everything? Wouldn't life be simple? Well, that might be one of the directions which cable designs are heading, toward a "universal cable." But that's fodder for another column.

The second type of digital audio on coax is where your console or other equipment already has a coax. The signal is still the standard AES/EBU format, but you don't have to buy any baluns to convert. Many digital processing boxes have as standard (or as an option) coax digital inputs or outputs. Coax for digital is worth considering if you're going to digital audio anytime soon.

And those video folks have another trick you should know about which solves the problems of patch panels and distribution amp for digital audio. Here are both problems in a nutshell.

If you stay in the 110-ohm world of digital audio, you eventually come to a patch panel.

Since we're now experts on "wavelength" (from many past columns) you will understand this: AES signals are high frequency. They range from 2 MHz to 3 MHz depending on the sampling rate. (48

See LAMPEN, page 24 ▶

Coax for digital is worth considering if you're going to digital audio anytime soon.

are some reasons.

Because coax, by its nature, is more impedance-stable than even the best twisted-pair, you can go farther, up to twice as far as you can go with twisted-pairs. However, you lose the inherent common-mode balanced-line noise rejection of twisted pairs, since these don't apply to coax.

The people most enamored of digital audio on coax are, in fact, video people. By converting their digital audio to coax, they can use the same cable for both audio and video. They can therefore use the same connectors, same stripping tools, and same crimping tools.

PRODUCT REVIEW

Around the World With Benchmark

Tom Vernon

Like Rodney Dangerfield, the lowly balanced-to-unbalanced interface box gets no respect in the pro audio world. Often left hanging by the cables or surrounded by dust bunnies in the bottom of the rack, we tend to have a set-it-and-forget-it mentality toward these devices.

World Interface (AWI), has lots of extra features and standout specifications.

AWI can really perform three functions. Depending on the front-panel switch selections, it can be either a two-way balanced-to-unbalanced recorder interface, line amp, or mono-mix amp.

Front-panel controls and indicators include left and right balanced input



Benchmark Audio World Interface

They usually get left in service until power surges or failing electrolytic caps take their toll.

Attitude adjustment

A few manufacturers seem to have the same attitude toward their construction. Some of the boxes that I've taken apart over the years look like someone's first electronics shop project — one that should have received a failing grade.

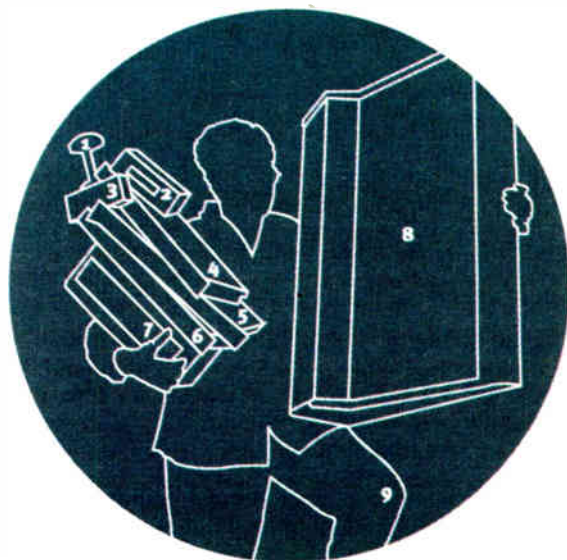
The folks at Benchmark Media Systems decided to take the subject seriously, and their offering — The Audio

gain controls, left and right balanced output controls, switch selectable line amp/rev channels/mono mix, green signal presence LED, flashing red/green peak/overload LED, and yellow power LED.

Around back are the XLR and RCA connectors for ins and outs, and the RJ-11 connector for power.

Mechanically, AWI is one rack unit high, one-half rack wide, facilitating side-by-side rack mounting. Juice comes from a wall mount ± 16-volt

See BENCHMARK, page 23 ▶



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Don't Neglect the Broadcast Tower

Ed Montgomery

This is one in a series of articles about the fundamentals of AM radio. The previous part appeared Aug. 4.

The tower is the most important part of the radio station.

In AM broadcasting, the tower and associated ground system is the antenna. It must be maintained to keep the radiated signal at its licensed value. Towers are often neglected by management.

What is the broadcaster to do at this point? It is a difficult time for the AM band.

The towers can be self-supporting or guyed. If the license so specifies, they need to be painted and often lighted. If they exceed 200 feet, they must be registered with the FCC. A complete tower inspection should be performed at least every three years.

Towers receive a lot of stress from wind. Over the years they may lose their vertical alignment. Part of the

The majority of AM towers are series-excited. This requires the tower to be insulated from ground. The insulator bears the weight of the tower and must be free of cracks that could com-

promising the insulator's integrity causing a possible failure.

The lightning loop of the transmission line and the spark-gap at the base of the tower need to be in place to reduce the likelihood of lightning strikes damaging equipment.

See AM, page 24 ▶



Figure 1: This AM site has vines growing up several towers, presenting a maintenance and performance hazard. A saw and a set of shears would solve this problem.

Today, engineering is often contracted out or centralized because of multiple station ownership and the AM antenna often does not get the attention it needs to maintain reliable service.

This is a time when the value of the transmitter site may actually be more than the entire value of the station. There are times when renegotiating leases, the broadcaster may be driven off the site because the land is more valuable as a residential or commercial complex.

inspection includes a check of the guy wires and associated hardware holding the tower in place.

The tower should be inspected for corrosion. If it is bolted together it, all joints should be tight. If the tower is welded, all welds should be inspected. Stress from wind and ice can cause the welded sections to crack and ultimately fall. In addition, the entire tower has electric current flowing through it requiring good electrical continuity.

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Transmitter Walk-Through Session

▶ WORKBENCH, continued from page 18
cement or sticky RTV to hold the little bolt onto the tip of the driver as you fish it down into the tube socket well. The tackiness is just enough to keep the bolt in place till you get the washer and nut in place on the underneath of the tube socket. Some wooden cotton cleaning swabs are of the proper diameter to fit into the Phillips cross on the bolt, which can also help in properly placing the bolt in the mounting hole.

★★★

Check your filters, and give the transmitter a good bath — before beginning, turn off all breakers, discharge all components, disable the remote control, and work with a friend, never alone.

Inside the power supply cabinet, after discharging the capacitors with the shorting stick, use 97-percent alcohol to clean insulators, and capacitor tops. Use clean cotton cloths (T-shirt material is great) or clean shop rags, such as Rags-

rotate the tube and watch the spring fingers. Look for improper bending, corrosion or burned fingers. You can spot this problem on the tube as well. Check the tube tabs for discoloration or arcing. Replace the socket if you find a problem.

The vibration of the blower motor can cause wiring to wiggle free. A close inspection of all soldered connections is also warranted. Keep an eye out for discolored components. Overheating will cause resistors to crack, or sometimes swell.

★★★

As you inspect wiring, check the wire runs. Many times, on older transmitters, the plastic cable mounts have lost their adhesive and pulled away from the wall. Watch where the wires lay.

Figure 4 is an example of a wire that broke loose from its selector switch, and rubbed up against traces on a printed circuit board.

The problem was the wire that

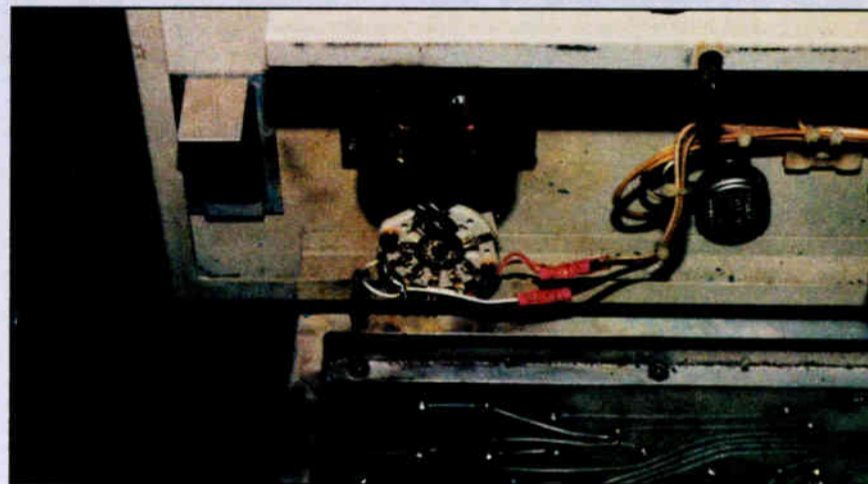


Figure 4: Ty-wrap wire runs to keep them from shorting to other components.

in-a-box. Paper towels will work, but invariably, will leave small pieces that tear off. These can get sucked into cooling systems or block tube cooling fins.

In Figure 2, cleaner capacitors are seen on the right, the ones with dirty build-up are on the left. Dirt can give a home to moisture, which can cause shorts — especially when dealing with high voltage.

Check the contacts on the components. Are they tight? Are crimp connections loose? Has heat caused insulation to crack or break away?

★★★

I mentioned checking tube contacts. Some tubes use sandwich-type spring fingers, where the tube is dropped into the socket, then turned.

Figure 3 shows the underside of such a socket. Using a trouble lamp,

broke off was carrying 120VAC, going to the AC Mains meter and selector switch. The close tolerance of the rear of the selector switch and the circuit board didn't help things either.

Use ty-wraps to secure wiring bundles, and replace those that have cracked or broken. If a ty-wrapped bundle needs to be broken for inspection, or routing another wire, replace the ty-wraps to keep everything secure.

■■■

John Bisset has worked as a chief engineer and contract engineer for nearly 30 years. He is a district sales manager for Harris Corp. Reach him at (702) 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

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Stratos Inmarsat M4: Light and Affordable

For remote operations, high-speed network connections previously required large satellite terminals weighing almost 50 pounds, and the size of a large suitcase.

Stratos says the Inmarsat M4 ISDN terminal gives broadcast journalists complete access to network applications back home, as well as extremely portable broadcast-quality audio for remotes.

A little bigger than a laptop computer, and weighing only nine pounds, the M4 delivers data speeds up to 56/64 kbps, comparable to land-line ISDN rates. The M4 connects to a computer via standard built-in ISDN interfaces, for access to high-throughput data network applications almost anywhere in the world.

Shipped with a battery, it delivers more than 100 hours standby time and can be



easily stored with a laptop computer in a portable over-the-shoulder carrying case.

In addition to hardware and airtime, Stratos offers M4 users Internet service, positioning the company as an Internet Service Provider (ISP) for the mobile satellite industry.

The company says M4 ISDN terminals cost substantially less than Inmarsat-B land units, and service also offers voice and data at rates significantly below Inmarsat-B.

Capabilities include broadcast quality audio, store-and-forward video transfer, video conferencing, Web access, high-res photo transfers and Internet e-mail. Other specialized services and uses are available, including a high-speed "mobile mailbox" service.

For more information, call (888) 766-1313, send e-mail to info@stratos.ca, visit the Web site <http://www.stratos.ca> or circle Reader Service 41.

Wheatstone Routing Switcher

Wheatstone Corp. has expanded its product line to include the 1024 AES Routing Switcher.

The 1024 delivers multiple signals to a central point and is one of the largest audio routing switchers available.

Thirty-two channels of audio are contained in each of the router's cards, and a single 21-inch rack mount card cage can provide up to 320 stereo inputs and 256 outputs. Four card cages can be connected together.

The unit is designed to interface with Wheatstone's D-500 and D-600 digital consoles and is also compatible with the Audiotronics NuStar digital console. The company says the 1024 connects easily to digital automation systems.

The 1024 Router's cards are "smart" cards, each containing total system intelligence. Talking to one of the system's cards is the equivalent of talking to the entire system, for redundancy all the time.

The system features convenient back-

mounted DB connectors; the unit's insulation displacement connectors soldering and crimping. Cards can be pulled from the front without disconnecting wires for easy swapping and repair.

For more information, contact Wheatstone Corp. in North Carolina at (252) 638-7000, e-mail to sales@wheatstone.com or circle Reader Service 71.

RF Connectors MMCX Crimps

Now available from RF Connectors is

the RFM-9000-1A MMCX, straight crimp plug connector for RG-178/U cable.

Even if you don't have a crying need for this item, you have to love the photo the company sent us.

This new addition to the company's subminiature series is for use where space requirements demand smaller components. MMCX connectors are one of the smallest coaxial connector interfaces that can be used to terminate standard coaxial cables.

The snap-in, slot-less interface offers rotation capability with a controlled 50 ohm impedance and low VSWR to 6 GHz.

Straight and right-angle styles are

available in PCB and crimp plug and jack configurations.

For information, call the company in California at (800) 233-1728 or (858) 549-6340, visit www.rfindustries.com or circle Reader Service 72.



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CEMA Pushes MMBS Concept

► CEMA, continued from page 16
bands) favor this kind of use.

"Part of our filing was a technical report comparing L-band and S-band frequency ranges and a variety of digital coding technologies, source codings, modulations and seeing the impact of jumping between these two bands," Justus said.

Qualitative analysis

"Part of that was a qualitative analysis. 700-800 MHz is ideal from a terrestrial repeater consideration." The study was conducted with COFDM coding as the baseline for measurement.

"COFDM is a proven modulation

scheme for overcoming interference and multipath impairments in mobile reception. It's being increasingly picked up

The CEMA filing also asks that the proposed MMBS licensees not be subject to Part 27 of the commission's

The electronics association wants to use old TV channel bandwidth for a new Mobile Multimedia Broadcast Service.

on by electronic newsgathering functions and other mobile-types of offerings," said Justus.

rules governing wireless and broadcast communication services. It suggests that Part 73 rules would provide a

more appropriate framework. Justus said this would establish standards for MMBS faster as well as increase the auction value of the bandwidth.

"It makes no sense to auction off the spectrum with the idea that it could be used for a range of possibilities. To leave it unspecified is to repeat what the commission did with Part 27 when it created this wireless communications service — no definition of the services, technologies to be deployed and so forth," he said.

If past patterns repeat, this would also increase revenues from the sale.

"It's our belief that if you designate the spectrum for a particular service and specify the particular technology to deploy that service, it becomes far more valuable. A good example is the DARS licensees. The auctions generated \$160 million for 25 MHz of spectrum. The wireless communications service covered about the same spectrum but generated only \$13 million," said Justus.

The National Association of Broadcasters filed a reply to the proposals for the available bandwidth on Aug. 13.

Alternate proposal

The NAB favored an alternate proposal submitted by the Walt Disney Co. that calls for dividing the two spectrum bands into blocks of 6 MHz. According to Disney's filing, any other size of spectrum block would "disfavor if not effectively prevent, broadcasting as a potential use" of the bands.

In its reply, the NAB agrees with Disney that "awarding licenses in 6 MHz blocks will best accommodate the provision of both narrowband and broadband services (including broadcast) within these spectrum bands."

Beyond these technical considerations, the NAB's reply disagrees with CEMA's view that the proposed MMBS is in the public's interest.

"CEMA has shown no compelling reason to justify the foreclosure of all these other potential uses and the exclusive reservation of 36 MHz of spectrum for a new service for which market demand has yet to be demonstrated."

Besides, it argues, IBOC DAB and DARS already will address whatever market demand there may be.

"The commission should thoroughly explore IBOC DAB technology before even considering the allocation of any scarce spectrum for another digital audio service, such as the proposed MMBS."

Wish list

CEMA will hold a "Discovery Group" on MMBS in Washington, D.C., on Sept. 15.

"The idea is to discern the degree of interest in pursuing the concept, looking forward to what kind of design requirements should be thrown on the wish list. We also need to determine which existing technologies can be integrated and what standard development activities need to be initiated as well as what venue or venues are needed to achieve this result," said Justus.

Justus also will make a presentation on MMBS as part of the Digital Audio Radio Conference during September's Audio Engineers Society conference in New York. David Bialik, DAR Conference chair, sees a possible competition between IBOC and MMBS.

See CEMA, page 23 ►



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AWI: A Little Respect, Here!

► BENCHMARK, continued from page 19
200 mA regulated supply which connects to the Audio World Interface via a RJ-11 jack.

Published specifications include a frequency response of +/- 0.05 dB from 20 Hz to 20 kHz, distortion of 0.0011 percent, and phase error of -7 degrees at 20 kHz.

Crosstalk is down 100 dB at 1 kHz, -75 dB at 20 kHz. Differential phase is an impressive ±0.25 percent from 20 Hz to 20 kHz. Input impedance is selectable 150/600/20 kohms. Balanced output impedance is 60 ohms via electronic transformer outputs.

The quality of construction for AWI is up to Benchmark's usual standards. Sheet metal work and paint job are excellent, and everything fits together well. Very high-quality components are used throughout.

The only problem I encountered when setting up the unit was with the 150/600-ohm termination jumpers. Parts are stuffed so close to the jumper pins that it was necessary to bend a couple capacitors out of the way before I could insert the jumpers, a minor inconvenience.

Robust reading

The instruction manual is robust for such a simple device. Within its 11 pages are: a description of features and performance specifications, installation

and operation instructions, a circuit description, troubleshooting and repair instructions that usually come with such equipment.

Some of the boxes I've taken apart look like someone's first shop project — one that should have received a failing grade.

information, and a schematic diagram. Quite a contrast from the one-page +4 dBU balanced signal and knock it

down to -10 dBv. Benchmark recommends setting output levels at -6 dB. Since many unbalanced input circuits have a potentiometer as the first element, additional gain reduction may be taken there without compromising signal-to-noise specifications. As always, the acid test is whether or not you can hear a difference between the Benchmark box and competing units.

If you're interfacing to poorly maintained cassette recorders, perhaps not. If you're interfacing to DAT machines or CD players, there's a good chance that you can.

Give your ISO-to-balanced interface box some respect, and you may be surprised by the results.

■ ■ ■

Tom Vernon can be reached via e-mail at TLVernon@blazenet.net

► CEMA, continued from page 22

"CEMA's proposal gives a market showplace for DVD Audio and it's going to intensify competition," Bialik said. "CEMA isn't saying its a competitor. They just want to say there's a possibility here, and would like the FCC to reserve frequencies for it. What they're saying is 'We're opening the doors here, so come on in and play'.

"But even if this just takes place on the audio and not the data level, it's taking marketplace. When I saw this, all I could say is 'wow,'" Bialik said.

Fate

The fate of MMBS may be decided quickly. Ed Jacobs, senior engineer at the Policy Division of the Wireless Bureau at the FCC, sees a possible resolution in less than a year.

Originally, the auction for the bandwidth could not take place before Jan. 1, 2001. But according to Jacobs, "There's consensus on the Hill to move the date up."

How such a tight deadline may shape the future of digital radio is a concern to Justus.

"The question is what can satisfy listener needs and how do you best do that. The obvious answer is with new spectrum. Without spectrum, IBOC is the only alternative. So we've been tracking the spectrum opportunities since 1992.

"We've consistently filed comments with the FCC in all these proceedings asking for them to please not make premature decisions — particularly spectrum decisions," Justus said.

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AM Basics: Care of Your Plant

► AM, continued from page 20

Shunt-excited towers, most often designed as folded unipoles, are grounded but have energized wires that are insulated, traveling up to a specific location on the tower where they are attached. These wires and their insulators need to be inspected periodically.

Other AM towers may have one or more FM antennas or other radio service antennas attached to them. The hangers carrying the transmission line need to be inspected as well as the mounts securing the additional antenna to the tower.

Relationship development

Developing a relationship with trustworthy tower companies is extremely important. RW's Troy Conner provides useful tower information in his *Man of Steel* column. *Workbench* by John Bisset also provides useful information on tower maintenance.

If a tower is registered, it must conform with FAA requirements. Part 17 of the FCC rules dictate the paint and lighting required for these structures. The number and location of bands of white and aviation surface orange, as well as the number of obstruction lights and beacons vary with the height of the structure.

An alternative to red lights and white and orange towers is high-intensity white obstruction lighting. This type of lighting is most often used on very tall towers. In densely populated areas, a silver or gray tower has less impact on a community than an orange and white one.

However, the community will be faced with the continuous flashes of light from the high-intensity lamps. Most of the energy is directed in the horizontal plane in the vicinity of the tower becoming more visible to the ground about a half-mile away.

All tower lighting must be visually checked every 24 hours. All tower lights should be inspected every three months.

Satellite receiving dishes have become a must in most broadcast facilities to receive network news and other programs.

These antennas are in the shape of a parabola and are pointed at geosynchronous satellites orbiting 22,500 miles above the equator. Most local stations do not have the equipment or tools necessary to repair these systems. They run on low voltage and should run for years



Figure 2: Keep satellite receiver dishes clean and free of pests. This one needs a wash and a coat of auto wax to prep it for winter.

without problems. These systems often are the responsibility of the network providing the service.

The received signal is concentrated at the center of the parabola and fed into a horn where the actual receiving antenna is. This radio signal is very weak requiring the antenna to be aimed precisely at the satellite, with the feed horn aligned and polarized properly. The "dish" must be firmly mounted. It must not move in wind. If it is roof-mounted, make sure the roof can handle the extra wind-loading the antenna will produce.

These parabolic antennas come in two forms: solid (either metal or fiberglass) and screen mesh. The dish must keep its shape through all weather conditions. Snow can reduce or eliminate a signal. Coat the dish with auto-

mobile wax allowing snow to slide off more readily.

All satellite receiving systems are vulnerable to atmospheric conditions. "Rain-fade" occasionally occurs on Ku-band systems, creating a weak signal or total loss. The sun also causes signal loss as it travels across the equator at the beginning of spring and fall.

With the sun directly behind the

satellite, the weak radio signal is lost amidst the radiated energy from the sun. Most services predict when this will occur and offer alternative plans for that time period.

Periodically inspect the satellite receiving dish and transmission line coming into the building. Make sure no one has accidentally cut the line and that pests have not built a home in the feed horn — two common reasons for loss of signal.

■ ■ ■

Ed Montgomery is the video technology and communications lab director at Thomas Jefferson High School for Science and Technology, Fairfax County, Va. He has worked as a broadcast engineer and college-level instructor.

Reach him at emontgom@lan.tjhsst.edu

Coax for Digital Worth Considering

► LAMPEN, continued from page 19

kHz sampling = 3:072 MHz bandwidth.) That means the quarter-wavelength critical distance is 82 feet.

So what difference could a patch plug or jack make? And the answer is not much. Even if you disagree and think the critical distance is 10 feet, a 6-foot jack and plug are still not a big deal. And to entice you to use the same TRS panels as before, manufacturers are bringing out low-capacitance versions which help preserve the square waves (i.e. ones and zeros) of the digital signal.

But the problem is not impedance, or even capacitance. The problem is the configuration of patch panels, that is, normals and mults.

Wouldn't it be great to use one kind of wire to do everything?

If you've ever wired up an analog audio TRS or bantam patch panel, you know that a half-normalled panel allows you to interrupt (and re-patch) the signal on one side of a dual jack and to mult (i.e. not interrupt, just add) to the jack on the other side. Interrupting a signal and rerouting to somewhere else is just fine for digital audio. But multing on the non-interrupt side is a no-no for digital.

Digital is specifically a 110-ohm system. Multing two cables means that each is now working at an impedance of 55 ohms, a pretty horrific impedance mismatch and one that will result in significant structural return loss (SRL) and dramatically reduced signal strength.

There are a few people working on an active balanced digital audio patch panel. But that means active circuitry in each jack with associated problems of power supplies (not to mention reliability or cost). There's also the possibility of passive splitters, sort of like baluns with multiple outputs. But again, fitting a 48- or 96-point patchbay would be very expensive, even assuming you could fit all the gadgets into them.

But don't fret, for there is light at the end of this dark tunnel, and we will get to it in the next installment.

■ ■ ■

Steve Lampen is a senior audio video specialist for Belden Wire & Cable Co. in San Francisco.

His book, "Wire, Cable, and Fiber Optics for Video and Audio Engineers," is published by McGraw-Hill. Reach him via e-mail to shlampen@aol.com

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PERSONALITY PROFILE

His Mojo Works Without a Sound

Judith Earley

"You can always feel the music," said Russell Luzid. "I've been feeling the music since I was a kid." But what do you do if you are born with both a feel for the music and a profound hearing loss?

If you're anything like Luzid, you become a southern California DJ.

You can tune in his weekly radio show "Hear the Blues with Russell," on KUCI(FM) from Irvine, Calif. But Luzid can't hear them — he was born deaf. Billing himself as the world's only deaf DJ, he does two shows a week at the

University of California, Irvine station, plus a regular Monday night stint as house DJ at B.B. King's Blues Club in Universal City.

Luzid's hearing loss is the result of Rubella contracted by his mother during her pregnancy, which left him with a total hearing loss in his right ear, and only 1-percent residual hearing in his left. Fitted with a hearing aid when he was five years old, Luzid was able to attend a special school for the deaf.

What makes Luzid's achievement more remarkable is that he didn't even learn to talk until he was about 30 years old.

At that time he was working as a draftsman for an insurance company when he was approached by a co-worker about transferring to the insurance adjustment department. Quick to reject the idea, Luzid said, "I thanked him, but pointed to the pad and pen that I used to communicate with then, and he realized that I couldn't do that."

Not long after that, the same co-worker introduced Luzid to a family who had a little boy who was deaf. Luzid got to know them well.

"They introduced me to a woman who called herself the Countess of Poland, and she asked me if I wanted to learn to speak intelligibly. I said yes, and took lessons from her for eight years," said Luzid.

In fact, Luzid's speech and lip-reading skills are so good now, when he started at KUCI two years ago, a fellow DJ worked with him for three months before he realized that Luzid was deaf.

Luzid credits "mental gymnastics" for his ability to communicate both on and off the air. But he admits there are still miscommunications.

"I called a friend and asked her how she was. She said, 'not so good.' I thought she said 'good' and said that was great. It made her mad but it was unintentional," said Luzid. He has just enough residual hearing to talk on the phone with a TDD hookup.

Just how did he make the unusual leap from insurance to radio?

"I've always loved the blues and read a



Russell Luzid

magazine called Southland Blues, that talks about the music and where you can hear it," said Luzid. "One way is in a club, another is on the radio. I'd never seen a radio station, but there was one nearby that played the blues." That was KSPC(FM) in Claremont, Calif., and Luzid set up a time to meet with one of the DJs there.

But when he arrived for the appointment, that DJ was out, so Luzid introduced himself to the DJ who was there. The two men went to lunch and talked music.

"He asked me if I wanted to be a DJ and I said sure. So I enrolled in the three-month DJ training program they have at KSPC," Luzid said. He did very well there, and became a regular DJ for KSPC. By the time he left, he was one of its most popular on-air personalities.

Luzid looked to the nearby community of Orange County, Calif., and felt confident enough to try out for KUCI. His confidence

See LUZID, page 36

In-Car Radio Trends: They're Listening

Laura Dely

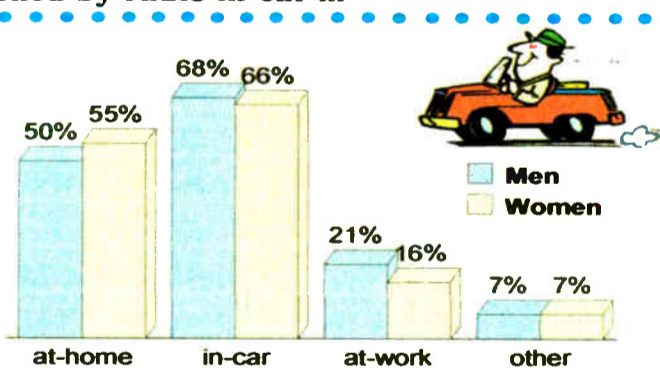
Most Arbitron diarykeepers listen to the radio when they are in-car, according to a recent study by Research Director Inc.

"This is the highest percentage of diarykeepers of any location of listening; 79 percent of diarykeepers listen to the radio in-car during a week," said Marc Greenspan, RDI partner.

The study revealed that there is a correlation between employment and in-car listening.

"Employed persons are more likely to listen to a radio station in the car. The study found that 72 percent of the average station's listeners who are full-time employees listen to the station in-car compared to 67 percent that are employed part-time and 56 percent who are not employed," Greenspan said.

Men are slightly more likely than women to be reached by radio in-car ...



Source: PD PROFILE® % P 12+ diaries M-Su 6A-12M that listen to a specific radio station. © Research Director, Inc In-Car Listening Study 1999

There are peaks in in-car listening in the morning and afternoon drivetimes, the study confirmed.

"But surprising to us," said Greenspan, "was that there is also a spike in the midday, at lunchtime."

Greenspan said another myth that is laid to rest by the RDI In-Car Listening Study is that people jump around from station to station when they are in-car, and therefore are hard targets for advertisers to hit.

"The percentage of total radio listening done in the car is very close to the market total with 67 percent of diarykeepers mentioning a station in-car that was also listened to in other locations," according to Greenspan.

And the study found that men are listening to the radio in-car in the course of a week more than women — 24 percent more than women's total listening time.

But at least one major advertiser understands the value of female in-car listeners.

In the-back-to-school period, Procter & Gamble is counting on capturing driving moms with a new campaign for Jif Smooth Sensations line of flavored peanut butters on Radio Disney. (See sidebar.) Radio Disney is popular with the in-car segment of radio listeners.

"With over 50 percent in-car listening, Radio Disney often reaches families on the way to the grocery store," said Radio Disney's Director

See TRENDS, page 37

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Appearances: Your Time to Shine

Mark Lapidus

I love radio station appearances. Always have. Probably always will.

As a jock, I once even did a remote from a garbage dump. Okay, that same station had me doing a weekly remote from a topless bar, so it did kinda even out.

But back to why I love appearances; I truly believe that they get people to vote when they fill out diaries. Sure, this is totally subjective, but if politicians didn't think their appearances had that effect, would they waste all that time on the road? Nope, they'd run their TV, print and (meager) radio ads and wait for the returns.

Many things about our industry have improved in the last 10 years. Most of us have far greater access to reliable music and audience research. Digital equipment allows us to produce theatrical audio pieces very quickly.

And the list goes on, except for one

product we are pushing.

This concept of being qualified can be used as a gauge for setting realistic expectations for ourselves and for our clients. The other elements — including time/date, location and other events going on should all be factored into how we think we'll do.

Yes, I want to do that appearance — whether commercial or public service — because I do want to shake hands and kiss babies, but let's not over-promise to the point of disappointing ourselves or our clients.

Work it

As to approach: It's silly to think that we can run small schedules on-air and believe we're going to drive tremendous traffic to our appearance destination. We need to supplement our on-air promotion.

This can be done by distributing fliers

capital budget for 2000, to consider what you need to spruce up your on-the-street look. A few new toys that make your appearance more interactive would be a nice place to start.

Perhaps you need to budget for a nice-looking portable booth; an inflatable mascot or logo; professional banners; games like a cash machine, putting green, prize wheel, pop-a-shot, etc.

Also many areas now have wireless modems available. Perhaps you could have your Web site active on a laptop at every appearance! And I know that clothing isn't typically thought of as a capital expense, but you certainly should also budget for putting station logos on clothing that your jocks want to wear.

A common mistake is to do ordinary T-shirts or golf shirts and be done with it. (If only all disc jockeys looked good in a T-shirt!) It may make more sense to have each disc jockey buy two or three items they like and put logos on those items.

Do appearances make a difference? Ask any DJ who's done a lot of them. If they're friendly and charismatic, folks recognize them. When a lot of listeners actually recognize any single DJ (especially in a big city), you've got a very special person on your staff.

So go ahead. Make your live appearances as successful as they deserve to be; folks will look as well as listen and they'll remember you all the more fondly in their diaries.

■ ■ ■

Mark Lapidus is president, Lapidus Media, and works in programming, public relations and marketing consultation. Reach him via e-mail at lapidus@erols.com



Card Table' (kārd táb'ə) n. 1. A flat, usually rectangular piece of furniture of stiff material, usually vinyl or leather covered, with folding legs, used in games and divination. 2. All too often, the extent of a radio station's remote promotion.

area: The radio station appearance has changed little in sophistication, approach or even expectation of results.

Let's tackle expectation first.

A client comes to us and asks us to do an appearance at a car dealership in a fairly large city. We take the money, run 15 promos and pray for a hundred people to show up. When 10 people show up we feel like we've failed, even when one buys a car. This is a classic case of false expectation.

When it comes to predicting what will happen when we go off and do something we've done hundreds of times before, we need to be realistic. We know by now that listeners do not flock in huge numbers to car dealer remotes — but that a few listeners will come by who are interested in a buying a car.

In other words, these are listeners who "qualify" as having an interest in the

in the immediate neighborhood (either delivered by hand or mailed); e-mailing to those who are in nearby zip codes; trading print ads for larger appearances; posting signage at the location so regular customers know a special event is coming up; generating Web site exposure on both your site and the client's; and cross-promoting at other locations you may appear at which are in the vicinity of your next appearance.

Finally, we all know that there's gotta be more to station appearances than a card table, disposable banners and a box of prizes — yet not many stations go beyond that.

There's no question that a lot of this has to do with expense, so let me take the opportunity that this time of year presents, and remind you that there is no better time than now, before you set your

New Hope for the Brazilian Market

Walter H. Mick

While the economies of Asia and Russia pull themselves out of the doldrums, North American newspaper headlines are trumpeting the economic recovery of Brazil.

Wall Street investment analysts describe Brazil as the greatest hope for economic growth in Latin America.

But will Brazilian businesses and investors in the broadcasting sector share in the optimism?

It is undeniable that Brazil, in the last two years, has advanced extraordinarily in many ways: the economy has opened up, privatization has shaken up stagnant state-run industries and inflationary chaos has apparently received a serious blow.

Not disaster

For Nestor Almeida, director of Rio de Janeiro-based distributor Sterling do Brasil, is one who believes that the Brazilian broadcasting sector will share in the country's economic recovery. "One grows in times of crisis," he said. "Crisis does not mean disaster, except as a reflection of some people's pessimism."

Similarly, Eduardo S. Araújo, director of Sociedade Tecno Paulista (STP) of São Paulo and president of the Associação Brasileira da Indústria de Radiodifusão (ABIRD), said, "We are optimists by nature."

For Edson O. Souza, director of Apoio Técnico, which distributes imported equipment from offices in Rio de Janeiro and a branch office in São Paulo, the optimism of foreign businesses is related to the drop in the Brazilian real, which reflects a more realistic exchange rate.

"The Brazilian government cleaned up the country's image, giving it more credibility on the macroeconomic level," Souza said.

Cláudio Younis, president of Eletro Equip Telecomunicações, a São Paulo-based distributor with a branch in Rio de Janeiro, said he also sees factors that justify the optimism of international analysts. "Never in its history has Brazil demon-

strated such power to react," he said. In spite of the generally optimistic attitude, those broadcast equipment manufacturers interviewed did not hesitate to point out the problems that still exist.

"This optimism is not sufficient to increase demand for equipment," Younis said.



Edson Souza

Similarly, said Araújo, "We should give ourselves time to increase trust in this optimism, which will certainly have favorable reactions."

Join the optimism

Souza suggested that while he welcomes the increased optimism, he would like to see where things stand six months from now.

"We should see it (economic recovery) without believing it," he said. "If it continues as it is, with an established monetary system and controlled inflation, then yes, we will have a reason to join in this optimism."

Almeida attributed much of the optimism to the unique nature of Brazil.

"Brazil is not a simple emerging market," he said. "We are a market of more than 160 million people, with a thirst for progress and all sorts of technology, without great restrictions for foreigners who come here to take part."

Souza's analysis is less optimistic. For him, the recession, aggravated by the recent currency devaluation, derailed ongoing negotiations and made it more difficult to receive financing.

"Our business used to finance products for up to 120 days, but the monetary

See BRAZIL, page 36 ▶

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Tips on How to Raise Your Web-Q

Joe Dysart

While Web-fever has every radio industry organization examining its commitment to cyberspace, Internet marketing consultants warn that without proper marketing and promotion, Web sites can quickly become cyber-elephants.

"The now-cliched Web maxim 'If you build it they will come' has lulled many online marketers into a false sense of opportunity," said Charles Sayers, an Internet marketing consultant based in Acworth, Ga. "The truth is that Web site traffic building has its own set of PR needs and requires its own system of aggressive, attention-getting tactics."

Specifically, Sayers said radio-oriented businesses looking to maximize the Web's potential should first attempt to determine how many of their customers or clients are actually online — and how easily they will be able to reach this market.

Be conservative

"Don't rationalize the number. Don't inflate your projections," Sayers said. "Be conservative. And determine whether it's a number you can live with."

Obviously, Sayers said, it makes no sense to invest resources in a Web page if only a minute percentage of your potential customer base actually has an Internet connection.

Should you decide to make the plunge, Internet consultants advise you to take advantage of as many of the following Web site marketing and promotion strategies as possible.

• *Consider a professional Search engine listing firm.* Seasoned Web users turn to search engines like Yahoo! (www.yahoo.com) and Excite! (www.excite.com) to help them find specific information on the Net quickly. Essentially, they simply type in a subject area and the search engine brings back link that they can click on for further information.

Given the great power these search engines have to steer thousands of Net cruisers to specific sites, it should come as no surprise that a number of Web-savvy firms have cropped up to help firms be among the first links the search engines return to information seekers.

The Web Hitman Web site (www.webthemes.com) is one of those firms. For \$795, the firm will guarantee that any site it lists will appear in the top 10 links from one of the Net's big eight Search engines: Yahoo!, Excite!, Alta Vista, Web Crawler, Hot Bot, Now!, Northern Light Search and Planet Search.

The Massachusetts Institute of Technology at www.wmbr.mit.edu/stations/list.html is no stranger to this listing strategy. When the keywords "radio stations" were entered into the Excite search engine, its site was the first link to be listed. That kind of visibility does not happen accidentally.

Another winner in the listing wars on Excite! was The Coast, 93.7 FM WKOC(FM) in Chesapeake, Va. (<http://thecoast.exis.net>). Its site was first up when the keywords "rock radio

stations" were entered into the search engine.

Freebies

• *List your site with hundreds of search engines for free.* Those who would rather not lay out hard cash just yet can still get their site listed in hundreds of search engines by visiting Virtual Promote, an absolutely terrific Web Site devoted to art of Web-site promotion. Point your browser to www.virtualpromote.com/promot1.html and you'll find links to nearly 500 sites offering links to thousands of search engines.

Included among the links are A1's Directory of 670 Free Sites for do-it-

yourself promoters, and 101 A Internet Promotion Service, which features a list of approximately 100 search engines to list your site.

Another option: Use a software program like Web Site Traffic Builder, by Draper, Utah-based Intelliquis (www.intelliquis.com) to list your site simultaneously with hundreds of Net search engines. Traffic Builder automatically registers your site with more than 600 Internet search engines and will automatically put your business in the appropriate category for each search engine.

Plus, you can use the software to check your site's position on the Net's eight most popular search engines.



• *Link till you drop.* Probably the easiest, least-expensive, and most-effective way to promote a site is to link your page with every other noncompetitive page on the See DYSART, page 34 ▶

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**Solutions for
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Bid Hello to Spectrum Auctions

Barry Umansky

In early August, a group of about 200 broadcast communications lawyers and broadcasters saw a preview of the future — a future of competitive bidding for broadcast authorizations.

The FCC staff held a seminar that described the system that will govern the first broadcast auction, scheduled for Sept. 28. And that auction likely will set the framework for broadcast auctions to come.

A look around the room during the six-hour seminar showed puzzled and concerned faces. Yes, a communications bar that grew up and flourished on "comparative hearings" for broadcast licenses was facing the stark reality of an entirely new system to decide among competing applicants.

Some of the younger audience members tapped in notes on their laptop computers. But most of the communications bar veterans took notes in long hand on yellow legal pads. Oh, did we tell you that the auctions have to be done electronically?

And ebay.com, it's not.

Hearing history ends

Spurred first by the results of a court decision and subsequently by congressional action and FCC rule making decisions, the stage has been set for a new regulatory regime to

determine who will get new broadcast construction permits, or CPs. The new system is a sharp departure from the one that governed broadcasting from its earliest days.

No longer will there be protracted and often expensive hearings before "administrative law judges" to determine the relative merits of the competing applicants. Instead, fast-paced auctions will be held before computer screens at broadcast station offices and

law offices all over the country.

Up until seven years ago, the commission's long-standing "comparative hearing process" was used to judge among all "mutually exclusive" applicants for a new construction permit. The system also was used to compare applicants for facility changes of existing stations against applicants for new stations if they were on the same or

adjacent frequencies in the same general geographic area.

But a 1993 decision of the U.S. Court of Appeals for the District of Columbia struck a fatal blow to the system. It invalidated key aspects of the comparative process.

In the wake of the court decision, the commission went back to the drawing board to reform its "comparative criteria." But before that process had been completed, the U.S. Congress, in

Now the winner largely will be determined on the basis of how much the applicant wishes to pay for the CP. Money clearly is the overriding new factor.

the Balanced Budget Act of 1997, enacted "auction legislation" that requires "competitive bidding" for deciding the winner among "mutually exclusive" applications, filed after July 1, 1997, for new commercial broadcast facilities and for major changes to existing facilities.

The commission was given the option of using auctions or comparative hearings to decide among commercial applications filed prior to that date.

In a series of rule-making decisions last year and in the spring of 1999, the commission announced and refined its system for broadcast auctions — a system that will apply to all such competing applications for commercial broadcast facilities.

In a related decision adopted earlier this year, the commission redefined the term "minor change" to cover the vast majority of applications for changes to existing facilities. Minor change applications are not subject to auctions; so these facility modifications will avoid the auction process.

From now on, when two or more parties vie for the same commercial broadcast CP, the winner largely will be determined on the basis of how much the applicant wishes to pay for the construction permit. Money clearly is the overriding new factor in the process.

However, the high-bidding applicant will be reviewed for its legal and other basic qualifications after the auction. There still is at least some room for administrative and possible court litigation over the final determination of who gets the CP.

But, in most circumstances, mo' money simply will get you mo' CPs.

Let the bidding begin

The commission calls its first auction a "closed auction." It isn't for everyone seeking a new broadcast permit. The auction, scheduled for Sept. 28, will be limited to groups of mutually exclusive applications for construction permits that were filed several years ago and became "stuck in the mud" of the court decision that invalidated the comparative hearing process.

The FCC had given these "mutually exclusive" applicants the opportunity to

settle their cases and, therefore, avoid auctions by eliminating a "comparative" situation. Some of these cases were settled when the FCC gave many of these "MX'd" groups a brief period to "buy out" other applicants for whatever the market would bear, rather than have these payments restricted to the "legitimate and prudent expenses" limit that generally applies to broadcast settlements.

Other competing application groups have entered into "universal settlements" — generally in the form of bona fide mergers.

All told, there will be a maximum of about 880 applicants in this first auction, many of which are vying for about 120 FM construction permits.

Universal settlements

These numbers are reduced from the original figures, as some the MX'd groups have been the subject of universal settlements/mergers, and therefore will not be put to auction.

Additionally, some of the applicants seek full-service AM and TV facilities, as well as low-power TV, FM and TV translators and digital TV "displacement relief" channels.

If you are one of these applicants, by the time you read this article in **Radio World**, you have been deeply immersed in the process of preparing for the auctions, as well as filing preliminary forms and ante-ing up your "up-front payments," as discussed below.

But all broadcasters should watch this process carefully. More than likely the upcoming auction will be the model for the auctions of all other broadcast facilities that become the subject of competing applications.

It is expected that the commission will conduct the next broadcast auction for broadcast facilities, including the myriad FM allotments that have been added to the FM Table over the past several years, by the second quarter of 2000.

The new auction process will be conducted electronically — primarily over the personal computers of applicants and their counsel.

Applicants for the September auction requested a "remote bidding software package" from the commission to participate in the closed auction. The software request deadline is the same as the deadline for the filing of the "short form" FCC Form 175 — the form that tells the commission that the applicant wants to participate in the auction.

The good news is that the software is free! The bad news is that subsequent auctions will require a different software package. So, if you become a frequent auction participant, keep those disks and CDs labeled and separate!

E-bidding and minimums

The commission clearly prefers applicants to participate in the auction electronically; but it will allow bidding by telephone. Under this system an applicant, or its communications lawyer or other representative, will call an FCC phone number to place bids.

But, without getting through information on where things stand among all the applicants — downloading and printing auction information for in-depth review, etc. — through use of the remote bidding software, telephone bidders comparatively may be "flying blind" and not have a clear view of where the other applicants are in terms

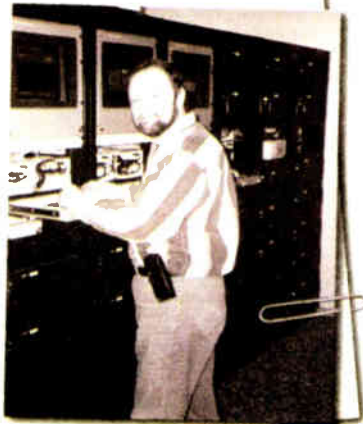
See AUCTIONS, page 33 ▶

Radio's Most Wanted

PROFILE: David Hood

Chief Engineer / AudioVAULT Supervisor
Emmis Communications / WTLC AM & FM
Indianapolis, Indiana
Radio World reader since its inception (1977)

Hometown: Elwood, Indiana
School: Purdue University, BS/EET
Favorite radio format: Old radio mystery programs and Imagination Theatre
Favorite radio station: All the Emmis Stations in Indy
Favorite color: Blue & green
Favorite piece of equipment: My good ole Tektronics scope!
Hobbies: Reading tech manuals, World War II history, and Sherlock Holmes
Coffee: With Sweet & Low
Proudest moment: Getting my first class radiotelephone while a sophomore in high school
Favorite Section in Radio World: Workbench, everything else - I even like the ads!
Reads RW because: Radio World is my main source for broadcasting information, especially news about DAB!



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► **AUCTIONS**, continued from page 32 of dollars bid or who is still in the bidding process.

Heavy phone traffic may also put phone bidders at a disadvantage.

The commission also set minimum opening bids for each facility involved in the auction proceedings. Opening bids for radio CPs were determined by considering the service and class of the facility, the population to be covered and certain recent broadcast transactions.

The FCC has been concerned about the possibility of creating a substantial number of unsold CPs. Therefore, it attempted to establish opening bids that would ensure reasonable revenues from the auction, avoid "fire sale" winning bids yet also not establish opening bids higher than any realistic final bid for a particular facility.

During the auction itself, bidding increments likely will have to be of at least 10 percent of the opening bid amounts. These standards for determining opening bids and incremental bids are expected to govern future auctions.

Up-front payments

September auction participants were required to send their up-front payment (no less than the minimum opening bid required) by wire transfer to the Mellon Bank in Pittsburgh for each auction in which it was eligible.

The money had to be sent, about two weeks before the auction, by "wire transfer" to a specific lockbox at the bank. Failure to ante-up the up-front payment renders the applicant ineligible to participate in the auction — not a good thing. An FCC Form 159 must be submitted by fax to the Mellon Bank on the same day — and at least one hour before — the wire transfer.

Bidding credits

The commission has created a complex system for determining which applicants might be eligible for a "new entrant" bidding credit. This scheme is designed to foster "diversity" among the winning bidders for new broadcast properties.

The "new entrant" credit in many ways is a surrogate for former "comparative preferences" for minority applicants and applicants with no or few broadcast station holdings. Oddly enough, the court case which threw out the FCC's comparative process did so largely on the basis of the court's questioning whether such preferences resulted in any real diversity of programming.

To determine whether a bidding credit will be granted, the first question is whether the applicant really is "new" — new to the industry and/or the market.

The starting point is to look at the commission's general attribution standards used in the broadcast multiple ownership rules. The commission said it will accept bidding credit applications from those with either no or few other "cognizable" media interests; but it will deny "new entrant" credit to anyone having mass media facilities in the "same area" as the proposed facility.

An applicant with no cognizable interest in any broadcast facility or other medium of mass communication will be awarded 35 percent bidding credit. Applicants that have no attributable parties with attributable interests in no

more than three mass media facilities will receive 25 percent credit.

The FCC recently issued a Public Notice saying that its new ownership attribution rules — rules that define which kinds of ownership or business relationships "count" when evaluating compliance with FCC multiple ownership rules — adopted on Aug. 5, 1999, would apply to broadcast spectrum auctions, including the auction on Sept. 28.

If you get a bidding credit, you still bid in whole dollars against the other applicants. If you are offer the winning bid, your credit reduces the amount you have to pay to the government for the CP.

This September broadcast auction for the "frozen applications" will be what the FCC calls a "simultaneous, multiple

round" auction. Under this scenario, all the bidding will take place during the same time period — over the same business days and with identical start and end times.

All of the CPs remaining will remain open for bid until the first round in which no new acceptable bids, waivers or withdrawals are received. (Bid waivers, withdrawals and removals are discussed below.)

Then the bidding closes simultaneously on all CPs being auctioned. The FCC, however, retains discretion to keep the auction open or to limit the number of additional rounds.

The commission will use a "uniform window filing procedure" for the September auction and, most likely, all subsequent broadcast auctions. The FCC's pattern is to announce a period

for the filing of short form applications, set a deadline for up-front, minimum bid payments, conduct a mock auction to demonstrate to applicants how the system will work, and then hold the auction itself.

A week before the auction, a bidding schedule, subject to change by auctioneers once the bidding begins, will be sent to all participants.

The anti-collusion rule

The FCC also has adopted an anti-collusion rule, which prohibits applicants from discussing the substance of their bids and bidding strategies with competing bidders after the short-form filing deadline has passed.

But there are complicated and limited exceptions whereby, for example, a party

See AUCTIONS, page 35 ►

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|||||.....|||||.....|||||.....|||||.....

Super-Sites to Check out in Cyberspace

► DYSART, continued from page 31

Internet that shares the same interest.

Every radio station, for example, will want to check out the Ultimate Radio Station List (www.ubl.com/radio) — a mega guide with links to hundreds of radio stations around the world. Said Settles, "Link until you drop."

• *Enter as many Web site contests as possible.* Web sites that have the mettle should attempt to get their new site judged by the many cool site of the day, week, etc. judging services.

Sites that are judged worthy of an award are given the equivalent to a graphic blue ribbon they can post on their site. And the awarding service also pro-

vides a free link to the winning page from its own home page — a perk that can literally generate thousands of visits to a new Web site, according to Sayers.

Jim Wilson, a samurai-class Web marketer and the Webmaster behind Virtual Promote, adds, "Keep in mind that most people who will be surfing to your Web site don't know the relative difficulty of earning different awards. All they see is that some people thought your site was good enough to win an award. Go ahead. Apply for everything."

• *Start a message board.* The Internet's answer to the local coffee shop or town square, message boards enable visitors to post messages to one another in a dedi-

cated domain, and thus build a community centered around the sponsoring Web site. Y107 in New York (www.newcountry107.com) fosters a sense of community this way with 12 message boards focusing on local bands, country superstars, charity benefits, the latest skinny on local nightclubs and the like.

• *Start a chat room.* A variation on the Message Board, chat rooms enable visitors to "chat live" with each other by typing short text messages back and forth to each other. Essentially, it's one of the highly socializing applications that put America Online (www.aol.com) on the map. Lazer103, WLZR(FM) in Milwaukee, has caught onto the concept

with its Web site-sponsored chat room (www.lazer103.com).

• *Start a newsletter.* Newsletters are one of the effective ways to establish an ongoing relationship with current and prospective customers. A number of radio stations have latched onto newsletters as tool for Web site promotion, including Sports Radio (www.sportsradio.com), WEBK(FM) in Killington, Vt., (www.webk.com) and WGLO(FM) in Pekin, Ill. (www.wglo.com). Sports Radio delivers its newsletter via e-mail to subscribers e-mail boxes; the others invite listeners to visit their Web sites for new issues.

Concludes Sayers, "Combining these tactics with a relentless persistence to build your site's traffic will virtually guarantee that within a few short weeks, your access counters (a software tool used to measure visits to a Web site) will start spinning like the gallon indicator on a 1950s gas pump."

■ ■ ■

Joe Dysart is an Internet business consultant based in Thousand Oaks, Calif. Contact him via telephone at (805) 379-3841 or e-mail joedysart@aol.com

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Solutions for
Tomorrow's Radio

A New Radio Goldrush for The Gray

The advertising powerhouse 25-54 age demo appears to be fragmenting, according to a recent study by Interep Research.

Michele Skettino, Interep spokesperson, says their study finds more dollars chasing smaller, mature shares of the 25-54 market.

And the study finds that, for the first time, spending on the 35+ demo has increased — appearing to confirm a long-predicted trend that dollars will chase baby-boomer's ears.

"I'm surprised that it's taken advertisers this long to figure this out. It's the 35+ group that is buying the multi-million dollar homes, boats and spending all the money," said Dean Burch, general sales manager at Washington, D.C.'s WMAL(AM), a news/talk station that attracts a wealthy, mature audience.

The trend is especially true, according to Interep, in the top 10 metros where the 25-54 dollar share is now 49 percent, dropping from 58 percent in 1994.

At the same time, the teen demo was less-coveted than in years past, down 1 percent.

Skettino said the trend should not be surprising.

"How much is any 25-year-old going to have in common with someone her parents' age?"

While 25-54 still takes the biggest share of the spot radio advertising dollars, it has continued to lose share to the 35+, 18-34, 18-49 and 25-49 groups for the past four years.

Burch predicts that the older demos will continue to win at the expense of the 25-54 group.

"Next we will see 35-64 — that is going to be the new powerhouse that advertisers will target above all others," Burch said.

The study looks at the top-25 radio metro areas, with men and women included in all groups.

— Laura Dely

Only the Mean Green Need Apply

► AUCTIONS, continued from page 33

holding a non-controlling interest in one applicant may acquire an ownership interest in, form a consortium with, or enter into a joint bidding arrangement with other applicants for CPs in the same MX'd group.

Such arrangements must not change the control of any of the applicants and are conditioned on only limited discussion of bidding strategy.

Activity rule waiver

Participants must bid actively in each round of an auction or risk eligibility to participate in future rounds. However, five "activity rule waivers" may be used by each applicant. These waivers can be used voluntarily or by default.

If there is insufficient activity by a bidder, the FCC system will assume that the applicant still wants to remain in the auction. The FCC automatically will use up one the applicant's activity waivers rather than make that applicant ineligible for future bidding for the CP. But, future inactivity and subsequent exhausting of waivers will end the game for the applicant.

Bid removal and withdrawal

An applicant is permitted to remove any bid, without penalty, only before the bidding period round expires. A bidder could make a bid in one round

and, in the next round, withdraw his or her standing high bid.

However, if that withdrawn bid is higher than the final winning bid for the CP, the party that withdrew the former high bid must pay the commission the difference between its high bid and the lower bid that wins the CP.

Procedures and disasters

In case of a natural disaster, technical difficulties, evidence that one or more parties to the auction have engaged in

unlawful activity, or for any other reason that the commission believes might threaten the integrity and fairness of the bidding process, the FCC may delay, suspend or cancel an auction.

Ten days after a Public Notice announcing the close of an auction, winning bidders will be required to supplement their up-front payments with amounts sufficient to cover 80 percent of the winning bid.

If any high bidder defaults or is disqualified after the close of the auction the FCC may award the CP to the next highest bidder or set the CP for another auction. Also, the defaulting or disqualified high bidder will be subject to paying the government a penalty — the difference between that applicant's high bid and the ultimate auction price of the CP, plus an additional 3 percent of the high bid.

The winning bidder will have 30 days of the Public Notice to file a

long-form application. Petitions-to-deny may be filed within 10 days of the subsequent Public Notice stating that the long-form application has been accepted for filing. If all petitions are rejected, the applicant has to pay the auction high bid balance in one lump sum within 10 days or pay the balance plus a 5 percent late fee within 20 days.

Clearly, broadcast spectrum auctions

are new and uncharted territory for broadcasters. And though the game is different, a range of important skills and techniques will help foster an applicant's likelihood of success. Thorough understanding of how the process works also is essential.

Particularly in cases where a party is competing in multiple auctions for different CPs, it is important that broadcasters consider bidding strategies well in advance of the start of the auction process. As noted above, there also are circumstances in which parties may create bona fide mergers of applicants prior to the auction process.

And for the presumptive winner of the auction, there still is the prospect of facing petitions-to-deny — a consequence which every applicant wants to avoid or at least overcome.

Obviously, it is important for broadcasters and their counsel to compare notes early and often as the time for an auction approaches. And as we all look toward huge numbers of broadcast auctions in the future, now is the time for broadcasters to determine, for example, which new FM allotments (all awaiting the announcement of an application filing "window") should be the subject of one's auction dollars next spring.

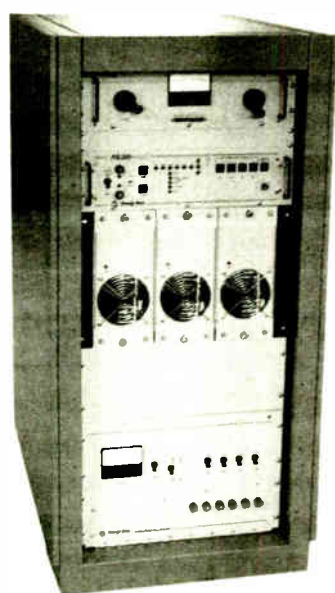
■ ■ ■

Barry Umansky is a Washington partner in the communications practice group of Vorys, Sater, Seymour and Pease. Contact him via e-mail to bdumansky@vssp.com or call (202) 467-8822.

Future broadcast auctions likely will be modeled on this one.

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Brazilian Radio: Getting Hotter

► BRAZIL, continued from page 30
instability made this type of operation nonviable," said Souza. "Now the maximum financing requires payment within 30 days, causing greater installments for the client."

In addition, "There was a halt in new equipment sales at the same time that we experienced an increase in repair services for used equipment," he said.

Highs and lows

For contract engineer Robinson de Oliveira of DB Sistemas, a business headquartered in Curitiba, Paraná, "those who suffer the highs and lows of our economy are the radio broadcasters in the interior, whose transmitters are practically junk metal."

Oliveira noted that the majority of the 60 stations he has as clients depend on governmental subsidies. "When someone manages to save money for new equipment, they are afraid to close the sale because every time the (U.S.) dollar goes up (in value against the real), they lose money," he said.

Araújo had a more ambivalent view of the market situation.

"On the one hand, the growth of the Brazilian economy brings with it greater investment in advertising, making stations more profitable," he said. "But from a political point of view, we are anxious and reserved, because the granting of new broadcasting concessions is once again paralyzed and there is no data about the license reclamation process."

According to Younis, during the difficult period that the radio broadcasting market experienced in 1998 and in the first

months of this year, "business remained stagnant, waiting for more definition."

But when the economy improved more quickly than many analysts had predicted, "Brazil reacted and dispersed the blackest clouds of the macroeconomic scenario," he said.



Nestor Almeida

Nevertheless, Younis said it remains difficult to obtain credit for investment and most credit lines come with unattractive interest rates.

Another obstacle to recovery, he said, is the lack of definite standards for digital radio and television in Brazil. "This creates insecurity in sector businesses, and creates the paradox of the need for investment and the lack of circulating capital to do it," Younis said.

All the broadcast equipment manufacturers consulted have clear ideas about what sorts of measures must be adopted to increase investment.

For Araújo, fiscal reform is needed,

which will reduce tax rates and simplify tax collection. Also necessary are welfare reform, greater control of government spending and governmental interference to limit price gouging and monopoly.

Oliveira said he believes greater government flexibility in the licensing process and the authorization of new transmitters is needed. He also recommended that radio broadcasters increase the professionalism of their employees and use the medium to promote social unity.

Younis proposed the creation of new credit lines for the radio broadcasting market, with interest rates and payments that are compatible with the conditions of Brazilian businesses. He also said he considers imperative the definition of DAB and DVB standards in order to facilitate timely sales.

Almeida said Brazil must promote tax reform in order to eliminate insolvency and the informal economy.

"We cannot keep paying export taxes or cascading import taxes. The so-called 'simple' tax does not take into account small export, import or resale businesses in offering of services or commissioned resale of national or imported products," he said.

High hopes

All those interviewed showed themselves to be generally optimistic, hopeful for better days with good prospects for growth and progress for sector business.

According to Marcello Petrelli, president of the Associação Catarinense de Rádio e TV (ACAERT) in Florianópolis and supervising director of the state-run TV O Estado, "with the increasing value of the (U.S.) dollar and stable inflation, companies are exporting more," he said. "This results in a revenue increase in the market and thankfully a percentage will stay in radio broadcasting."

According to Younis, the positive tendency of the economy brings reactivation of investments.

"We cannot believe that all the market's problems will be resolved, but we are of the opinion that the risks faced by broadcasters can be considered opportunities for those in the equipment business," he said.

Souza, with an optimistic vision of the market, adopted practical measures to improve his returns, opening a branch in Santa Ifigênia in the heart of São Paulo, an area with a large concentration of electronic markets.

"This optimistic view of the market could be highlighted if licenses were granted for new services," he said. "This would represent the implantation of approximately 3,000 new small stations broadcasting with power levels from 100 W to 1 kW."

Almeida, during the NAB99 convention, became acquainted with an embryonic project called FLAG, which seeks to develop a worldwide fiber-optic connection of telecommunications, audio, video, data and telemetry services. This project could eliminate many existing problems and reduce satellite costs.

According to Almeida, Brazil should prepare for the many opportunities presented by FLAG and similar projects.

"Radio professionals must participate

in this sentiment of euphoria and optimism," said Almeida. "They should immediately plan to invest and take part in this new era while it is still developing."

■ ■ ■

Walter Mick contributes to *Radio World* from Curitiba, Paraná, Brazil. He is also the author of the book *Rádio Digital — Um guia para o profissional do século 21*.

Love of Blues, Loud And Clear

► LUZID, continued from page 27

was well-founded; for three years, KUCI has been his home. As Luzid said, "KUCI is where my heart is."

As if that weren't enough of an accomplishment, Luzid's love for the blues then led him to B.B. King's Blues Club. When the club first opened up in Universal City, Calif., in September of 1994, Luzid says he went there every night to meet all kinds of blues artists and eventually became friends with



Russell Luzid at the Controls of KUCI

them. "One day they asked me if I would like to emcee and I've been there ever since," Luzid said.

The next plateau in Luzid's music career is emblazoned across the back of his jacket. In November 1998, he opened his own blues club in South Orange County, Calif., in the city of San Juan Capistrano.

Russell's Blues Club is housed in the Freight House Saloon in San Juan Capistrano. Luzid explained how his dream came into being. "I was contacted by the two owners," said Luzid. "I went over to visit them and they asked for my help." Because of his strong contacts in the music industry, Luzid's job is to bring in the musicians to play and in return he gets to name the club after himself. In fact Luzid is so persuasive that he was also able to negotiate \$10,000 worth of donated sound equipment during the club's first week of existence.

Luzid's next goal is to saturate Orange County with the blues, and at the rate he's going, he might just make it. That saturation may reach far beyond the county's geographical boundaries: Now KUCI(FM) is on the Internet and Luzid can be heard live at www.kuci.org Friday mornings from 6-8 a.m.

All this, and he still maintains his regular job as an insurance adjuster.

"I get about two hours sleep a night," Luzid said with a smile.

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Jif's Choice: Radio Disney Moms

Laura Dely

According to Radio Disney, 50 percent of its audience listens in the car, which is a strong selling point for Radio Disney's marketing and advertising department.

"We are now able to go to advertisers

its new Jif Smooth Sensations peanut butter campaign on the mouse-eared network. The flavored peanut butters campaign began its back-to-school run on Radio Disney Aug. 2.

Radio Disney reaches more than 1.5 million children aged six to 11 and more than 500,000 moms each week. And not



who are interested not only in kids, or only in moms, but kids and moms together," said Jim Pastor, Radio Disney's director of advertising sales. "There are a number of companies who are very interested in targeting that group."

Radio Disney's high percentage of families who tune in on the road is a prime reason that Procter & Gamble chose to launch

only are 50 percent of those listeners in-car, but they are also "often on the way to the grocery store," Pastor said.

"And mom is usually the parent behind the wheel," Pastor said. "Advertisers are coming to us because it's hard to get both moms and kids at the same time — something that makes Radio Disney very attractive to advertisers."

Analysis of research conducted by SRI for Radio Disney three times per year reveals that Radio Disney's in-car listenership has increased from 42 percent when the network first began broadcasting in 1997 to over 50 percent today.

Melissa Gorup, Radio Disney public relations manger, noted that the back-to-school campaign is the first time that Jif has advertised on the children's network. But Radio Disney has consistently built up its ad revenue from advertisers seeking family targets. Pastor named several major corporations that seek venues for the kid/mom audience that Disney provides: Nestle, Frigo Cheese, Kidseeze cough medicine, Popeye Vitamins and Nabisco are just a few.

Besides producing a variety of 30-second spots for Radio Disney, Jif will also sponsor a regular feature on the mouse-ear network: "U R What U Eat."

The feature stars Radio Disney DJs as cooks, who give a list of ingredients to listeners, and then wait for kids to call in and guess what food the ingredients create. The correct answer wins a prize. The new Smooth Sensations peanut butters will be prominent ingredients in the call-in contests.

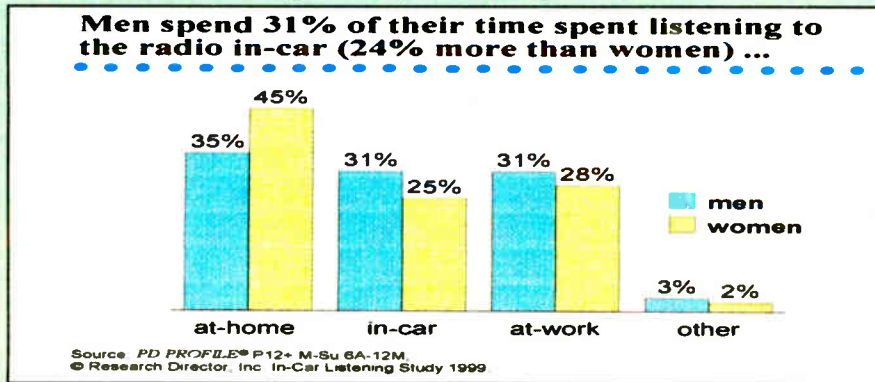
"Radio Disney will provide both advertising and sponsorship opportunities to reach our core audience," said Procter & Gamble Spokesperson Shanae Gibbs.

Radio Disney believes that its audience is more aware of its brand, and are more devoted to Radio Disney than other children's entertainment programming. It is testing this hunch in a survey of its listeners, which will be completed in September.

In-Car and Tuned In to the Radio

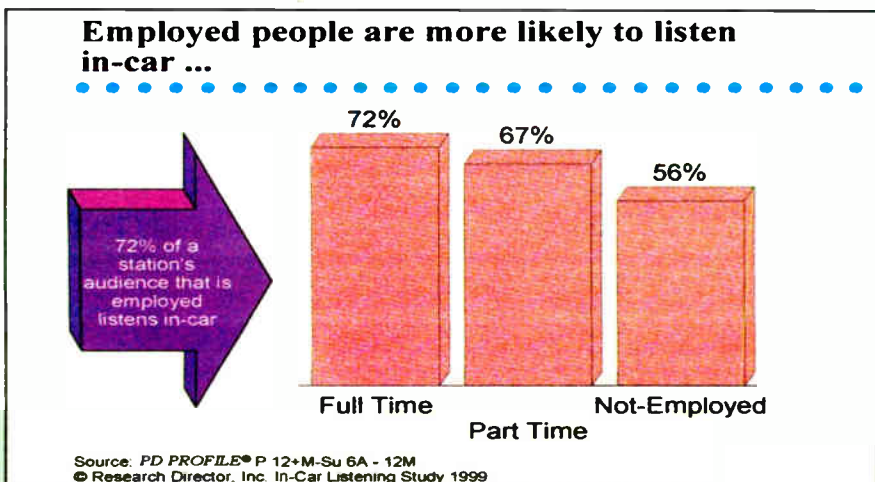
► TRENDS, continued from page 27 of Advertising Sales Jim Pastor.

Radio Disney's goals reflect another finding of the RDI study: In-car listeners sometimes are not choosing what they are listening to.



"This shows up in teen or under-14 diaries, where you see one kind of entry for in-car, but a radically different kind for at home or at work, where presumably, they have more choice," said RDI's Greenspan.

But for the 1.5 million children in the Radio Disney audience, it appears that they choose what was on the family's car radio. And the Jif Smooth Sensations campaign on Radio Disney is counting on that. It estimates that it will reach more than 500,000 captive, driving moms each week.



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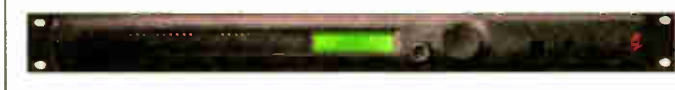
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September 15, 1999

CD-R Finds a Radio Career

Carl Lindemann

The popularity of the CD format continues to outstrip expectations.

When the original playback-only, audio-only format entered the marketplace in the 1980s, industry experts anticipated that it could take up to a decade for it to gain dominance over vinyl records. Instead, the transition to this first digital consumer format happened overnight.

er for Marantz/Superscope.

Now, professional stand-alone units have dropped to as low as \$1,000. Consumer units at half this cost are available, but are limited to using more expensive media to offset artist royalties.

Meanwhile, high-speed PC-based units — up to 8X recording speed — are well below the \$500 mark and have become an integral part of many DAWs.

But PC drives have not taken the place of stand-alone units in radio.

working in tandem with a DAW, PC-based units have additional capabilities to take on a variety of tasks.

The professional market is just a small part of the burgeoning consumer sales.

"We are seeing a constant jump in the number of units shipped each month," said Allen H. Gharapetian, product and marketing manager for

Yamaha Consumer Products. "The industry has experienced a tremendous growth."

For example, he said, the retail channel alone, excluding Internet shops, sold more than 90,000 units in June vs. 55,000 units in May. Gharapetian points to use for music and data storage to explain their popularity.

"Stand-alone recorders are designed to record music-only, while a PC drive is far more versatile. Stand-alones come with

See CD-R, page 44 ▶



HHB's CDR850 is one of many new models available.

In the past few years, the CD's versatility and functionality have expanded remarkably.

Burn, baby burn

"Now that people can burn their own CDs, it has totally revitalized the format," said Paul Schweiger, sales consultant at Broadcast Supply Worldwide, a retailer of broadcast equipment.

Stand-alone, PC-based and multiple-burner replication units have gained wide acceptance in radio and have claimed some of the territory once dominated by DAT. By contrast, MiniDisc also is gaining popularity, but the CD's enormous installed player base makes it the medium of choice both in and out of the studio.

The first CD recorders were expensive stand-alone units that recorded in real-time, or "1X."

"Our original customers were a few studios and mostly broadcasters. That was about eight years ago with the CDR-600. It cost about \$12,000," said Niko Karvunidis, product development man-

agement. "Even people with high-quality SCSI computer-based units will buy our units because they're as easy to use as a tape recorder," said Cam Wilder, sales manager for HHB Communications USA. "A lot of radio stations are putting their archives on CD. DAT has never demonstrated its archival value. The 1X speed (of the stand-alone) isn't an issue if you're archiving tape to CD — it's got to be played back at 1X anyway! Also, you can get a summer intern to handle the task. You don't need the production director taking up time on a DAW to do this properly," said Wilder.

Sales are up

According to Schweiger, stand-alone sales are taking off again the latest generation of units can handle most of the new CD formats — consumer, professional and re-recordable. He sees the latest products from Tascam, HHB and Marantz selling better than the previous generation.

Stand-alone units often have digital I/O capabilities. But when it comes to

tion demands.

The advent of CD-Rs intensified the need for maintaining an uninterrupted data stream over extended periods — a major problem with older drives.

Now, even pedestrian UDMA

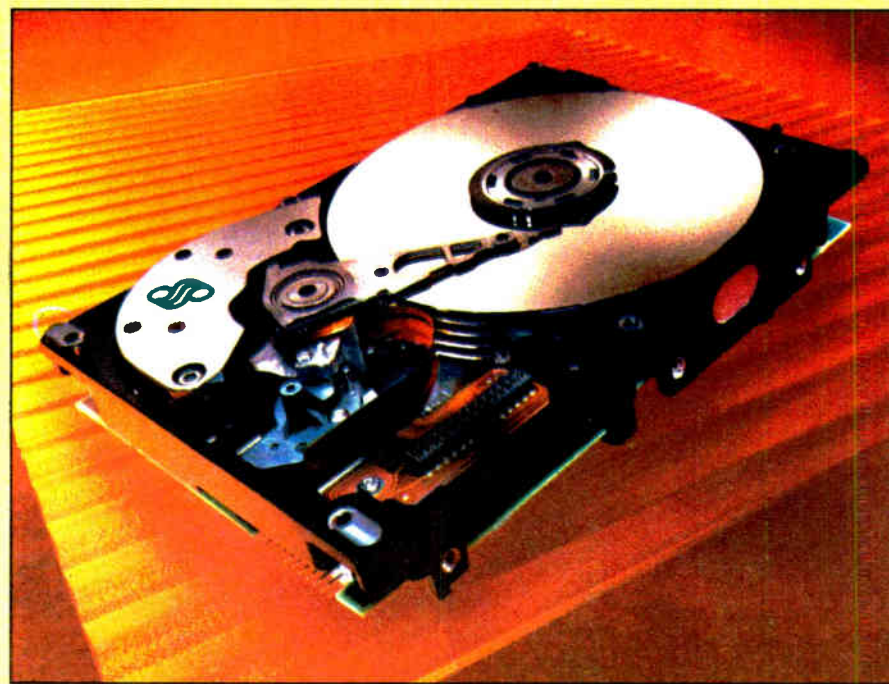
See CHEETAH, page 42 ▶

PRODUCT EVALUATION

The Cheetah SCSI Drive Is a Screamer

Carl Lindemann

A few years back, "A/V Rated" SCSI hard drives commanded premium prices. Units with 4 GB capacity could top \$1,000, but were necessary to keep up with serious audio produc-



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CD Players Distort CD-R Sound?

Bruce Bartlett

I recently received a letter from Marty Elliot, chief engineer for B.E.K. Productions, in which he voiced the following complaint.

He sent a CD-R to a local radio station, but the CD-R sounded distorted when played over the air. Here is his letter:

"I own two CDR-630 Marantz CD recorders, and have had good results with these units. The sound is good, except when I sent off CDs to two different FM stereo radio stations to play on air. The sound was totally bad — lots of distortion (sounded like about 5-8 percent THD) coming over the air and picked up by my high-quality stereo receiver.

"What gives? The same CDs sound perfect played directly through my sound system, which uses the same receiver and speakers that I use when listening to the radio.

"Is there some residual ultrasonic signal that's messing up the FM carrier present on these home-burned CDs, or some other command signal going into the FM station's equipment that can be causing such atrocities?

"This happened with two different stations, on two different occasions, with two different types of music (classical and rock). All the rest of the station's CDs sound great, except mine!

"Nobody knows what's up. Maybe you do. Possibly some 19 kHz subcarrier

disturbance?"

I am not aware of CD-Rs having any signals that could interfere with the 19 kHz subcarrier. However, one possible cause for the distortion came to mind.

Some radio stations do add some unintentional distortion to the signal — perhaps several percent — because the signal chain in FM broadcasting is much longer than it is in Marty's studio.

There is the station's mixer, patch bay, compressor/limiter, maybe an equalizer, FM modulation, multipath and FM receiver. Marty might just be very familiar with the clear sound coming from his CD-R at home, so that any distortion added by the station's signal chain would be obvious.

Marty might be less familiar with the sound of commercial CDs played on the radio, and so is more forgiving of the distortion added to those CDs.

Perhaps Marty's CD-R is uncompressed, and he is hearing the station's compressor in action. Many commercial CDs tend to be highly compressed already, so you would not notice a big difference in their sound at home or on-the-air.

Another possibility: Marty's CD-R could have such a high treble content that it is overmodulating the station's signal due to pre-emphasis. He would never hear this when playing the CD-R over his home stereo.

If Marty's CD-R is much brighter than

standard CDs, the station's signal might be driven into overmodulation only by Marty's CD-R.

It might be that Marty's CD-R is being read with high error rates at the station. The CD player in use at the station does not track the CD-R as well as Marty's CD-R player.

If the error rate is high enough, the CD player cannot interpolate the missing values correctly, resulting in distortion. In fact, some CD players do not even try to

The quality of the D/A converters varies among players, but not so much that you would hear 8 percent THD.

interpolate missing data.

But in my experience, CD players never add 8 percent harmonic distortion if they encounter high error rates. They quit playing, skip, or add clicks.

I encountered one CD player manufactured by Linn that was so carefully aligned to commercial CD specs, it would not play most of my CD-Rs. Some CD players read CD-R and CD-RW discs less reliably than they read commercial pressed CDs — although most players work well with either type of media.

Note that rewriteable CD (CD-RW) media does not work in most older players because the reflectivity of the CD-

RW is much less than that of CD and CD-R. Some old CD players and many newer ones can play CD-RW discs without errors, but many cannot.

Suppose that the station's CD player exactly recovers the bits off the CD-R. Is there any reason why the CD-R would sound different on the station's CD player?

Well, the station's unit might play CD-Rs differently than regular CDs. For example, one CD player uses 4X oversampling with commercial CDs, but switches to 1X when playing CD-Rs. This could make an audible difference. Some people say that any two CDs can sound slightly different, even if they are commercially pressed.

Of course, the quality of the D/A converters varies among different players, but not so much that you would hear 8 percent THD. Even if the station's converters were really bad, that would not explain why the CDs sound clean and the CD-Rs do not.

My advice to Marty: It might help to experiment with different recording speeds if your recorder allows this. Some media works better at 2X speed than it does at 1X or 4X. Try some different blank CD-R brands, or a different recorder. CD players vary in their ability to correctly play certain brands of media. You may need to experiment to find a working combination of CD recorder, media and player.

It's a complex phenomenon. One site that thoroughly explains CD technology is at www.tc.umn.edu/~erick205/papers/paper.html

Can any reader shed some more light on this subject? If so, please write to me via e-mail c/o RW at radioworld@imaspub.com. We would like to hear from anyone who has had the same problem, or who has a good explanation for it.

■ ■ ■

Bruce Bartlett is the author of "Practical Recording Techniques 2nd Ed." and "On-Location Recording Techniques" published by Butterworth-Heinemann.

PRODUCT GUIDE

Discmatic Multidrive CD Duplicator

The Onyx stand-alone 100-disc duplicator by Discmatic supports up to four 8X drives. It features a proprietary autoloading mechanism that provides fast and reliable disc handling.

The Onyx offers on-the-fly CD-to-CD copying, batch copying and the option of adding a dedicated CD-ROM reader. It can duplicate 24 full CDs (74 minutes of audio/650 MB of data) per hour.



EZ-ONE control firmware has core logic stored on an advanced flash ROM, rather than on the hard disk, which the company says can cause problems in some duplicators.

With a 4 GB internal hard drive, Onyx can store a large volume of data. Onyx supports all major formats.

Pricing starts at \$6,345.

For information, contact the company in New York at (800) 422-6707, visit the Web site at www.discmatic.com or circle Reader Service 47.

HP CD-Writer Music

The Hewlett-Packard CD-Writer Music is a CD-ReWritable drive designed to let users create customized CDs from digital music files downloaded from the Internet. It also allows users to duplicate selected tracks or entire contents of existing CDs.

The CD-Writer Music is a hardware/solution for making music CDs of up to 74 minutes in length. The unit connects to any standard PC, allowing users to download music in MP3, Microsoft Windows Media Audio (WMA) and other digital audio formats. This device creates CDs that can be read by virtually any standard audio CD player or CD-ROM drive.

The HP CD-Writer Music includes Sonic Foundry's Music Jukebox for downloading, copying and managing music files. The package also includes NEATO CD labeler and software and HP Music Digital Audio CD-R media for unrestricted recording of music from CDs or the Internet.

The HP CD-Writer Music list price is \$299.

For information, visit the Web site at www.hpcdwriter.com or circle Reader Service 55.

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- Bob Hamilton, New Radio Star

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- Dave Oliwa, Radio And Production, May 1997

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Steinberg Cubase VST: Big Bang

Mel Lambert

Digital audio workstations come in all kinds of flavors and creations. Some are basic — such as the two-channel WAV editor that shipped with your PC — on up to a behemoth that requires a Ph.D. in astrophysics and the arms of an octopus to operate.

Smack in the middle of this continuum is an affordable, German-designed hard-disk recorder/editor/mixer that has been maturing nicely during the past three years, and which now offers an amazing amount of processing and manipulation bang for the buck.

The latest revision of the Steinberg Cubase VST (for Virtual Studio Technology) workstation features a lot of useful new features. These developments are built on a power base of functionality that has made the system popular with music studios, post houses and musicians.

These developments might also be just what the doctor ordered for a radio production facility looking to move into more integrated functionality.

A standard 16-bit record/play version was recently augmented with VST/24, which, as might be expected from the name, provides full 24-bit audio resolution.

Now available as a free download for current users of Cubase VST, software ver-

Shuffling is a random micro-splicing and shuffling algorithm that introduces bouncing of signal fragments at definable points in the audio file's actual timing, while preserving the overall continuity of its time sequence. The result is a collection of extremely unusual panning, panorama width and stereo movement effects.

Comb Filters feature resonance up to self-oscillation, and amplify a signal at a given frequency plus all its harmonic frequencies. Band Pass combines a high-pass and a low-pass filter that together form a variable width band-pass or band-reject filter with variable cut-off frequency. Typical applications include the creation of various types of quasi-telephone effects and unique filter blends.

PitchAccum combines two transposers with a feedback delay to produce harmonizer-type effects and other pitch-related creations.

Goose with the golden ear

Incidentally, the TC Native Reverb plug-ins for the VST Series are considered by many golden-eared engineers to be among the best-sounding stereo delay-based effects available, with a high degree of user flexibility.

All adjustments can be made quickly and easily in real time via an intuitive

with 16 Groups, eight Auxiliary Sends per channel, eight Effects, four Insert effects per channel and four Master insert effects. A total of 32 disk tracks are available.

Two distinct Cubase audio editing windows are provided. The first editor is non-destructive, and enables audio portions to be cut and re-ordered, with volume curves and grouping.

The second editor acts directly on the recorded data and enables creative modification of the actual data with cut, copy and paste capabilities, plus time-dilation/compression and pitch shift.

Minimum system requirements for Windows environments include a Pentium-based system running at 100

MHz, with at least 24 MB RAM, 256-color 800-by-600 monitor, Windows 95-compatible sound card and a fast EIDE or SCSI hard disk. Steinberg recommends at least a Pentium 166, and 16-bit/1024-by-768 graphics card to experience good performance.

Apple OS owners require a Power Mac or compatible — at least a PPC 601/80 or faster — with 16 MB RAM and second-level cache.

■ ■ ■

For information, call the company at (818) 993-4091 in California.

Mel Lambert has been intimately involved with the production and broadcast industries on both sides of the Atlantic for several decades. Most recently, he served as International Marketing Director with Otari Corporation. Reach him at mediapr@earthlink.net



Multiple functions are apparent in the Cubase VST.

sion 3.7 for the PC features full dynamics control per channel, including compressor, noise gate, limiter and soft clipping.

More extensive MIDI control is offered, including external control of audio faders and the system's innovative plug-ins.

Mac fans, don't feel left out. Apple OS-compatible versions are available.

Already offered by Steinberg is a range of unique software plug-ins that go beyond conventional processing functions. GRM Tools for Mac- and Windows-based VST is a collection of four creative plug-in processors, developed for Steinberg by the musical research group based at the Institut National de l'Audiovisuel, Paris, an organization well-known for its fascinating research into sound modeling. The designation "GRM" is derived from "Musical Research Group."

GRM Tools offers four families of effects, based on an innovative "parameter-morphing." A delay parameter defines the time frame in milliseconds during which settings from the one preset blend over into another.

graphic interface with easy access to room shape, size, color, diffusion, pre-delay and other control parameters.

Cubase VST is designed to work with a series of Windows- and MAC OS-compatible sound cards via support of the ASIO system, which provides plug-and-play connectivity for audio hardware options, including multichannel 24-bit operation with word-clock synchronization.

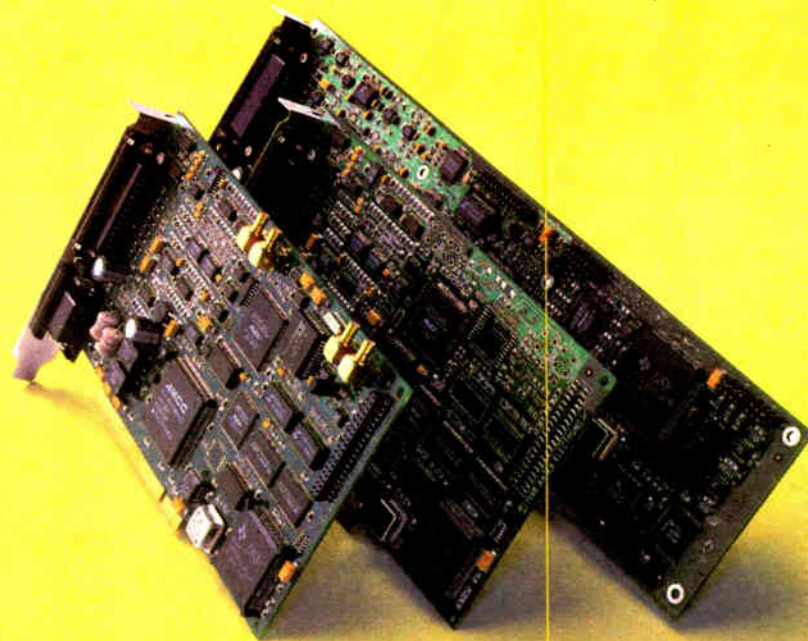
The Cubase VST mixing console is a screen-based environment that features input and group channels. Each channel offers a main fader and VU meter, plus Mute, Solo, EQ and Auxiliary Effect access buttons; up to four VST plug-in insert effects are available per channel.

Group channels can be presented in a separate window, if required, as can master output controls. Every channel, including groups, features eight auxiliary sends, with pre/post-fader switching, that connect directly to internal effects, or can be routed to an external output. Up to four bands of fully parametric equalization can be applied to each channel.

A fully loaded VST/24 system offers 96 audio channels (64 on a "standard" VST),

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- 3 virtual stereo devices

Model BX-44

- 20 bit A/D and D/A converters
- MPEG layer I/II, 8 or 16 bit PCM
- PCI bus, WIN 98/NT
- 96dB dynamic range, 0.003% THD+N
- 4 inputs/4 outputs/balanced
- 3 virtual stereo devices
- AES/EBU/SPDIF digital I/O
- MIDI interface
- Video sync/time code

Model BX-12

- 20 bit A/D and D/A converters
- MPEG layer I/II, 8 or 16 bit PCM
- PCI bus, WIN 98/NT
- 94dB dynamic range, 0.003% THD+N
- 4 inputs/8 outputs/balanced
- 6 virtual stereo devices
- AES/EBU/SPDIF digital I/O
- Independent sample clocks
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- Optional, opto-isolated digital I/O

Circle (36) On Reader Service Card

Seagate Drive Pulls Big Numbers

► CHEETAH, continued from page 39

EIDE drives can beat what the old SCSIs were capable of. But SCSI drives have also evolved.

The Seagate Cheetah 9LP ST39102LW uses the latest SCSI standard, Ultra2. This quadruples the burst rate of the original Ultra SCSI standard.

With burst rates of 80 MB/sec and sustained rates of some 25 MB/sec, the ST39102LW can handle most any audio production task as well as the needs of many music server setups.

The ST39102LW is fast and efficient. This second-generation, 10,000 rpm 9.1 GB drive consumes 25 percent less power than earlier models. Seek

time averages 5.2 ms.

To get some idea of what this means

ty on a Pentium 233mmx PC with a 5,400 rpm UDMA hard drive, then on

The advent of CD-Rs intensified the need for maintaining an uninterrupted data stream over extended periods.

in a production environment, I ran the IQS Hard Disk Speed Test 32 Bit utili-

a PII 400 MHz system with the Ultra2 drive. The IQS utility is designed to

determine how suitable a system is for multitrack production. Both systems ran under Windows NT.

(Editor's note: The Hard Disk Speed Test 32 Bit utility is a free diagnostic utility included with the SAW line of multitrack software products. It can be found at the Innovative Quality Software web site at www.iqsoft.com)

How many stereo tracks can the hard drive support in real time? The IQS utility was crucial back in the early days of PC audio production when getting four good uninterrupted tracks to run was a challenge. If you stretched the system beyond its capabilities, you would have to make an image file to hear what it sounded like.

Adding the extra step of creating finished files instead of being able to hear tweaks on-the-fly was a time-consuming hassle. Having a hard drive that can keep up is a tremendous time saver.

Miracle worker

Compared to my first production setup — a 486 DX2-66 under Windows 3.11 — even the UDMA drive is a miracle worker. The hard disk speed test yielded a read speed of 4,054 kbytes/sec and a write speed of 2,104 kbytes/sec.

According to the utility, a reading of 1,000 to 4,000 kbytes/sec indicates the system can handle as many as 12 stereo 16-bit/44 kHz tracks. To go beyond to 12 or 24 tracks, a drive would need to score a reading of 4,100 to 8,000.

The test only gives a ballpark figure because the capabilities in actual use are determined by a combination of other factors, including system RAM, video RAM and CPU speed. Despite these limitations, the test shows a minimum and maximum capacity for a drive. The final throughput is determined by that figure relating to the rest of the system.

So much for the caveats. Remember, a score of 8,000 would be outstanding. The ST39102LW scored a read speed of 15,744 kbytes/sec and a write speed of 9,336 kbytes/sec!

Using the SAW32 multitrack recorder/editor, I managed to fill up the program's upper limit of 16 tracks of 16-bit 44.1 stereo sound without a glitch. Switching to the 32-track SAWPro, I began to get bogged down at 24 tracks, although the limiting factor here was more likely due to processor speed than the hard drive's throughput.

The ST39102LW's superiority over the UDMA drives goes beyond seek speed. According to Mike Walton, Seagate product marketing manager for high-end disc drives, SCSI handles the task more intelligently.

"When you are doing multitracking, you have multiple commands stacking up. SCSI drives have the ability to sort the queue, based on the need for particular data," he said.

Off to market

Walton said this capability is like going into a grocery store. You arrive with a shopping list, ordered according to your own preferences. But the grocery store is organized differently from the order on your list.

If you take things off the shelf out of the sequence in the list, you get out of the store faster. But if you go through the store rigidly holding to the

See CHEETAH, page 45 ►

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MediaForm Duplicators

The CD-5916 by MediaForm can duplicate up to 16 CD-Rs simultaneously without the need of a PC. It can be loaded with one to 16 CD writers, and is equipped with an A/V hard drive, allowing the user to write images to the hard drive while a first set of copies is made.

The CD-5916 is a pro audio product that is Red Book compliant, supporting sub indexes, ISRC and UPC codes. Audio professionals can take advantage of the unique audio track extraction feature. Tracks from various audio discs can be copied to create a custom compilation disc.

Easi-DAT and Easi-Audio options can be added for importing from any digital or analog pro audio source.

Outfitted with 8X drives, it duplicates a full 74-minute CD in nine minutes. Fully loaded, the CD-5916 can produce a minimum of 106 discs per

hour. It allows the user to change copy speed from 2X up to 8X. Suggested retail price is \$12,695.

The company also offers the CD-3706P Autoloading CD-R Duplicator and Printing Station, which provides unattended CD duplication and printing,



and is now available with a color printer option. The suggested price is \$18,440.

For information, call the company in Pennsylvania at (800) 220-1215, visit the Web site at www.mediaform.com or circle Reader Service 53.

HBB Offers CDR850 'Plus'

HBB debuts its CDR850 Professional CD Recorder/Player "Plus" version at the 107th AES Convention this month. The unit is designed for use with digital systems in "all-digital" applications.

A set of DIP switches on the rear panel enables it to reference its master clock source not just via the Word Clock input, but also via its AES/EBU digital input, the coaxial and optical SPDIF digital inputs, or its own internal clock.

Another new feature is a balanced digital output on an XLR connector,



The addition of a Word Clock input enables the deck to be locked to a master clock source during playback, an essential function when working with digital systems in facilities where the audio remains entirely in the digital domain.

making possible longer cable runs required by multi-room facilities.

For information, contact the company in California at (310) 319-1111, send e-mail to sales@hhbusa.com or circle Reader Service 44.

Tascam CD-RW5000

The Tascam CD-RW5000 Compact Disc Recorder can read and/or write to all available media, including CD, CD-R, CD-RW, CD-R-DA and CD-RW-DA.

The 2U rack-mountable CD-RW5000 includes XLR balanced and RCA unbalanced analog I/O, an AES/EBU digital input, S/PDIF coaxial and optical digital I/O, a Sync Start

The most notable aspect is its support for all currently available forms of CD media. The company says many stand-alone recorders require CD-R-DA or CD-RW-DA formatted media and do not support CD-R or CD-RW. The cost of CD-R-DA and CD-RW-DA media is substantially higher than CD-R or CD-RW, the company says, because these disc formats are specially licensed for the consumer market.



function. Auto or Manual Track Increment capability, a sample rate converter, an Erase function and parallel control I/O capability.

For managing signal levels, it has an output level trim control.

The suggested retail price of the unit is \$1,299.

For information, call (323) 726-0303, send e-mail to tascamsales@tascam.com, visit www.tascam.com or circle Reader Service 50.

Microboards CD Technologies

StartREC is touted as the first digital audio editing system combined with a multidrive CD-Recordable duplicator. It is made by Microboards Technology and offers advanced hard-disk editing tools and the ability to create up to four custom audio CDs at 8X speed in a rackable or desktop setup.

The unit is priced at \$3,195 with two 8X CD-Recorders and one high-performance reader. It is expandable to four 8X recorders.

Editing functions allow producers to move, divide, combine or delete tracks, add or drop any index and create track fades. The company says the combination of editing and duplication saves on equipment costs and space.

The unit ships with a 4.2 GB hard disk. Regardless of source protection, StartREC will produce a copy-protected disc using SCMS.

The company also introduced PlayWrite MP3, a complete Internet MP3 audio and data backup CD-R solution for PC users; and AudioWritePro, a CD Recordable system that can create compilation audio

CDs directly from various analog sources such as tape deck, LP, radio, TV and others without a computer. It is priced at \$679.



It can also connect to a PC or Mac for burning audio, video or data CDs with conventional mastering/editing software. Connected to a PC, users can create custom audio CDs from the Net by downloading MP3 files and converting them to a Red Book disc-at-once image using PlayWrite MP3 software and recording the CD on AudioWritePro.

Recording speed is 4X when connected to a computer and 1X when connected to an analog source.

For information, contact Microboards in Minnesota at (612) 470-1848, visit www.microboards.com or circle Reader Service 43.

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CD-Recording, Settling In

► CD-R, continued from page 39

built-in firmware and menu software that may not be modified. The PC drives can use different software and go through flash-ROM upgrades," he said.

High-speed drives

The exploding market for PC-based units has been building for several years. Today's high-speed drives are far superior to the first consumer units released in 1996.

Takayuki Kuroshima, marketing/business development manager for Ricoh DMS Center, has seen the progress.

Despite the advances, the interface of choice today is the same as it was three years ago: Ultra SCSI. Most professional users avoid the inexpensive IDE consumer units or even those using the latest USB interface.

"SCSI is still a more robust interface and professionals, especially creative people dealing with Macs, still are devoted to SCSI. SCSI is still the preferred choice for the professionals and people who don't mind spending an extra \$70 to \$300 dollars for a SCSI controller," said Gharapetian. "They get that extra level of

tors have a special place in the production cycle.

"PC-based applications are typically geared at mastering. They do a good job or producing a single disc. They do a horrible job at then making multiple copies of that disc," said John McGrath, director of manufacturing for MediaForm. "The bottom line is that the use of a single-drive PC based system (for mastering) and a copier is the best and most common approach," he said.

Duplicators range from \$1,000 one-to-one devices to \$18,000 mass replication systems.

Users are increasingly opting for automated systems over manual ones.

"The customer who would buy a four-drive manual system a year ago is now considering a two-drive automated setup," McGrath said. "With the increase in drive speed (from 4X to 8X) no throughput is lost and the unit can run unattended allowing the operator to work on other projects."

The next development in automation is a network enabled "Disc-on-Demand" solution.

McGrath said, "cdDIRECTOR is analogous to a network print server. While a network print server functions as a shared resource allowing multiple

"DSD is the format for the 'Super Audio' CD," Karvunidis said. "This is the competing format to DVD audio. It's the dual layer disc proposed by Sony and Phillips. One layer is a high-density, DVD-type layer. The other is CD 'Red Book' compliant. You can play them in standard CD players, but units that support DSD can also access that information. The products with this capability are supposed to debut by the end of this year."

DVD

And what about DVD?

"That's a home theater format," said Karvunidis. "The studio community finds it interesting, but it's not their concern as yet," he said.

Plextor's Wing is keeping the door open, but with reservations.

"We are doing fundamental R&D in the DVD marketplace," he said. "But if there's a dollar difference between a CD-ROM and a DVD-ROM, I believe people will buy the lower-cost product. Also, I find it hard to believe that corporate America will be building DVD into all their systems. Why give their employees the opportunity to watch movies while they're working?"

Yamaha's projections see high-density formats becoming competitive in a year. According to Gharapetian, "CD-R and CD-RW business will be replaced by DVD-R and DVD-RW



AudioWritePro by Microboards creates compilation CDs.

"The technology is better, faster and cheaper. The recording, rewriting and playback speed of CD-RW is increasing while prices either hold or drop.

"For example, we introduced the first CD-RW drive kit back in 1997. It recorded at 2X, 2X for rewriting and 6X for playback. Today's unit costs the same but records at 6X, rewrites at 4X, and plays back at 24X," he said.

Meanwhile, Plextor began shipping an 8X recorder at the end of last year.

The current technology for PC-based CD-Rs is expected to top out at about 12x record speeds by mid-2000.

performance which may make the difference between a good disc or a Frisbee."

Replication

High-speed drives are popular in PCs and also as components in replication systems.

"Replicators have adopted the 8X drive as the new standard, replacing the 4X," said Howard Wing, vice president of sales and marketing for Plextor USA. The company makes units for PCs while providing many of the OEM drives for replicator manufacturers.

Manual and automated CD replica-

The technology is better, faster and cheaper.

— Takayuki Kuroshima
RicoH

users access to printing, the cdDIRECTOR allows users across a local or wide area network the ability create CDs on demand."

New generation

With the growth of CD-R, a new generation of CD players designed to work with them is on the way. Already, Denon offers units that can read "Orange Book" compatible discs. Discs that are still open to record additional tracks can be played back.

This fall, Marantz will release a whole line of players that will be able to read CD-RW. Standard players are unable to extract data reliably from CD-RW's less reflective coating.

The next development may be Direct Stream Digital (DSD) capabilities.

business respectively."

When?

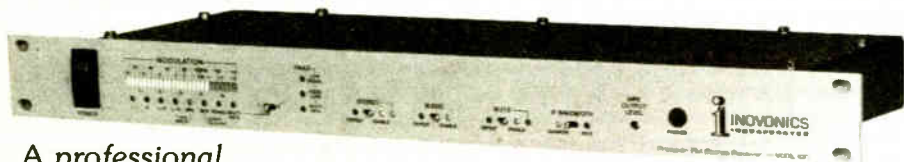
"Because of compatibility, availability and price issues — not to mention initial recording speeds and reliability — it will at least take until fall 2000 for DVD-R/RW units to start making a dent in the CD-RW's growing market. Other new products — and mediums, beyond DVD — are now being researched as well."

Not every manufacturer is on the CD-R bandwagon. Sony and Denon do not offer units for the professional market. Their MiniDisc offerings handle much of the same functions.

MD's major drawback? Not everyone has an MD player.

"If you want to give a disc to a client, you give them a CD," said Schweiger.

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Seagate Cheetah Gets the Job Done

► CHEETAH, continued from page 42
list's order, it is far less efficient. Even so, not all SCSI drives are the same.

"What sets us apart, why we win so many of the A/V shootouts, is because of our servo code, because we are so efficient," Walton said.

So what's the need to support 20 or more stereo tracks? Admittedly, this kind of performance is more advantageous to music or video producers. Those tinkering with high-density 24/96 recording will find this absolutely necessary to handle the new standard's data demands, which are more than triple those of 16/44.1 recording.

Overkill?

Even so, is this overkill for radio? There are a few good reasons you should opt for Ultra2 SCSI in a production system. If you burn CDs, the capabilities of the Ultra2 allow you to actually multitask while making a CD-R. Usually, you have to be careful to shut everything down before starting a burn.

Even TSR programs running in the background (Terminate and Stay Resident) need to be stopped to avoid interrupting data to the CD-R. When a data interrupt does occur, it results in a "buffer underrun" and the CD-R media is toast.

The upshot is that a PC burning a CD-R becomes useless for anything else until it finishes. But the

several other programs.

Beyond standalone DAWs, the Ultra2 is a must for networked envi-

The ST39102LW was able to maintain an uninterrupted flow of data during a 4X CD-R burn even though I was running several other programs.

ST39102LW was able to maintain an uninterrupted flow of data during a 4X CD-R burn even though I was running

ronments so that others can access archived audio.

Servers maintaining multiple feeds ben-

efit from the speed and data management. With street prices for the ST39102LW dipping below \$500, the price/performance is justified even in a tight budget.

Besides all these logical reasons, the sheer pleasure of having such power under the hood is irresistible to some. For those of us who remember muddling along with just two or three tracks at our disposal, the ST39102LW brings the peace of mind that comes from settling an engineering problem once-and-for-all.

■ ■ ■

For more information contact Seagate at (800) SEAGATE, (408) 438-6550 or circle Reader Service 42.

Carl Lindemann is a regular contributor to RW. Visit his Web site at www.cyberscene.com or send e-mail to carl@cyberscene.com

ADAPTEC 2940U2W

Adding an Ultra2 drive to an existing system does not necessarily consign the older drives to the scrap heap. The Adaptec 2940U2W PCI adapter card can effectively integrate Ultra, Ultra Wide, and Ultra2 drives through the single card.

Rather than defaulting to the lowest and slowest standard, the 2940U2W electronically isolates the newer SCSI bus. The Ultra2 and legacy drives operate side-by-side without any loss in performance.

Unpacking the kit, it looks more complicated than it is. The four different SCSI cables included mean that most anything can be hooked-up. The actual setup is very simple.

The only glitch came when using it to build an NT 4.0 system from the ground-up. I had to go to the Adaptec Web site to get the latest drivers. But once in hand, loading the OS on the freshly formatted ST39102LW drive went flawlessly.

Aside from speed, the Ultra2 interface can handle up to 15 devices over more than 36 feet of cable. With LVD (low voltage differential) drives like the ST39102LW, cable length can be as long as 66 feet. This increased range is tremendously helpful in larger operations where office geography leaves some SCSI peripherals frustratingly out of reach.

— Carl Lindemann

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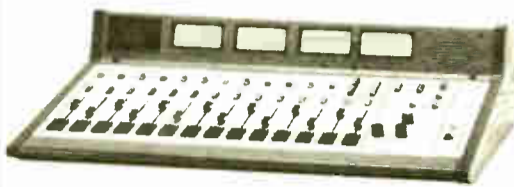


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8x1 DAS

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8X2D

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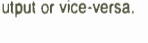
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Active crosspoint switcher with 3 stereo inputs and 2 stereo outputs.



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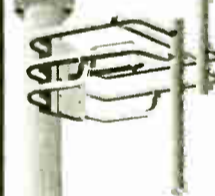
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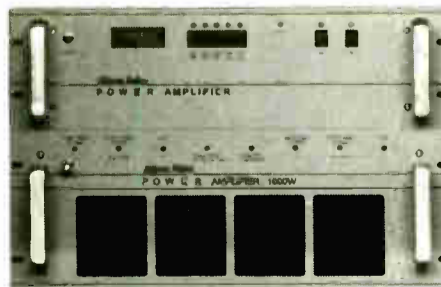


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Ricoh Disc Media and Systems-Center offers a high-performance portable CD-R/CD-RW drive created for laptop PC users.

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The company also announced a new, faster MediaMaster CD-



R/CD-RW drive package with a 6X CD-Recording speed capability, 4X CD-RW rewriting and 24X CD-reader.

The internal drive package is available for both SCSI and Atapi, at \$399 and \$349 respectively. An external SCSI version will be available for \$449.

For information, contact the company at (877) 742-6479, visit www.ricohdms.com or circle Reader Service 75.

Custom Music CDs

Adaptec's SoundStream CD recording software lets consumers create their own "greatest hits" CDs by compiling tracks of favorite songs they download from the Internet or off existing CDs.

This application links to popular Net music Web sites, access to CDDDB, the online Disc Recognition Service, Jewel Case Creator, for creating custom CD labels and inserts, and special effects for enhancing sound quality.

"While MP3 has become tremendously popular, most people can only listen to MP3s on their computer," said Tom Seaman, group marketing manager. "We want to give customers an easy way to listen to their favorite MP3s anywhere."

The user interface is similar to a standard audio player, allowing users to create a playlist by selecting songs from hard drive or CD. Sound quality can be enhanced using built-in signal processing from Arboretum Systems.

SoundStream has a suggested retail price of \$49 with a \$10 mail-in rebate coupon. Customers can sign up at <http://cdr.adaptec.com/signup> to be notified of availability.

For information, call (800) 959-7274, e-mail to sales@adaptec.com or circle Reader Service 56.

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New Fostex CR-300

The new Fostex CR-300 CD Recorder offers digital and analog recording to both pro and consumer CD-R and CD-RW media.

Features include auto signal conversion, five selectable record modes and a simple, intuitive interface.



The user can write CDs in professional-format for duplication, or incorporate SCMS copy-protection. It is suitable for pressing multiple copies of professional CDs for master backups or copy-protected consumer-format CDs to sell at a gig.

Other pro features include four CD-RW erase modes, digital fade-in and

fade-out for smoother recordings, three modes of copy bit selection, and support for Fostex Disk Management System data backup from Fostex digital multitrack recorders.

A complement of digital I/Os, including AES/EBU input and S/PDIF, are present, along with a built-in sample rate converter for making original CD

masters from DAT or MD media. Optional accessories include a 4-track digital mini mixer, for adding effects prior to input.

For information, contact the company in California at (562) 921-1112, e-mail to info@fostex.com or circle Reader Service 54.

Yamaha Records in 12 Minutes

Yamaha Corp. of America serves the CD recorder market with the CRW6416SZ, which it calls the world's first and only 6X recorder with 4X rewritability. It is designed to speed CD production and data backup for users and applications of all kinds.

Henio Arcangeli, Jr., vice president/general manager, Consumer Products Division, said the CRW6416SZ can record an entire CD in 12 minutes.

"We expect it to be an indispensable tool for business and consumer users alike."

The new unit uses SCSI-2 I/F. maxi-

mum 10 MB/sec. burst transfer rate (synchronous transfer) and features Yamaha's proprietary LSI chip set, optical head and the new Write Strategy for reliable high-speed recording.

The company said the half-height, 5.25-in. format drive carries an estimated street price of \$449.

The drive will be available to resellers through computer distributors. It will also be offered to consumers at major computer retailers, mail order catalogs and Internet resellers.

For information, call the company in California at (714) 522-9000; visit the Web site at <http://www.yamaha.com> or circle Reader Service 46.



Alesis MasterLink

The Alesis MasterLink ML-9600 is a mixdown and mastering system that combines hard-disk recording and editing, digital signal processing and CD creation in a single unit.

The ML-9600 allows studios, musicians and mastering facilities to store, deliver and play stereo 24-bit, 96 kHz audio on standard recordable compact discs. The unit can also produce and play conventional 16-bit, 44.1kHz Red Book format CDs.

MasterLink features a 3.2 GB internal hard drive with editing, DSP and mastering functions, a 4X CD-R drive and 24-bit A/D and D/A converters. Also, MasterLink introduces CD24, a proprietary format devel-



oped by Alesis, which the company says exceeds the previously resolution of Red Book audio on standard compact discs. Using the ISO 9660 disc format and AIFF audio files on standard CD blanks, MasterLink 9600 creates high-resolution CDs that can be played back on the system, in addition to being accessible to digital audio workstations.

The list price is \$1,699.

For information, contact the company in California at (310) 255-3400, visit the Web site at www.alesis.com or circle Reader Service 45.

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Dielectric 3-1/8" coaxial relay, Mike, 800-588-7411.

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dbx 165A mastering compressor, vgc, \$1.2K +shpg; Lexicon PGM 70 digital reverb, excel cond, \$1.5K +shpg; Joan Hardy M-1 mic pre, excel cond, \$675 +shpg. P Trembley, 661-254-5213.

dbx II 142 stereo NR system, Audio Distributor KLH transient noise eliminator, SAE 5000A impulse NR system. B Campbell, 915-673-5289.

Orban 280RX adaptive enhancement processor, \$795; dbx FS-900 w/2 dbx 411 NR cards, \$500; Orban 429 compressor/limiter/deesser, \$450; Rane HD-6 headphone amp, \$200. M Pappas, 303-988-0976.

Ramsa WZDE40-20 stereo digital effects processor, w/2 graphic, parametric & notch EQs, compressor/limiters, speaker delays, spectrum analyzer, excel cond, \$2000/trade for older recording gear. M Hughes 301-962-6823.

Sony PCM501ES, 16 bit 44.1 PCM analog to digital processor, permits up to 6 hrs uninterrupted digital recording using std VHS cassette rcd, \$500. B Meuse, 650-969-2433.

Tascam PB32 patchbays (5); Tascam PB32 patchbays 1/4 to 1/4 standard (unbalanced), decent shape, \$400 for 5. M Hughes 301-962-6823.

ADC Propatch 1/4" punch-block patchbays, new, \$600 (many, ADC TT 144 point patchbays recond, \$149-229. Switchcraft 1/4" 96 point, new, 2 spaces, \$249. W Gunn, 760-320-0728.

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Yamaha BP-2 bass pedals, prefer electronics only, but happy w/schematic. B Meuse, 650-969-2433.

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Century 21 auto segue auto sequencer for CD players. B Campbell, 915-673-5289.

DCS digital audio system w/486 CR workstation, DA56-01 digital audio board, MPEG audio board, 4.3 GB drive, silence sensor, uninterruptible pwr supply, \$10,000. H Close, 603-352-3691.

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Gates Yard 8 pot mono console, gd cond, \$500. J Cunningham, 580-265-4496.

PR&E BMX 3-22 console w/5 mic modules, 16 stereo line-input modules, telco, slate, studio & mono modules, digital timer, etc, excel cond, BO. Dave, 630-896-8888.

Wheatstone SP5 production console, \$5000/BO. T Evans, 207-942-3311.

Harrison MR2 32 input, 48 buss console, \$20,000/trade for other studio gear. M Hughes 301-962-6823.

McCurdy stereo boards (2), used in classical station, \$2000 ea; Gates Executive stereo boards (2), one w/updates, one needs work, \$1800/both. B Larson, 518-686-0975.

Logitek 12 stereo mixer. Mike, 800-588-7411.

MCI 618 24 inputs (12 mono, 3 w/super EQ, 12 stereo) great prod board, \$6k, MCI 528 27 in recording board \$7k, Neve 8108 65 in, mint \$59k, D&R Orion 1k-nu 26 inline, (64 on mixdown) \$12k, Trident 70 28x16, \$8500, JL Cooper 16 trk automation, \$1200. W Gunn, 760-320-0728.

WANT TO BUY

Mackie 24-8 or Tascam 2600 MKII w/meter bridge. J Maloney, 203-746-3659.

Ramko DC5M5 schematics, copy OK or will copy & return. E Pacer, 724-532-1778.

Soundcraft 600/800, Tascam 2600, Auditronics 110A, Mackie 1604, Neotek Elite. W Gunn, 760-320-0728.

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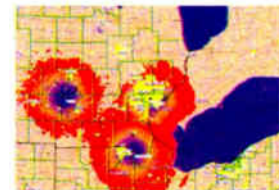
WANT TO SELL

Orban 418 & 424 production units, 50% of list. B Larson, 518-686-0975.

Urei LA2A (extra meter added) \$2500, dbx 900 rack (4 comps/4 gates) \$1800, Gates Toplevel \$550, CBS Audimax, Volumax comps, Dynamic Presence EQ \$400 ea. W Gunn, 760-320-0728.

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CBS Radio's 50KW non-DA WFAN in NYC seeks a hands-on CE. Experience must include high power RF, EAS, Y2K, computers, studios, digital workstations, newsroom systems, building systems, network originations, FCC rules and regulations. Responsible for all technical operations & maintenance. Self-starter w/good people skills in a union environment. Fax resumes: GM, 718-361-1059. EOE.

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BROADCASTING
OF KANSAS

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Premier New England broadcast group seeks Group CE. Be part of core management team. Take a leading role in upgrades, build-outs and acquisitions This is a hands-on, full-time job for a self-directed, organized individual - we need your help! Fax resume to "CE", 603-668-6470.

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Bdctg school grad in search of job in Oklahoma area, on or off air, voice or production, w/on-air exper. Jarrod, 405-867-4980.

Bdctg school grad, prof, team player, goal oriented, mature, ready to impress looking for the cutting edge, quality oriented, ready for radio, 2 voices, creative. Reggie, 405-427-7581.

CE position wanted. Experienced w/computers, xmtrs, automations, DCS, UDS, digital studios, 22 yrs exper. R King, 541-269-9109.

Hire me! Great on-air personality, dynamic writing skills & news delivery, bdctg grad w/exper at OKC station, will travel. Chris, 405-670-2250.

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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. This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Contact Name _____
 Title _____
 Company/Station _____
 Address _____
 City/State _____
 Zip Code _____
 Telephone _____

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
- E. Commercial AM station
- F. Commercial FM station
- G. Educational FM station
- H. Network/group owner
- I. Consultant
- J. Other
- K. Delivery Service (Internet/Cable/Satellite)
- F. Recording Studio
- K. Syndicators/Service Providers
- M. Ind. Engineer
- 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
- J. Promotion
- H. Programming/production
- G. Sales
- E. News operations
- F. Other (specify)
- K. Production Mgt or Staff

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS WTB Category: _____
 Make: _____ Model: _____
 Brief Description: _____
 Price: _____

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



5827 Columbia Pike, 3rd Floor • Falls Church, VA 22041
 PHONE: 703-998-7600 • FAX: 703-998-2966

Call Simone Mullins, Classified Ad Manager,
 to reserve space in the next issue.

Use your credit card to pay, we now accept VISA and MASTERCARD.

Select from these categories for best ad positioning:

- Acoustics
- Amplifiers
- Antennas & Towers & Cables
- Audio Production (Other)
- Automation
- Business Opportunities
- Cart Machines
- CD Players
- Computers
- Consoles
- Disco-Pro Sound Equip.
- Financial/Leasing Svcs.
- Furniture
- Limiters
- Microphones
- Miscellaneous
- Monitors
- Receivers & Transceivers
- Recorders/Services
- Remote & Microwave Equip.
- Repair Services
- Satellite Equipment
- Software/Databases
- Stations
- Stereo Generators
- Tapes, Carts & Reels/CDs
- Tax Deductable Equipment
- Test Equipment
- Transmitter/Exciters
- Tubes
- Turntables
- Employment

Classified Advertising Rates
 Effective January 1, 1999

	1x	3x	6x	13x
1-9 col inch (per inch)	\$79	77	75	72
10-19 col inch (per inch)	\$74	72	70	67
Distributor Directory	\$121	118	115	110
Professional Card	\$84	82	80	76
Classified Line Ad		\$2.00 per word		
Blind Box Ad		\$15 additional		
Station/Studio Services		\$175		

To compute ad costs: Multiply the number of ad inches (columns x inches) by the desired rate schedule for your per unit cost. Example: a 3" ad at the 1x rate is \$237, at the 3x rate \$231, at the 6x rate \$225, at the 13x rate \$216, etc.

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This listing is provided for the convenience of our readers.
 Radio World assumes no liability for inaccuracy.

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◆ READERS FORUM ◆

Another SESAC attack

Dear RW,
Add my name to the growing list of GMs and owners like Larry Fuss (RW, July 7) who refuse to be bullied by SESAC.

I've been in a running fight with that organization since my station changed over to a talk format. I, like Mr. Fuss, have searched high and low for a list of SESAC-licensed material; they have yet to supply me with one.

I, too, have canceled my SESAC contracts and, of the very little licensed music I use on my stations, will not (if I ever find any) use SESAC-licensed material.

*Keith Riggs
General Manger, Vice President
KTBR-FM
Roseburg & Coos Bay, Ore.*

LPFM comments

Dear RW,
I feel like holding a big Crybaby Party for all of the radio pirates, colleges and dissatisfied radio listeners who want LPFM.

Do we really want to give these folks a 100 or 1,000 watt station so their three or four listeners can hear their sandbox radio programming? I'd prefer they go back to the old way of holding up a walkie-talkie to their stereo system and cater to the truckers.

If some stations are needed in rural America, fine. But let's not clutter the rest of the radio dial any more than it already is.

Do we have a problem with big conglomerates hogging up the stations ... or even simulcasting the same programming on their AM station? Yes! Let's start with solving that problem before we see the need to approve LPFM. Otherwise, we'll have two problems that will be uglier than just one.

*John Wilsbach
General Manager, WMSS(FM)
Middletown High School
Middletown, Pa.*

Dear RW,
Probably the biggest argument in favor of low-power FM has recently surfaced in Berkeley, Calif. After 50 years, KPFA(FM) has angered its supporters so much that violence has erupted, supporters have been arrested,

and the entire broadcasting staff has been locked out.

At the apex of the problem is a new Pacifica Foundation management team that wants to go mainstream and get better ratings, therefore attracting corporate sponsors.

Forget loyal supporters who sent millions of dollars in checks and money orders since 1949 to hear news that no other station would touch. No, the corporation can make much more money airing programs that tell us how great Republicans are. And forget those small-label R&B CDs ... hey, if it ain't rock, we don't need to play it!

Perhaps the FCC should just pull the license. There are hundreds of pirates out there who don't have big heads, and would welcome the opportunity to serve the listeners.

*Duke Evans
Producer, Low Rider Oldies Program
River Rat Radio
Santa Rosa, Calif.*

Internet radio

Dear RW,
Ken R.'s excellent article in the June 23 issue on Internet radio stations ("Internet Radio: Still in Diapers") somehow ran out of space before he had a chance to mention WRKO(AM)/The BIG 68 Remembered!

WRKO/Boston began as a top-40 station in 1967, featuring top jocks either from other major-market stations, or on their way to larger markets. It stopped rocking and began talking in 1981, but left in its wake a top heritage station that blew away all competition almost immediately after taking to the air in March of 1967.

It's tough for some to realize, but the great radio stations were not confined to New York, Los Angeles and Chicago. The BIG 68 Web site is about to enter its third year, with added RealAudio airchecks, some 250 WRKO music surveys scanned and enhanced online, jock photos, information on Boston radio, and more. We offer copies of the entire site on CD, autographed by a former BIG 68 jock or PD.

But the best part of all is, as former WRKO PD Mel Phillips (now at WCBS-FM) says, the site has been a great way of reuniting the former WRKO jocks, newscasters, and more. And we try to keep them all in touch

Here's Your License

We know of a local organization that is very excited about low-power radio. Its members are delighted with the thought that they could have a 100-watt station up and running in no time at all.

But asked what he would put on the air if he had an LPFM license today, one manager replied, "I don't know, but it wouldn't be the crap that's on the radio now."

Which means he has no idea. He'd have a license, a transmitter and some concept of what he doesn't want to air, but not an inkling of what he *should* put up.

It's easy for low-power supporters to criticize radio programming, and to talk about the benefits of low-power in a general way. But let's get specific.

Through the magic of the press, you now own a radio station. Here's your LPFM license with our blessings.

In 30 days, you must be on the air with something that absolutely, positively serves the public or you forfeit your license. Tell us what you will air.

Will your station be all-live with original material? More Stern clones? Will you bring back some long-forgotten "name" jock for nostalgia's sake, or take your chances on young moldable talent? Will you address hard-hitting community issues? Will you program a niche music format, with automation? Will you broadcast church programming, or public-access shows?

Will you depend completely on local artists for music? Do you plan on lifting MP3s off the net?

What will serve the public responsibly? *Should* you serve the public responsibly?

We have just given you an awesome responsibility. The debate as to whether we should or should not have LPFM is now a moot point. You have a station and you have to have it ready in a month. Knowing what you do about the community where you are, what are you going to do with your station? Explain your plan.

It will be interesting to see who's preparing for LPFM and who is just blowing smoke.

— RW

with each other, via a private e-mail discussion group.

In the past two years, I had the privilege of meeting the great Frank Kingston Smith, Joel Cash, and Johnny Dark (Johnny is still on air, at Miami's WFLC(FM)). We have a ball when we get together. And the stories these guys tell are precious.

There's a searchable online database of every single record the station ever played, the position each attained, and more. We hope to make this database much more sophisticated, as Internet technology (and my knowledge) develops.

But WRKO wasn't only successful because of its on-air talent. Its engineers were tops in the business. It was often said that at least part of the RKO chain, including CKLW and WRKO, sounded like FM on the AM. The sound was so good, that I phoned then-CE George Capalbo some 32 years ago, and he told me that indeed, the way the audio chain was tweaked was literally a company secret. The were other 50 kW stations in Boston, but none sounded sweeter than WRKO.

Lots can be learned from the former

heritage stations. The more I develop this Web site (now more than 400 pages large!) the more I realize how good we listeners had it back then. I've yet to speak to any of today's broadcasters who don't readily admit that radio on the whole is boring at best. Thank God for my colleagues who keep those other great, former heritage stations alive, from KQV(AM) to WFIL(AM). They're museums online, but nobody pays a cent to drop by and browse all he or she wishes, 24 hours a day.

*Shel Swartz
Program Director, WRKO(AM)
W. Palm Beach, Fla.*

Write to Us

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READERS FORUM

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Everyone Wants to Own a Convertible!

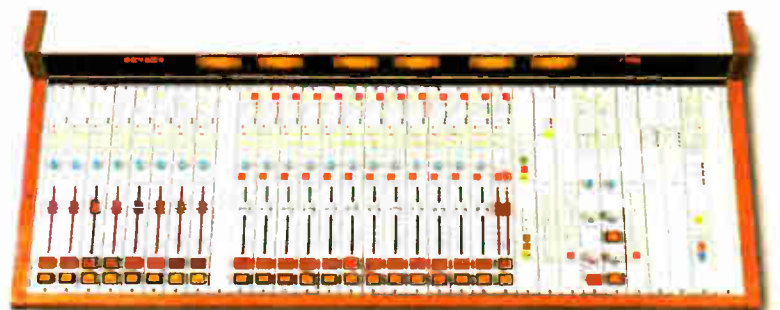


It doesn't matter what's under the hood...

So... How About a Convertible Radio Console?

Our New WHEATSTONE A-5000 gives you the best of both worlds. Order it from the factory now as a topnotch ANALOG on-air console. Then later, when you're ready, switch it out to DIGITAL! That's right, this new design accepts modules from our top-of-the-line D-500 and D-600 consoles, allowing it to be converted from analog to digital in the field!

Think of it: no new studio furniture, *no rewiring*—all your existing studio connections simply replug. And while we're at it, no re-training your staff either. A painless switchover on your own timetable, right in your own facility! If you need a new radio console *now* but aren't quite ready for the Big Switch, then check out our new A-5000—you'll like what's under the hood!



 Wheatstone Corporation

600 Industrial Drive, New Bern, North Carolina 28562 (tel 252-638-7000/fax 252-637-1285/email: sales@wheatstone.com)

Circle (10) On Reader Service Card
World Radio History



DIGITAL INTEGRATOR

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A meterbridge router controller panel can run our new Wheatstone rackmount switcher for hundreds of additional inputs. The totally modular hot-swap design accepts both analog *and* digital inputs. Dual metering is simultaneous VU and full scale digital peak. Add a PC based **setup program** for quick configuration of all displays, mutes, tallies, machine starts and mix-minus assigns (once set the PC is removed for console stand-alone operation) and you begin to see the *power* that lies behind this intuitively simple control surface.

SOUND LIKE SOMETHING YOU'RE LOOKING FOR? Give us a call here at **Wheatstone** and ask about the brand new **D-600 DIGITAL AUDIO CONSOLE**—our sales engineers would love to tell you more!



Wheatstone Corporation

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