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Radio World®
The Newspaper for Radio Managers and Engineers
January 5, 2000

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DIGITAL NEWS

USADR, DRE Combine DAB Efforts

Two IBOC Proponents Form Alliance, Predict Move Will Bring DAB Standard Closer

by Leslie Stimson

From three systems to two — and is a digital Grand Alliance next?

The industry is watching the progress of in-band, on-channel digital radio research in the United States, after hearing of an alliance between two former competitors.

Under the agreement between Digital Radio Express and USA Digital Radio Inc., announced Dec. 14, the former will give up development of its own IBOC system to lend support to USADR's efforts. DRE will focus on specialized data applications for the USADR system and announced a new partner in that effort.

"It gets us closer to the establishment of an IBOC standard," said DRE Managing Director Dwight Taylor. "That's what people in the industry need ... the standard takes away the gamble."

USADR President and Chief Executive Officer Robert Struble said of the alliance, "It cleans up the playing field and makes IBOC closer to reality."

DRE says it chose to partner with USADR because of confidence in the USADR technology, its owners and business plan to bring the technology to consumers. Both companies confirmed they began talking about working together before the NAB Radio Show in Orlando.

As part of the alliance, DRE is slated to receive a percentage of USADR stock. It would then join 14 other owners, including the top 10 radio groups, in the Columbia, Md.-based company.

DRE, based in Milpitas, Ca., has five partners that own equity in the firm.

Some equipment manufacturers and some members of the National Radio

See IBOC, page 6 ▶

Radio Prepares for Sydney 2000 Olympics

by Phil Sandberg

SYDNEY, Australia While many of those who tune into the quadrennial Summer Olympic Games will do so via television, the Sydney Olympic Broadcasting Organization has not forgotten about radio.

The SOBO quietly is preparing to ensure that the necessary technical

The Main Olympic Stadium in Homebush Bay

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NEWSWATCH

Tristani Stays At FCC

WASHINGTON FCC Commissioner Gloria Tristani is remaining at the commission. She had been thinking about returning to New Mexico to run for Congress.

"The (Clinton) Administration has asked me to stay at the FCC," she said. But she plans to return to her home state in the future to serve in a different capacity.

Tristani, one of three Democratic commissioners, was unlikely to be replaced by the Republican-controlled Senate during an election year, observers said.

Pirate Indicted

RICHMOND, Va. The FCC Enforcement Bureau announced that on Nov. 16, 1999, a federal grand jury indicted Khalid Kubweza on four counts of operating an unlicensed FM station on 91.7 MHz from his home. In September of 1995, the FCC seized unlicensed radio equipment from his home, and again in 1998.

Cumulus to Buy Connoisseur

MILWAUKEE Cumulus Media Inc. will pay Connoisseur Communications $242 million in cash for 35 radio stations in nine markets. Pending regulatory approval, Cumulus will own 299 stations in 58 markets.

The acquisitions include multiple-station clusters in Illinois, Indiana, Iowa, Michigan, Ohio and Western Pennsylvania. The deal will increase Cumulus' presence in the Midwest to 23 media markets.

Cumulus Media Inc. filed an S-3 registration statement with the SEC in advance of an anticipated 4th-quarter equity selloff, which company statements indicate will be used for further acquisitions.

The deal is expected to close by June 2000.

FCC in Clover

WASHINGTON The FCC has money again.

The agency was officially funded for fiscal year 2000 when President Clinton signed the $390 billion budget legislation. Included is $231 million for the commission and $300 million for the Corporation for Public

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Broadcasting.

Both had been operating under temporary funding mechanisms since their new fiscal years began Oct. 1.

AM Auction Window Soon

WASHINGTON The FCC announced an auction-filing window of Jan. 24 to Jan. 28 for certain AM construction permits. The window applies for those who want to submit proposals for new AM stations and major modification applications that were received on or before Nov. 26, 1997, and later "frozen" by the commission. Applicants for new AMs and AM major modifications applications filed after Nov. 26, 1997, that also were "frozen," are eligible to take part in this auction filing window.

The freeze was limited to new station and major change applications and the Mass Media Bureau has continued to process minor change applications under its first-come, first-served processing rules for the past two years. However, the FCC will not accept applications for CPs for minor changes in authorized AM stations between Dec. 24, 1999, and Jan. 21, 2000.

This limited freeze gives AM stations more time to file minor change applications before the window. The freeze also eliminates the risk that a station's proposal would be blocked by a competitor seeking a similar change before the window.

To take part in the auction, stations must file FCC Form 175 by 5:30 p.m. Eastern Standard Time on Jan. 28. For more information about the filing window, go to *www.fcc.gov/mmb* and click on "Public Notices."

CEA Promotes Ralph Justus

ARLINGTON, Va. The Consumer Electronics Association has promoted Ralph Justus to vice president, technology and standards.

Justus has been serving in that position in the interim since George Hanover retired in November. Under Hanover's leadership, stated CEA, the department helped smooth the way for the emergence of new technologies such as digital audio broadcasting.

As vice president, Justus will continue to administer technical programs associated with EIA/CEA standards, government regulations, technology policy and research issues related to the consumer electronics industry.

Justus joined CEA, formerly the Consumer Electronics Manufacturers Association, in 1991 as director of engineering. Previously, he served as director of engineering, regulatory and international affairs for NAB and as supervisory electronics engineer of the FCC's television branch.

Directional AMs: Give Us a Break

by Lynn Meadows

WASHINGTON Directional AM station owners say they need a break in their antenna performance verification rules.

The consulting firm of duTreil, Lundin & Rackley Inc. cites lax maintenance practices due to economic conditions of the AM radio industry in the 1980s and 1990s and scaled-back FCC enforcement for the fact that — in its estimate — more than 50 percent of directional antenna systems are out of adjustment today.

Another consequence of the decreased demand for the services of consulting engineers for directional antenna work is that new engineers were discouraged from entering the field.

"The sad fact is that very few of the engineers who designed, adjusted and proofed the thousands of directional antennas that we have today are still in practice and only a scant number of new experts have come along to replace them," read the comments of duTreil in the FCC Notice of Proposed Rule Making on AM directional performance verification. "We don't believe that it is overstatement to say that the AM radio industry is in an engineering crisis."

Knowledge pool

Rule changes, wrote duTreil, would help young engineers enter the market and reach the level of knowledge necessary to become experts in directional antenna work much quicker than is now the case.

Despite the cost savings promised to directional AM stations, only 17 comments and five reply comments were submitted to the FCC regarding the Notice of Proposed Rule Making, issued in June. The comment period for MMB Docket 93-177 was extended to mid-November.

But potentially hundreds of stations will benefit if the changes proposed in the docket are adopted (**RW**, June 9, 1999). Roughly 40 percent of the 4,790 AM radio stations licensed in the United States operate directionally sometime during the day or night.

Beginning with proof-of-performance requirements, the NPRM addressed several issues that have drained the budgets of AM stations with directional antenna systems for decades.

First, the commission suggested reducing the number of radials required in a full proof of performance. For a simple directional antenna pattern, the FCC proposed reducing the minimal number of radials required from eight to six. For complex antenna patterns, the commission suggested a requirement of no more than 12 radials.

AM Directional Array Outside New York City

If the major lobe, minor lobes and nulls could not all be accounted for by those 12 radials, the FCC proposed using pattern symmetry to account for the remaining minor lobes and nulls.

Consulting engineers Hammett & Edison Inc. supported changing the minimum number of required radials from eight to six. But the firm suggested that pattern symmetry be allowed to be assumed only in directions where there are no significant protection requirements.

ABC Inc. commented, "We do not support either unnecessary radials or artificially limiting the number of radials needed to characterize extremely complex arrays with many nulls."

DuTreil, Lundin & Rackley is one of the companies that filed the original Petition for Inquiry in 1989 to revisit the FCC rules regarding the performance of AM directional arrays.

DuTreil stated there should be no minimum number of radials. "Only the radials required to demonstrate that the parameters of the array have been adjusted to produce the required field vector summation should be required to be measured."

The FCC further proposed cutting the number of points that must be measured per radial to establish directional and non-directional field strengths along each azimuth from 30 to 15 and shortening the minimum length of the radial from 34 to 15 kilometers.

Hammett & Edison and others favored this change, saying it would reduce the amount of travel time required to conduct a proof of performance without affecting the accuracy of the results. DuTreil opposed setting rigid standards for radial length, citing the "great variation in electromagnetic environment from station to station."

For partial proofs of performance now,

See AM, page 5 ▶

'The Bott and Jochem Buildings'

From the Editor

Paul J. McLane

My column in the Oct. 27 issue about the new Harris Broadcast facility in Ohio prompted a letter from Larry Cervon, known to many **RW** readers as former president and major owner of Broadcast Electronics. He is also a self-described broadcast history nut.

Larry liked my idea of naming the two big buildings at the Harris complex after broadcast pioneers. I had offered a few ideas, such as the Marconi and de Forest Buildings, or the Gates and Ridge Buildings, for Parker Gates and Roy Ridge.

Former Gates Radio Co. employees gathered recently for a holiday dinner. Seated, from left: Roger Veach, Norbert Jochem and James Barry. Standing, John Burtle, Larry Cervon and A. Hans Bott.

Larry offered two ideas of his own.

"You may know that I was with Gates Radio for 27 years and succeeded Parker Gates as division head and VP/general manager. This was from about 1967 to 1974.

"My involvement with Broadcast Electronics came after that, and in 1977 I moved Broadcast Electronics from Silver Spring, Md., to Quincy, Ill.

After Gates, who?

"To dedicate the two new Harris Buildings in Ohio to recognize contributors to Harris' growth is a great idea. It would probably be a duplication to consider Parker Gates, as the huge Quincy complex was dedicated to him on June 11, 1971," Cervon wrote.

"The Quincy complex also has an avenue named for Parker Gates and a drive named for Hilmer Swanson, who was a tremendous contributor to Gates' growth (and that of Harris) because of the PDM invention back in the late 1960s when I was running Gates. Then, later for the DX technology, etc., etc.

"But the individual who, in my opinion, made the greatest technical contribution is A. Hans Bott, who led development of the IF modulation television transmitters, which we introduced in late 1969.

"In my opinion, Harris would not be the TV transmitter leader it is today if Hans Bott had not come up with the idea of IF modulation, which was conceived in Germany for UHF and which Hans Bott was on top of.

"It was his idea to develop a line of low-band, high-band and UHF TV transmitters using IF modulation that propelled Gates to the number-one position in TV. This was helped by our acquisition of the GE TV broadcast business in July 1972, which was moved to Quincy later that year.

"After Hans Bott, the next most important contributor to Gates'/Harris' growth in technology, in my opinion, was Norbert (Nibs) Jochem, who was vice president of engineering during the time Hilmer Swanson invented PDM and while Hans Bott led the IF modulation transmitter development.

"So, my suggestion for naming the new Harris facilities would be A. Hans Bott and Norbert (Nibs) Jochem. Except for Hilmer Swanson, nobody comes close in the technical contribution and he should be a top candidate regardless of the street in Quincy. I feel quite sure Parker Gates himself would be pleased with these choices."

I like Larry's suggestions. They fit well with the history theme that Harris has created in the lobby and hallways of its new broadcast headquarters.

Perhaps Harris will use these ideas, or come up with a few more of its own. I've passed these ideas along to them.

What do *you* think? What other radio facilities are in need of a good name? Tell me via e-mail to *pmclane@imaspub.com*

★ ★ ★

Another long-time friend of the industry is Bruce F. Elving, who lives way up there, west of Duluth, Minn., near I-35 and U.S. Highway 2. He's out with the 18th Edition of his "FM Atlas."

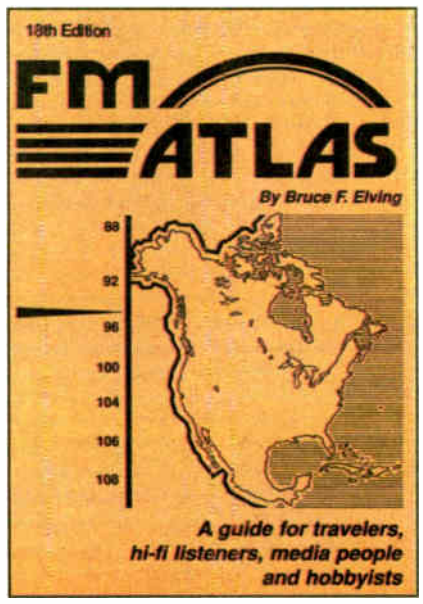
The current version includes several new maps, particularly for Mexico, where many new FM stations are on the air.

A generation of travelers and hobbyists has used the familiar handbook with the orange cover to identify FM stations by frequency, market and format, since it was introduced as a project of the Worldwide TV-FM DX Association in 1971.

It contains 115 pages of maps of the United States, Mexico and Canada, showing FM stations licensed to each market. Another 110 pages are devoted to a state-by-state directory.

The book has plenty to keep a DXer or FM buff engrossed. It notes stations that are monophonic. It includes information about station subcarriers, shared-time arrangements, translators and boosters.

The symbol system can be awkward to follow the first time you use the book. And it has a decidedly low-tech look and feel. Elving notes in the introduction, "The maps are done on a 1968-era IBM Selectric Composer. The Station Directories are done, through Tennessee, on a modified IBM ESComposer and creaky 1980s-era computer that crashed in mid-project. It was believed to be the last operating system of its type in the world."



But in an era of high gloss and fancy Web sites, the atlas is a comfort, and its pages reflect an obvious love and knowledge of radio.

You can order the "FM Atlas" by sending $21.99 to FM Atlas Publishing, P.O. Box 336, Esko, MN 55733-0336 or calling (218) 879-7676. Elving also produces the newsletter FMedia!, which costs $65 per year.

AM Antenna Rule Changes Proposed

▶ AM, continued from page 3

permittees must make at least 10 field strength measurements within three to 16 kilometers from the array at radial locations used in the last complete proof of performance. The FCC proposed to reduce to eight the required minimum number of points per radial.

DuTreil suggested abolishing partial proofs from the rules because of their "inherent inaccuracy and susceptibility to cumulative error." The company argued that "the full proof-of-performance procedures that we have proposed will make it possible for most, if not all, stations to conduct proofs with less effort and expense than is now required for partial proofs."

Computer modeling

As Greater Media Inc. observed in its comments, Docket 93-177 brought the topic of computer modeling to the forefront among broadcast engineers, consulting engineers and trade organizations.

The NAB hosted an ad hoc forum on AM directional antennas in October. The organization reported that the participants agreed that computer modeling for method-of-moment analysis "has advanced to the point of warranting the reduction in field measurements now being proposed by the commission."

But the forum did not reach a consensus on what specific measurements could now be replaced by computer modeling data.

The NAB proposed that a voluntary committee of industry representatives, engineers and consulting engineers take six months to examine the issue of computer modeling in depth. Infinity, the licensee of 53 directional AM stations, supported NAB and stated it intends to participate on the voluntary committee to work toward a consensus regarding computer modeling.

Clear Channel Communications Inc. urged the commission to authorize the use of numerical modeling methods in place of traditional proofs-of-performance methods.

Consulting communications engineering company Carl T. Jones Corp. commented that the industry has not "identified, verified and documented detailed procedures to allow accurate and repeatable computer modeling of directional antenna systems which can be uniformly applied to a wide range of directional antennas and tower configurations."

But both Jones and duTreil supported a Further Notice of Proposed Rule Making to study the subject.

Many comments focused on the FCC's proposal to make it easier to change monitoring points. Licensees regularly take field strength measurements at their monitoring points to verify that a directional array remains within the radiation limits allowed.

Current rules require an applicant to include the results of a partial proof of performance taken on the radial containing the monitoring point to be changed. The FCC proposed allowing applicants to reference the measurements taken along that radial in the last full proof of performance submitted to the commission.

Clear Channel urged the FCC to revisit the concept of monitoring points especially for arrays that are licensed based on computer modeling. If the commission decides to retain monitoring point requirements, Clear Channel suggested it authorize points with a value of 10 percent above the predicted maximum based on a full proof of performance.

The FCC also proposed to eliminate the requirement for maps and directions indicating how to reach monitoring points for applicants who use global positioning coordinates to identify monitoring point locations.

"We have no objection to specifying the locations with GPS coordinates, as long as a description is also included," wrote Hammett & Edison.

ABC commented that currently, it is difficult for another station or FCC inspector to determine the exact location of a monitor point because the FCC no longer prints directions to monitor points on new licenses.

"Points should be defined to within roughly a 50-foot radius (less in some urban areas) or the variance in value is too great to be meaningful," commented ABC.

Carl T. Jones Corp. said it supports the use of differential GPS coordinates in lieu of detailed routing descriptions. Still, Jones favored maintaining the requirement for monitor point pictures and detailed descriptions of the monitoring points.

The company supported retaining the requirement of submitting a partial proof of performance on the affected radial when requesting a new monitor point.

"The measurement of eight points on a single radial can hardly be considered burdensome in the rare instance of a monitor point change, yet it would provide critical information in determining whether the radiation on the radial remains within its standard pattern radiation limit."

Licensees are currently required to install base current ammeters or toroidal (current registering devices) transformers at the power feed point of each tower, typically at the base of the tower.

The FCC proposed deleting the requirement for base current ammeters or toroidal transformers for those directional stations employing approved antenna-sampling systems.

In its comments, the firm of Hatfield & Dawson Consulting Engineers LLC, another one of the original petitioners, called the base current ammeters "an anachronism which should have been eliminated years ago."

The FCC proposed to delete most of the antenna monitor construction and operational requirements.

Also, all AM directional stations are required to use an antenna monitor as a means of verifying directional array performance. The current rules include detailed specifications — most adopted in 1973 — that antenna monitors must meet. Concerned that those specifications are impeding the development of antenna monitor systems using advanced technology, the FCC proposed to delete most of the antenna monitor construction and operational requirements.

Critical arrays were addressed in the NPRM as well. Critical arrays have a greater potential for causing interference. Licenses of stations that have critical arrays specify tighter operating tolerances, and those stations must install special precision monitors.

The commission proposed to stop specifying the use of expensive specially designed precision antenna monitors for critical arrays in favor of requiring that the installed monitor have a digital readout graduated in increments no larger than half of the critical parameter specified in the authorization.

Star Development Group, owner of WBDO(AM), Palm City, Fla., supported this idea. In its comments, the group said this would allow for the use of off-the-shelf equipment instead of expensive specially designed monitors.

The commission also suggested that two- and three-tower antenna systems and daytime systems be excluded from being classified as critical arrays.

ABC commented that some antenna systems could be evaluated on a "per-element basis." Using an example of a six-tower array, ABC suggested only towers 2 and 3 may need to be maintained within critical limits, but 1, 4, 5 and 6 could maintain standard limits.

The commission suggested deleting the requirement to measure impedance across a range of frequencies, which several commenters supported. Licensees are currently required to take measurements of resistance and reactance at 5 kHz intervals out to 25 kHz above and below the carrier frequency.

BUSINESS DIGEST

Continental Pursues DTV, Hires Harland

Continental Electronics Corp., well known to radio station engineers, has set up a business unit dedicated to its solid-state digital TV transmitters and related TV lines.

The product line is marketed under the SpectraStar name. The company said CEC Television is the first manufacturer dedicated exclusively to solid-state amplification and single-platform, multimode modulation technologies.

CEC Television sells direct in North America. Among its sales force is Bill Harland, formerly of Broadcast Electronics and Acrodyne, who joined the company in October.

Then There Were Two

▶ IBOC, continued from page 1

Systems Committee, the standards-setting group co-sponsored by NAB and the Consumer Electronics Association, welcomed the news.

"From the perspective of a hardware manufacturer, anytime you can consolidate the number of people that are putting forth standards and technologies, I think it's a good thing," said Bob Law, vice president, consumer products, Kenwood USA Corp.

"All the hardware manufacturers would love to see a consolidation of all three proponents so that there's only one technology and one standard to deal with."

Kenwood has an agreement with USADR to develop and market IBOC receivers.

"It eliminates some of the potential delays of the future," said NRSC Chairman Charles Morgan. He also said the workload of the NRSC has been reduced because it must evaluate only two systems to see if they perform better than analog radio.

The alliance leaves two strong companies developing IBOC technology — USADR and Lucent Digital Radio. Both explored the technology jointly in a 10-month development agreement that ended in February of 1998 because the companies chose to pursue their goals differently.

The new alliance announcement prompted more calls for cooperation between USADR and Lucent.

Harris Corp. is testing its transmitters and STLs with both USADR and LDR. Harris, among other manufacturers, called for a so-called Grand Alliance at the NAB '99 convention.

Of the USADR/DRE agreement, Jim Woods, vice president, Harris Broadcast Communication's Radio Systems Business Unit, stated in an e-mail, "It important that we as an industry define digital radio to the listeners. If we allow other services to define the quality and service of mobile digital audio entertainment, then we will be forever in a catch-up mode.

"Therefore, we are very enthusiastic about this development and reiterate our call for an alliance which includes *all* the proponents."

Test results

Morgan sounded a note of caution about moving too fast.

Recalling earlier discussions about a Grand Alliance, he said, "My opinion was we should wait until both systems are fully developed, and put them both on the table, so that people can look at them. Then would be the right time for an alliance *if* an alliance is proper."

Morgan believes the NRSC would welcome such an alliance, but said the companies would need to decide if that is what is best for them.

USADR said, as it has before, that LDR is welcome to join its coalition.

Lucent, as it has before, extended a similar invitation to USADR.

"It works both ways," said LDR President and Chief Executive Officer Suren Pai.

Of LDR, Morgan said, "If they want to pursue their system, because they believe it's a superior system, then they should do what they think is right."

All the hardware manufacturers would love to see a consolidation of all three proponents.

— Bob Law
Kenwood USA

USADR submitted more than 250 pages to the NRSC on the Dec. 15 deadline; Lucent had not, citing a need for more time.

The FCC's deadline for public comments on its DAB Notice of Proposed Rule Making is Jan. 24. LDR said the two submission deadlines "caused an overlap in demands upon our technical teams," said O.J. Benjamin, LDR senior vice president, product management.

Pai said LDR would tell the NRSC what it plans to submit and when at the DAB Subcommittee meeting on Jan. 8 at the Consumer Electronics Show in Las Vegas.

Information to come

Privately, some sources said that LDR missed the deadline as a delay tactic.

Of the later submission, Pai said, "We've never said we would not cooperate with the NRSC."

Milford Smith, chairman of the NRSC DAB Subcommittee, said, "I am somewhat buoyed by the fact that they're saying, 'We'll be there, but not quite on time.' It will be up to the subcommittee to make a determination as to what effect, if any, the late submission of data would have."

"Our goal here is to try and get a viable, best possible system of digital transmission for the industry. If you keep that in your sights as a goal, then I think we probably have to be a little bit flexible to get that done."

Of the three proponents working on IBOC development, DRE is the smallest company. Indeed, Struble has referred to them in the past as "three guys in a garage."

That name stuck and DRE even referred to it proudly in a presentation at the NAB Radio Show in Orlando.

And now?

"We're going to stay in the garage. We're still a Silicon Valley company," Taylor said.

Struble said, "Whether they are three guys in a garage or not, they've become a credible IBOC proponent and are accorded the same weight at the NRSC and the FCC. We think it makes great sense to have two of the proponents come together."

Observers said that given DRE's size, it was never going to compete on an even playing field with the other two proponents and the alliance with USADR makes sense for both companies to play on their strengths.

RW has previously reported that with its limited manpower, DRE had not intended to conduct the amount of field testing as the other proponents.

Now it does not need to submit formal results of its tests at KSAN-FM in San Francisco (**RW**, Sept 16, 1998) to either the NRSC or the FCC. Nor does it intend to.

The alliance leaves DRE free to concentrate on development of wireless mobile data transmission and reception technology. DRE said it is using its intellectual property to implement more efficient use of radio subcarriers for the delivery of mobile data.

DRE announced an equity partnership with Cue Corp., a data services company, and with semiconductor manufacturer ST Microelectronics. DRE previously announced business relationships with both, but now both have become equity partners in DRE for a total of five with the three founding partners.

DRE has created a design that it said permits higher data net throughput, at low cost, for Internet appliances, car receivers and other mobile data communication devices.

Digital Radio Express has six patents relating to IBOC technology that it will share with USADR. DRE acquired the intellectual property from those patents from Derek Kumar, now director of DRE Engineering, when the company was formed in 1997.

Kumar had worked on previous USADR IBOC systems as a subcontractor.

USADR will review the patents and determine if that patented technology will become incorporated into the USADR system.

If so, DRE would get a share of whatever licensing revenues USADR derives through the sale of IBOC-compatible equipment made by other firms. Both USADR and DRE declined to reveal specific terms.

DIGITAL NEWS

DAB Launches Officially in Canada

by James Careless

MONTREAL Digital radio has been commercially launched in Canada. Currently, Eureka-147 simulcasts of existing AM and FM services can be heard in Toronto, Montreal and Vancouver, British Columbia, on the L-band.

The official launch occurred in November at the DAB World display at the 1999 Canadian Association of Broadcasters convention in Montreal.

DAB World

Located in the Queen Elizabeth Hotel, DAB World featured consumer digital radios made by Pioneer, Kenwood, Sony, Clarion and Arcam, among others.

The event included on-location broadcasting, including a complete portable studio designed by Radio-Canada, the French-language service of the Canadian Broadcasting Corp.

For Canada, the launch of DAB caps a decade of cooperation between private and public radio, government and equipment manufacturers.

Through Digital Radio Research Inc., recently renamed Digital Radio Roll-Out Initiative, the Canadian radio broadcasting industry has taken a European technology and successfully adapted it to the Canadian market.

"It has been a tremendous experience," said DRRI Executive Director David Garforth. "We moved forward all the time, sometimes we moved sideways, but never backwards."

Plans

What does the future hold? At this point it is unclear which Canadian markets will be next to go digital. A number of people are talking about building facilities, said Garforth, "but nobody has gone public yet."

Will DRRI woo the United States away from in-band, on-channel digital radio in favor of Eureka-147 DAB?

"I would not rule out U.S. broadcasters coming on board," he said. Still, even a Eureka-147 supporter like David Garforth does not expect U.S. approval of the use of L-band.

Canadian DAB stations are broadcasting using the Eureka system in the top three Canadian markets, covering one-

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Harman Sells Orban to CRL

by Paul J. McLane

The consolidation of radio equipment suppliers took a dramatic turn on the Monday after Christmas.

Circuit Research Labs Inc. signed a letter of intent with Harman International Industries Inc. under which CRL will acquire the assets of Orban Inc.

The $15 million purchase will be financed by debt, according to C. Jason "Jay" Brentlinger, the CEO and majority shareholder of CRL.

The Orban brand will be retained, he said, as will all Orban employees, most notably its chief engineer and co-founder, Bob Orban.

"An Orban without Bob just wouldn't be Orban," Brentlinger said.

Brentlinger said he had drafted a letter of employment for Bob Orban, and the two intended to sign it once the deal is closed. That is expected at the end of January.

Optimods and Audicys

This deal is one of several among equipment companies recently, but in the world of audio processing it is a blockbuster.

Even its competitors acknowledge that Orban is the biggest name in radio on-air processing, thanks to the success of its Optimod line.

Brentlinger estimated the combined company will have about 70 percent of the world market for radio and TV processing.

Orban, based in San Leandro, Calif., has approximately 75 employees and annual sales of about $18 million. It was founded in 1970 and was privately held by Bob Orban and the late John Delantoni. It was sold in 1989 to the U.S. division of AKG Acoustics, which was acquired by Harman in 1994. Orban also makes Audicy digital workstations, included in the sale.

CRL, based in Tempe, Ariz., has approximately 25 employees and $2.5 million in annual sales. It was founded in 1974 by Ron Jones and Gary Clarkson. After Jones died in 1998, Clarkson sold his majority interest. CRL is publicly traded over the counter. The two businesses will operate together as a public company, according to a statement from broker Serafin Bros.

Industry watchers say the publicly held Harman has been looking to sell off certain pieces. Its professional business, which also includes JBL and AKG, has been focusing on theaters, venues and the contracting market.

According to the Harman 1999 annual report, "As our focus on audio pays increasing dividends, we are divesting non-audio operations."

Observers said Orban was one of the smaller operations in the Harman family and that the company has been looking at its portfolio in the wake of recent management changes there.

"They don't have the critical mass to be in broadcasting," one said. "Orban was below their noise floor."

Harman has $1.5 billion in annual sales. Philip Hart, president of Harman Professional's International Group, said in a statement that the combination with CRL "makes great sense."

At least for the time being, CRL will operate both its Tempe headquarters, where it owns a 10,000-square-foot facility, and the 50,000-square-foot Orban offices in San Leandro, which have two years remaining on a lease.

Brentlinger said he expects Orban will remain in the San Francisco Bay area even after that, but that plans are not set.

Sources said the deal plays to each company's strengths, with approximately 80 percent of Orban's business being in digital processing products and 80 percent of CRL's in analog.

"Between the Orban and CRL brands, we can offer the full range of audio processing solutions at many price points using both digital and analog technologies," Brentlinger said.

He said he started talking about buying Orban as soon as he came to CRL this year, and that Orban and CRL products will continue under those names.

Brentlinger is radio-savvy. He owns two stations in the Phoenix area, and just sold a third; he has been a chief engineer since 1980. "My first job was tuning transmitters and playing religious tapes on weekends in high school," he said.

The deal is part of the consolidation that's been going on throughout the broadcast business, he said. "It's just now hitting manufacturers."

Orban, he said, is a market leader. CRL has been known for innovation, he said, but has nothing like the distribution network of Orban.

Rumors of Orban being for sale had been surfacing for a year. Many observers figured Harris Corp., which has purchased six companies in 2-1/2 years, would be the suitor; Harris officials were not available for comment. Brentlinger said he was up against two other bidders but wasn't told who they were.

Frank Foti, president of Cutting Edge, which competes in the processing wars, said he was not surprised by the news, having heard the rumors.

"Orban is a great competitor, as is CRL. From our viewpoint, I don't see anything changing in the level of creativity or competitiveness. Robert Orban is to be applauded (for his success). It didn't happen by luck.

"It's going to make for some exciting times in this small marketplace."

SBE to Certify for Networking

by Lynn Meadows

INDIANAPOLIS, Ind. Responding to the convergence of broadcasting and information technologies, the Society of Broadcast Engineers is offering its members a chance to become Certified Broadcast Networking Technologists starting in 2000. The new level of certification is the first the SBE has added in more than four years.

Terry Baun, chairman of the SBE National Certification Committee and director of engineering for Cumulus Broadcasting Inc., said the certification test will get as much into networks as possible without becoming vendor-specific.

Topics covered by the test will include the basics of broadcast local area network installation. These include wiring a network, recognizing what a hub is, and knowing what the different wire categories do and understanding the basic layers of network protocol common to all systems.

The 12 members of the National Certification Committee are designing the test, said Linda Godby, certification director for the SBE.

Certified Broadcast Networking Technologists will be able to show a "comfort level" with basic hardware and elementary software, said Baun. With this certification, broadcast engineers who are not comfortable installing a network themselves will at least feel competent to discuss the project with the person doing the work, said Baun.

Asked how a broadcast-networking technologist differs from one outside the broadcasting industry, Baun said, "bits are bits," but added there are some things broadcast engineers need to keep in mind about sending audio over a network.

He said the industry is moving toward a convergence of RF technology with information technology. Radio stations are becoming computer systems that talk to transmitters, said Baun. He said there are two schools of thought on how the two industries will merge: Either people in information technology will learn about the transmitter side of the broadcasting business or broadcast RF people will learn the information technology side.

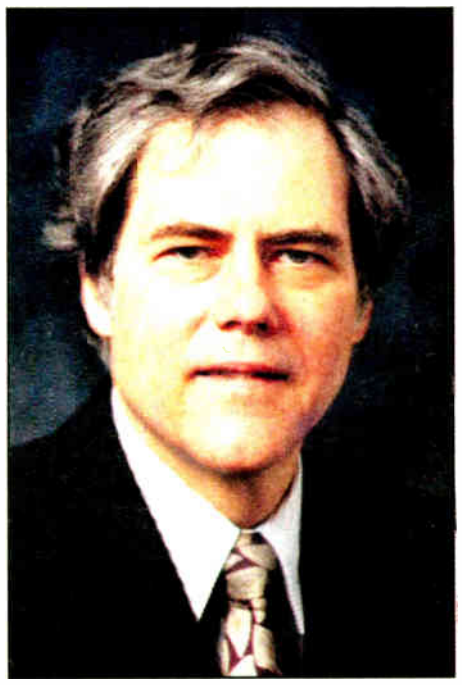
Baun called the new certification the first step in helping broadcast engineers get comfortable with networks. Education is the cornerstone of the SBE, said Baun. He said the fact that the SBE built a new level for networking technologists shows how important the organization believes it is.

The SBE will eventually offer a computer-based training/study guide to prepare for the test. The guide will be available in 2000 although Baun did not know if it would be ready before the first set of tests scheduled to be offered at the local chapter level Feb. 11-21.

The SBE has no data on how many of its members are Certified Novell Engineers or Microsoft Certified Professionals. Baun said he planned to discuss the idea of automatically certifying members who have reached basic levels of certification with specific vendors such as Novell or Microsoft at the next certification meeting.

"Most every engineer I know who wants to stay in the business realizes they need computer skills. Many are getting Microsoft certified and becoming CNEs (Certified Novell Engineers) on their own. SBE is smart to include computer/networking proficiency testing for certification," said Tom McGinley, chief engineer for WPGC-AM-FM in Washington, D.C., and **RW** technical adviser. "The more you know, the more useful you will be to your employer. Few GMs nowadays hire a CE who isn't computer savvy."

"This is not just the future, this is right now," said David Stewart, director of engineering for Hispanic Broadcasting Corp. He said some of the chief engineers working for Hispanic Broadcasting are also Certified Novell Engineers.



SBE's Terry Baun

Stewart said that for hiring purposes, the SBE certification would not be essential but would be a plus.

"Having one would be better than not having one," he said

Engineers who want more information on the new certification can call SBE Certification Director Linda Godby at (317) 253-1640 or visit the SBE Web site at *www.sbe.org*

Three Die in Fall From N.C. Tower

by Randy J. Stine

CLEVELAND, N.C. Authorities in North Carolina are investigating the deaths of three tower workers who fell approximately 1,000 feet.

The men were climbing the 1,500-foot tower in Cleveland, N.C., to paint the structure, which is owned by WFMX(FM), Statesville, of the AMFM Inc. group.

Authorities identified the victims as Daniel Zortman, 40; his stepson, Ronald Brooks, 16; and Charles Shively, 19. Zortman owned Quality Tower Painting of Red Oak, Va.

Detective Sgt. J.T. Knight, Rowan County Sheriff's Department, said the three men were wearing safety harnesses connected to a cable attached to a motorized winch on the ground.

"(Zortman's) wife was on the ground running the winch when she reported her husband asked her to stop. At that time, it appears slack came into the cable and when she started the winch again the cable came off the winch," Knight said.

Knight said it is unclear why the winch line slacked or why Zortman asked his wife to stop the winch originally.

"It could have been one of the climbers had snagged or the resting platform they were carrying snagged, but the all-clear was given and the winch started again," he said.

Knight said his department was close to ruling the deaths an accident.

"Foul play is not being considered."

Anthony Maisano, WFMX general manager, said it was the first time Zortman had worked for the station. The crew had spent several days at the tower site and was nearly half done with the job when the accident occurred Dec. 3.

"Obviously this is very upsetting for everyone. We are saddened for the men's families and are doing whatever we can to help them through the situation," Maisano said.

Knight said the N.C. Division of the Occupational Safety and Health Administration is investigating the deaths to determine whether workers were abiding by federal safety standards for working at high elevations.

It is unclear why the winch line slacked or why Zortman asked to stop the winch.

Maisano said the weather was good — "sunny and mild" on the day of the accident.

Zortman's wife, Wanda, was taken to the hospital for treatment of shock and burns to her hands when she attempted to grab the moving cable, Knight said.

AMFM also owns WSIC(AM) in Statesville.

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Sydney Olympics Prep

▶ OLYMPICS, continued from page 1

requirements are met for audio coverage of the Sydney 2000 Games, too.

"Video and ambient sound are the major components of all Olympic television transmissions. Nevertheless, the video and the sound would not give us the complete picture of the competition without the well-known voices of commentators," said Slobodan Dumic, director of commentary systems with SOBO.

"The situation is even worse for radio. Just try to imagine Olympic radio sports programs without commentary, just ambient sound."

One of the tasks facing SOBO is to provide good working conditions and services for the many radio and television journalists coming to Sydney from around the world to cover events at the 39 Olympic venues.

Commentary area construction

The Summer Olympics will be held in Sydney, New South Wales, from Sept. 1 to Oct. 1.

Dumic said the basic requirements for the Sydney 2000 "commentary areas" include adequate design and serviceability; a good, unobstructed view of the field of play; a supply of reliable and easy-to-use commentary equipment; good-quality, full-duplex audio circuits; and a quality information and CATV system.

Other requirements include telecommunications access to phone and data lines, as well as access to public address systems and efficient technical staff.

Dumic began working with the Olympics as chief engineer for the Yugoslav state broadcaster at the 1976 Winter Games in Innsbruck, Austria.

He has worked on Winter Olympics in Sarajevo, Croatia (then Yugoslavia); Calgary, Alberta; and Nagano, Japan; as well as Summer Olympics in Moscow; Los Angeles; Seoul, South Korea; Barcelona, Spain; and Atlanta.

"For Sydney, we are planning to use 200 commentary positions, which will be allocated on a permanent basis to more than 150 different radio and television broadcasters from around the world," said Dumic.

"CATV monitors will allow commentators to view the SOBO international feed of the event," he said. An information system will provide commentators with relevant online data; information is displayed on a touch screen PC monitor.

Dumic said only a small number of commentary positions with point-of-view cameras would be available.

Digital communications

The "commentary unit" is a digital audio mixer providing connections for up to three headsets, plus an additional input for interview microphone or tape recorder for playback.

These units are connected to the commentary control unit, which is installed in the commentary control room. All communications between the commentary unit and the control unit in the CCR are digital.

According to Dumic, there will be 39 commentary control rooms, one for each venue.

Each CCR will be purpose-built and operated by SOBO, and will house the back end for all duplex audio circuits and commentary equipment. From these areas, SOBO staff will monitor the hardware and circuitry of the commentary positions and will provide support to those journalists.

Descriptions of events by the commentators are fed via headphone headsets to the control unit in the commentary control room.

A venue distribution frame allows some circuits to be extended to different locations within the venue. Other circuits go to digital codecs and E1 multiplexers that are connected via 2 MB circuits to an equipment room operated by Australian telecom, Telstra.

From there, all signals will be passed to a Telstra synchronous digital hierarchy fiber-optic network set up for the Olympics and then to the International Broadcast Center.

On-site studios

Forty-one circuits are connected to the Telstra SDH. In the IBC, all circuits coming from the 39 venues are extended to the national site, cross-connected to patch fields, then connected directly to the on-site studio areas of the rights-holding broadcasters.

Finished programming is sent via the Telstra equipment room to satellite uplinks or other means to the respective countries.

In all, Dumic said he expects the Sydney Games to employ more than 1,600 commentary positions, roughly 900 commentary units and 2,000 headsets, 100 commentary control units, integrated codecs/multiplexers providing 2,000 audio circuits and 130 standalone codecs for the more-than-300 international audio circuits.

"To perform this complex and delicate task," said Dumic, "approximately 300 commentary assistance personnel will participate in the Sydney 2000 operation."

SOBO is in the process of hiring CCR managers, assistants, installers and operators. Staffers from local networks and free-lancers from Australia and abroad will work with SOBO to organize and perform the 2000 Olympic games, he said.

■■■

Phil Sandberg is editor of the Australia/New Zealand Extra edition of TV Technology and Production, a sister publication of ***Radio World****. Contact him via e-mail at* philsandberg@bigpond.com

Canadian DAB Proceeds

▶ CANADA, continued from page 6

third of the population, while consumer receivers are already on the market.

At the front of the pack is Pioneer. While other manufacturers took a "wait-and-see" attitude toward DAB in Canada, Pioneer aggressively promoted the new medium and heavily funded research and development of DAB equipment.

Pioneer even equipped three Volkswagen Beetles with digital radios. Known as "DABugs," they are now helping to sell digital radio on the streets of Toronto, Montreal and Vancouver. In recognition of its support, DRRI presented the company with a plaque at the convention.

And how are consumer sales for DAB receivers?

Consistent sales

Sales of the Pioneer trunk-mounted digital radio receiver, which links to existing AM/FM radio headends, are "pretty consistent," said Peter Cos, marketing manager for Pioneer Electronics of Canada. The price of the unit is $650 in U.S. dollars.

Broadcasters have been Pioneer's biggest customer base, said Cos, but he believes that will change with the official launch.

Meanwhile, if the DAB World displays were any indication, manufacturers are getting serious about DAB in Canada.

Like the Pioneer unit, most radios on the market are trunk-mounted mobile models. The prices vary, but generally hover around the $650 mark.

However, Sony of Canada has a desktop model in development, as well as an in-car model.

According to Steve Orlob, product manager for mobile electronics, Sony will begin selling Canadian desktop digital radios this year. He is upbeat about DAB, describing it as "a strong future technology with a lot of potential."

DAB stations are on the air in the top three Canadian markets.

Data applications

Canadian broadcasters are looking to implement new data applications to help speed the uptake of DAB.

The leading such application is DRIVES, developed by Globis Data Inc. The product is a real-time traffic map that is displayed on in-car VGA monitors.

Now being tested at Toronto digital radio station 680News, DRIVES is targeted at commuters and the trucking industry, said Globis Data President Barrie Kirk. "The future of radio is in pictures," he said. "It is a paradox, but it is true."

Information about DRIVES is available at the Globis Data Web site *www.globisdata.ca/*

BUSINESS DIGEST

LDR Licenses PAC to XM

Lucent Digital Radio has licensed its Perceptual Audio Coder to XM Satellite Radio.

Lucent has also licensed PAC to encode and decode audio to the other satellite-delivered digital audio service developer, Sirius Satellite Radio.

The versions of PAC being developed for XM and Sirius will be tailored to work with each system, said Ben Benjamin, LDR senior vice president, product management. PAC incorporates error concealment, said LDR, to provide robustness to channel degradations.

Asked whether using the same audio compression algorithm for both systems will hasten the interoperability of both receivers (AM/FM/XM/Sirius), Benjamin said this development makes that possible in the future, but more agreements are needed between XM and Sirius.

— Leslie Stimson

Cobra Launches FRS Radio With AM/FM Stereo

Cobra Electronics introduced what it calls the only product to combine a digital AMFM stereo radio with a family radio service device.

The microTALK FRS-115 will be shown at the CES show this week.

The FRS device offers two-way communications for up to two miles and access to all 14 communications channels.

A Cobra executive said the company wants to develop appealing features for the FRS line so people will carry one on their belt or in their purse, briefcase or backpack.

When a communication comes through, the FRS signal can override the AM/FM radio, enabling users to clearly hear the message being sent.

Radio World, January 5, 2000

Invest in This Useful Switch

John Bisset

Well, we survived Y2K! Share your experiences or lessons learned with *Workbench* readers via e-mail to *jbisset@harris.com*

If you're making plans to return the rented generator you planned to use for the backup studio power, you might want to consider investing in a GenTran manual transfer switch (cost: about $240) for the next outage.

The fused switches make selection easy. Shown in Figure 1, the GenTran comes in a variety of sizes.

Our photo shows a switch bought by Randy Kerbawy of WTNJ(FM), Mount Hope, W.Va. It consists of six 15-ampere circuits, ideal for a studio situation.

The circuit selection switches are three-way: Generator/Off/Line. Critical studios or critical equipment racks can be wired to the switches.

In Randy's case, he wired a 5,500 W generator into the switch, which handled his critical loads. In the hills of West Virginia, outages can be several hours long — and not just at 12:01 on the morning of the first of January. Because the studios are manned, the expense of an automatic transfer switch can be saved.

★ ★ ★

Randy offered another cost-saving suggestion to stations with Scientific Atlanta satellite frames.

Figure 1: A GenTran Manual Generator Transfer Switch offers quick generator transfers for only a few hundred dollars.

Apparently, local CATV groups are converting to new receivers, and ditching their old SA-6600 frames and video receivers. The local oscillator module, found in the 6601 down converter, along with the power supplies in these discarded frames, can be used by us radio types.

At a time when everyone is scrambling for spares for their SA frames, this is a goldmine. Contact your local cable company, invite its maintenance tech to your next SBE meeting, and see what they are planning to drop in the dumpster.

As we reported in a recent *Workbench*, the power supply is usually the first point of failure in the SA frames. Routine capacitor replacement and keeping the supply clean are sensible measures.

Having a complete spare supply is even better!

★ ★ ★

If you manage a group of stations, and that group of stations uses hard-drive audio storage, you'll want to consider a Belkin OmniView four-port video switch.

Shown in Figure 2, the switch scrolls through the four monitor feeds automatically. The video feed to the monitor can also be selected manually. AM/FM Orlando Chief Engineer Ed Allen saves monitor space, as seen in Figure 3 on page 17, but can quickly view the operation of either hard-drive system, or his audio router.

★ ★ ★

In the Nov. 10 issue, I jokingly referred to running 110VAC through Belden 8451, typically used for audio wiring — and the surprise you find when you cut through said cable.

"Mr. Belden," Steve Lampen, clarifies the use, though the specs may not please broadcast engineers!

It seems Belden's specs on 8451 are such that the cable will handle 110VAC nicely. In fact, the cable is rated to 300 VRMS! How much current can the cable carry? You need to refer to Belden's Master Catalog to determine the melting point of the insulation and jacket.

Figure 2: Reduce your monitor count by using a video switcher.

Steve did the calculations for us. Depending on the ambient temperature, 8451 will carry between 3 and 5 amps. Steve points out, though, that the voltage drop on the 22 AWG wire must also be considered — at 17.5 ohms per thousand feet per conductor — the resistance becomes the limiting factor for any distance.

So, at 110VAC, you need to consider both the distance and the current draw.

How about playing it safe? Use 12 or 14 gauge Romex instead!

For a copy of Belden's Master Catalog, circle **Reader Service 101**.

★ ★ ★

Here's a tip for owners of StarGuide II Satellite Receivers.

If your receiver develops noise or loses its memory and needs to be reauthorized, check the 5 VDC power supply. Most likely the supply is low and needs to be adjusted. Before popping the top, check with

See WORKBENCH, page 17 ▶

Pump up your voice with the new ToolVox from Omnia.

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The new ToolVox from Omnia is the all-digital microphone processor that jocks everywhere have been waiting for. With ToolVox, voice talent is clean, full and powerful—while the music remains untouched.

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Circle (12) On Reader Service Card

Intraplex Helps Clear Channel

Clear Channel Communications chose a **Harris Intraplex** STL system as part of its consolidation of seven Denver stations into one facility.

"Denver is definitely an RF-clogged environment," said Clear Channel Director of Engineering Jeff Gulick. With the company's move to the Denver Tech Center, he said, it could explore new digital alternatives.

"We were looking for a solution that could help us address the challenges of moving programming to seven different transmitter sites, with full redundancy and the chance to consolidate programming with backhaul, RPU, WAN and even telephone traffic."

Gulick and other Clear Channel engineers put together what Harris Intraplex described as one of the country's most sophisticated, digital STL/TSL/WAN systems, knitting together T1 links over spread spectrum radio, conventional copper T1 lines from US West, and Intraplex STL and cross-connect equipment.

Gulick cited the cost benefits of the system over multiple equalized circuits, and of consolidating multiple types of bi-directional traffic over the same links.

"For example, in addition to STL, we will be able to backhaul our sports feed for the Broncos, the Rockies and University of Colorado, satellite programming, and other remotes planned for the future, such as TV traffic audio."

Jeff Gulick of Clear Channel

A spread spectrum link will be used as the primary STLs, with the copper T1 lines used for backup.

Gulick expected the move and cutover to take place by the end of November. The result is described as the largest non-network, commercial radio facility in the United States, and one of the first that provides full redundancy for all STL paths.

For information, contact Harris Intraplex at (877) 468-7275, send e-mail to csnyde05@harris.com *or circle* ***Reader Service 52.***

Pineapple Plant Install Goes to Radio Systems

Radio Systems Inc. won a 14-studio, seven-station contract for equipment and wiring at AMFM Inc. stations in Honolulu.

The project, housed in a former Dole pineapple plant, is using new Radio Systems Millenium consoles, StudioHub wiring as well as existing boards.

For information from Radio Systems, contact the company in New Jersey at (856) 467-8000, visit the Web site at www.radiosystems.com *or circle* ***Reader Service 72.***

BE Helps AMFM Recover From Fire

A transmitting facility operated by AMFM Inc. in Anchorage, Alaska, recovered quickly from a fire that destroyed both of its transmitters and half of its 5,400 square-foot-studio.

The station, owned by Clear Channel Broadcasting, was without radio coverage for six hours. AMFM Inc. Engineer Van Craft told the facility, which houses three stations, to use a Broadcast Electronics transmitter at the site to get back on the air. He then placed an order with BE for a 1 kW, solid-state transmitter.

BE performed final test on the FM-1C1 that day and shipped it overnight to Anchorage.

Once the station's regular transmitters are back on the air, AMFM will use the FM-1C1 as a backup in Anchorage, thanks to its broadbase frequency capabilities.

For information, contact the company in Illinois at (217) 224-9600, visit the Web site at www.bdcast.com *or circle* ***Reader Service 111.***

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MDS-E11 – Streamlined MD Recorder with Professional-Level Inputs

At only 1U high, the MDS-E11 is ideal for a broad range of applications, from producing demo discs to on-air use. Superlatives begin with Sony's Wide Bit Stream technology with digital processing of 20 bits for higher quality recordings. Beyond the advanced circuit technology, the MDS-E11 offers Fader Start for on-air playback, an automatic pause function for playing back narrations or sound effects one by one, and fully-featured table-of-contents editing. A wireless remote is included, but it also offers many optional wired remotes for versatility. And of course, it has with balanced XLR and unbalanced RCA analog I/O, plus coaxial digital I/O.

MDS-E58 – Sony's Economical Professional MD

The MDS-E58 is a low cost stereo MD recorder suitable for budget-conscious applications, yet it still features both analog and digital I/Os, remote control and many other broadcast necessities. Make quick work of your recordings with fully-featured TOC editing and an infrared remote control (optional wired remote via Control S port available). Unbalanced RCA analog I/O, coaxial and optical digital I/O.

MDS-JE630 – Now with "Keyboard Input" for Easy Text Editing

BSW's lowest priced rackable MD recorder just got better! Introducing the MDS-JE630, featuring a PC keyboard input for typing disc and track names as well as a 24-bit A/D converter. This fantastic consumer-level recorder is perfect for production, with jog dial for track selection, CD text and custom file transfer and digital record level control. Rack mount kit sold separately.

MDS-B5 – Superior Audio Performance

Sony's industry standard MDS-B5 recorder/player and MDS-B6 player offer the "big market" performance you seek, with the durability to last for years. Multi-access "Hot Start" for up to 10 tracks makes it an excellent on-air source. Other features include RAM-TOC editing for saving master disc contents, PC keyboard input and RS232 interface, next track select and variable speed control.

MZ-R55CG – Super Compact and Lightweight

Sony's MZ-R55CG is so tiny and lightweight, it's probably the handiest MD recorder you can have with you, either as a primary or backup device. Smart features include the wired remote control, sample rate converter and 40 seconds of shock resistant memory for skip-free playback. Headphones included. An optional XLR to mini-plug cable is available through BSW.

MZ-B3 – Portable Powerhouse Recorder

The MZ-B3 has everything you need for daily recording and has been proven reliable by thousands of journalists. It offers a built-in microphone plus a mic input jack for use with external mics; automatic date/time function; voice-activated recording; high-speed playback; stereo or mono recording; remote control; AC adaptor and more.

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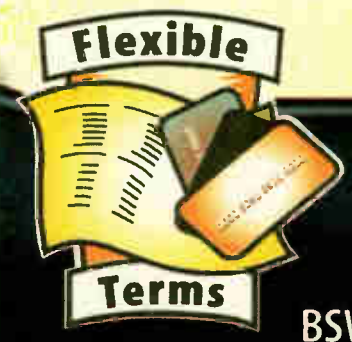

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Circle (14) On Reader Service Card

PRODUCT EVALUATION

MD Report Turns Portables Pro

Carl Lindemann

Pocket field recorders for DAT or MiniDisc are tremendously handy. But the miniscule form factor involves a few tradeoffs. Unbalanced eighth-inch connectors are all that suppliers can fit on them. Worse, they are really designed to work with cheap electret microphones. The jacks provide phantom power to support them, and there is no way to shut off the juice.

This can be problematic if you use a dynamic microphone, such as the Electro-Voice 635. The current raises the noise gate. And should you happen to jiggle the connector in the field, loud static pops and tics get on the recording.

If you want to protect yourself from this, you need to build a special mic cable with a blocking capacitor to defeat the current.

Battery life and headphone monitoring also are problematic on these tiny decks. Larger "pro" DAT machines and MD recorders with balanced XLR connectors are available, but are pricey and less portable.

There is another solution, one that should be irresistible to those who have already invested in pocket recorders or are thinking of moving into them: the MD Report and MD Report Junior.

Break-out box

These are self-contained docking units that provide a professional interface, improved monitoring and 48 V phantom power. The units are manufactured by Pass Audio Ltd. in the United Kingdom and were introduced to the U.S. market in the past year via PMI Audio. The company remains the exclusive distributor in the United States.

The units are cost-effective ways to upgrade consumer-quality MD and DAT recorders to professional capabilities.

MD Report

The MD Report is the full-featured version. It is about the size and weight of an HHB PortaDat. Inside, a 3-3/4 by 6 by 1-1/4-inch area has been set aside to dock the recorder.

Marrying the two is simple. Eighth-inch connectors for the headphone out and line jacks integrate the MiniDisc and the Report. A power supply that works with 4.5 to 6 V units also plugs in easily (Sony MZ-R55 users need an optional 3 V stepdown cable). Velcro tape secures the player in place.

One end of the unit holds either four D batteries or a rechargeable sealed lead/acid battery that takes about two hours to reach a full charge. This is enough to power the recorder for up to five hours.

The MD Report is a cost-effective way to upgrade a consumer recorder to professional capabilities.

The battery power also shores up another weak point in the MiniDisc portables: monitoring. Outputs on the units are set low to protect unwary users from damaging their hearing. Running a decent headphone from these is problematic both in terms of volume and battery drain.

The battery-powered MD Report allows improved monitoring through a high-quality headphone amp with quarter-inch jack. An internal speaker is built into the unit. Also, the unit can be operated on AC with a 12 V power supply.

All controls are located opposite the battery compartment. Four toggle switches are used to turn the unit on/off, select line/mic level input, stereo/mono input and phantom power.

Next to these, a pair of female Neutrik XLR connectors, a single male XLR for balanced mono line output, and a 3.5 mm stereo line out jack provide all the interfacing you need for either stereo or mono recording and playback.

An LED monitors battery levels. The unit has attachments for a shoulder strap and fits into a custom padded carrying case that allows easy access to both the controls and the recorder.

See MD, page 32 ▶

ENGINEER PROFILE

Scott Is Three Times a Winner

Robert Rusk

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

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

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

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

Like father ...

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

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

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

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

Photo by Angel D. Bates

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

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

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

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

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

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

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

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

Dollars and sense

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

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

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

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

"For television, it won't be tremendous in the smallest markets," Scott said. "It's not going to be minimum wage, but it

See SCOTT, page 18 ▶

Tip for StarGuide II Owners

▶ WORKBENCH, continued from page 12

your program provider, just so you don't void any warranty.

Once inside, you'll want to measure the 5 V supply. One engineer experienced these problems with just a 0.2V deviation. He measured 4.81 VDC, instead of 5 VDC. The power supply test points are on the Molex connector, where it meets the mother board.

Adjust to 5.0 or 5.1VDC, and the receiver is as good as new. By the way, the pot adjusts backwards. For more voltage, turn the pot counter clockwise!

We appreciate the CBS/Westwood One engineers for sharing this tip with *Workbench* readers.

■■■

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

Figure 3: Here's an easy way to monitor multiple hard-drive systems.

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

Managers, Know Thy Station

Ed Montgomery

This is the last in a series of articles about the basics of AM radio, intended to help non-technical managers understand their facilities. The previous part appeared Dec. 8.

In this age of deregulation, multiple ownership and fewer engineers per station, the responsibility for day-to-day operations has fallen on different people than in the past. In some cases, it is the station manager. In other cases, it may be a local assistant manager who answers to a cluster GM. In any event, this additional job description may be accepted reluctantly but it must be assumed.

No one wants to be notified that their station is off the air. Engineering assistance may be hours away. If station personnel follow the simple procedures that have been presented in this series, many of the events that could put a station off the air could be avoided or predicted.

Today's studio and transmitting equipment is reliable. It does not need the nearly constant attention older equipment did.

However, it must not be ignored, either. If the station does not employ a full-time engineer, managers should develop the ability to observe keenly how their stations are operating.

The more you know about how the system operates, the better off you will be.

Other responsibilities include the purchase of equipment. This is a huge area of expertise that will serve you well if you develop it.

For example, in recent years the audio fidelity and distortion characteristics of consumer-grade equipment has nearly come to equal that of products made for professional use.

It may seem logical to buy a consumer-grade compact disc deck or tape machine for a fraction of what a professional machine would cost. If the machine breaks, replace it. It costs too much to fix. This idea is not all bad, if you understand that consumer gear will wear out faster under heavy use.

However, keep in mind that you are getting a machine that delivers a high-impedance output. High-impedance lines are susceptible to crosstalk and interference from adjacent audio and electrical lines. If a high-impedance line parallels several feet of electric power cord, a 60 Hz hum can be added to the audio.

Consumer-grade equipment for the studio may require an interface amplifier to change the output to a balanced, low-impedance line that the audio console will accept.

A quick glance at an audio console manual will reveal what the input levels are. Typically, they are balanced inputs at levels much higher than consumer-grade equipment can deliver.

The balanced line inputs on an audio console usually are either XLR or tip-ring-sleeve. These connections are more reliable than the RCA "phono" plugs used by the consumer-grade products. RCA/phono plugs and jacks are friction-fit. They can be pulled out accidentally, creating problems that station management really does not need to face.

Understand these factors when preparing an equipment purchase list.

EAS and hard drives

Another area of responsibility for local management is the Emergency Alert System (EAS). Critical staffers must know what the national, state and local plans are. Station ownership or management has made decisions regarding which emergency announcements will and will not be broadcast. All operating personnel need to know how EAS operates and what their responsibility is when the message is received.

EAS is quite an advance over EBS. There should be no reason emergency notifications are not transmitted, something that could not be said for the previous systems.

Studios are becoming "tapeless," with specially formatted computers to play back all music, commercials and the like. While this trend began years ago, many facilities only now are beginning to convert.

These systems also will intercept network feeds from satellites and telephone lines. They permit unattended operation. Music, spots and other program material are entered into the system as "data files" in a manner similar to the way you would create a computer file using word-processing software.

If a file is "corrupted," it can result in dead air. Corrupt files can also lock into a specific file playing all music, spots, network feeds — anything. This can be embarrassing and costly to the station,

See AM, page 21 ▶

Managers should develop the ability to observe keenly how their stations are operating.

Critical staffers must know what the national, state and local plans are.

Repeated Honors for Teacher

▶ SCOTT, continued from page 17

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GUEST COMMENTARY

Overbuilding Into Oblivion

Ron Burley

The author is president of Broadcast Software International.

One of the strange quirks of PC design is that in trying to make a system the very best, you can actually make it worse.

Take for example the case of one of our newest customer/partners. These guys were among the best engineers in radio. They also had on staff some of the best computer design consultants in the business.

They were trying to build the ultimate system for our WaveStation digital automation software. Despite all their expertise, this all-star group managed to design themselves into a hole of audio oblivion. How'd they do that?

Here's what they put together:

- Intel Pentium III 500 MHz CPU
- 256 MB of RAM memory
- Microsoft Windows NT 4.0 Server, Service Pack 5
- 18 GB SCSI RAID array

This is a great system, right? They put together a high-performance powerhouse, right?

Not quite. This system will likely run slower and be clunkier than a 1995 vintage Pentium 75 with 16 MB of RAM.

Better design

So where did they go wrong?

The CPU and RAM memory are OK, but the rest of the system will cause problems.

The team selected Microsoft NT because of its reputation as a very stable platform. However, the Server version is optimized to provide best performance for remote applications accessing the server via a network. Programs that run on the local machine are not given priority.

Unfortunately, that's exactly where most applications reside. Therefore, even though the NT Server operating system is great for many installations, for this one it is inappropriate. It actually slows down the performance of the automation software in favor of network tasks that might not even exist.

A better choice would be Windows NT Workstation or Windows 98. Both of these systems can be optimized to provide fastest performance for local applications.

Less obvious is why a SCSI RAID hard-drive configuration would be a problem for an automation PC. To get to the root of this one, you need to understand how RAID works.

Ron Burley

RAID systems are designed to provide absolute data integrity through data redundancy. However, it's the redundancy of RAID that is at the root of the problem. Redundancy means that the RAID system actually writes data into multiple places on multiple drives in order to save it.

This takes a lot more time than writing the same data to a single drive. When reading it back, the process is slowed as well. The RAID system reads the data from the multiple locations, compares it for accuracy and then passes it on to the operating system. This is a relatively slow process.

Seamless audio playback depends upon a rapid and steady flow of data from the hard drives to the audio card. The delays caused by the multiple reads and writes will often manifest themselves as breakup in the audio on playback and/or record.

Significant delays can also occur when the system attempts to open or close files quickly, such as when seeking header or label information. These interruptions can bring a system to its knees.

Adding insult to injury, the RAID system isn't even a good solution for data protection in most automation scenarios. While RAID will protect against a physical hard-drive crash, it doesn't protect against the other half-dozen more common reasons to lose data, including accidental or purposeful deletion of files, viruses, operating system failure or acts of God.

Do your homework

A better solution for those who are concerned about data loss is a good tape drive or removable disk backup system.

True to form, when this system was put online, it was sluggish and unpredictable. The wrong operating environment combined with an inappropriate hard-drive configuration created big problems on what appeared to be a top-of-the-line system.

To avoid getting into situations like this, first look to the developer of the software program for system recommendations. Before you significantly divert from those guidelines, talk with them about your proposed changes. They may have insights into design pitfalls that might not be obvious. A phone call or e-mail to double-check with the specialists can save weeks of headaches and midnight trouble-calls.

■■■

RW welcomes other points of view.

All Staff Should Know the Basics

▶ AM, continued from page 18

particularly if the station is not attended at the time.

Think of your system failing during a morning or evening drive time without anyone at the station knowing what to do about it. It is not necessary that every person know everything about the system. But managers should create written procedures for the duty person, or the person responsible when the station is unattended, to attempt to get the system running again.

Computer lingo

One thing all broadcasters probably realize by now is that the standard for spots, sounders and music, the cartridge machine, is no longer the heart of radio's audio management system. The era of compressed audio on a hard drive is here. Ultimately, every broadcast station will have some form of computer system recording and playing audio.

There are several computer terms you will find helpful in determining how a computerized system will operate. MTBF, for Mean Time Between Failures, suggests the life span of a hard drive. RAID, for Redundant Array of Inexpensive Discs, defines the amount of redundancy built into the system. It illustrates how much backup data can be stored within the system.

Other terms like Transfer Rate, Latency, Seek Time, Command Overhead and Access Time define how quickly a system can access or record files.

Computers are not like traditional broadcast equipment. They must be isolated from power surges and intermittent losses of electricity.

They do wonderful things, but they are not people. They will produce exactly what is entered into them.

It is important to keep all audio levels constant when creating files. In many cases, there will be no one on-duty to "ride the gain" on the console.

Computers also now can monitor and control your transmitter and antenna pattern. Stations with post-sunset authority may need 60 time changes and 22 power changes programmed accurately into the system.

The station licensee is responsible for making sure these changes take place at the right times.

Some systems have been known to lose their memories or not make proper changes. They should be monitored to make sure they are operating properly. Some have a synthesized voice coupled to a telephone interface, allowing you to call to determine transmitter site status and make minor adjustments.

Training

The only thing a computer-based audio system may have in common with traditional studio equipment is that it records and plays voice and music. As a result, some staffers, including the engineering staff, may require computer training.

Good records and observations will help keep you on the air.

When buying an audio management system, or any business system built around special computer technology, be sure the supplier offers a solid training program and reliable service and support.

The economics of purchasing one of these systems is a major consideration as well. You are buying a computer system. The state of the art today may be obsolete in just a few years. Estimate the cost-savings and revenue gain over a three- to five-year period. At that time, something new may be on the market.

Computers tend to lose their "newness" sooner than most products. The computer industry's obsession with rapid innovation often leaves businesses and consumers with machines that cannot be upgraded. When considering the possible changes that could affect a system, consider some form of lease arrangement that would guarantee upgrades.

Also consider the operating systems. Is the manufacturer using hardware and software that has been proven over the years? Who made the computers, hard-drives, etc.? All of these systems will have the broadcast supplier's name on them, but inside they probably look and operate like the computer used for word processing, billing or the Internet. Proprietary systems are the best choice.

In conclusion, pay attention to your studio and transmitter facility. Keep records on how your plant is functioning. Keep studio and transmitter facilities clean. Make sure there is adequate circulation of cool air around all equipment.

Good records and observations will keep you on the air and indicate when further technical assistance is necessary.

This concludes the "AM Broadcast Basics" series. Readers who have registered for this class through Northern Virginia Community College will receive a test within a few weeks. Certificates for those who successfully pass the class will be mailed out by Feb. 1, 2000.

■■■

Ed Montgomery is lab director at Thomas Jefferson High School for Science and Technology in Alexandria, Va., and a part-time radio engineer.

He also taught college-level broadcast engineering technology and has written educational columns for ***RW****. Contact him via e-mail at* emontgom@lan.tjhsst.edu

MARKET PLACE

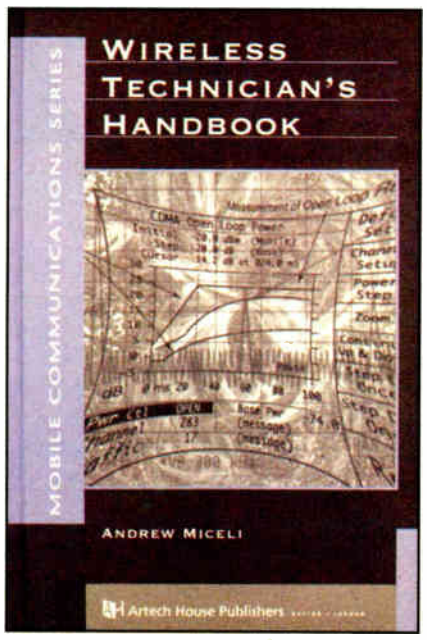
Wireless Technician's Handbook

Wireless is where it's at these days, and this book will tell you all about it. If you've ever wondered about the differences between analog, TDMA and CDMA, consider this one.

"Wireless Technician's Handbook" by Andrew Miceli is a 327-page hardback from Artech House Publishers. It contains extensive information for wireless engineers seeking an understanding of practical field applications, for beginners to the industry and for non-technical business people who want an understanding of the technology.

Topics include cellular concepts, analog cellular, TDMA IS-136, CDMA-ONE, GSM, the basics of field testing and more. The book retails for $59. Ask for ISBN 1-58053-005-2.

For information call the company in Massachusetts at (800) 225-9977, ext. 4030, send e-mail to artech@artechhouse.com *or circle* ***Reader Service 42.***



SPECIAL REPORT

Radio and Digital Audio in 2010

Carl Lindemann

Whether you define the new millennium as starting this month or a year from now, it is upon us. We asked industry leaders representing different aspects of digital audio technology to predict how radio will use digital audio at the end of the next decade.

Asking what the next 10 years will see is like asking what a century would bring just a few generations back.


Dane Ericksen

"Ten years is enough time now for three or four revolutions in technology — each as significant as the Internet," said Philippe Generali, vice president of operations and development for Radio Computing Services.

Despite the difficulty, here are a few glimpses.

Back to the future

Digigram USA Managing Director Neil Glassman predicts the studios of 2010 will share some key features with the pre-digital days.

"I think radio will make a full circle in the equipment it uses," he said. "When I first started in radio in the 1970s, the studios were filled with specific-purpose devices. Consoles, cart decks and all the rest. The radio studio of the 1990s consists more and more of general-purpose devices that use specific hardware and software.

Just as the consumer will see specific-purpose appliances replacing general-purpose computers in the coming decade, Glassman said, the radio manager can expect to see a return to specific-purpose devices.

"These devices may be a computer inside, but the GUI and feature set will less resemble a general-purpose computer. These devices will be designed to overcome the limitations of today's computer-based solutions. They will no longer be reliant on consumer operating systems, which, although reliable, are still problematic enough so that they have not earned the confidence of professional radio users."

And these devices will use more-sophisticated media management, Glassman predicted, which, coupled with high bandwidth network connections, will further accelerate the consolidation of program origination facilities.

The missing link

Dane E. Ericksen, P.E., CSTRE, is a senior engineer with Hammett & Edison Inc., Consulting Engineers, San Francisco. Ericksen looks to the critical connection between broadcast studios and their transmitter uplinks. Upgrading these will be a major project long before 2010. As the decade passes, the challenge of maintaining quality connections despite interference from overloaded airwaves is likely to increase.

"Terrestrial digital radio broadcasting will require increased throughput for studio-to-transmitter microwave links. For stations that use a 950 MHz aural STL, this will probably mean converting an existing FM analog STL to a digitally modulated STL.

"Besides a new transmitter and receiver, a codec and modem will be necessary to first digitize and combine, and then decode and separate the analog voice portion of the STL signal from the digital portion.

"A modification of the STL license — on the Universal Licensing System (ULS) FCC Form 601 — will be required to authorize the conversion from analog to digital, and this in turn will require a check of the allocation conditions with respect to adjacent-channel microwave paths.

"STL and ICR receivers that can tolerate a 0 dB D/U ratio from an adjacent-channel analog signal may require a higher (better) ratio when the adjacent channel signal is a digitally modulated signal that more completely fills up the channel bandwidth."

A seamless whole

Gary Snow, president of Wheatstone Corp., forecasts that integration will smooth out the rough edges in the transition to digital.


Gary Snow

"Two great leaps in consoles came about with modular designs and of course with the use of digital technology. Both advances have made consoles incredibly reliable and virtually eliminated the need for in-station maintenance," Snow said.

"Digital technology has made consoles smarter and more flexible at the same time. We'll continue to see stations become increasingly digital. Among other important considerations, modularity is still key."

For that reason, Wheatstone consoles are designed to allow "hot-swapping" — the user can replace modules without taking the board off the air.

"Integration, especially during this transition period, also is very important. Since a console is generally the final control point prior to air, the need for integration dictates that the console must interface easily with automation systems, telephone hybrids, ISDN lines, (routing) switchers and STL paths and strive to eliminate unnecessary D/A and A/D conversions."

Broadcast to the 'audience of one'

Philippe Generali of RCS looks at how its scheduling technology will enable programmers to focus their message to serve one listener at a time.


Philippe Generali

"Our products integrate the Internet with radio so we can place ads and promotion during songs. This is radio you can see — and that *isn't* the same as television. Our current product is an applet that not only plays, but also continually streams elements including info about the song

"Having direct integration with online media offers tremendous opportunities for terrestrial radio stations. The Internet isn't a competitor as much as a partner. By the same token, it's becoming imperative for stations to stream their signals online. This marks an amazing change in the market. Instead of having a few stations locally, you'll have thousands."

The only way to stand out of the crowd, he said, is by format and market segmentation.

"What's remarkable here is that we will get down to the smallest segmentation possible — one person."

Out from central casting

Tom Hartnett, vice president of engineering for Comrex, predicts a shift from centralized program production to a world where the "virtual studio" can be anywhere.

"The most significant changes in day-to-day radio operations will be in how and where programming is generated. It's likely that the two factors limiting real-time audio transmissions in data networks — bandwidth and reliability — will become less restricting soon. It won't be driven by broadcast applications, but rather by voice-over IP and video demands, both which require low latency and guaranteed network throughput.

"Assuming that competition will keep costs low, I can see fewer reasons why even small broadcast operations would generate substantial programming on-site.

"In the same vein, I can see the transformation of the existing cellular system into a wireless data network having a big impact on radio. First of all, as soon as consumers can receive reliable digital audio over a wireless phone, you've removed the 'office

See 2010, page 26 ▶

I think radio will make a full circle in the equipment it uses.

— Neil Glassman
Digigram USA

Some format changes are tough to get used to. Going digital shouldn't be one of them.

Harris helps you make a simple, easy transition to digital with future-proof solutions for the next wave in broadcasting. We're leading the way with tested and proven IBOC-compatible AM and FM transmitters, as well as digital storing, mixing and routing equipment. Our full line of digital consoles have the look and feel of analog consoles, the ability to handle both digital and analog inputs, and can reconfigure from one to another easily. And only Harris provides fully digital studio-to-transmitter links to digitize your entire air chain. Some tactics to keep listeners can be a real drag. But with Harris, it couldn't be any easier.

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With 32-bit, floating point technology and APUs containing 6 Sharc DSPs, you might think the DRC2024 digital console, with its "awesome" audio speed and processing power, is more than your budget can handle. In fact, even with all those horses under the control surface, you get affordable next-generation features that would normally cost thousands in other consoles. Like 5-band parametric EQ, sample rate conversion for every input and complete, automatic gain control, gating and compressor/limiter—for the highest level of sound quality. Plus, the 2024 is reliable, easy to use and install, and provides more flexibility in control than any competitive console. No matter what the future holds for your operation, the DRC will keep you in stride—at a price that won't stop you in your tracks.

The DRC family of consoles offers 11 AES digital inputs, upgradeable to 22 with an additional APU.

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Solid-state reliability. Built-in redundancy. You'll appreciate why we named them ZZZs.

Engineers sleep easier with the Harris Z Series of FM transmitters for lots of reasons. Like their solid-state reliability, redundant IPA systems and power supplies, hot-pluggable RF modules for easy on-air repairs, *and* the option of two exciters with automatic switching built in. Outfitted with our unrivalled DIGIT CD™ FM digital exciter, Zs deliver the trend-setting, CD-quality sound listeners increasingly expect. And now, we're putting your worries about the future to rest as well. We're actively working with DAB system proponents on modifications to Z transmitters for IBOC field testing, so when a new standard is established and you need to start broadcasting IBOC DAB, you won't be caught snoozing with Harris. Or, then again, maybe you will.

Z Series transmitters include an easy-to-read LCD panel for diagnostics plus a main and backup controller.

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Future Radio Views

▶ 2010, continued from page 22

only' aspect to Internet radio and created thousands of potential new radio 'stations' on a medium over which the radio industry has no real control."

From a traditional broadcast standpoint, he said, the wireless network could allow programming to be generated anywhere, anytime, without any lead time or any prior planning.

The open road ahead

Radio Free Asia's David Baden sees a restructuring of the information technology infrastructure on which today's digital audio is built. For him, Open Code will define the future of digital audio.

"In a modern digital broadcasting facility, a great deal of scheduling, file conversions, network transfers and other computer operations provide new flexibility and convenience. In a world where audio becomes just another kind of data and multitrack editors are just another application, many tricks of the Information Technology world can be employed to provide better support unavailable in the analog domain."

John David

Baden feels it's time for broadcasters, as the ultimate end users, to take a more proactive role in the digital broadcast development environment.

Francisco Montero

"Radio Free Asia is working in-house on a networked MPEG digital audio system. The first version is due March 2000 for beta testing. This system will be a free client/server MPEG recorder and editor with database management and scheduled list playback."

The challenge of maintaining quality connections despite interference from overloaded airwaves is likely to increase.

— Dane Ericksen
Hammett & Edison Inc.

Baden said the system will be cross-platform and the user interface will be accessed from a Web browser.

"All executable programs and source code will be placed on the Web site with full documentation for free downloading and use. The applications will be open to the software developer community to improve. Radio Free Asia will manage all new modules and updates written developer community."

■ ■ ■

Carl Lindemann produces "CyberScene: The Socially Significant Cyberspace" from North Berwick, Maine. Reach him at www.cyberscene.com

What Others Say

RW also asked a number of industry experts about the challenges facing radio in coming years.

Among their replies:

How will U.S. radio differ in 2010 than it does today, either technically or in general?

"At NAB, we have people that monitor closely the trends and technological developments that we think will affect radio's future.

"Senior VP of Research and Information Group Rick Ducey predicts that Radio will be personalized, interactive, rich media (not just audio), digital and 'community-based' (i.e., creating ad hoc communities of listeners/advertisers/stations based on interests, purchases).

"The traditional radio station will be a portal entry point to a suite of integrated products and services served via AM/FM transmission, Internet connections to a variety of devices, both RF-based and wired. Radio broadcasters will program for the 'air' and for the 'Net' in an increasingly seamless fashion.

"Radio will be IBOC, moving to all-digital, and broadcasting integrated services including high-quality audio, IP packets with arbitrary data types to a variety of enabled receivers (radios, PCs, IP appliances, etc.).

John David
Executive Vice President/Radio
National Association of Broadcasters
Washington, D.C.

What must radio do in the next millennium to survive and thrive?

"Years ago, I had this idea that TV would evolve to include additional senses beyond vision and sound. But although "Smell-a-vision" never happened, TV has evolved to make the viewing experience far more than what it once was. Witness DTV and Surround Sound and, hey, the sirens are coming from behind my left shoulder!

"Radio needs the tools to become more robust. Means exist to give us fade-free reception in a moving vehicle in urban areas, title and artist information for the music we hear, and a search engine to find that NPR station when we're traveling out of town. All of this will obviously enhance our listening experience, but technology alone isn't enough.

"I'll put up with a crummy signal to hear something that interests me. So I vote for diversity of programming, and I hope we can find a way to afford it. Combined with a great quality signal, it will make Radio invincible!

Art Constantine
VP, Business Development
Corporate Computer Systems Inc.
d/b/a Musicam USA
Holmdel, N.J.

"With the growth of other media such as direct satellite delivery systems and Internet Webcasting, there has been an increase in the options open to programmers. This has attracted high-quality talent from traditional radio.

"These new media outlets could become a powerful competitive force once they fully enter the market in mobile wireless forms. I think the test will be to see how traditional radio broadcasters use these new media outlets and incorporate them into their business plan.

"The astute radio executive will not run away from these new programming platforms, but will embrace them as a means to expand delivery of their programming product and generate added revenue."

Francisco R. Montero
Director
Office of Communications
Business Opportunities
Federal Communications Commission
Washington, D.C.

MARKET PLACE

ComStudy 2.2 Available

RadioSoft is out with Version 2.2 of its ComStudy mapping software.

The update is available free to registered users on the RadioSoft Web site.

Notable improvements include a transmitter spreadsheet, real-time path profiling and side-mounting antenna effects.

The company says V2.2 is simpler and more stable, but retains all functions from V2.1.

RadioSoft also said the FCC Wireless Division evaluated various software programs and purchased ComStudy 2 for use in the Gettysburg and Washington facilities for engineering of land mobile applications.

For information, contact the company in Florida at (904) 426-2521, visit the Web site at www.radiosoft.com *or circle* ***Reader Service 45.***

Iebuzz Sets Up BeOS Site

A new Web site caters to media professionals and anyone investigating the Be Operating System as a platform for audio production, music, video, graphics and 3D/animation. The site was launched by Iebuzz.com.

BeOS was explored in articles in the Sept. 29 and Oct. 27 issues of **RW**.

TheStudioLab.com is the online counterpart to a real-world studio where professional BeOS media software and hardware products will be tested and reviewed.

"The reviews will be held open-ended," said site creator Dane Scott, "allowing us to add notations to them as we learn more about how well certain products work with each other."

For information about BeOS and StudioLab, call Dane Scott at (920) 834-5678 or visit TheStudioLab.com

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

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Circle (24) On Reader Service Card

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A remarkable on-air console with room to grow: The popular 12,000-series consoles are in use in major broadcast markets worldwide. Available in 18- and 28-channel mainframe configurations, they feature a "universal bus" design for complete customization.

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arrakis SYSTEMS INC.

Affordable 5-, 10- and 15-channel consoles: The 1200-series consoles begin at under $1800 and are ideal for on-air, production and news applications where ease of use and reliability are paramount.

Circle (26) On Reader Service Card

WIRED FOR SOUND

Look What Cat 5 Can Do for You

Steve Lampen

We talked in the Dec. 8, 1999, issue about Category 5 and enhanced Category 5 UTP, or "unshielded twisted pairs." We noted how specifications for these cables could meet many of the requirements for both analog and digital systems.

The accompanying chart provides a quick synopsis, with some additional facts thrown in.

There are some other considerations when using Category 5 or enhanced Category 5 for analog or digital audio.

First, these are solid conductors. There are stranded versions ("patch cable"), but these are considerably lower in performance. Because we're talking strictly install cable, put it in and leave it alone; solid conductors work just fine. (At least the phone company hasn't had a problem in the last 100 years using solid conductors!)

Staying in place

Category 5 is not rugged. There is enhanced bonded-pair Category 5 that is more rugged than regular, but this is not snake cable, meant to go out on the road with your rock band. This is install-only cable, meant to be put in protected areas.

It is not intended for direct burial or installation outdoors. There are some "over-jacketed" versions of Category 5 designed for such applications, but they are less cost-effective.

The performance of Category 5 UTP is dependent on the boxes at each end. If they are not well balanced, the cable will radiate its signal or pick up noise. But most newer, high-quality professional analog and digital equipment is well balanced.

It is fair to say that an audio installation of Category 5 or enhanced Category 5 is only as good as the equipment to which it is attached.

One place where UTP fails completely is in phantom-powered installations. In those cases, the ground wire and shield are used as part of the power delivery systems for condenser mics and other devices.

UTP, by definition, has no shield, no ground. So without adding a third wire, or sacrificing an adjacent pair, phantom powering may be a difficult proposition.

Goodbye, ground loops

How do we hook it up?

Using Category 5 or enhanced Category 5 is amazingly easy. You can take a single twisted pair and put it into an XLR. Ignore pin 1 (ground) and hook up the twisted pair to pins 2 and 3.

I know this sounds weird, but it works just fine.

And here we come to one of UTP's most obvious advantages, one which has been known to premise/data (computer) installers for almost 10 years. Using a cable with no ground means — no ground loops!

No ground loop interference. No connection between boxes except for the signal itself. The only reason you had a ground wire or drain wire in the first place was to "drain" off the noise from the shield caused by the poorly manufactured pair.

Now, we've fixed the pair, so we don't need a shield, we don't need a drain wire, and ground loops are history.

This doesn't mean that all your other shielded cables shouldn't be grounded, or that you shouldn't put in an effective star-ground system as part of your installation to avoid ground loops. And it certainly doesn't have anything to do with ground from a safety standpoint.

It's just that anything hooked up with UTP doesn't care.

SYSTEM	SPECIFICATION	CATEGORY 5
Analog	Gage size	24 AWG, fits very well in all connectors and punch-down systems.
Analog	Capacitance 20-50 pF/ft	Category 5 is under 20 pF/ft, even better than standard analog audio cable.
Analog	Crosstalk -90 dB @ 20 kHz	Some "enhanced bonded-pair" Category 5 is better than -110 dB @ 20 kHz.
Digital	Impedance 110 ohms	Category 5 cable is 100 ohms +/- 15 ohms, AES standard is 110 ohms +/- 20 % (88-132 ohms). Some enhanced bonded Category 5 cable is 100 ohms +/- 10 ohms or even better.
Digital	Crosstalk -30 dB or better	48 kHz AES sampling has a bandwidth of 6.144 MHz. Crosstalk of CAT 5 at 10 MHz is more than -50 dB.
Digital	Must be shielded pairs	The "U" in UTP means "unshielded."

Category 5 Specifications Compared to Analog and Digital Audio

Using a cable with no ground means — no ground loops!

Multiple cable uses

And this leads us into interesting territory.

If UTP can carry balanced line audio, why not other balanced line signals, such as RS-422 machine control? The answer is, why not? As long as the signal on the cable is balanced, you can run whatever you want.

This means that you should be wary of unbalanced signals, such as video, or unbalanced (consumer) audio, or unbalanced control systems, such as RS-232. All would need to be converted into a balanced format to work with Category 5.

Surprisingly, there are a number of manufacturers that make baluns to do precisely this. They convert unbalanced analog video into balanced line format, or digital video, or coax-based digital audio, or even broadband/CATV. These baluns convert from the BALanced line of UTP to the UNbalanced of the source, hence the name BALUN.

Shared sheath

The crosstalk of some enhanced Category 5 cables is so good that it became apparent that different signal types could be combined on one four-pair cable.

EIA/TIA, the premise/data standards bodies, only talk about multiple data signals, such as multiple 10baseT or 100baseT signals. They never mention multiple audio channels, much less RS-422.

But, just as before, if you are the "keeper" of the spec, if you don't answer to anyone but yourself, then the only question is "will it work?" And many times the answer is yes.

For instance, KDTV Channel 14 in San Francisco is running 100baseT on two pairs in an enhanced Category 5, and RS-422 machine control on the other two pairs. The user is editing video in a networked format (the 100baseT), but the editors, accustomed to the old controllers, have RS-422 controls running the video servers.

In the same way, you could run four channels of AES (or eight channels in the "two-channels-per-pair" mode) down a four-pair enhanced Category 5.

In the home

There are even some clever home builders who are prewiring their homes with Category 5 cable. They know that this can be converted from computer network cable to audio cable (analog or digital), video cable, security cameras, additional security or just about any other thing their customer may require.

And the really cool thing is that this cable could change instantly. Thus, Category 5, and especially enhanced Category 5, can be an "application nonspecific" backbone cable.

The limits of even the top-of-the-line enhanced Category 5 cables are based on the fact that the pairs are 24 AWG copper. And, if you intend to use these cables at very high frequencies, above 200 MHz, be sure that the manufacturer not only tests the cables up to the frequency you will be using, but publishes the results of these tests. Make sure that these test results, such as capacitance and crosstalk, are appropriate to the application(s) you are considering.

In our next installment, we'll take a trip back into the history of wire and cable.

■ ■ ■

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

WEBCASTING MADE SIMPLE

So your station wants to stream audio on the Net, and it's up to you to make it work? You've heard all the horror stories of unfriendly software, undependable PCs, lousy audio cards and the dreaded 3am lock up. Who needs it?

If only there was a reliable, one-box solution for broadcasting.

Say hello to Audioactive. We're the company that pioneered MP3 streaming, and the solution chosen by the world's most demanding webcasters. With the Audioactive real-time hardware encoder, you'll be reaching new listeners with the latest technology in no time at all. Simple. Professional. Reliable.

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www.audioactive.com

Power Up Your Portables

▶ MD, continued from page 16

both the controls and the recorder.

The MD Junior offers many of the same features in a smaller, lighter package. It is something like a combination of a Hi-Fi external headphone amp and a Henry Engineering Portamatch.

It lacks the large internal battery to power the MiniDisc. Instead, it runs on a pair of 9V batteries; enough to drive the headphones. The recorder has to run on its own internal power.

The unit is minus the internal speaker, XLR out and the ability to run from AC power, as is found on the MD Report. Because the MD Junior is only slightly larger that the recorders themselves, the two units are stackable and fit inside a custom-fitted "fanny" pack.

The Report weighs four pounds, the Junior one pound. In use, they share qualities. The electronically balanced inputs and mic preamplifiers are quiet. Published specifications claim that noise levels are below –126 dBU. Using a range of professional microphones including an EV 635, an EV RE-11 and a beyerdynamic M58 confirmed that the MD Report/Junior is able to get the most any portable recorder has to offer.

Using a Sony MZ-R55 MD recorder, I found that accessing the player controls was somewhat awkward. Once I start recording and have the case zipped up, it takes a bit of effort to reach back in again.

One of a digital recorder's best features is the ability to index recordings. A touch of a button adds a track mark.

MD Report Junior

Reaching for the button and other controls is possible. But under normal field conditions, this is prone to some fumbling.

Also, one needs to have faith that everything is being recorded smoothly, as it is difficult to see the VU meters to confirm that. In a sit-down situation like conducting an interview, this is not an issue; leave the case open. But chasing after a story sometimes does not allow such a controlled setting.

At $679, the MD Report is the most inexpensive way to get a quality digital field recording. As of December 1999, the PMI Web site showed the price to be $499.99 direct.

The MD Junior is an even more terrific deal. At $299.99, it is a worthy addition to any field reporter's kit.

If you were sold on the size and portability of the small-format digital recorder, but sometimes find that you miss the connectivity found in the larger "pro" units, the MD Report and MD Junior add these capabilities. And when you just want to grab some "quick and dirty" sound, you may still undock the recorder and take advantage of the "pocketability" of the decks you enjoy. This is an option that the larger pro units with integrated XLRs cannot offer, but that the MD Report/MD Report Junior can.

Product Capsule:
MD Report/ MD Report Junior

Thumbs Up
- ✓ Small and transportable
- ✓ Neutrik XLR connectors
- ✓ Phantom power
- ✓ Internal monitoring

Thumbs Down
- ✓ Difficult to reach controls on some decks

For more information, contact PMI Audio Group in California at (877) 563-6335, visit www.pmiaudio.com or circle **Reader Service 126**.

GM Journal

Radio World — Resource for Business, Programming & Sales — January 5, 2000

Protect Your Site.
Page 34

Phoenix Rises to Ride Dereg Wave

Mike Clancy

Phoenix radio continues to remake itself.

The market, known as the "Valley of the Sun" for its 300-plus days a year of El Sol, is one of the largest that will experience spin-offs from the upcoming Clear Channel-AMFM merger.

That deal would combine 12 stations — three AMs, nine Class-C FMs. Four major stations would need to be spun off to comply with FCC ownership limits.

How they will be spun is unanswered for now.

The deal involves more than half of the market's Class-C FMs, all broadcast from the premier RF location in town.

South Mountain sits on the flat desert landscape like a slumbering giant. Its signals clear every nearby obstacle including shorter mountains and downtown buildings. The rules of broadcasting here are defined by the flat surrounding terrain and the urban sprawl that has made Phoenix one of the nation's largest cities geographically.

With full market coverage, South Mountain stations enjoy big ad dollars, which in turn helps them in ratings and in revenue. At least as many smaller stations on the fringes of town compete for the crumbs.

Marv Nyren is general manager of KZON(FM) and KKFR(FM), two AMFM stations involved in the upcoming merger.

Nyren noticed two things about "Valley" radio when he returned to Arizona a year ago from Atlanta: the high number of stations — "over-radioed" is the term usually applied to describe the market — and a perceived lack of change in major stations, whether in format or personality.

Indeed, compared to No. 12 market Atlanta, Phoenix, which is No. 15, has twice as many stations.

Changes

But Phoenix radio is not static. According to Arbitron, of the top 20 stations in the market, all but one have changed hands since the 1996 Telecommunications Act.

One, oldies station KOOL-FM, changed five times from 1993 to 1996. And with each sale, its price increased — from $8 million, when Compass Radio Group bought it and its AM counterpart in 1993, to $51.5 million, when the two stations were sold separately in 1996. KOOL-FM, now owned by AMFM, may well be sold again in the big merger.

Similar stories can be told for KOY(AM), KYOT(FM) and KSLX-FM-AM — multiple owners and continually rising prices that raise levels of debt. Since 1996, about 70 percent of the 46 stations in the Phoenix market have seen a major change, either in ownership, format or personalities.

The result is a vastly different landscape than existed 10 years ago.

In May of 1999, Clear Channel paid $150 million to purchase KNIX-FM, a country giant, and KESZ(FM), an adult-contemporary station and the market's leading station by revenue. With that market record-setting sale, the almost-total ownership turnover of the top 20 stations in the past five years was complete.

While a few stations have changed formats as a result of consolidation, most have changed

J. D. Freeman, Clear Channel Phoenix Market Manager

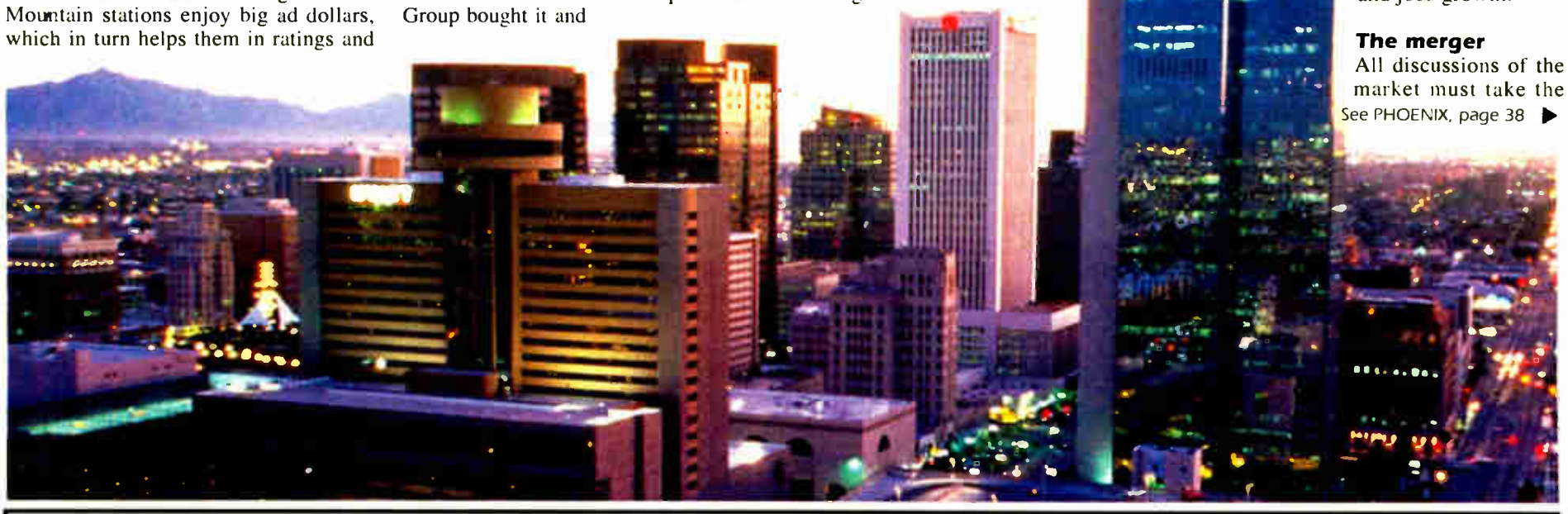
management, staff, image or style.

Phoenix stations fight for revenues estimated at close to $150 million. That revenue pie has doubled since 1993, as the area has continued to be among the national leaders in population and jobs growth.

The merger

All discussions of the market must take the

See PHOENIX, page 38 ▶



Be Smart: Protect Your Web Site

David A. Milberg

Here's an eye-opener: You may not actually own your own Web site.

Startling? Impossible? Perhaps, but finding your own trademarks and copyrights stolen out from under you is only one potential danger lurking in the misty depths of the Internet, according to Clay Tillack of the Chicago law firm Schiff, Hardin and Waite.

"Stations who hire a consultant or outside service to design their Web site should obtain a written 'work-for-hire' agreement from the provider that assigns to the station all copyrights and all other intellectual property including design elements and icons," said Tillack.

"It's also a good idea to get written assurance from the Web designer that he or she is not currently involved in litigation over the ownership or use of such materials."

Just asking this question might uncover some surprises you could not imagine.

For example, if the Web designer is only licensing, but not selling, the design elements, Tillack suggests you protect the work created for your company.

"The station should consider negotiating confidentiality and exclusivity clauses in the agreement that limit the Web site designer's ability to perform similar work for competitors."

There's nothing like firing your Web designer and two weeks later discovering all your cool stuff on your worst enemy's site.

Get it in writing

"The same elements a station would want to see in an agreement with any other service provider should also be in an agreement with a Web designer," said Tillack.

Other items to be spelled out should include payment, terms, project delivery, performance standards, indemnifications, cancellation privileges and waivers.

Because the Internet in general and radio's involvement in it in particular are such new phenomena, stations may not be aware of the many other pitfalls that can plague the inexperienced broadcast operator.

Your own employees can be another potential area of concern, according to Tillack.

"If a radio station uses its own full-time employee whose Web duties are outside his/her normal job description, a written agreement should be drawn up. The station must make it clear the content is owned by the station," said Tillack.

In other words, if an overnight jock is doubling as chief "Web god," make sure he won't come back later and claim he owns the station page simply because he designed it.

The next step is to plaster the station logo all over your site to make it perfectly clear to browsers that your station owns its Web site, including content and design.

Be sure that a copyright notice such as "©1999 WXXX, all rights reserved" appears prominently, Tillack said.

"And if your station includes music, get the right licenses through ASCAP, BMI or SESAC."

Audio elements

Adding original program elements such as announcer jokes or local news also may make it appropriate to add a performance copyright symbol (P) next to the © symbol for the copyright notice on your page for such audio elements.

Your station attorney can advise you on the particulars of copyright protection forms to be filed with the Library of Congress, the federal agency that takes care of copyrights.

Can your station be sued for something on your Web page that someone else thinks is his or hers, like a trademark or a photo, even if it's inadvertent? Sure — there's bound to be a lawyer somewhere out there who will take the case!

So get permissions in writing for other people's stuff that you post on your Web site. Also, make the station's trademarks prominent to the world on your Web site.

Tillack advises that proper notices accompany the use of station slogans. Your station attorney can advise you on which of the several categories of protection are best for you. Federally registered trademarks are best, but state registrations also can have value. Again, check with your attorney.

A Web page can be a great advertising vehicle, a source of income, a way to relate to listeners and a chance to provide some content not available over the air. But it can also be a legal nightmare without the proper precautions and protection.

■■■

David A. Milberg is an attorney and the marketing and communications director of a Chicago-based law firm.

Web site design: The devil is in the details.

BROADCAST LAW REVIEW

The Law of Station Call Signs

How to Obtain, Change and Protect Your Call Sign

Barry D. Umansky

Just in time for 2000, the FCC has replaced its manual system for assigning and changing station call signs with a computer-based mechanism known as the "Smart Call Sign System."

It's an all-electronic system that works over the FCC's Web site, and it's now mandatory — the only call sign assignment method employed by the commission.

Present procedures

Unlike the past procedures, no phone inquiries regarding call sign availabilities, or mail requests for call sign assignments/changes, are allowed. It's now all done over the Internet.

But while the new electronic system provides for new mechanics, there have been no new substantive changes in the commission's policies for call sign regulation.

Call signs issued for stations west of the Mississippi River generally still must begin with a "K." They usually must start with a "W" if you are east of the river. Only four-letter call signs are issued. The three-letter call signs granted decades ago to some stations are still grandfathered.

The last significant changes in the commission's call sign policies were made in 1984. It was then, as addressed below, that the FCC ceased to restrict the assignment of call letters that were "phonetically" or "rhythmically" similar to call signs already employed in the market.

Let's take a look at how the new FCC electronic call sign system works. We'll also give a series of pointers on how a station's call letters (and related logos, artwork, etc.) may obtain protection from sound-alike or look-alike uses, despite FCC deregulation of this area 15 years ago.

With the FCC's new call sign reservation and authorization system, users may access the commission's Web site to handle a series of functions previously performed manually by the FCC's Mass Media Bureau staff. The Web site address of the Smart Call Sign System is *http://dettifoss.fcc.gov:8080/prod/callsign/prod/main.html*

You also may navigate to the commission's call sign system by going to the FCC's home page (*www.fcc.com*) and then to the page maintained by the FCC's Mass Media Bureau.

Once you are on the system, you can complete all your call sign business relatively swiftly — and with a reasonable level of security.

The commission's Smart Call Sign System allows users to search by call sign to obtain licensing information for those call letters. You can check to see if the desired call letters are available. If so, you simply proceed in the system.

If not, the system will give you the identity (including the name and mailing address) of the licensee/permittee that holds the call letters.

As in the recent past, the FCC will allow you to make a "secondary use" of the basic call letters (e.g. you want to use "WXXX-FM" but an AM station currently uses "WXXX") if you obtain written consent — usually obtained for a price — from the party already using the "base" call sign.

Once you find that a desired set of call letters is available, the FCC system allows users to make: **(1) initial requests** — where the holder of a construction permit wishes to make an initial call sign selection; **(2) changes** — where the current holder of a call sign would like to change to a new, available call sign; **(3) transfers/assignments** — where the proposed transferee/assignee of a station wants a different call sign for the station; and **(4) exchanges** — where two licensees want to exchange call signs or one wants to relinquish one or more call signs to another licensee.

Forms needed to perform these functions are completed online. Once the forms are completed, clicking the "submit" button sends them to the FCC for processing.

If a fee is required, you simply send it to the Mellon Bank in Pittsburgh within 15 days.

When the FCC system accepts your request, it will give you on-screen verification of the request and provide you a "call sign request number" that you should keep for future reference.

It tells you about any fees required, places your change request in the FCC call signs database and generates "call sign reservation notification postcards" that will be sent to you and to any other affected licensees (e.g. a station holding the requested or "base" call sign).

The theory is that if you are such an "affected licensee" getting a postcard from the FCC and you haven't consented to the proposed use of those call signs, you will contact the commission and the process will halt.

Upon timely payment of any fee — and with no objection having been submitted by someone in response to their receipt of an FCC postcard — the system finalizes your change and generates "authorized change notification postcards" that will be sent to you and to any other affected licensees within two to three business days.

From now on, you'll have to use the Web if you want to change call signs or ask about available names.

Once your call sign change becomes effective, your old call signs become available to others, unless you were involved in an "exchange" of call letters with another broadcaster.

Buying a vowel

For obtaining a station's initial call sign, or if your station is non-commercial or an LPTV, there is no FCC call sign fee. For commercial stations only adding or removing an "-FM" or "-TV" suffix to an existing call sign, there also is no FCC fee. But for all other commercial station call sign changes, the call letters come with a price.

As of this writing, the fee for call sign changes is $75. That is the charge set under the current FCC "cost of processing" fee schedule.

Watch for this fee to rise in future years. And make sure you submit the proper fee. Again, if the commission doesn't receive the correct fee within 15 days of your request, your call letter reservation "hold" is cancelled.

The commission's electronic call sign system will inform you if a fee is due and, if so, will provide an "FCC Form 159" (the FCC's fee payment form) icon for you to click.

When you click that button, an FCC Form 159 will appear on the screen, with most of the relevant information already filled in — including the FCC "fee type code." (The code for radio station call letter changes is "MBR.")

Below the form is the FCC lockbox address at the Pittsburgh Mellon Bank, to which you send the form and your check. You print out the form and send it to Pittsburgh.

Piracy protection

The commission has adopted safeguards aimed at preventing unauthorized changes in station call letters.

In addition to "postcard-alerting" potentially affected licensees/permittees of change requests, the FCC system will issue a "validation code" and send it to the e-mail address you entered on the system. You must type in that validation code in one "field" on the request form before it is submitted. Forms without the proper code are not processed.

By employing this validation code feature — which will allow requests to be traced back to the applicant's e-mail address — the commission hopes to limit fraudulent and abusive use of the system.

Several parties commenting months ago on the commission's electronic call

See UMANSKY, page 36 ▶

E-Only for Call Sign Registration

▶ UMANSKY, continued from page 35

sign reservation proposals had pointed out that some additional degree of security would be needed (the FCC only had proposed to use the postcard notifications) to prevent unauthorized and/or malicious call sign reservations.

So, now you've obtained your new call letters. What prevents some other broadcaster from making a change to his or her call letters that pretty much sound like the ones you've just started to use on the air?

Prior to the mid-1980s, the FCC regulated disputes about similar call signs. Under the old rules, a licensee could block FCC approval of a station's proposed call letters by arguing that they would confuse the audience, steal a station's "goodwill," etc. But, the commission stopped resolving these disputes in 1984. Absent FCC oversight of call signs, broadcasters needed to find alternative measures to protect call signs.

There have been *no new substantive changes in the commission's policies for call sign regulation.*

These additional measures now are provided by the U.S. Patent and Trademark Office, which, since 1985, has permitted broadcasters to register their call signs for "service mark" protection. Service mark protection also is available for station slogans, mascots, etc.

A service mark gives the broadcaster exclusive use of the mark in the station's market area. Registration of a service mark enables the licensee to defend its goodwill in the community where the licensee has spent, or will spend, considerable time and money establishing it.

The service mark significantly will help a station prevail against someone else's use of the same or similar call sign, slogan, etc.

Obtaining such protection usually starts with a "trademark search," the subsequent registration of your mark and, if there are no objections filed against your registration (or if you prevail against such opposition), the ultimate grant of certificate of registration.

Logos and mascots

Also, logos and other station artwork and designs (depicting slogans, mascots, etc.) may be protected through registering a claim at the U.S. Copyright Office. Although a copyright will exist in an original design from the time of its creation, this copyright may not be enforced until registration of a claim to copyright is filed with the U.S. Copyright Office.

From the time that such a copyright is registered, the holder of the copyright may bring a copyright infringement suit in federal court.

The legal fees and filing costs for service mark and/or copyright protection are far less than the costs to your station if someone chooses to employ call signs, logos, slogans or mascots that are confusingly similar to the ones used by your station.

■ ■ ■

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

Reach him at (202) 467-8822 or via e-mail at bdumansky@vssp.com

Succeed With New FCC E-Forms

If you are making a call letter change on the system, the form will ask you to:

1.) Specify the effective date for the new call signs (for up to 45 days after the submission of your request).

2.) Certify that neither the licensee nor any officer, director or cognizable shareholder has been denied "federal benefits" under the Anti-Drug Abuse Act of 1988.

3.) Confirm that you have consent to make any "secondary use" of someone else's call sign.

4.) Fill in contact information, including your applicant name, address, phone number and e-mail address.

If you submit incomplete information, the system requires you to go "back" and fill in missing information.

STATION SERVICES

Programs and Services for Radio Stations

Mail info and photos to: RW Station Services, P.O. Box 1214, Falls Church, VA 22041

Judy Jarvis Tag Team

Judy Jarvis is back, now in the company of her son, co-host/producer, Jason Jarvis.

Judy & Jason Jarvis

A life-long non-smoker, Judy Jarvis endured lung cancer surgery and chemotherapy that kept her off her talk program for months. Jason had previously filled in as host on the few occasions his mother was absent, but became a full-time host when Judy was diagnosed with lung cancer last year.

When Jarvis returned to the air in early 1999, Jason stayed on and became half of the only mother-and-son team on a nationally syndicated talk radio program.

"The Judy Jarvis Show" features calls, commentary and newsmaker interviews, with an emphasis on what "people will be talking about tomorrow," according to her spokeswoman, Deborah Shillo. Recent guests have included George Carlin, Bill Bradley, Al Gore, Jack Palance, Bill Clinton, Jesse Ventura and Whoopie Goldberg.

"The Judy Jarvis Show" is distributed by ABC Satellite Services to 50 radio stations.

For more information, contact Lou Severino at Global Media in New York at (212) 967-2888 or circle ***Reader Service 51.***

Sounds of the Century From AP

The Associated Press Radio Network is offering a new, 24-part series of audio features that highlight what the network believes are the most significant events of the 20th century.

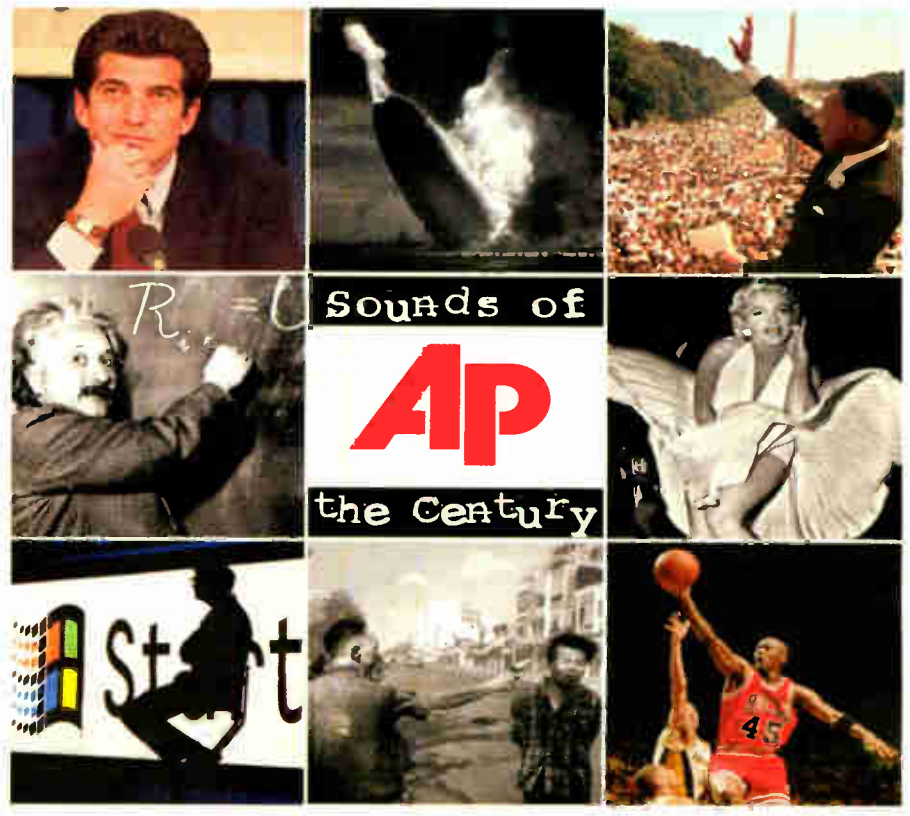
Produced and hosted by AP Anchor Chuck Rice, the 59-second features use the actual audio from historical events. The series includes Vladimir Lenin, cult movie character Austin Powers, radio inventor Guglielmo Marconi, Madonna, Babe Ruth, Monica Lewinsky, the Titanic's last SOS signal and Hal, Stanley Kubrick's thinking computer from "2001 — A Space Odyssey."

AP said "Sounds of the 20th Century" provides a unique perspective into the century's history.

"Only AP has the resources and the creative talent to create such a special product that can attract listeners and advertisers," said Corrine Baldassano, general manager of AP Radio.

For more information, contact John Jones in Washington, D.C., at (202) 736-1152 or circle ***Reader Service 61.***

Samples are available to AP Network affiliates at http://apradio.com/



AP illustrates some of its 'Sounds of the Century.'

The New Frontier in Valley Radio

▶ PHOENIX, continued from page 33

Clear Channel/AMFM merger into account. It will change the landscape once again.

According to Clancy Woods, market manager for AMFM, Clear Channel will retain its four stations — KNIX, KESZ, KZZP-(FM) and KMXP-FM. He expects Clear Channel will add from AMFM the other country music giant, KMLE(FM).

An unanswered question is how the country music biggies, Clear Channel's KNIX and AMFM's KMLE, will operate. Under the merged company, they will share at least top-level management, maybe more.

Otherwise, Woods said the properties that would likely be sold to satisfy merger constraints would be AMFM stations KKFR, a longtime rhythmic top 40; KZON(FM), a hot adult contemporary station; KYOT(FM), which has the soft jazz field to itself; and KOOL-FM, the longtime oldies leader.

Most observers expect that KKFR, which counts many younger Hispanics among its audience, would be sold to a Spanish-language operator that may or may not adjust the format.

Speculation is that if a single operator can finagle a buy of three of the stations to be spun, it could then add the Hearst Argyle stations or the Sandusky operations to make a cluster that could compete with Clear Channel.

Sandusky Radio owns three of the top 20 stations.

Consolidation's effects

"I think some of the fun is gone, and some of the stations sound dispirited," said Shawn Holly, a former exec at then-KGLQ, now KMXP(FM), who recently took a job as program director for KOOL(FM).

"The kinds of risk-taking that made a station interesting, including music that is not part of heavily researched playlists, have ended," he said.

Such lamentations fail to impress station managers.

J.D. Freeman is the Phoenix market manager for Clear Channel, and has oversight of the top earner KESZ. Freeman said his stations are not increasing the number of commercials.

"But my big concern is balancing the demands of advertisers and listeners — I know that investors can tilt the scales," Freeman said. "At what point in time do we compromise our listeners and lose them?"

Woods, Freeman's counterpart at AMFM, said, "It's very easy to pull a fire alarm and be concerned about the loss of local ownership and, for that matter, the big merger." Woods, who oversees eight stations, called Phoenix one of the most diversified markets in the United States.

"I couldn't have been more against deregulation," said Mike Jorgenson, who at one time owned Sundance Radio, a company that was among the first to take advantage of deregulation's benefits. Jorgenson sold his group to Chancellor (now Clear Channel) in 1996.

"No one can say there is more diversity, better service or greater excellence in programming, like promised by those who wrote and supported deregulation legislation," Jorgenson said. "The only possible advantages have benefited the shareholders."

Wild ride

"But at some point, the stock market has to slow down," Jorgenson said. "At some point, the music stops. And the debt will choke some of these guys."

Stations often are selling at 16 times their cash flow, Woods said, compared with multiples of eight or 12 before consolidation was allowed. Pressure then grows to improve the bottom line. Cuts are made wherever they can be in an attempt to bring the multiples down to, say, 14.

"We don't know, and I suspect they (station owners) don't either, how they'll make back the tens of millions of dollars they are spending for individual FM stations in a reasonable amount of time," said Michael Hagerty, a reporter for KTVK television and Phoenix correspondent for the Web site Radiodigest.com.

For example, even if KNIX, the second-leading biller, had no overhead at all, it would take its new owner five to seven years to cover its cost at current revenue estimates.

Drop-outs/move-ins

New Century Arizona is one of the companies that bowed out. Since 1996, it owned three stations here and managed a fourth. It sold one, KHOT-FM, to Hispanic Broadcasting Co. It sold KGME(AM), a sports station, to Salem Broadcasting, which switched to religion. It sold the third station, and the marketing arrangement for the fourth, to Big City Radio.

See PHOENIX, page 40 ▶

Radio Snapshot: Phoenix

Market Rank: 15

Revenue Rank: 16

Number of FMs: 25

Number of AMs: 21

Estimated Revenue:
1995: $104.2 million
1996: $113.8 million
1997: $125.3 million
1998: $142.8 million
1999: $157.0 million

Revenue Growth:
'92 - '97: 12.5%
'98 - '02: 10.2% (est.)

Local Revenue: 73%
National Revenue: 27%

1997 Population: 2,761,900
Per Capita Income: $15,572
Median Income: $32,585
Average Household Income: $40,700

BIA Financial fn network *Source: BIA Financial Network*

Phoenix
Commercial Radio Market Overview

Stations	Owner	BIA's 1998 Est. Station Revenue (in $mil.)	Format	Summer 1999 Rating
KNIX-FM	Clear Channel Communications	13.6	Country	6.5
KTAR(AM)	Hearst-Argyle	13.4	Nws/Tlk/Spt	6.0
KMLE(FM)	AMFM Inc	14.2	Country	5.7
KOOL-FM	AMFM Inc	13.3	Oldies	5.2
KYOT-FM	AMFM Inc	6.6	NAC	5.2
KKFR(FM)	AMFM Inc	6.5	CHR	4.7
KZON(FM)	AMFM Inc	7.2	Rock	4.6
KZZP(FM)	Clear Channel Communications	5.2	CHR	4.6
KESZ(FM)	Clear Channel Communications	6.7	Soft AC	4.5
KFYI(AM)	AMFM Inc	6.0	News/Talk	4.4
KUPD-FM	Sandusky Radio	9.1	AOR	3.8
KMXP(FM)	Clear Channel Communications	3.9	Rock AC	3.5
KKLT(FM)	Hearst-Argyle	4.2	AC	3.3
KSLX-FM	Sandusky Radio	5.0	Clsc Rock	2.8
KLNZ-FM	Hispanic Broadcasting Corporation	1.3	Spanish	2.6
KDKB(FM)	Sandusky Radio	7.1	AOR	2.5
KOY(AM)	AMFM Inc	3.2	Adlt Stndrd	2.3
KEDJ(FM)	Big City Radio	1.9	Alternative	2.2
KPTY(FM)	New Planet Radio	2.0	Top 40	1.7
KHOT-FM	Hispanic Broadcasting Corporation	1.8	Mexican	1.3
KGME(AM)	AMFM Inc	.1	Sports	1.2
KDDJ(FM)	Big City Radio	1.3	Alternative	1.1
KIDR(AM)	Radio Unica	0	Spanish	0.8
KFNN(AM)	CRC Broadcasting Company Inc	1.6	News/Info	0.6
KMYL(AM)	Interstate Broadcasting	.4	Adlt Stndrd	0.6
KBZG(FM)	Rainbow Broadcasting Incorporated	0	R&B Oldies	0.6
KVVA-FM	Z-Spanish Media Corporation	2.3	Spanish	0.6
KMVP(AM)	Hearst-Argyle	1.9	Sports	0.5
KMJK(FM)	Syncom Radio Corporation	.3	Urban AC	0.3
KASA(AM)	KASA Radio Hogar Inc	0	Chrst/Span	0
KMYL-FM	Big City Radio	.2	Adlt Stndrd	0
KTKP(AM)	Christian Communications	0	Nws/Tlk/Spt	0
KBZR(FM)	Big City Radio	0	Clsc Hits	0
KPXQ(AM)	Salem Communications Corporation	0	Chrst/Talk	0
KMIK(AM)	ABC Radio Incorporated	.2	Children	0
KCTK(AM)	Salem Communications Corporation	.8	Talk	0
KSLX(AM)	Sandusky Radio	0	Clsc Rock	0
KPHX(AM)	Continental Broadcasting	.2	Spanish	0
KSUN(AM)	Fiesta Radio Inc	.3	Spanish	0
KDUS(AM)	Sandusky Radio	0	Sports	0
KBSZ(AM)	SBD Broadcasting Incorporated	0	Oldies	0
KXEG(AM)	Radio Property Ventures	0	Gospel	0
KXAM(AM)	"Gerson, B., D. & M."	.6	Talk	0
KFNX(AM)	North American Broadcasting Company Inc	0	Talk	0
KESP(FM)	Rainbow Broadcasting Incorporated	0	Clsc Hits	0
KSWG(FM)	Circle S Broadcasting Co Inc	0	Country	0

BIA Financial network *Stations are ranked in order of Arbitron Summer '99 12+ share.*

INTERNATIONAL UPDATE

ARD Studios Relocate to Berlin

Roberta Beach Jacobson and Alf B. Meier

Change has come to Bonn radio — but not the kind driven by U.S.-style consolidation.

German federal broadcasters had little choice but to follow suit when the German parliament decided to move from Bonn to Berlin.

The former capital of the Federal Republic of Germany was always intended to be provisional. But after 40 years, "provisional" starts to feel permanent.

Therefore, it came as a shock when, following German reunification, the Bundestag, the federal parliament, announced a move from Bonn to Berlin. The government also decided to relocate its ministries by 2000, leaving just a few small departments in Bonn.

Suitable location

It became evident that all news agencies would have to relocate at least part of their operations to Berlin. This included ARD, the German federal broadcasting service whose affiliates include the public broadcasting services in each of the German *länder*, or states.

Right after the decision to move the government to Berlin was announced, ARD sent staff members out in search of a suitable location for the new studios. They found a site within walking distance of the Reichstag, the old (and new) parliament building.

Funding was not a problem; the ARD had already planned and budgeted for a new complex in Bonn to centralize all the ARD radio and television affiliate studios at a single site.

The biggest change ARD had to make to the plans was to change the street address to "Wilhelmstrasse 67a, Berlin."

Berlin Under Construction

The first purchase of the premises took two years of negotiating. Nobody parts easily with prime real estate in central Berlin, land that is near the Reichstag and the Brandenburg Gate and complete with a building permit.

Another obstacle was the fact that the zoning committee insisted on including apartments, stores and a restaurant in the building plans.

Some employees were reluctant to give up life in Bonn and relocate to Berlin — something they shared with many government employees.

People who had worked most of their lives in Bonn and who had lived in the same house for years were not thrilled to move shortly before retirement.

However, despite the difficulties in the relocation project, ARD met its completion deadline of spring 1999 as well as its budget.

The new 5,000-square-meter location houses the Capital Studios for the television and radio affiliates of ARD, which includes working space for 50 radio editors, 22 editors for the first TV program and 10 for regional TV stations. A joint production team for radio and television has 40 employees.

With the new facility completed before the official move of the Bundestag to Berlin, ARD Chairman Peter Voss noted, "the government will come (to Berlin); the ARD is already here."

Communication capabilities

The technical fitting-out of the studios was in the hands of a project team from Sender Freies Berlin (SFB) and Westdeutscher Rundfunk (WDR), who, because of their earlier Bonn connection, controlled the funds to build for ARD.

Büro für Elektrotechnik-Bauleitung GmbH (BFE) was the main contractor, in charge of implementing the plans. The focus of planning was based on the *Pflichtenheft*, mandatory minimum technical standards established by ARD.

The radio side of the facility includes 50 equipped offices for production, editing and broadcasting using Web One, a Quantel Clipbox system with external audio workstations for editing, and beyerdynamic 292 headsets.

There are also four mixing rooms fitted with Lawo Gerätebau Diamond mixers and a studio for up to eight interviewees, equipped with Neumann KM 40 and KM 142 guest microphones and a Neumann V 89 moderator microphone. In addition, there is a central switching room fitted with Lawo equipment.

The facility is linked via its telephone switchboard to the ARD-owned CN net, a fiber-optic system that connects all ARD affiliates to a switching hub in Frankfurt am Main.

An analog and digital downlink with reserve antennas connects to the television stations, radio stations and news agencies via satellite. The studio has a direct radio link to its Berlin transmitter tower, a mobile radio station and connections to all cellular telephone service providers in Germany, all of which can be tapped from the studios for use on air.

■ ■ ■

Roberta Beach Jacobson, a free-lance journalist, and Alf B. Meier, a free-lance photojournalist, report on the industry for ***Radio World*** *from Griesheim, Germany.*

Phoenix Radio Reinvents Itself

▶ PHOENIX, continued from page 38

Using Harris Intraplex equipment, BCR synchronized KBZR(FM) at 106.5 MHz with KEDJ(FM) at 106.3, and trimulcasts with a third acquisition, KDDJ(FM) at 100.3, employing a modern-rock format. The combined station is called The Edge. Big City also purchased a fourth FM at 105.3, KYML(FM).

The Edge, with Howard Stern, arguably is the most successful of the lower-powered "move-ins" here, broadcasting on three frequencies to cover the market.

The addition of The Edge to its holdings improved BCR's overall financial picture, resulting in a third-quarter cash flow for the parent company of $421,000, compared to a $425,000 deficit in the same period last year. BCR attributes its record third quarter to The Edge, even though it owns stations in four markets.

Big City, however, has been trying to trade its 100.3 frequency for KLVA(FM) at 105.5, owned by the Educational Media Foundation, which it plans to pair up with 105.3, giving BCR a second synchronized station in Phoenix.

BCR's all-stock acquisition of Hispanic Internet Holdings in November, when BCR ousted its CEO and named HIH CEO Charles Fernandez to head BCR, will have no effect on BCR's low-power plans for the Phoenix market. According to SEC registration documents, Big City will pay about $40 million for this strategy, assuming it comes to pass.

The buying frenzy even has reached the once underserved minority market. Although Phoenix has only one black-owned station, KMJK(FM), which lacks a full-powered signal, Z Spanish and Hispanic Broadcasting have both entered the market in 1999, paying prices in the neighborhood of $20 million apiece for each underpowered station.

Radio Unica joined them about the same time. All three grabbed signals that were better than Spanish radio previously had enjoyed. All three also have begun to make some noise in the ratings, outperforming all but one of the market's previous Spanish outlets, the non-commercial KNAI-FM. Population growth in the Valley has favored the new Spanish stations, with Hispanic numbers growing more rapidly than the market as a whole.

Hispanics easily are the largest minority group in the market. Within five years, Hispanics will make up the majority of high-school graduates; demographers project that within 20 years, Hispanics may dominate the local population.

The early results have been impressive: KLNZ, airing a syndicated format from its owner, Z Spanish, could become a top-five performer in the 18-34 demographic, within six months — if it hasn't already. The audience has come from a few new listeners, but most of it has come from KNAI, a United Farmworkers-owned station that calls itself La Campesina.

One of the more interesting sidelights has been a squabble between Z Spanish and Hispanic over KLNZ. Z Spanish agreed to trade the station to Hispanic earlier this year in exchange for a station near Houston. But when plans for a new station elsewhere on the dial fell through, Z Spanish tried to pull out of the deal.

In arbitration now, the situation could have some effect on which company has first shot at a Clear Channel-AMFM spin-off.

■■■

Mike Clancy is media reporter for the Arizona Republic newspaper. Reach him at (602) 444-8550 or Mike.Clancy@pni.com

Clancy Woods, AMFM VP/Market Manager, Phoenix

Hearst-Argyle cluster includes KTAR, KKLT and KMVP.

Phoenix Public Radio

Phoenix supports two public radio stations: KJZZ(FM), a jazz station, and KBAQ(FM), a classical station. The Maricopa County Community College District holds the license for both.

The stations plan to move this year from their 6,400-square-foot studios in Mesa to new, "mostly digital," studios in Tempe in 2000, where they will have almost three times as much space.

"We'll be gutting an existing building, and start over from there. We plan to install pre-fab studios, but haven't bid those out yet. We're waiting to see how our funding lines up," said Carl Matthusen, general manger of KBAQ.

When the 20th Anniversary "Morning Edition" Road Show visited the Phoenix public stations in December, the stations used the high-profile moment to announce a $2 million capital campaign to raise funds for the new station build-out.

The budget for the new studios is in the development stage, but the parent, Maricopa Community Colleges, has pledged $2.1 million.

The KBAQ transmitter is located in the White Tank Mountains. In 1998, KBAQ moved its transmitter from its advantageous South Mountain location, in order to quadruple its power to 12,700 W. While improvements delivered an expanded service area and improved reception to Valley areas, the new location also brought problems caused by mountains that lay in the new path.

Dennis Gilliam, chief engineer at KBAQ, said the station has applied for FCC approval to install a translator that will rebroadcast the signal directly to the affected areas of Phoenix. Gilliam has successfully expanded sister station KJZZ's signal beyond the Phoenix area, to Flagstaff, Tuscon, Prescott and Cottonwood, Ariz., with a similar translator strategy.

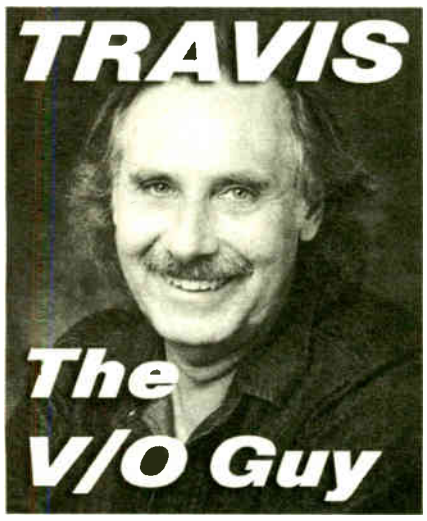
KJZZ/KBAQ General Manager Carl Matthusen

— Laura Dely

Set Up a Voice-Over Web Site

Travis

In just the last month, I had five calls from other voice-over performers who suddenly wanted information on what they needed to do to get their own Internet site. It seems everyone around me has decided that a presence on the Internet is necessary to a successful career.



Of course, having an Internet site is not a requirement for success in the voice-over business and I doubt that it ever will be. There have been some recent developments, which will make having a presence on the Internet valuable to voice-over talent.

E-mail

The first development is the recent rollout of low-cost, high-speed Internet connections.

Until this year, the average person could not afford a fast connection to

See TRAVIS, page 46 ▶

DAT and MD: Tale of Two Sonys

Carl Lindemann

The new Sony PCM-M1 pocket DAT recorder is an amazing accomplishment. It is tiny in size, yet not tinny in sound. Still, the usefulness of the PCM-M1 for radio has to be seriously evaluated in light of the popularity of MiniDiscs.

MD is becoming the recording media of choice in radio. It is fair to start thinking about the life expectancy of DAT as a format.

The Sony PCM-M1 is an engineering miracle. The pocket-sized DAT recorder is slightly larger than the smallest cassette Walkman. The DAT is great on its own, but coupled with the SBM-1 high-density linear A/D converter, the PCM-M1 is able to achieve 20-bit sonic fidelity. Audio capture is limited more by choice of microphone and room acoustics than by the recorder.

Niceties

Unlike most MDs, the PCM-M1 retains some of the amenities of analog recorders. The controls are simple and straightforward. They do not require manual-in-hand fiddling, nor does one experience a non-intuitive series of buttons representing a computerized interface.

Instead, recording levels can be set manually by turning a knob. The recording function is pretty much the same as with any tape recorder. A set of switches on the back select 48, 44.1 or 32 kHz sample rates, manual or automatic levels, and line or mic levels at the 1/8-inch input jack.

Hassling with the interface on a pocket MD can be frustrating, whereas the mechanical controls on the PCM-M1 are obvious and easy.

A/B comparisons between the PCM-M1 and the MZ-R55 MD gave DAT the clear advantage. For voice recordings, I used a classic beyerdynamic M58 microphone through an MD Report Junior breakout box.

The idea was to get past the "plug-in power" included in the mic jack in both units. The phantom power hampers dynamic mics. The MD Report Junior sidesteps the problem, while providing a balanced XLR connector.

The PCM-M1 Portable DAT Machine

For music recording, I used an AKG 522C stereo mic. I also plugged into each recorder directly with an ECM58, the electret version of the beyerdynamic M58. Unlike its dynamic counterpart, the mic is not degraded by plug-in power.

The point was to get a direct sense of the quality of the integrated mic input amp on each unit. A second round of tests using the SBM-1 unbalanced quarter-inch jacks upped the ante. All DAT recordings were made at 48 kHz. The MZ-R55 operates at 44.1 kHz using ATRAC version 4.5.

Using the MD Report Junior breakout box, the MD did a journeyman's job with voice recordings. The PCM-M1 seemed slightly quieter. The difference was not as striking as when recording music through the AKG mic.

Rich audio

The uncompressed DAT recording sounded richer. Perhaps some of the subtle harmonics are lost in the MD perceptual coding. It is also likely there was more detail to record with the $1,500 stereo mic. DAT did a better job capturing the stereo imaging. Next to it, the MD sounded flat.

Going direct with the electret mic, it was clear that the mic amp used on the PCM-M1 was of a higher quality than that of the MZ-R55. The DAT incorporates the same amp as the SBM-1, while the MZ-R55 is a consumer-grade component. Basically, the DAT lacked a low-level hiss that defined the noise floor on the MD. Next, using the SBM-1 A/D converter raised the bar beyond my ears.

The converter unit is about the same size as the recorder, and runs on four AA batteries. It has a pair of unbalanced quarter-inch jacks as well as a 1/8-inch jack for monitoring. The units link through a proprietary digital connector.

The PCM-M1 runs on 4.5 V and the SBM-1 on 6 V. Many AA batteries or two AC adapters are needed. Though the two come with a nice case to carry them together, powering them is likely to be awkward over a lengthy recording session.

I might have burned out too much of my high-frequency sensitivity, but the difference between the PCM-M1 with and without the SBM-1 was not overwhelming. It shoehorns the equivalent of 20-bit sound onto the 16-bit format.

See DAT, page 45 ▶

Products & Services Showcase

For more information on the products shown below, circle the appropriate Reader Service No.(s) on the enclosed Subscription/Reader Service card or contact the advertiser directly.

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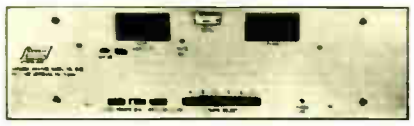

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Passive switching/routing with 10 stereo inputs and one stereo output or vice-versa.

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READER SERVICE NO. 152

Hi - Ho, Come Back to the Fair

Alan R. Peterson

Ow! My head! Good thing the millennium comes only once every thousand years or so.

Funny thing. I turned my radio on the other morning and it was as if nothing had changed. Sure, there were a few computer crashes, a lot of people got arrested on New Year's Eve for being idiots, but otherwise, pretty much everything remained the same as when I went to bed the night before. The view out the window looked the same, the voice on the radio had not changed, and my bedroom had not morphed into some chrome cell with blinking lights and a monitor screen.

Which can only mean one thing — they lied to me.

Who? The folks that ran the 1964 World's Fair, that's who.

Another world

I was maybe seven years old when I took in the Fair in Flushing Meadows Park, just outside of New York City. Everything was all shiny and fascinating, with hopes and promises for a better, brighter future.

The experts were all in agreement about the future. After all, why else would they have gone to all the trouble to build this marvelous exhibition to tell us so? Why else would they make us memorize the lyrics to "It's a Small World?"

By the year 2000, we were supposed to have had flying cars that got us to and from work, personal autogyros that flew us to the supermarket, monorails that swiftly shuttled us around town, personal nuclear reactors in our basements providing us with safe clean power (chortle), robots that did our housework, and telephones with a picture tube.

They did not see the personal computer or the compact disc coming. They could not foresee cars going from huge chromed behemoths to squat little boxes that turn into accordions upon impact with a clump of weeds. They did not realize the majority of Americans thought monorails were lame. I'm not cleaning my house until one of those robots shows up at my front door with a bucket.

Oddly enough though, there was one thing I noticed way back then that amuses me considerably today.

I remember visiting both the General Motors and Ford pavilions where I would hop into automobiles on endless belts and be whisked off into panoramic presentations of the land of the future, complete with animatronic creatures and special effects. Inside each car was the voice of the narrator, guiding me through the wondrous experience that lay ahead of me.

Where did that narration emanate from? The AM radio in the dashboard!

Way to go, futurists

In spite of all possible predictions, good old AM was still going to be the king of the hill 40 years hence. FM worked, but was still being treated as a loss leader by many established stations of the day. Some of today's movers and shakers in the digital radio industry were barely even born in 1964.

All around the fair, Sony and Toshiba pocket transistor AM radios were tuned to WABC, WMCA, WNEW or WCBS. Some moneyed luckies came to the fair with their expensive and weighty Grundig portable shortwave receivers, but stayed with the local stations to hear what was going on in town.

The vision of the future was so overwhelming in terms of technology, travel and quality of life that few stopped to think about where radio itself was headed. Good old AM would always be there, because there was nothing else on the horizon at the time that appeared to be a threat. A portable FM Walkman was barely a glimmer in anyone's eye.

MP3s, if they had existed, would have been impractical, as the computer needed to decompress one was still the size of an office floor. It certainly would not have been considered trendy to strap an Ampex reel machine to your belt to listen to music when you went jogging. AM owned that whole slice of the pie.

Now, let us step back and examine where we are.

There are very few monorails anywhere around the United States because they are still lame. Flying cars are impractical, as they would essentially drop from the sky during traffic jams. Robots are great for bomb squads and the manufacture of cars, but cannot clean a sink worth a darn. The Virginia Power and Electric Company again turned down my request for a basement reactor.

AM is still here, and so are FM, MP3, CD and MD, as well as direct satellite-delivered music and streaming Internet audio. At one time or another, one leads the pack then pulls back. Formats fall by the wayside to make room for the next big thing. There is still some serious faith in AM.

The vision of the future was so overwhelming, very few stopped to think about where radio was headed.

Even as you read this, great minds are at work trying to figure out ways to squeeze a digital signal in and around the analog one you now listen to for news, talk and traffic info. Even though we won't be traveling to work in large, clear pneumatic tubes by this time next week, you will still have an AM signal to listen to if you want it. The folks that put the 1964 World's Fair together got that part right, even if they didn't intend to.

But then, it's not the first time.

Predating the 1964 World's Fair was the one in Seattle in 1962. The Space Needle, the proud monument of that fair city, still stands today. It can be reached by — yep — a monorail from downtown.

Two autumns ago, the 1998 NAB

Radio Show was held in Seattle, with a **Radio World** party booked in the intermediate level of the Space Needle.

While gazing out at the scenery below, I noted a companion building to the Needle, constructed only a few hundred yards away. The outside facade and styling could only have been inspired by a vision of the future through 1960s eyes. In the late 1990s, it was still in active use, but seemed rather quaint.

"There it is," I noted dryly to another partygoer also looking out the window, "The Building of the Future."

"And they were right," he said back to me.

"What do you mean?" I asked.

"It's there, isn't it?" he shot back.

Funny how they get it right when they don't even try.

■■■

Alan Peterson keeps things glued together at Fairfax Public Access Corp., Fairfax, Va.

Reach him via e-mail to peterson@fcac.org

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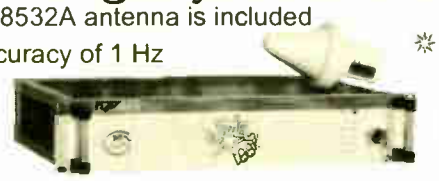

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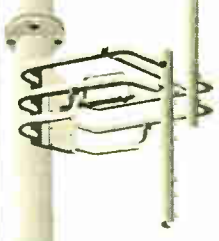

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READER SERVICE NO. 93

A Sony Portable Comparison

▶ DAT, continued from page 41

There seemed to be a bit more detail in music recordings, but I do not know if I could have consistently chosen between the two in a blind test.

Going beyond these somewhat esoteric tests and into the real world, there is not enough difference between the MD and the DAT to trade convenience for audio quality. For news-gathering, it is definitely a "no" vote.

It was clear that the mic amp used on the DAT was of a much higher quality than that of the MD.

The MZ-R55 Portable MiniDisc

Voice recordings are better than broadcast quality with either.

For capturing more challenging material, the PCM-M1 is definitely superior. If you have a fleet of MDs in your operation, it may be worthwhile also to have a PCM-M1 in the arsenal for recording.

The MZ-R55 retails for $349.95, while the PCM-M1 retail for $999.95. The SBM-1 converter accessory retails for $549.95.

The PCM-M1 costs nearly three times that of an MD. If you are really vested in sound quality, adding another $550 for the SBM-1 may be justified.

Now for the larger question: will MD kill DAT? The answer is perhaps, in time. DAT still holds an edge over the compressed format, but ATRAC compression is getting better all the time.

DAT is as good as it can get at 48 kHz. For now, DAT is far from dead. Given the installed base of rackmount DAT units, the format is likely to endure for some time. It is also legitimate for radio producers to opt for DAT audio quality over the convenient compressed audio of MD.

With digital broadcasts on the horizon, the higher-quality archives may prove beneficial. It is still reasonable to adopt DAT for field recording, and the PCM-M1 is convenient and effective.

■ ■ ■

For more information, contact Sony in Florida at (800) 686-7669, check out the Web site at www.sony.com/proaudio *or circle* ***Reader Service 43.***

Sony Comments

How does Sony see the relationship between these formats? Pro Audio Product Manager Bob Tamburri at Sony Electronics Inc. answers this question.

"Sony's position on DAT and MD is that DAT was designed to be an audiophile format, that is, the best sonic quality available at the time it was developed. DAT is still the best sounding portable format around.

"Most live concert recording is still done on DAT, and the proponents of this practice wouldn't have it any other way. In fact, any live content going to broadcast would likely suffer less degradation in transfer and dubbing than an already-data-compressed format.

"There is that SCMS stuff. All MD recorders have this feature and professional DAT recorders have the ability to bypass this.

"MD is positioned to replace the aging analog cassette format. From all reports, it does so with astounding results. The sonic, reliability and convenience advantages over cassettes are now known, and it is safe to say that the cassette has finally met not only its match, but also its superior.

"The question of which format is best for radio is a matter of features. One could argue that due to its superior quality and physical robustness, DAT would be best suited for field acquisition. However, MD, due to its random-access capability, longevity and titling/editing flexibility, is best suited for production.

"There may exceptions to this rule. For example, the MZ-B3, which is widely used for radio interviews, is unique in its transcribing features not found on even the most expensive MD recorders.

"While it can be safely said that MD has become the new 'cool tool' for radio and ENG, there is still room for high-quality recording units like DAT, at least for the time being."

PRODUCT GUIDE

New Plug-ins For SADiE

SADiE offers Cedar Systems DeThump as a new plug-in for $2,495. It is designed to remove low-frequency energy bursts or thumps from an acoustic signal.

It uses audio data surrounding the thump to build a picture of what the

low-frequency signal data should have been, and then uses the picture to replace the audio. It looks at only low-frequency data because thumps are usually untouched at high frequencies.

SADiE also said it has licensed POW-r, an algorithm that reduces longer word lengths of 20, 24, even up to 32 bits, to CD standard 16-bit format. The acronym stands for Psychoacoustically Optimized Wordlength Reduction.

It will be released as an optional plug-in in 2000. A retail price has not been set.

For more information, contact SADiE Inc. in Tennessee at (615) 327-1140, visit the Web site at www.sadieus.com *or circle* ***Reader Service 82.***

CD-R Copier for Multiple Users

Rimage Corp. announced it's shipping the new Producer 2000 Amigo, a single-drive CD-R recording and automatic labeling system. It features an 8x CD-R and the Prism color thermal printer.

The Amigo can attach to a network and is controlled by Rimage's Perfect Image software that can image and download while it is recording another project. It is designed for unattended 24-7 use.

The Producer 2000 Amigo is available through Rimage distributors and resellers and is priced under $10,000.

For more information, call Rimage in Minnesota at (612) 944-8144, visit the Web site at www.rimage.com *or circle* ***Reader Service 91.***

A Web Page Allows Quick Access

▶ TRAVIS, continued from page 41

the Internet, which would allow the reasonable transfer of high-quality audio. Suddenly, telephone and cable TV companies are offering high-speed Internet connections much faster than old telephone-line modems.

The result is that anybody with one of these "high-bandwidth" connections can send and receive quality audio over the Internet at relatively the same cost as before.

The second development is that the Internet rapidly is becoming something many more people have access to.

Not long ago, when someone sent a script, it was faxed or mailed. Today, 90 percent of the time, scripts are e-mailed.

During the last few months, about one-quarter of my bookings have involved some e-mail — either my agent gets an e-mail requesting my services or availability, or I get an e-mail directly.

Last month I got my first e-mail confirmation of a booking from one of my agents, who are not usually the most technically sophisticated people. If they are using e-mail, almost everybody must be using e-mail.

The third development is an emergence of audio standards for the Internet. Major record companies are starting to promote and deliver a considerable amount of sales through the Internet. Now I can buy music over the Internet, download it to my computer, where I can play it or download it to a portable digital music player, or record it on a CD.

The acceptance of the MP3 audio format means most people will be able to play a sound file that appears on a Web page.

Now I don't need to send out demo tapes or CDs. I can expect that a potential client can listen to my voice-over demo on my Internet site. It's cheaper than the average $5 including postage or hand delivery I pay to send out a CD.

A potential client can listen to my Web demo. It's cheaper than $5 to send out a CD.

Currently, most bookings are still made from listening to my CD. Over the next year, I expect the online presence to have a greater impact.

Everybody's doing it

There is a downside to the increased use of the Internet by voice talent.

I used to use my site as a marketing device. During the past four years, I have booked four jobs directly from my site, the result of somebody finding it while surfing, and a direct result of the "novelty" aspect of my demo placed on the Net.

Now, there are many other voice-over performers on the Net, so this does not happen anymore. As the Internet matures, it loses the "novelty" appeal. Meanwhile, it is established as a standard method for delivering audio.

When performers ask me how much it costs to have a site, I recommend setting it up yourself for economical reasons.

To have a Web designer set up a simple Web site, it would not be unreasonable for that designer to spend 20 to 30 hours, including time in consultation necessary for creating a useful site. An hourly rate for such an occupation can be upwards of $100 an hour, so setting up a simple site could easily cost $3,000.

For most, that is a lot of money, especially when it can be done yourself for no cost, except for some spare time.

If you already have a computer, and an Internet Service Provider such as AOL, you already have most of the tools needed to create a Web site, complete with an online voice-over demo. What you don't have, you can download from the Internet for free.

Finding the host

The first thing needed is a Web site hosting service that creates a place on the Internet for the site. Most Internet service providers offer Web site hosting as part of the basic service plan.

While the included or "free" site might not have the capabilities necessary for an online radio station or Internet retail business, the site will be capable of providing an online presence, including audio for your voice-over demo. Many service providers also provide tools intended to make setting up your site as painless as possible.

Next time, we will discuss specific techniques used to set up the site. In the meantime, spend time on the Net and see what others have done, if you are not already. Those sites will give a lot of ideas that you might want to incorporate.

■■■

Travis the V/O guy is a veteran voice-over artist in California. Send e-mail to vo-guy@voice-guy.com *or visit* www.voice-guy.com

PRODUCT GUIDE

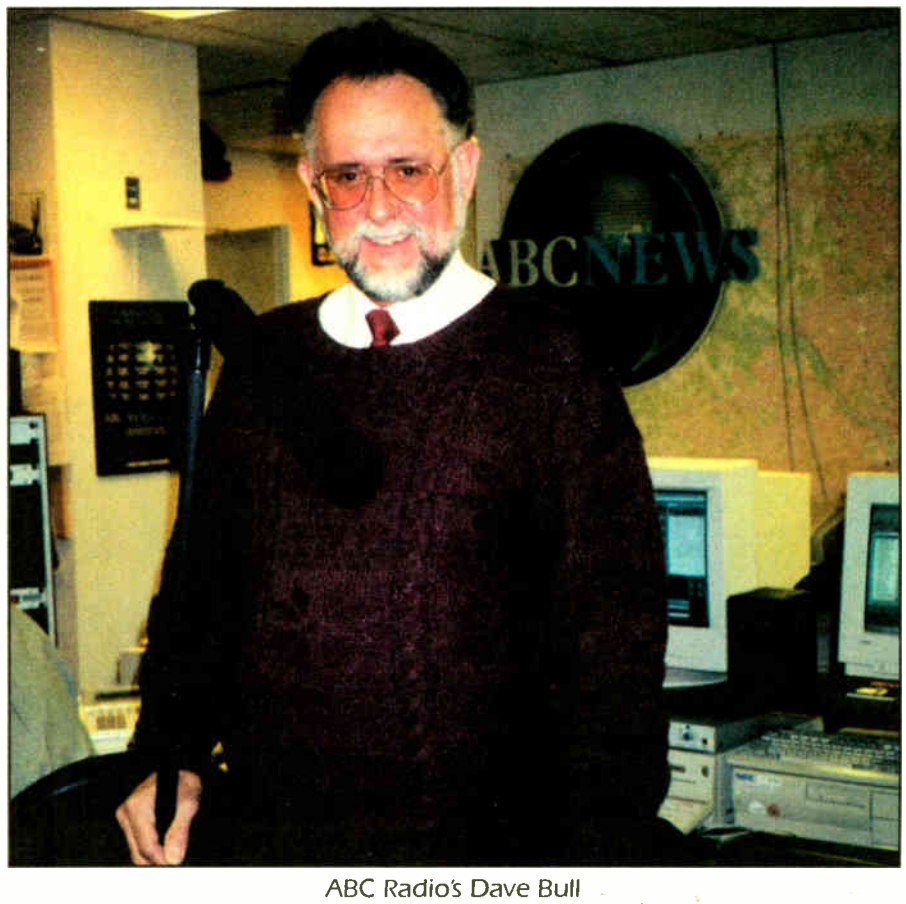
EV's All-In-One Shotgun

Electro-Voice offers a new shotgun/boom-pole microphone. The ENG 618 retails for $1,398.

The company says this mic is unique because it combines the microphone, fishpole, shock-mount and monitoring ability into one balanced package.

The integrated system uses a hypercardioid electret condenser mic having a response of 50 Hz to 20 kHz. The mic capsule is attached permanently to a K-Tek graphite fiber boom-pole designed to extend to six feet and fold down to 18 inches.

The electronics housing at the handheld end has a switchable 200 Hz roll-off filter, an XLR output, a low-battery LED indicator and an adjustable 9V battery-powered headphone amp using a 1/8-inch mini-plug. The system can be powered by an external 12 V to 52 V phantom power supply or with the battery. It comes with a windscreen and storage pouch.



ABC Radio's Dave Bull

For more information, contact EV in Michigan at (616) 695-4750, check out the Web site at www.electovoice.com *or circle* ***Reader Service 44.***

GUEST COMMENTARY

Denon: RW Review Got It Wrong

Jim McGuinness

The author is a broadcast product specialist in the Denon Pro Products Division.

The Denon DN-C630 CD Player offers numerous features for radio, the author says.

The review of the DN-C630 CD Player in the Sept. 1 **RW** left me disappointed. It seems that the reviewer's point of view was from a computer and control aspect, and not from a pre-production, post-production, installer point of view, which was the product's initial design intention.

Therefore, the reviewer's comments on how the controls work and how it fits the application shed a poor light on a product that has been selling well, has a tremendous track record for reliability and has been well-accepted in the field.

Fixing the facts

The DN-C630 is not a DAW or CD-ROM type of product and I believe should not have been brought up in that light. DJs, both in broadcast and in clubs I have talked to, have no problems using the control designs.

Any piece of equipment should require the user to read the owners' manual at some point. It would be difficult to make any device with many features without a manual to explain them. After reading the manual, most users should not have a problem operating this unit.

The **RW** article contained four errors.

- The pitch range is +/- 9.9 percent, not +/- 10.0 percent, and there was no mention of the pitch-lock feature or preset pitch range, which is +/- 3.0 percent.
- The delay is 100 to 300 mS if desired, not 5 to 20 mS.
- The reviewer's statement that "the drop in sound level that triggers the end of the segment can also be changed" is unclear. Therefore it's difficult to understand what function is being referred to on the player.
- The listed phone number is wrong. It is (973) 396-0810.

The review did include some features, but I would like to point out others that were missed. The controls contain a few features of the Denon CD Cart players, but also add consumer-handling controls and features for production.

The DB-25 connector is the same as on the Denon cart player, and would be a direct plug-in for existing studio mixer controls that are connected to one of the cart players.

The player provides a calendar display of the first 20 tracks for quick reference of a disc or program set along with a bar indicator so the operator can tell where the start and stop point are on a track, disc or program at a glance. Also, remaining or elapsed time indication is selectable.

Frames are also displayed at a rate of 75 per second and can be shut off.

Pitch is displayed for precise speed matching. A pitch-lock is provided to avoid accidental movement of the pitch slider.

This player can also read indexes. Both the track select and index select use a dial knob, which is either x1 or x10. This feature is also wrap-around to save search time.

A feature named End Monitor, which could be called "Outros" allows the user to hear how the end of the track sounds for proper mixing at the press of a button. The End Monitor time is selectable.

A stop button halts all functions and turns the drive off. This is unique, as most pro-machines run all the time whether in play or pause, which is time on the drive. A power guard button stops accidental power-downs in mobile applications.

The XLR outputs are +4 and are adjustable up or down.

The unit allows the user to save features in a setup mode. Some of the presets include a Power-up Play for unattended startup and auto-repeat of a track or program, which is great for background music, museums and displays.

Adjustable Cue to Music eliminates search time and provides consistent start levels with no dead air.

End of message is a visual warning indicator for end of song, and is adjustable for when the unit starts the warning.

Track Reserve puts the unit into cue for the next track to be played without interrupting current playback.

Next Standby allows for quick review of a disc using only the standby and play buttons.

Other setup features include:

Fade-In digital processing is time-adjustable. Playlock stops accidental function changes while music is being played. Remote can be enabled and disabled. Standby tally can be on or off, and fader control set to play or pause. Playback can be stereo or mono. Preset pitch-level can be set to +/- 3 percent. Sleep function, which increases reliability, is defeatable.

All these features create a CD player that can be used in many situations around radio stations or otherwise.

■ ■ ■

Contact Jim McGuinness if you have any question concerning Denon products at (973) 396-7492 or e-mail him at j_mcguinness@denonnj.com

RW welcomes other points of view.

The reviewer's comments shed a poor light on a CD player that has been well-accepted in the field.

PRODUCT GUIDE

Complete Three-Drive System

Mediaform rolled out the CD-3073i for inkjet printers and CD-3073t for thermal printers, a three-drive CD-R duplicator with in-line "direct-to-disc" printing capability. This is the first in its new line of NT-based, integrated mastering, duplicating and printing systems with a retail of $8,695.

Mediaform's automated three-drive system, with printer docking station, includes the new SmartDrive, described as the first "duplication grade" 8x CD-R and 2x CD-RW recorder. It does not include the keyboard, monitor or printer, which can be bought through Mediaform.

The unit comes with a feature that cures the printed portion of the disc before the discs are stacked. The inkjet and thermal docking stations are interchangeable for those who need the flexibility of either inkjet or thermal-based printing.

It can produce at least 18 73-minute CDs per hour. The system comes with a workstation that is network ready and can queue up to five jobs.

For more information, contact Mediaform in Pennsylvania at (610) 458-9200, check out the Web site at www.mediaform.com, *or circle* ***Reader Service 84.***

Mediaform CD-R Systems

Citadel Selects Scott Studios as "the Best" Digital System

Larry Wilson (at right), CEO of Citadel Communications Corp., shakes hands with Dave Scott as Citadel standardizes on Scott Systems for its 124 stations and future aquisitions.

Citadel Communications Corp., one of America's top 10 radio groups in 1998 revenues, selects Scott Studios Corp. as its sole supplier of on-air digital audio delivery systems for its 124 radio stations and future acquisitions.

"We thoroughly investigated all of the competitive digital air studio systems and decided upon the best one," says Larry Wilson, CEO of Citadel Communications. "Our regional Presidents and Vice Presidents of engineering and programming spent nearly a year analyzing different options. While no system or manufacturer is 100% flawless, it became obvious to us that Scott Studios is the very best. Their long history of excellent service commitment, the quality of their digital studio products and competitive pricing were our primary reasons for selecting Scott Studios."

Dave Scott, CEO of Scott Studios Corp. says, "It's an honor to be Citadel's sole digital audio vendor and take their other brands as trade-ins on our new equipment. Our systems are designed by announcers, for announcers.

"Of Scott's 61 employees, 43 are former jocks and PDs with 700 years collective radio experience. Competitors work more from the engineer's perspective, although we have 20 former chief engineers on staff also. Scott Studios' digital fits DJs like a glove."

After adding five Oklahoma City stations and other pending transactions, Citadel will own or operate 124 radio stations in 23 mid-sized markets such as Providence, Salt Lake City and Albuquerque.

Citadel is well known across the country for attaining topnotch competitive programming success, and the addition of Scott Studios announcer friendly technology will help Citadel announcers deliver superior information, entertainment and service to their 8,000,000+ weekly listeners.

Citadel's stations are not the only ones who choose Scott: *More* U.S. radio stations use Scott Studios' than *any other* digital system, with 5,046 Scott digital workstations in 2,202 U.S. stations. Nine of the ten *top-billing groups have Scott Systems*.

Scott Systems are the *easiest to use!* They're intuitive, straightforward, simple, yet the *most* powerful!

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!

Scott Studios is famous for our *uncompressed* digital systems at a compressed price, (but we work equally well in MPEG and MP3). Scott Studios' audio quality is the *very best* and plays on laptops or PCs with ordinary sound cards. We pre-dub your startup music library free. Your PD can auto-transfer songs digitally in *seconds* with a CD-ROM deck in his or her office.

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 also 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 Scott System 32 (pictured at the upper right) is radio's most powerful digital system. Your log is on the left side of the LCD touch screen. 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.

Options include seamless redundancy, self-healing fail-safes, newsrooms, 16-track editors, time and temperature announce, and auto-transfer of spots and voicers to distant stations over WAN or Internet. Check our web site and call us toll-free.

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

Circle (94) On Reader Service Card

Quantegy Makes Traveling Easier

Quantegy's new TracPaks are designed to hold three DTRS or ADAT cassettes. They provide additional storage space for reference CDs, track sheets and other notes and have a handle for transportation.

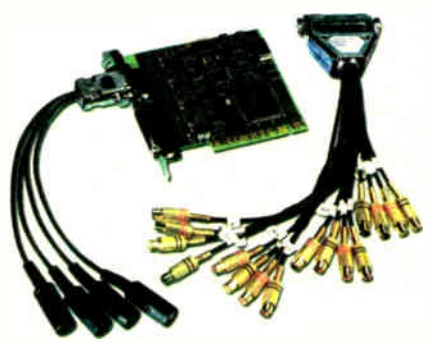
The HDPE container provides a secure environment for long-term storage of master tapes.

For more information, contact the company in Alabama at (334) 742-7992, visit the Web site at www.quantegy.com *or circle* ***Reader Service 46.***

Sek'd Eight-Channels

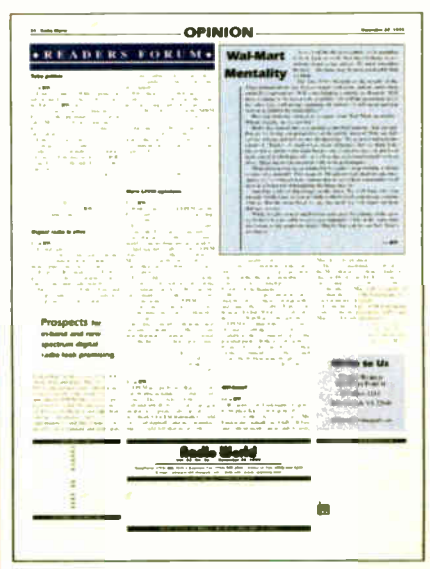
Sek'd America released the new Sienna (ARC8896) audio card, retailing for $699. It has eight analog RCA I/Os and two MIDI I/Os. It is 24-bit 96 kHz and works with any Windows-based DAW.

It comes with a complementary version of Samplitude Pro, a 24-bit, 96-kHz eight-track mixer that has a reverb and is DirectX compatible.



For more information, contact Sek'd in California at (800) 330-7753, visit the Web site at www.sekd.com *or circle* ***Reader Service 65.***

Readers Forum is on Page 54



Radio World

Broadcast Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

ACOUSTICS

WANT TO SELL

AMPLIFIERS

WANT TO SELL

Symetrix A220 stereo amp, solid state, rack mounted, $175. C Harper, 606-484-9393.

Crown DC-150, $250; Crown stereo power line one amp, $295. J Price, 214-321-6576.

Custom built Altec-Lansing A323B monaural, pwr amp, push-pull 6L6 output tubes, BO, transformers worth over $350. M Crosby, 408-363-1646.

ANTENNAS/ TOWERS/CABLES

WANT TO SELL

470' SOLID ROD TOWER, 2" legs, 100mph wind. Mark Barinowski, 706-733-1286.

Coax patch panel 3-1/8"-7 pole. Mike, 800-588-7411.

Audiometrics voice-over booth on wheels w/XLR/phono inputs, 60x42x30, $1275 +shpg. J Baltar, 207-623-1941.

Ramsa WZDE40 digital multi EQ, 20 bit stereo, 31 band graphic, feedback search, notch filter, compressor, spectrum analyzer & delay, $2000. M Hughes, 301-962-6823.

Urei 565 Little Dipper EQ, $700; ADC Propatch 1/4" punchblock patchbays, new, $600 (many); 1.4" TRS patch cords like new, $15; ADC TT 144 point patch bays, recond, $149-229. W Gunn, 760-320-0728.

WANT TO BUY

Auditronics 200 control room monitor module for 200 Series board. J Snaper, 530-265-9073.

Yamaha BP-2 bass pedals, need electronics only, but will be happy with schematic and/or owner's manual. B Meuse, 650-969-2433.

AUTOMATION EQUIPMENT

WANT TO SELL

Digilink III, extra SCSI drive for addtl 24 hrs record time, gd cond/clean, $2750/BO. P Wolf, 941-458-3777.

Smartcaster automation systems (3), one in service, two w/switchers & one w/o, all units used in satellite automation, $4000/all.

Scott Studio Systems (4), new, never used, still in boxes, call for prices. S Fuchs, 573-686-3700.

Dielectric 3-1/8" coaxial relay, Mike, 800-588-7411.

AUDIO PRODUCTION

WANT TO SELL

AudioSource portable realtime spectrum analyzer, RTA-ONE in carrying case, battery/ac powered, internal mike, $400; Gold Line RTA 1/3 Octave analyzer, LM27 one rack space, 3 LED system, $250; calibrated mike, $100; Shure M615, w/matching ES615 analyzer mic & case, $350, trade for old bdct gear. M Hughes, 301-962-6823.

Ramsa WP9055 power amp, new, 2x50 W rms @8 ohm, 100 W rms bridged, new in box, $380/BO/trade. M Hughes, 301-962-6823.

WANT TO BUY

Arrakis DL2, need not be Y2k ready, will pay $1700 immed for operating unit. R Roberts, 800-524-3994.

BUSINESS OPPORTUNITIES

WANT TO SELL

SYNDICATE YOURSELF 1-100 MARKETS, US and Caribbean via satellite, airtime available now, call Mr. Ferguson 954-735-4070, www.ibnradio.com.

CART MACHINES

WANT TO SELL

Telex Magnecord stereo cart machines, record electronics, have new parts and remotes. StarAudVis@aol.com, 661-256-1567.

Fidelipac Dynamax CTR112 stereo, single play cart machines (5), $800 ea +shpg, has fast forward, used for 6 mos & put in storage. B Lord, 206-932-4839.

BE Series 3000 (2) Pb mono in gd cond, $50 ea; (1) Series 300 R/Pb mono w/spares, gd cond, $75 +shpg. M Zurbrick, 214-293-7420.

Various stereo/mono, BO. J Lalino, 315-891-3110.

CD PLAYERS

WANT TO SELL

Pioneer M403 6 CD player, $120. S Petit-Homme, 914-966-3436.

CD RESTORATION

COMPLETE FACILITIES

CONSOLES

WANT TO SELL

Collins IC-6 in very gd cond, serviced regularly, $1000. T Tabback, 520-282-4154.

Shure M267 prof portable mike mixer w/limiter, 4 input, Phantom pwr, battery/ac powered, clean cond, $350; Ramsa WR-8210A, 10x4x2 mixer, ea chnl has 3 selectable inputs (mic, line, tape), 3 band sweepable (parametric) EQ, new/demo, $1300 or trade for old bdct gear; Soundworkshop Series 30, 34, 40 parts, call for list, copies of manuals/schematics for 30, 34, 40, Arms II, BO or partial trade for mikes, effects, etc. M Hughes, 301-962-6823.

Ampex AM10 6x2 mixer, excel cond, $295; Altec 1599A 6 chnl mixer, $295. J Price, 214-321-6576.

Fairchild FICM vintage discrete console strips includes mike preamp, line amp, 2 band EQ, compressor, VU meter, fader, 1+ space rackmount, $1200 ea. M Hughes, 301-962-6823.

RCA BC 30 85-23 stereo, missing lever switch & input card for Ch1 position, very clean w/manual, 1981 vintage, working when removed from service, BO. A Fromm, 918-335-5093.

Logitek 12 stereo mixer. Mike, 800-588-7411.

Soundcraft 600, 24x8, $3900; JL Cooper 16 trk automation, $1200. W Gunn, 760-320-0728.

WANT TO BUY

Soundworkshop 40. A Polhemus, 212-302-9010.

LIMITERS

WANT TO SELL

Optimod 8100A in excel cond, $2995; Optimod 8100A S/T sub chassis, for discrete stereo, $475. T Burns, 815-625-2100.

CBS Volumax, $400/ea; mint Urei 1176LNs, black, $2300; 1176LN silver, $1800; 1176 original blue/silver transformer l/o, $2300. W Gunn, 760-320-0728.

WANT TO BUY

Urei, dbx, Collins, RCA, Gates, Universal Audio. T Coffman, 619-571-5031.

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

WANT TO SELL

Atlas heavy duty boom mic stand for 44BX or other, $250; RCA 44BX ribbon mic, $2500. E Reilly, 206-282-6914.

Telex WT-50 xmtr & mic, $125; Telex WT-200 xmtr & mic, $125; EV 636, $65; EV 654, $85. J Price, 214-321-6576.

EV 635L mics, $95; Altec salt shaker mics, $295/ea. W Gunn, 760-320-0728.

WANT TO BUY

RCA 4A-1 sq box style mic (brown), used in late 20s, will pay top dollar in any condition. L Drago, 203-230-5255.

Ribbons, condensers, dynamics, tube 1950-90. T Coffman, 619-571-5031.

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted. 615-352-3456, FAX: 615-352-1922.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA ribbon mics. W Gunn, 760-320-0728.

MISCELLANEOUS

WANT TO SELL

10 Sangamo Mica capacitors, assorted values, $500; Myat End Term, 7/8" EIA flange, $50; 20 coil tap clips, assorted sizes, $50; Kintronic phasor front panel dial w/counter, $25. G Salyer, 813-685-3740.

Audiometrics voice over booth on wheels w/XLR/phono inputs, 60x42x30, $1275 +shpg. J Baltar, 207-623-1941.

UTC transformers "ouncers", variety of P/S Byer TR/BV35508, $25 ea; Ampex Sel-Sync, $295; Ampex transformers & pre-amps, call for price. J Price, 214-321-6576.

Spectra Sonics 601 compressor, MONO, complete w/outboard controls & VU meter, schematic, brand new, $200; Allen & Heath "Mini-Limiter/Pro-Limiter" $50/BO. M Crosby, 408-363-1646.

WANT TO BUY

Conax, Stancor PCO/PSO 150. R Robinson, 203-949-0871.

Tower beacon, need both incondensant & Xenon type. A Weiner, 207-985-7547.

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Recdgs, 228 East 10th, NYNY 10003. 212-674-3060.

MONITORS

WANT TO SELL

Belar stereo FM, FM monitor, $500/both/BO. J Lalino, 315-891-3110.

JBL speaker drivers, call for price. J Price, 214-321-6576.

Used Mod Monitors, McMartin & Belar. Many to choose from, tuned & calibrated on your frequency, full guaranteed. Goodrich Ent. 402-493-1886.

Yamaha NS10Ms, $295. W Gunn, 760-320-0728.

RECEIVERS & TRANSCEIVERS

WANT TO SELL

Scientific-Atlanta 7300 rcvr & 6325 digital processing unit w/7.5 & 15 kHz cards in gd cond, $1500. R Meyers, 305-264-5963, jrmeyers@bellsouth.net.

RECORDERS

WANT TO SELL

Ampex 440B w/remote, 15 & 30 ips, $1000/BO; Studer A80 24 trk, low hrs, wide body Mark III, $20K. A Polhemus, 212-302-9010.

Magnefax reel duplicators (2), gd cond, one mono, one stereo, 5 slaves ea, BO. Jim, 615-321-3612.

MCI JH-24 16 trk 2" 16 trk, gd cond, auto locator, still in service, BO. R Murphy, 512-349-2231.

Otari 5050 BIII, 1/4" 2 trk, like new cond, $1000; Panasonic 3900 DAT machine w/controller, very low hrs, $1200. J James, 415-331-9346.

Otari ARS 1000 in gd cond/clean, $150/BO; Tascam 32 in gd cond/clean, $750/BO. P Wolf, 941-458-3777.

Otari ARS 1000, gd cond, PB only, $400. Jim, 615-321-3612.

Parts for Scully 2 8 trk, Teac 3440S, 3340, 80-8, Otari 5050 8 trk, Dokoder 7100, 7140, 8140. M Hughes, 301-962-6823.

Scully 270, Metrotech 500 Series r-r, 3 of ea, service manuals, parts cache included, $100/all +shpg or you pickup in NE Ohio. Greg, 330-499-6794.

Sony U-matic top loading players (8) & a few recorders, $300/all +shpg. J Baltar, 207-623-1941.

Teac A3300SX 1/4 trk, takes big reels, $550. M Hughes, 301-962-6823.

Teac V-377 cassette R/P, $150. S Petit-Homme, 914-966-3436.

Ampex 354-2 stereo tube recorder, excel cond in console, $695; Ampex 351 transports decks, BO; Ampex 440 stereo, excel cond in console w/Ampex 6 chnl mixer, $750; Ampex 440C in console, 3.75-30 ips, excel cond, $995;MCI JH110 stereo in console, excel cond, $495;MCI JH110B stereo in console, $750; set of new Ampex 8 trk 1" heads, $750; new Ampex 16 trk 2" heads, $350 ea; MCI electronics stereo set B-C, $150; Otari CB-109 auto locator, CB-11 new, call for price. J Price, 214-321-6576.

Ampex 440B 15 & 30 ips w/remote, $1000/BO; Studer A80 24 trk, lw hrs, wide body, $20K/BO. A Pollhemus, 212-302-9010.

Magnefax reel duplicators (2), gd cond, one mono, one stereo, 5 slaves ea, BO; Otari ARS 1000, gd cond, PB only, $400. Jim, 615-321-3612.

Otari MX 5050 BII-2 (4), great cond, 2 speed, 2 trk, 2 chnl, 1/4" tape. $1100. D Watson, 508-752-0700 or drew@wicn.org.

Otari MX-5050A; Revox A-77; Magnacord 1021 3 in rack; Teac A4300; Telex 7 cassette duplicating system, all in gd cond, BO. D Hedrick, 912-268-1550.

Parting out Scully 2 trk, 8 trk, all parts avail. M Hughes, 301-962-6823.

Akai M7 Cross-Field head recorder, $100; Roberts portable recorder, mono, tube-type, take-off on Ampex 600 Series, $100; (3) Ampex 440/450 tube type PB electr w/o tubes, $200 ea; Ampex early recording monitor amp w/S-31A output xfmr & 5" Utah speaker, tube type, rack mount, $150/BO; AMPEX RESTORATION FREAKS!! – VIF tube replacements & adapters, VIG 1006-JFET replacement for 12SJ7, 12AX7 or 6F5 tubes, spec sheet avail, $16 ea. M Crosby, 408-363-1646.

ALL NEW!! Spotmaster TP1B tape timers, $175; CLOSEOUT Spotmaster TP1B cart winders, w/o pressure roller & timer, $25 +shpg; STL alignment carts C0031-FI (IEC), CO234-2-FI (stereo IEC), X1235-1-FI (3150 Hz Flutter), $25 ea. M Crosby, 408-363-1646.

New MCI 110C-2s, $1800; Scully 8 trk, $1500; new short MRL test tapes, $229 for 2", $79 for 1/4", all formats avail; Otari MX5050 Mk III-8, $3k; Otari CB110 remote, $300; CB116 locator, $550 (all for $3.5k); Tascam 85-16 w/locator, remote, dbx, $1800; MCI JH110B 8 trk w/locator, $2900; Akai ADAM new, digital 12 trk, $3500; Ampex ATR102 rebuilt 1/4", $4900, 1/2", $6400; Technics RS1500 isoloop recorders, $695; Otari 5050 2 trk, $695. W Gunn, 760-320-0728.

Scully 280B-2 w/servo motor in Russ Lang roll-around console, new record & PB heads & idler, $1100 +shpg; Ampex 622 speaker/amp in portable case, $200; portable case for Ampex 622 speaker/amp, case only, $75; Inovonics solid-state R/P electr for Ampex upgrade, 2 chnls, $100 ea. M Crosby, 408-363-1646.

WANT TO BUY

Soundworkshop 40, all or parts. A Pollhemus, 212-302-9010.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

REMOTE & MICROWAVE

WANT TO SELL

GE PVL-2000 Gemlink 23 gHz microwave comm. System for FM/video, 10 mHz bandwidth, $1800/BO. J Snaper, 530-265-9073.

Comrex 2XP, 2 line Incoder, $450. Tom, 1-800-860-9771.

REPAIR SERVICES

Circle (263) On Reader Service Card

STATIONS

WANT TO BUY

AM or FM station located in RI, MA or CT area, non-comm or comm., no station to small, will consider partnership. M Cardillo, 401-942-8341.

AM or FM station located in RI, MA or CT area, non-comm or comm., no station to small, will consider partnership. M Cardillo, 401-942-8341.

TAPES/CARTS/ REELS/CD'S

WANT TO SELL

Fidelipac 300 Series (gray carts), large quantity, most lengths, prefer to sell in bulk, BO. M Sophos, 914-693-3963 5-7PM EST.

Giant oldies format on blk Scotchcart II's, 3274 songs from the 50's, 60's, 70's & 80's, $4000/BO; Blk Scotchcart II's, 250 3.5 min, $.85/ea; Abco Carousel wire cart racks that hold 500 carts, $170, all +shpg, all used for only 6 mos & then in storage. B Lord, 206-932-4839.

CONSULTANTS

DISTRIBUTOR DIRECTORY

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

Tanner Goldmine Series, 200 oldies tapes, mono in boxes, excel cond, few hrs use, complete library, BO. D Hedrick, 912-268-1550.

Various carts, $.60 ea. J Lalino, 315-891 3110.

Audiodisc 10 - 10", 20 – 12", 3 – 16" in master shipping case, BO. M Crosby, 408-363-1646.

TAX DEDUCTIBLE

WSCU Chicago State University is seeking donated radio equipment for campus station. Needed equipment such as: board, cart machine, automation unit & more. M Devonne, 773-995-2831.

TEST EQUIPMENT

WANT TO SELL

Delta CIB-3 operating impedance bridge, as new, $350 BO; Potomac FL-31 filter, .5 to 1.7 MHz, as new, $1200/BO; General Radio 1606A bridge, also GR821A twin T, BO. John, 201-384-0500.

Prime Image HR6001M TBC, $950 +shpg. J Baltar, 207-623-1941.

Tektronix DM501A digital multimeter, $150; Tektronix DM502A digital multimeter, $150; Eico 150 solid state signal tracer, $100; HP 353A 100DB attenuator, $65; BK precision Dyna Jet 707 tube tester, $200. J Price, 214-321-6576.

TRANSMITTERS

WANT TO SELL

ITA 5 kW FM w/gd spare PA, new plate xfmr, works good, sell or trade, recently removed from service, ready to ship, BO; Wilkinson 20000E 20 kW FM, currently used as standby @16 kW, great cond, want Collins 831G2, will sell or trade. BO; BE FM-30 (2), operating in parallel, will sell or trade for Collins 831G2 or Continental 816's. C Frenwald, 206-726-7071.

Nautel Ampfet ND1, 3 yrs old, 1 kW AM, avail now, factory tuned to 1570 kHz, perfect cond, $10,000/BO. R Miller, 808-572-5534.

TFT 8300 Series STL xmtr & rcvr, excel cond, w/factory compliance certificate, $2500. B Geyer, 304-523-8401.

Gates 1G 1 kW AM 1400 kHz 833 tubes. gd for parts or ham radio use. BO. A Fromm, 918-335-5093.

Harris FM10H 10K, gd for rebuilding or parts, exciter not included, $2000. D Coffman, 941-334-1393.

Harris MW1-A, was used as extra, in working cond, just off air, need space, must sell, spare parts w/manuals, $3500/BO +shpg. D Kasey, 904-253-0000.

Harris FM-25-K xmtr. Mike, 800-588-7411.

McMartin BF-10K 10 kW FM, factory rebuilt, in perfect, like new cond, includes new tubes, tested & tuned on your freq. Guaranteed. Adjustable from 5.5 kW to 15 kW, FCC type accepted. Goodrich Ent, 402-493-1886.

McMartin BF-5K 5 kW FM, factory rebuilt in perfect, like new cond, includes new tubes, tested & tuned on your freq, guaranteed, fully adjustable from 0 to 5.5 kW. Goodrich Ent. 402-493-1886.

SERVICES

Circle (264) On Reader Service Card

WANT TO BUY

C-Quam AM stereo system in gd shape. D Hedrick, 912-268-1550.

McMartin AM/FM xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

TUBES

WANT TO SELL

Circle (265) On Reader Service Card

Circle (266) On Reader Service Card

Circle (267) On Reader Service Card

TURNTABLES

WANT TO SELL

RTS-405 stereo TT preamp (2), $90/ea +shpg, used 6 mos & put in storage. B Lord, 206-932-4839.

EMPLOYMENT

HELP WANTED

GREAT JOB with GREAT PAY for GREAT ENGINEER.
Are you the ONE? Bott Radio Network is searching for a CE for its Kansas City-based 16-station Christian radio network/group. Position requires strong background in construction, installation & maintenance of studio, AM/FM xmtrs, STLs, digital audio, DCS computer automation, satellite networks & translators, along with the ability to manage other people & a love for quality Christian radio. Excellent character & professional references expected. Some travel involved. Great compensation with full benefits. Send cover letter, resume, salary history & references to:
Personnel Director
Bott Radio Network,
10550 Barkley
Overland Park KS 66212
or fax 913-642-1319
or email:
ggaut@bottradionetwork.com
EOE

PLEASANTVILLE DOES EXIST...
and you can live here!

CBSI (Custom Business Systems, Inc.) the world's leader in business software solutions for radio, is searching for 2 new Customer Relations Representatives. You will work directly with 3000+ worldwide clients to ensure they get the most from the most advanced radio business software available...& be working toward a move to a position as a Regional Sales Manager. Avoid the "consolidation crunch" & come to the beautiful Oregon coast...enjoy ocean breezes & mountain sunrises. Reqs. Min. 5 yrs radio exp., strong knowledge of computers & the desire to excel. We offer a competitive comp & benefits pkg incl 401-(k) match & profit sharing. Contact CBSI HR Manger, POB 67, Reedsport OR 97647. E-mail: HR@cbsi.org, Fax: 541-271-1401.

cbsi
Custom Business Systems Inc

PLANNING FOR THE FUTURE?
Like to work with good people? If you have background in or are currently enjoying a sales position (particularly if you are interested/knowledgeable in RF, send resume to: Blind Box #1-5-00-1RW, Radio World, POB 1214, Falls Church VA 22041.

POSITIONS WANTED

15 year broadcast veteran seeks to relocate to Maryland/Pennsylvania/DC region. Seeks FT employment, exper in news, talk, prod, music & administration. T/R: 207-882-4865.

CE position wanted. Exper w/computers, xmtrs, automations, DCS, UDS, digital studios, 22 yrs exper. R King, 541-269-9109.

Experienced CE seeks FT/PT/contract/seasonal work in the NE. Friendly, outgoing, looking for radio, TV work. FCC licensed, CET (4 options), amateur operator. Exper in carrier current AM & MDS also. M Rakoff, 718-969-5224.

Middays, afternoon drive or nights. Any of those need filling? 9 yr vet relocating to work for you. Andy, 330-633-5323.

Recent bdctg school grad, gd voice, great work ethic, ratings go-getter seeks DJ or talk radio. Works well w/public. Mark, 405-940-2800.

CE position wanted, exper w/computers, xmtrs, automations, DCS, UDS, digital studios, 22 yrs exper. R King, 541-269-9109.

Hello Colorado! Slade Parker is ready to get started! Mature, professional, rookie-grad w/specialized training in radio broadcasting looking to head back west. Call Connie, 405-375-6843.

Middays, afternoon drive or nights. Any of those need filling? 9 yr vet relocating to work for you. Andy, 330-633-5323.

Personality Radio! Ratings, phones, concepts! PD/MD exper, A/C, oldies, country, classic rock, no liners! Mornings or other. Mike, 707-421-1502.

Program Directors, are you looking for a very knowledgeable R&B DJ to host a very unique show & boost your bottom line? Then call me at 718-528-9758 for a free demo tape.

Veteran broadcaster, retired from Voice of America could do part-time gig as news anchor or in production. Alex Kuhn, 864-595-7092.

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations and recording studios *only*. All other end users will be charged.This FREE service does not apply to Employment Help Wanted ads or Stations For Sale ads. These are published on a paid basis only. Send your listings to us by filling out the form below. Please be aware that it takes one month for listings to appear. The listings run for two consecutive issues and must be resubmitted in order to run again. Thank you.

Please print and include all information:

Are you currently a subscriber to Radio World? ❑ Yes ❑ No

Signature _____ Date _____

Contact Name _____

Title _____

Company/Station _____

Address _____

City/State _____

Zip Code _____ — _____

Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a **paid** basis. Line ad listings & display advertising are available on a per word or per inch basis.

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*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

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◆READERS FORUM◆

More CD-R comments

Dear **RW**,

In reference to Bruce Bartlett's article "CD Players Distort CD-R Sound?" (**RW**, Sept. 15, 1999), are we sure that Marty is using "audio" blank CDs, not data CDs? And are the recording levels of the recorder *never, ever* in the red? The levels cannot even be blinking into the red like we are used to recording with our cassette media.

Thanks for the interesting reading and the challenge.

Fred Cresce
Oxon Hill, Md.

LPFM licensees

Dear **RW**,

In your Sept. 15, 1999, editorial, you ask prospective LPFM licensees what they want to do with their stations. I have made meticulous plans for my station, should the FCC grant me a license.

First, some background. I am located in Ocean County, N.J., an area covered by eight local commercial Class As and three small AMs. Although Ocean County has a large older demographic, none of the local FMs program to it. If it isn't rock, CHR, AC, or top-40 country, it doesn't get on the air. Period. Of the AMs, one simulcasts a modern-rock format from its FM outlet and the other two, under common control, carry Westwood One's adult-standards feed. Decent local news coverage is hard to come by.

In 1996, a regional group owner came into the area and bought up most of the stations. The FM station mentioned here was LMA'd by the group and promptly fired its news staff. This station, which once brought us breaking news, now airs rewrites from the local newspaper and is totally unattended at night and on weekends. There are no local television stations and the area is usually ignored by stations in New York City and Philadelphia.

If I am granted an LPFM license, I plan to offer local news, using stringers and other means of tracking down stories and getting them on the air. I would also play big band and swing music, not heard in the area since one regional station was sold to Disney (Radio Disney) and another became an extension of a Spanish-language station from Philadelphia. The idea is localism and counter-programming.

If Congress could be persuaded to reinstate ownership caps on stations, require local public service and news programming, and do away with an auction system that ensures that only the super-rich and the large conglomerates get the right to broadcast in this country, we wouldn't need LPFM.

Philip E. Galasso
West Creek, N.J.

Dear **RW**,

I think **RW** should be commended for the vigorous and even-handed coverage of the LPFM issue. Still, there's something that bothers me. The most-common reason to oppose this new service given by the anti-LPFM folks hinges on the issue of interference. Of course, this is important, but it's based not just on the existing state of the analog FM band as we know it, but also includes the addition of IBOC digital technology.

I'd be the first to admit that a digital system might be far superior to what we are currently used to, but I haven't had a single listener tell me that it was something he or she was looking forward to. I doubt that 99 percent of the general public even has an inkling of what it is, much less has any desire to adopt it.

On the other hand, the FCC admits that they get more than 13,000 requests per year for the addition of additional broadcast allotments, most of which would be satisfied with some sort of LPFM authorization. Evidentially, a lot of people think the FM band could do more to serve the public than it currently delivers.

To put it bluntly, the general public could care less if they get digital radio broadcasts, but they would like more programming choices. Maybe we should ask them, just to make sure. It's my considered opinion that they really don't care how the signal is delivered to them.

This is just a thought, but assuming the FCC's job is to regulate the airwaves in a manner that benefits the general populace of the United States, and in so doing reflects their needs and wants, then the approval of some sort of LPFM authorization should be a "no-brainer."

On the other hand, if the FCC's job is to mollify the inventors of new technology and those who are existing custodians of the airways, then they will kill LPFM. The answer to me seems obvious, but we'll have to wait and see where the power really lies.

Chuck Conrad
President
Crossroads Audio Inc.
Dallas

Dear **RW**,

I think it's time a lot of people opened their eyes about LPFM. If the FCC doesn't come up with something soon, there will be so many pirate stations springing up on the FM band that even if the FCC were to increase their staff a thousand-fold, they won't be able to put a minute dent in tracking them and closing them down.

LPFM is going to happen with or without FCC sanction. Isn't it better to have a regulated system of frequency allocation than complete chaos on the FM band?

So then, all you pot-bellied fat cats at NAB better wake up and change your position on this matter because, if you have your way, you will be in for problems that you never thought possible — problems that even your mega-bucks won't solve. You will be solely responsible for the total destruction of the FM band and it will become another citizens band.

David W. Wagner
Brodheadsville, Penn.

Digital Radio Is Closer

We welcome the news that two former competitors on the IBOC landscape will work together.

USA Digital Radio and Digital Radio Express have put the boxing gloves aside and agreed to an alliance in their efforts to produce in-band, on-channel digital radio technology.

We're not too surprised: DRE has never had the resources or the marketing "oomph" that USADR and Lucent Digital Radio do. At least one of the technical folks at DRE had worked with USADR's people in the past, and rumors of an alliance had been surfacing toward the end of 1999.

Under the agreement, DRE will give up development of its own system to lend support to USADR's efforts. DRE will focus on specialized data applications for USADR.

The timing is good. With the FCC planning a rule making, with the NRSC standards body about to review field and lab data and with satellite radio about to hit U.S. consumers in 2000, anything that moves the IBOC football forward is welcome news.

"It gets us closer to the establishment of an IBOC standard," said DRE's Dwight Taylor. Those are comforting words to anyone who fears an AM stereo-style outcome for DAB.

Could a DTV-style "Grand Alliance" be next, as urged by some, including transmitter manufacturer Harris? Will USADR and Lucent Digital Radio agree to work together?

We asked them, of course. Each said the other was welcome to join *their* coalition.

Such posturing is not unusual among competitors. The truth is, these two proponents know each other, they take part in industry events together, and they have cooperated in the past. They may well again, at some level.

The next few months will prove critical. The proponents will await NRSC's response to their individual test results. As NRSC Chairman Charles Morgan said, "My opinion was we should wait until both systems are fully developed, and put them both on the table, so that people can look at them. Then would be the right time for an alliance *if* an alliance is proper."

We're betting that the two remaining competitors will find it in their interests to cooperate, at least sharing more information and establishing common goals, until a national standard is agreed upon.

There will be time for profitable competition later.

— **RW**

'The general public could care less if they get digital radio broadcasts, but they would like more programming choices.'

Write to Us

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Radio World
Vol. 24, No. 1 January 5, 2000

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E-mail: radioworld@imaspub.com • Web site: www.rwonline.com

NEXT ISSUE OF RADIO WORLD JANUARY 19, 2000

For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041. Unsolicited manuscripts are welcomed for review: send to the attention of the appropriate editor.

Radio World (ISSN 0274-8541) is published biweekly by IMAS Publishing (USA), Inc., P.O. Box 1214, Falls Church, VA 22041. Phone: (703) 998-7600, Fax: (703) 998-2966. Periodicals postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Michele Inderrieden, P.O. Box 1214, Falls Church, VA 22041, (703) 998-7600, Fax: (703) 998-2966.

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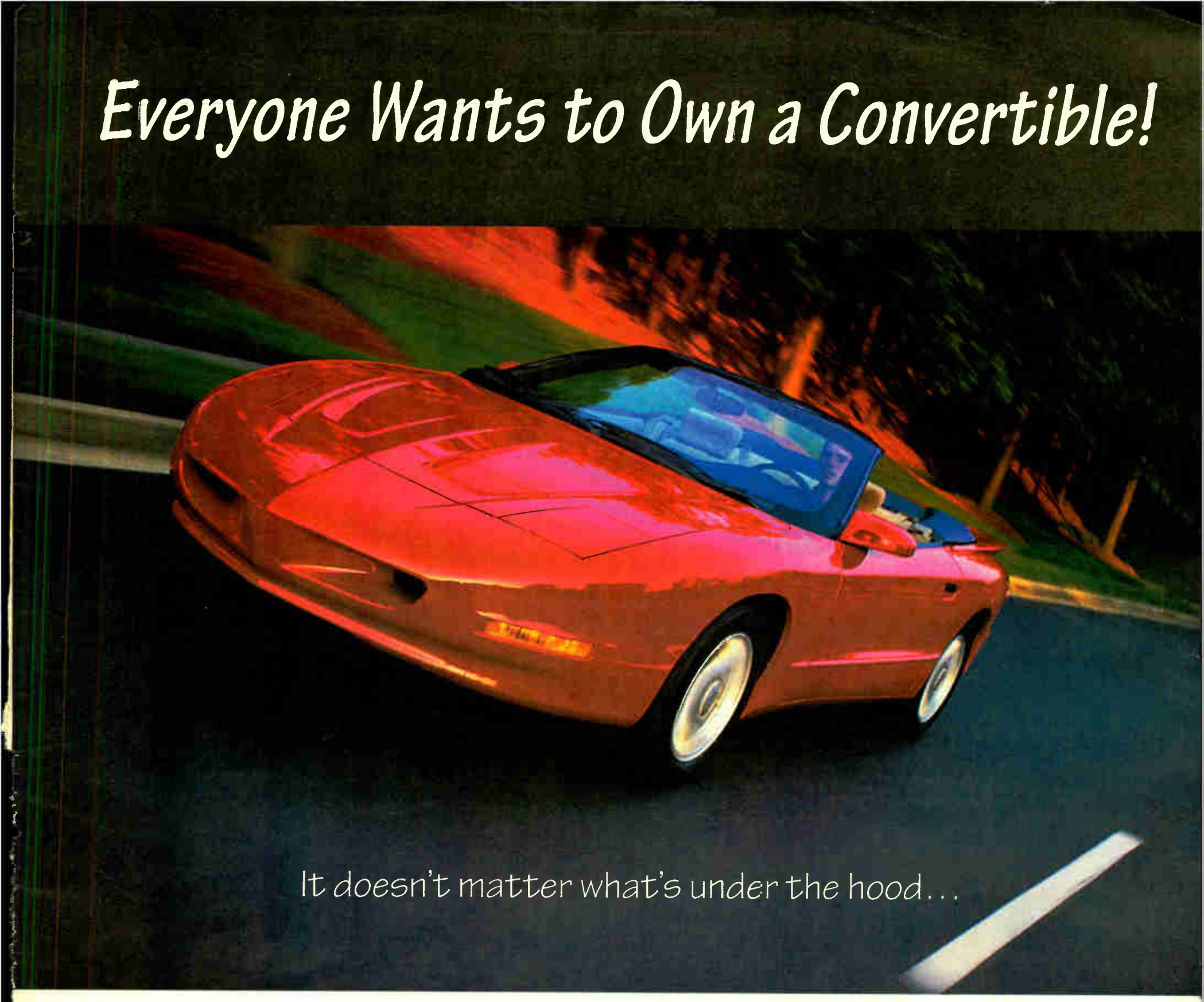

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