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Radio World

**DAB Breakthrough
at NAB
Radio '92?
Find out in
Pilot Tone, p. 4.**

Vol 16, No 16

Radio's Best Read Newspaper

August 19, 1992

New Orleans Market Enjoys Format Variety

by Nancy Reist

NEW ORLEANS When you're scanning the dial to check out the New Orleans market during the NAB Radio Show this September, don't forget the AM band.

That's the advice of Don Cooper, Jr., the executive director of the Greater New Orleans Broadcasters Association, who said the city is experiencing "a resurgence of AM."

Although FM stations captured eight of the top 10 slots in the 12-plus category of Arbitron's winter book, WWL—a news-talk clear

channel AM station featuring Rush Limbaugh—led the pack. This spring, another AM station, WQUE, stopped simulcasting the contemporary urban format of its sister FM and switched to 24-hour sports after obtaining the rights to broadcast the New Orleans Saints football games.

It is too early to tell what impact the switch will have on WQUE's ratings, but General Manager Ken Wentz said community response has been very positive.

"It has made an impact in the awareness of the market, not only in advertisers, but also from listeners. Here, there's no professional basketball or baseball. People live and breath the Saints year round," Wentz said.

An AM revival

WBYS—a station which blends traditional nostalgia with more contemporary easy listening pieces—is another AM success story. Program Director Bob Middleton said the station has developed a unique technique to generate business during the slack months after Mardi Gras.

The station sponsors "lifestyle fairs" featuring exhibitors who provide services to seniors. WBYS sells package deals of air time and exhibit space to the sponsors. The fairs have been so successful that



The Big Easy:
NAB's fall radio show comes to New Orleans. See our preview, pp. 48-65.

General Manager David Smith has introduced them to other stations in other markets.

The success of these AM stations has been continued on page 54 ▶

RUNNING RADIO

Niche News Is Wave of The Future

by Bruce Ingram

CHICAGO Music-intensive radio stations that have passed on round-the-clock wire services in the past have a variety of new options to consider, thanks to revamps by Associated Press (AP) and United Press International (UPI) and the sudden entrance of the ABC and CBS news networks into the "rip and read" biz.

The new services differ in many particulars, especially the degree of customization they offer subscribers. But they are generally comparable in their intent to provide concise and convenient information at a modest price—determined by market size (see accompanying chart).

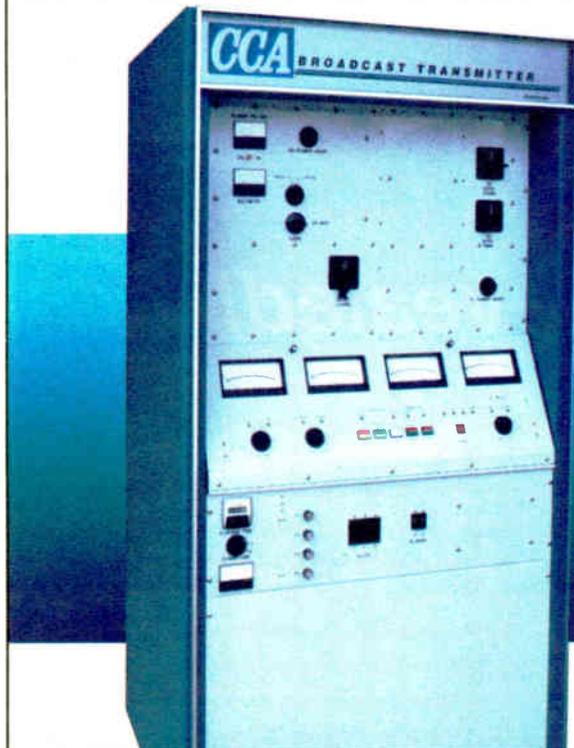
Cost, after all, is the main reason many music stations backed away from a commitment to news in the first place. Depending on the market, a 24-hour wire service can cost anywhere from \$10,000 to \$60,000 a year.

Simply dropping news altogether can leave a station vulnerable, however, as many discovered during the Operation Desert Storm.

"A lot of music stations have cut back on news staffs and time devoted to news, but they still need a news basis for any morning show," said Evelyn Cassidy, director of station services for AP. "Now we're able to

continued on page 32 ▶

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NRSC Plans Vote on RDS

by John Gatski

WASHINGTON Although behind its original schedule by several months, the National Radio Systems Committee (NRSC) has received a standard proposal from its Radio Broadcast Data Systems (RBDS) subcommittee.

The subcommittee's recommended standard includes all the program type codes (PTY) for RBDS format scanning and a proposal to incorporate ID Logic B for AM format selection.

Ballots were scheduled to go out August 1 to NRSC members and are due back by September 30. The NRSC will forward any negative comments back to the subcommittee to discuss and work out if possible, according to NAB Manager for Technical Regulatory Affairs John Marino.

The standard is likely to be officially adopted by the end of the year, Marino predicted.

RBDS is based on the RDS technology that was developed in Europe. It is a 57 kHz digital data stream broadcast on FM subcarrier. RDS receivers can receive such information from the data stream as: call letter/frequency display, formats, emergency

continued on page 7 ▶

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World Radio History

NEWSWATCH

FCC Revises Revised Ownership Rules

WASHINGTON Bowing to congressional pressure, the FCC has backed away from the relaxed ownership rules it had approved in March.

During its August regular meeting, the FCC reduced the 30 AM and 30 FM station limits to 18 AMs and 18 FMs. In two years, the national limits will increase to 20.

The ownership rules revisions stemmed from the FCC's March 12 decision that liberally increased the national ownership from the long-held 12 AM/12 FM group ownership total with no more than one to a market.

Key congressional leaders and other radio industry segments reacted angrily to the ownership rules relaxation, calling the changes dangerous to programming and ownership diversity.

The latest revisions have "simplified" the local ownership rules that were changed in March, but criticized as too complicated. Groups will now be able to own up to two FMs and two AMs in markets with more than 15 stations. In markets with less than 15 stations, a group could own three stations—with no more than two in the same service. The three station maximum in the smaller market, however, only applies if the total is less than half of all the

stations in the market.

In addition to the revision of national and local ownership limits, the new rules allow a group to own "an attributal interest" in three additional stations in each band if they are controlled by small business or are more than 50 percent minority controlled.

The FCC action also has proposed adding an "incubator" incentive that would allow groups to surpass the ownership limits if they nurtured small businesses into becoming owners.

The Commission's latest action did not alter the Local Management Agreement (LMA) rules that were restricted in the March decision.

"Hard Look" Policy Relaxed

WASHINGTON The FCC has relaxed its "hard look" policy during the processing of commercial construction applica-

tions for FM stations.

The "hard look" policy requires that all information contained on an application be complete and accurate. If mistakes or omissions are made on the application, even if they are only inadvertent or an oversight, the application can be rejected and the applicant has to wait a year to reapply.

Under the relaxation, "applicants will have the opportunity to correct defects," the FCC said. Structurally, there will be three stages in which errors or omissions can be corrected following the close of the original filing window.

FCC to Protect FM Applicants

WASHINGTON The FCC has enacted new procedures to help resolve conflicts between FM allotment petitions and applications for new construction FM permits or applications for changes in facilities.

The new procedures established cut-off dates to protect applicants from other rulemaking petitions that may emerge dur-

continued on next page ►

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ing the filing window. Previously, pending FM applications were unprotected from subsequently filed rulemaking petitions, resulting in delays during the processing of FM applications.

Within the new guidelines, new station or major change applications in the non-reserved FM bands will become protected from other mutually exclusive applications at the end of the filing window. Applications for new FM stations or major changes in the reserved, non-commercial band will be protected at the end of the 30-day period for filing mutually exclusive applications.

All other FM applications will be protected as of the day they are received at the FCC.

The new cut-off rules "will provide some certainty to applicants by limiting their exposure to conflicting rulemaking proposals while at the same time affording prospective rulemaking petitioners the opportunity to seek new allotments or upgrades through the rulemaking process," the FCC said.

Mods May be Made Easier

WASHINGTON A one-step processing procedure for certain modifications of existing FM authorizations has been proposed by the FCC (Docket 91-159).

The FCC is seeking comment on whether licensees and permittees should be allowed to request, by filing only an application, upgrades on adjacent channels and co-channels, and modifications to adjacent channels of the same class.

AES Scheduled for San Francisco

SAN FRANCISCO The Audio Engineering Society (AES) will hold its 93rd convention in San Francisco, Oct. 1-4.

The convention will be held at the Moscone Center and is expected to draw about 14,000 engineers, scientists, technicians, executives and hobbyists from the U.S., Europe and Asia.

For more information, call 415-781-6306.

IEEE Symposium Planned

WASHINGTON The IEEE will hold its 41st annual broadcast symposium Sept. 17-18 at the Hotel Washington.

Sessions will cover medium-wave and shortwave antennas, broadcast transmission engineering and advanced television.

For more information, contact Garrison Cavell at Suffa and Cavell, Inc.: 703-591-0110.



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SCDR Pulls Application, Still on Track

by Alex Zavistovich

WASHINGTON Although Satellite CD Radio (SCDR) recently withdrew an FCC experimental license application for testing of its digital audio service, the company maintains that everything is still business as usual.

According to SCDR Chairman Martin Rothblatt, the withdrawal of the experimental application in late July came after a routine "periodic regulatory review" with the company's lawyers. There are no plans, however, to have SCDR bow out of the digital audio race, he said.

In addition to the experimental application, Rothblatt said that SCDR also has applications for a regular license and a conditional license. He was confident that one of those two applications "will be approved within a year," and that, therefore, the experimental application was "redundant."

Another consideration in withdrawing from the experimental licensing process was a policy statement on experimental satellite applications, issued by the FCC on July 21. Among the guidelines expressed in that policy statement were "We (the FCC) will generally avoid granting applications that permit the construction and launching of complete systems."

Because the SCDR application was for a complete system, Rothblatt explained, the

company did not hold much hope of its being accepted.

The NAB used SCDR's withdrawal from the experimental licensing process as an opportunity to emphasize the association's opinion on digital audio broadcasting (DAB) and the satellite-based SCDR system's role in it.

"The NAB is pleased that Satellite CD Radio, Inc. withdrew its application for an experimental satellite broadcast system,"

There are no plans, however, to have SCDR bow out of the digital audio race.

the NAB said in a prepared statement.

"The NAB believes it would be premature and prejudicial for the Federal Communications Commission to approve any licensing scheme for Satellite CD Radio, since no larger government policy has been developed for digital audio broadcasting (DAB)," the release said.

Although the FCC has said nothing formally about DAB, commissioners Ervin Duggan and Sherrie Marshall have each said publicly that they would consider national or

regional delivery of digital audio service.

In April, SCDR entered an agreement with MultiRadio, a European provider of multiple channels of all-music, non-commercial audio programming. On July 4, the company dedicated two uplink antennas at its programming center in Washington, D.C. The antennas will send 30 channels of audio to SCDR's planned satellites which will, in-turn, send the music to subscribers' automobiles nationwide, the company said.

Subscribers will need to purchase new digital-quality radio receivers for their cars. SCDR projects such radios to be available in 1995, providing FCC approval can be obtained in 1992.

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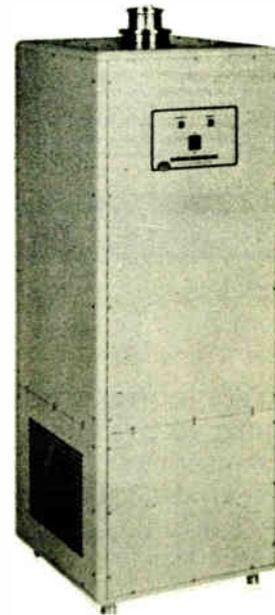
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EARWAVES

DAB Surprise à la Acorn

by Alex Zavistovich

WASHINGTON It looks like USA Digital may be springing a DAB surprise at the NAB radio show in New Orleans.

USA Digital, you'll recall, is the CBS/Group W/Gannett brain trust that's working on the Project Acorn in-band DAB system. The group had a pretty impressive lab-type demonstration of its system for FM at the spring NAB show in Las Vegas.

Between then and now, USA Digital set some ambitious goals for itself: on-air demonstrations of Project Acorn in both the FM and AM bands, with mobile demos to follow a couple months later. From what I've been able to learn, those goals are likely to be met in The Big Easy.

Basically, Project Acorn sends a digitally-encoded audio signal within a station's RF mask (that is, in-band, on-channel). On the receiving end, the DAB signal is extracted using a chip originally developed by the military, but soon to be available in consumer quantities.

Here's the impressive part: Not only does this system seem to work for FM, it'll work for AM, too. And I'm not talking about the narrow-bandwidth fidelity you've come to expect from AM—I mean CD-quality stereo. The works. What's more, USA Digital's demo will probably take place in the expanded AM band, just to show that the system can work in those allocations. Mobile AM demos of Project Acorn are going to take place here in Washington some time after the show; mobile FM demos are going to happen at an as-yet-undetermined site in the midwest.

Insiders at USA Digital have modestly maintained that all they'll be showing at NAB will be "progress." Project Acorn's detractors are still dubious as to whether the system will eliminate multipath—which is, after all, the main reason for having DAB. They also argue that the system won't really mean much until it's proved in a mobile environment. From what I can tell, though, nobody

at USA Digital is sweating too hard about either of those points.

If they manage to pull off these demos at the radio show, the Project Acorn developers will have secured a place in radio's history books for sure. Amid all this potential excitement, however, one group probably will be singing the blues: the NAB.



Remember, the association has planned a massive DAB seminar for New Orleans, with lots of foreign dignitaries and other heavy hitters to be in attendance. Meanwhile, the big news may really be happening outside the exhibit hall, at the USA Digital booth. Talk about stealing thunder. I only hope the booth won't be hidden away near the espresso bar, like it was in Vegas.

In the June 10 edition of *Pilot Tone*, I gave my initial impressions of the FCC's new Record Image Processing System (RIPS), a local area computer network that stores and retrieves the multitude of official documents filed each day with the Commission.

Shortly thereafter, I got a very nice letter from Donna Searcy, the secretary of the FCC, inviting me back for a more comprehensive explanation of the system and its advantages over the previous way of researching filings at the commission.

OK, for the record, the computerized system *does* offer some real benefits. First, more than one researcher can access the same docket with RIPS, as opposed to the old method where you had to wait until the person who checked out the file ahead of you finished using it.

Second, the system provides a directory

that displays the names of the people or groups that filed comments, requests, etc. pertaining to the docket. That saves some time pouring over reams of filings looking for the one that interests you.

RIPS also enables users to have a look at the history of dockets that have been retired from the commission's active files. So if you're doing a lot of background work, you may find that function useful, too.

Of course, not everyone is going to have the luxury of having the secretary of the FCC spend a good part of her day explaining the ins and outs of the system. If you jump in all by yourself, you *will* be frustrated. And I still think there are some things that were easier to do the old way.

After getting the full RIPS treatment, though, I can say that Donna Searcy and her staff *are* committed to making the system work, and they seem accessible for advice if you get lost. How much you get out of RIPS depends on why you're using it and how well you can get around the system architecture.

If you blinked you missed it, but in the last week of July an extremely optimistic little band of insurrectionists attempted to overthrow the government in Madagascar, an island nation off the coast of Africa, in the Indian Ocean.

According to press reports, the failed coup had a lot going against it, including the fact that there were only 10 people involved in it. (I guess political overthrows are like professional football—to be successful in either, you need a lot of depth on the bench.)

In one of the only significant achievements of the rebellion, the coup leaders did manage to take over a radio station on the island for several hours. Did they wrestle control of the media from the current government to spread their message of revolution to the masses? Did they "black out" official news of their actions, to cause confusion among the ranks of the loyalists, thereby minimizing resistance?

Not exactly. What they *did* manage to do was to change the format of the radio station from classical to country.

That's it for now. Tune in next time.

Alex

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RF cut-off debate

Dear RW,
This is in response to the letter from Dane E. Erickson of Hammett & Edison, Inc. of San Francisco, appearing in the July 22, 1992 edition of **RW**, concerning the cut-off of the upper limits of RFR. I am in the unique position of being both the Director of Clinical and Biomedical Engineering at St. Mary Hospital in Quincy, Ill. and CE at KHMO/KICK/KBXX radio in Hannibal, Mo. Since my discipline is in both radio and life science, I must comment. The upper limit of 100 MHz is, indeed, somewhat arbitrary. We must note that the excitation frequency of an MRI scanner is 100 MHz.

The scanner, of course, works on the principle of cellular re-radiation of RF (that is put very simply, although it is actually more complex). The field, however, is quite high, with the patient in close proximity to it.

Cells do respond in varying ways to electrical and electromagnetic fields beyond the 100 MHz range. To what degree, again depends on the field strength.

If stations below 100 MHz are required to be included in measurements, so should the entire FM band. Consider the source of the regulation, however, and it all makes "sense."

Michael E. Seaver, Dir.
Biomedical Engineering
St. Mary Hospital
Quincy, Ill.

DAB reality check

Dear RW,
Yes, the U.S. switching its telemetry research to S-band to make DAB L-band available in the U.S. would be logical and perhaps the best solution for all (**RW**, "It Takes Time to Build a Flying Car," July 22, 1992). But you are missing the point here. We are not talking about what is logical or what is good technology. The fact that an in-band DAB system is highly questionable to start with also is not the point. What is under debate here is not what is logical

or simple or in the best interest of all, but what is best for America's current owners and operators, screw the rest of the world.

Once we get beyond this nervous bias and provincial self-interest, we'll get DAB off the ground. And we'll do it much sooner than HDTV. That's what's good about good technology. Eventually, it does preempt poor technology based on all sorts of non-technical considerations. Sure wish we were leading the world in this one, but it sure looks like we will be pulled into reality screaming and crying to the NAB all the way. Pity.

Bob Botik, President
Botik Broadcast Services, Inc.
Austin, Texas

Editor replies: I'm not sure which one of us has really missed the point, but in the U.S., DAB will succeed only if broadcasters support the system that's chosen. Therefore, any criteria for a domestic DAB system ought to include what's best for America's current owners and operators.

The thrust of the Pilot Tone column you refer to was that what is needed in the search for an appropriate DAB system for the U.S. is, in a word, patience. The Radio Operators Caucus has for some time advocated the pursuit of in-band technology as being in the best interest of current broadcasters, and threw its support behind the USA Digital Project Acorn (CBS-Gannett-Group W) effort at the NAB spring show in Las Vegas.

Unfortunately, developers of in-band technology are not being subsidized in any real way, unlike the developers of the Eureka 147 system in Europe. In-band systems, therefore, must be developed at a pace dictated by the meager budgets of the proponents, with the added pressure of now having to meet EIA deadlines. This is further compounded by the difficulties inherent in adding such a complex enhancement to an already mature technology like radio broadcasting—hence the flying car analogy.

My point in describing the NAB-Eureka situation was simply to indicate that the association would have to deal with a perceived conflict of interest if the U.S. were to reverse its position on L-band spectrum use and if the NAB resumed its negotiations with Eureka. That's nothing new, by the way; such apparent conflict of interest already was pointed out to the NAB at congressional hearings on DAB.

Finally, I have to disagree with you that "good" technology (to use your term) will win out over technology based on non-technical considerations. If that were the case, we would now have an uncontested AM stereo standard, we would be using ISDN lines instead of Switched 56 or T-1, there would be no SCMS copy protection for DAT recorders and a domestic RDS standard would not have been slowed for want of a format identification provision for AM stations.

We live in a society blanketed by layers of politics, and compromise has always been the name of the game, even in technical matters. That is no less true for DAB. I have hope that a DAB standard will be implemented in the U.S. before the end of this century, but it will not happen without concessions from all concerned—and that includes both broadcast and non-broadcast interests.

Being the Best

It's time once again for the fall NAB Radio Show, to be held Sept. 9-12 in New Orleans, with the slogan "Where Radio's Best Connect." This year in particular, the slogan definitely fits the scope of the event.

From management-oriented sessions tackling such diverse topics as programming, marketing and the new multiple ownership rules, to technical sessions on FCC rule enforcement, DAB and other emerging technologies, the convention will prove to be an important place to gain the tools needed to operate a radio station successfully.

The idea of "connection" that underpins the show's theme this year carries with it the notion of networking between industry leaders, the free flow of information through colleagues striving to achieve a common goal: to be counted among best in their chosen profession.

Another view of the "connection" concept, however, is a feeling of camaraderie, a "we're all in this together" team spirit which at times seemed to have eluded previous fall NAB gatherings.

For too long, engineers and equipment manufacturers dismissed the fall radio show as being a "programmer's show." There did seem to be an invisible yet impenetrable wall set up between management interests on one side and engineering concerns on the other.

This year, for whatever reason, that wall seems to have tumbled down. Management sessions will include technical topics (admittedly treated in a layman's fashion). Broadcast equipment manufacturers will find themselves shoulder-to-shoulder with other radio service providers in the exhibit hall, much more closely than in years past. Management seems to be reaching out more to the engineering side of the industry.

It's incumbent on engineers to make those same strides toward connection with station management as well. A greater understanding of issues outside the purely technical realm will give engineers a keener sense of the big picture of radio operations.

This in turn will make the engineer a more valuable idea person, a credible asset that station owners and managers can turn to for more than technical answers alone. In these times of increased use of contract engineers and technical operations consolidated through LMAs, that kind of reputation translates into job security and professional growth.

This year's show will indeed be geared to radio's best. Attend the show, and make the connection.

—RW

Gotham versus Sennheiser?

Dear RW,
I read the Gotham versus Sennheiser letters in your June 24 issue with a mixture of amusement and skepticism. In the United States, many highly regarded lines of equipment were imported by Gotham Audio, which has traditionally been slightly Prussian in its relations with the industry. In other parts of the world, Neumann microphone parts are actually available over the counter. I'm sure that many professionals in the industry would admit to a deep-seated resentment of Gotham's supremacist attitude over the years.

As to the argument over the use of the Neumann name, most of us are used to being subjected to claims by the industry that are ultimately proven to be questionable. The latest this and the greatest that are constantly going the way of the Eventide 1745 DDL. Not so with the really great-sounding equipment, such as Neumann tube-type mics. The fact is that professionals throughout the world are using tube mics made prior to 1970 on an ongoing basis, and have concluded that these mics sound superior.

There is no microphone being made today, by either Neumann or Gefell, that can compare to my tube U47, and any person who would like to do an A/B comparison is welcome to visit during the AES this October, in beautiful San Francisco. We also have these types of mics available for purchase from time to time.

It never fails to amaze me that neither Neumann nor AKG have gone into production of their most classic and sought-after microphones. Instead of building C12s, AKG gave us "the tube."

Rumor has it that Neumann is manufacturing a run of U67s: we can only hope that someday they will make M50s and M367s. To quote Herr Sennheiser: "It is somewhat outside normal thinking for me to understand the positive effect of these vintage microphones." Obviously he hasn't been doing a

lot of recording lately, or a lot of blindfolded listening tests. I think it is clear to those of us in the industry who use quality microphones which models actually sound the best. Isn't that the bottom line for us?

Dan Alexander, President
Dan Alexander Audio
Oakland, Calif.

Vintage 78s resurrected

Dear RW,
Could you give me the complete address of Rick Jorgensen, from the article "Vintage 78s Resurrected," by Nancy Reist in your July 22, 1992 issue?

We do music restoration too, and might be of some help in dealing with clicks and pops. We use Digidesign's Sound Tools, with excellent results. We would like to share information and provide help to Rick.

Paul Dean
Creative Audio Designs
Merritt Island, Fla.

Rick Jorgensen, the owner of American Gramophone and Wireless Co., can be reached at 18021 150th Ave. E., Oring, WA 98360. He also can be contacted by phone at 206-893-4227.

Radio World

Vol 16, No 16 August 19, 1992

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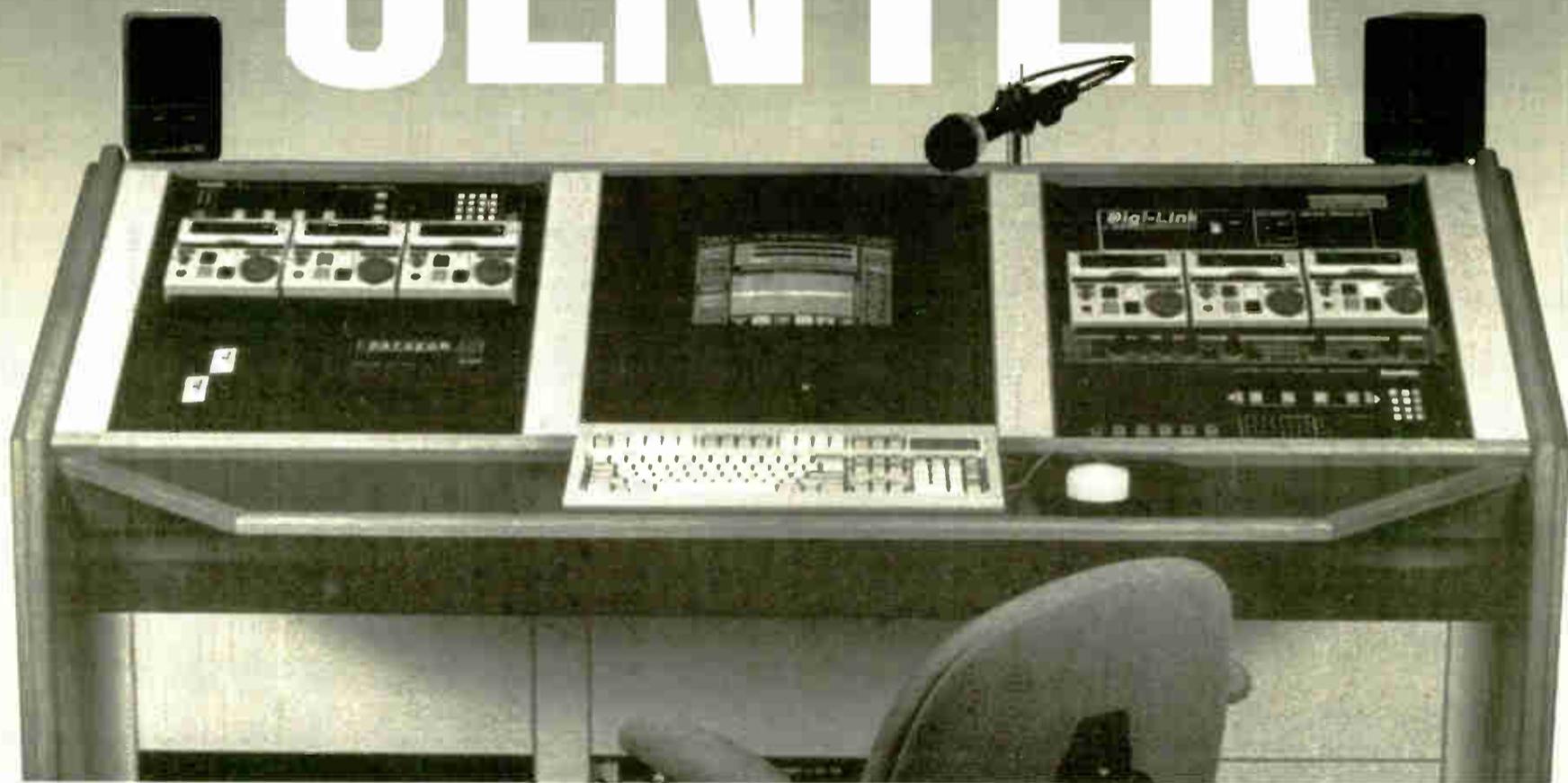
Radio World (ISSN: 0274-8541) is published semimonthly by Industrial Marketing Advisory Services, Inc., 5827 Columbia Pike, Suite 310, Falls Church, VA 22041. Phone: 703-998-7600, Fax: 703-998-2966. Second-class postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send 3579 forms and address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. Copyright 1992 by Industrial Marketing Advisory Services, Inc. All rights reserved.

**Next Issue of
Radio World
September 9, 1992**

Solution to August 5 Puzzle

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DMX Adds to Cable Subscriber Base

Editor's note: This is the second of three articles updating the status of major players in the digital cable audio industry.

by Frank Beacham

NEW YORK Since he began subscribing to Digital Music Express, Joseph Mehal of Woodstock, Ga. has virtually quit listening to radio or watching television.

"DMX is turned on pretty much non-stop when I'm home," the 33-year-old voice mail engineer said. "The novelty has not worn off."

The same can be said for Carl Nye, 50, a retired Navy officer from Cottonwood, Ariz. who recently signed up for the cable music service. "I'll turn on channel 22, instrumental music, for background when I'm reading. If the family wants to clean up the house, we'll change over to the reggae channel to punch it up a little bit. When we do active listening, we like the blues channel," Nye said.

Nye's opinion should be of interest to broadcasters who dismiss the new cable

music services. Recalling radio listening in the late 1950s, Nye said radio used to offer a variety of music types to listeners.

"If I wanted country music on Saturday night, I'd tune in the Ryman Auditorium, WSM, and listen to it live," he continued. "If I wanted to hear jazz, I could either tune in WWL from New Orleans or Symphony Sid in New York with live jazz from Birdland. I could hear blues from southern stations and rock from Boston, New York or Chicago.

Like the old days

"In recent years, commercial radio stations have been driven to more ads and yak and less music. They take fewer chances. They are all fighting for the same darn 25 to 34 audience and there's no choice left. For musical entertainment, today's radio can't beat this cable service. They just can't touch it," Nye said.

Nye's words are sweet music to the ears of executives at Digital Music Express (DMX) and Digital Cable Radio (DCR),

the two major competitors vying for subscribers who want to choose from among a wide range of musical formats with no commercials or announcers.

Each service claims to be the industry leader at the moment, though their reported numbers show them to be relatively close in subscriber and cable system sign-ups.

Digital Music Express currently offers 30 channels of music on a 24-hour-a-day basis. The major categories are classical, jazz, oldies, country, Latin, urban, easy listening and rock. Under each of these categories, the service offers more niche-oriented formats, such as symphonic, chamber music and opera channels under classical, and classic rock, '50s oldies, '60s oldies and folk rock under the oldies banner.

On cable only

DMX carries no radio stations and has no plans to do so. Listeners use a special cable-connected tuner—usually supplied by the cable company—to connect the audio feed to the subscriber's stereo system. The tuner also has a direct digital output so that subscribers can record the music on a digital tape recorder.

Channel selection is determined by a remote control. An optional remote, called DMX-DJ, allows the subscriber to get information on a liquid crystal display about the song being played at the time on the channel. The information includes the artist's name, album title, composer's name, DMX ID number, record label and catalog number.

DMX Chairman Jerry Rubinstein, a former chairman of United Artists Records and ABC Records, said his service had over 50,000 paying subscribers by mid-July and is adding new ones at the rate of more than 1,000 each day.

"We are launching very fast here and are getting ready to launch in Europe on Sept. 1," Rubinstein said. "We have 275 U.S. cable systems installed and 100 of those have actually launched the system and begun

limited marketing. We will be launched and available to 10 million households by the end of the year."

DMX will launch this fall on cable systems in Germany, the Netherlands, Switzerland, the United Kingdom, Ireland and Scandinavia, Rubinstein said. Though each country will get a customized menu of musical formats, all feeds will originate from DMX's production facility in Atlanta, Ga.

So far the biggest challenge to implementing the new service is getting people to understand its benefits, Rubinstein



Digital Music Express' DJ remote can display the artist, song title and album title.

NRSC Plans RDS Balloting

► continued from page 1
alert override, and switching between transmitters on different frequencies.

A U.S. standard

The standard had to be tailored for U.S. use—especially the PTY codes that are necessary for automatic format scanning. For example, all country stations using RDS will be assigned PTY code 10. This means that an automobile driver who wants to listen to country stations can push a button and the receiver will scan for country stations.

The ID Logic B feature for AM has enabled the subcommittee to move the standard through the process. Originally expected to be approved by the April NAB convention, the standard became stalled just before the show when the NAB threatened to pull its support.

The NAB's own RBDS task force was concerned that the standard was being driven by receiver manufacturers, represented by the EIA, with no benefit for AMs. During deliberations in 1991, the NRSC RBDS subcommittee had decided there were no data stream technologies that were workable for AM. Hence, no provisions for AM were made in the standard, except language to modify it later when technology became available.

The EIA and the NAB reached a compromise on the standard at the NAB convention when the subcommittee agreed to examine ID Logic B for AM.

ID Logic for AM

The original ID Logic for FM allowed for scanning of formats, but station formats are programmed into the receivers, which means the internal program must be updated periodically in order to ensure correct station formats. The proposed AM version of this is called ID Logic B.

Although user responsibility for AM station format updates requires more interaction by the user, updates could be provided by an RDS FM station in each market. Stations such as NPR members could broadcast a data stream of updated information to RDS receivers, according to the NAB.

Despite working AM into the standard, Marino said there is broadcaster resistance to the FM format scanning feature, and that will have to be worked before a standard is approved.

"A lot of broadcasters just don't want format scanning at all," Marino said. "They feel that their station may actually be missed in any format scanning (by listeners)."

He also noted that some stations have said they don't want to be rigidly categorized in one format. For instance, Marino explained, there are several variations of the country format, but only one country format code within the proposed standard.

Proponents argue that format scanning is a primary feature of RDS; without it, they say, most customers would not buy the receivers.

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Riverwalk Jazz Show Taped Live for Radio

by Frank Beacham

SAN ANTONIO, Texas "Welcome to The Landing Jazz Club on the banks of the San Antonio River, across the alley from The Alamo, deep in the heart of Texas. This is Riverwalk, Live From the Landing . . ."

And with that introduction, the Jim Cullum Jazz Band is once again on the air.

The group is back for a fourth season on more than 120 stations on American Public Radio. The popular broadcast, produced by Pacific Vista Productions for Texas Public Radio, has become an American showcase for classical jazz and such performers as Milt Hinton, Lionel Hampton, Clark

Terry, Benny Carter, Dick Hyman and Bob Wilber.

Live musical performances are combined with historical background and biographical sketches of early jazz greats and living legends to create a kind of documentary storytelling with music.

Producers Margaret Moos Pick, Lynne Cruise and Jim Cullum use a live-to-tape format for the show, which is set in a small jazz club with an audience of about 125 patrons. Mixer Jim Anderson, a New York-based engineer/producer, manipulates about 32 live stage and six audience microphones at a 40-channel MCI console in a truck about 150 feet from the stage.

The show is mastered on an MCI 110B two-track analog recorder at 15 ips using Dolby SR processing and is backed up on a Panasonic SV-3700 DAT recorder.

"A lot of people hear this music as a bunch of guys jamming," Anderson said. "But Jim Cullum wants a very specific sound. He describes it as a pyramid. Jim's cornet is at the top of the pyramid. Right below it are the clarinet and trombone. And then below them is the rhythm section."

Thus, the mix is layered in tiers with subtle differences in levels of the various instruments, Anderson said. "The cornet is carrying the melody almost 100 percent of the time, except for a solo by someone else."



Riverwalk, Live from The Landing
The Jim Cullum Jazz Band with
Master of Ceremonies, David Holt.

Anderson, working with Reel Sound Recording of Austin, employs an arsenal of microphones to produce the Riverwalk sound. A Beyer M 500 hypercardioid ribbon (providing "a bigger, fatter sound") is used on Cullum's cornet and a Beyer MC734 is used on the band leader's speech. Co-host David Holt is miked with a vintage Neumann KMR85.

The next tier of miking includes a Beyer M 260 unidirectional ribbon on Allan Vache's clarinet and a Beyer M 130 bi-directional double ribbon on Mike Pittsley's trombone. "Rather than have everything in your face, we like the bi-directional mic to open the back a bit to create more ambience," Anderson said.

The final tier of mikes include, on Ed Torres' drums, a Beyer M 160 hypercardioid double ribbon on overhead, Neumann KM84 on high hat, B&K 4007 on snare and low tom, Countryman lavalier on high tom, Beyer M 88 on the beater side of the kick and a Radio Shack PZM on the front of the kick.

Don Mopsick's bass is picked up with a Beyer MPC 40 boundary mic and Howard Elkins' guitar and banjo use a Beyer MCE 80 supercardioid condenser.

The house piano gets special miking treatment to play down "third harmonic overtone distortion that might be slightly ringing." A pair of Beyer M 88 unidirectional dynamic mics pick up John Sheridan's playing. Audience applause is covered by six AKG 451s, hung overhead in the club.

Gordon Garrison of Reel Sound Recording does the house mix, but sound reinforcement is limited. Garrison boosts vocals and guitar for the audience and sends a monitor mix to the stage. Pre-taped roll-ins from the truck also pass through his eight-channel board.

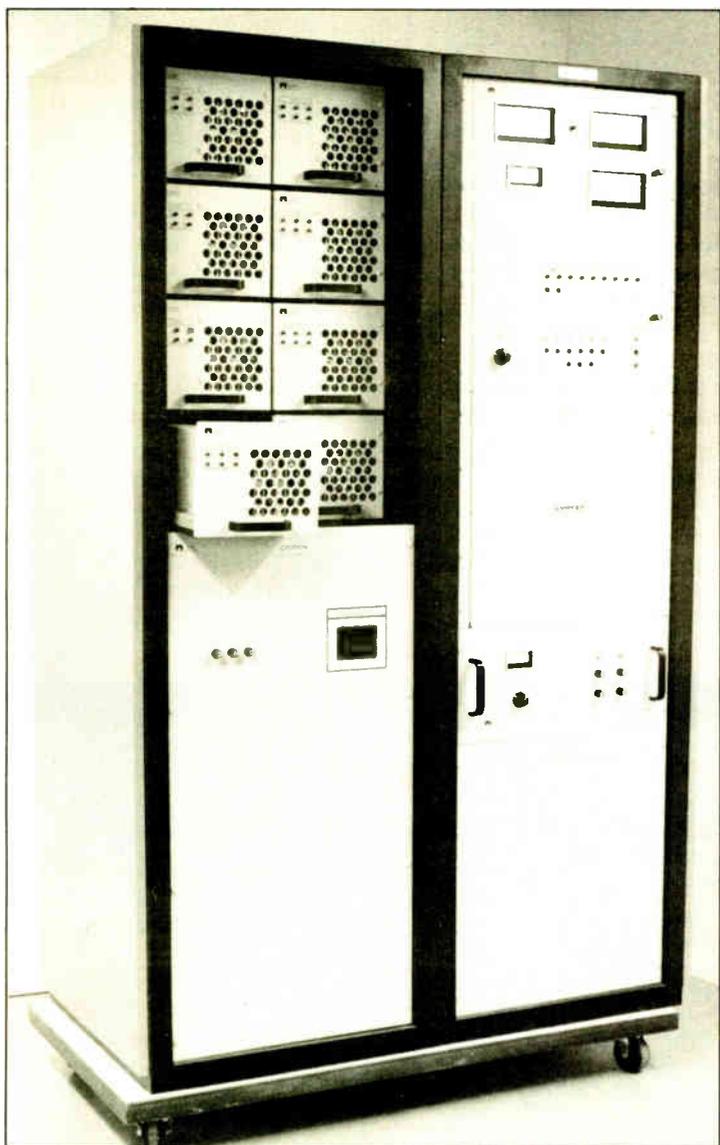
In addition to the live performance, Riverwalk uses some pre-taped historical material and sometimes the band will segue into and out of historical recordings.

"I have a rundown of every tune, pretty much broken down chorus by chorus . . . even bar by bar. So I'm not only reading the script, I'm reading each tune," Anderson said.

Two days are used to prepare and record an episode of Riverwalk. On the first day, the band rehearses the music and pre-records are completed. On the second day, all post-production for the show reel is completed and the company goes through a recorded dress rehearsal without an audience. Then, at about 7 p.m., the show is recorded straight through.

After the performance, the master tapes go to Los Angeles, where Ed Greene does the required postproduction. "It consists mostly of editing, to trim times or in some cases to use a better solo from the dress rehearsal in the final program," Anderson said.

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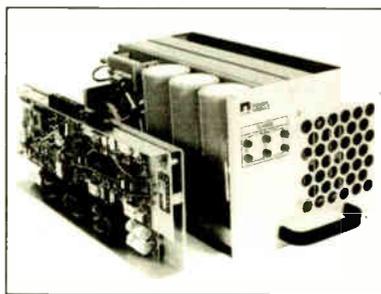
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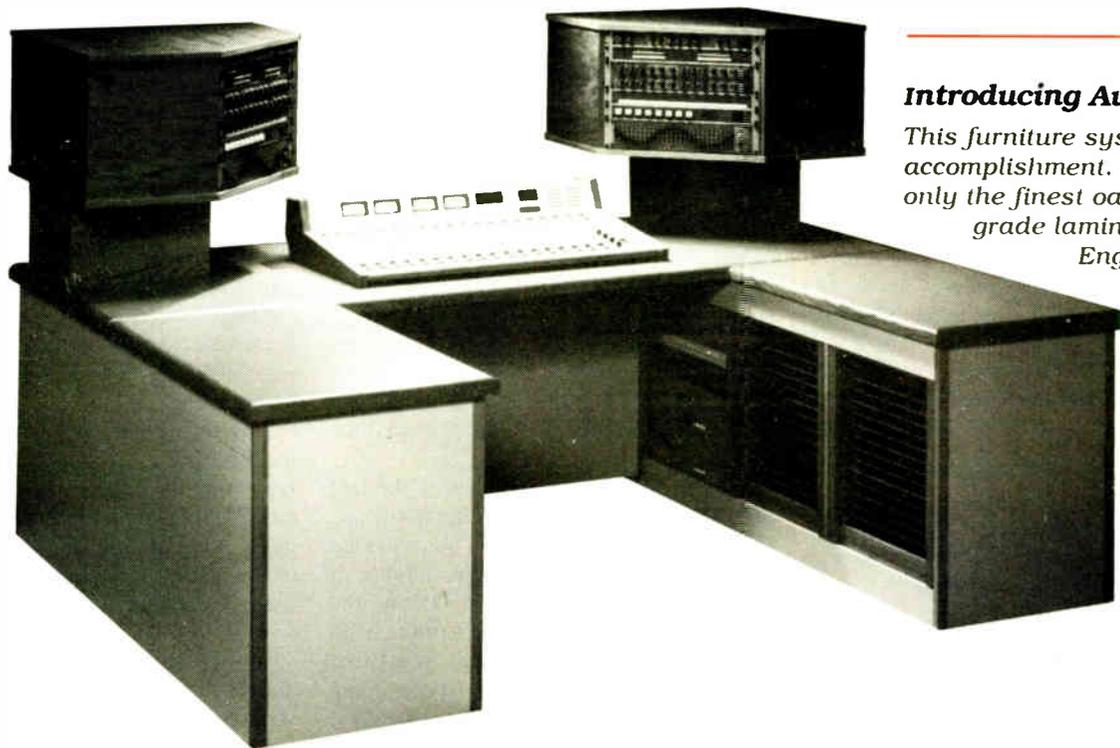
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World Radio History

COLE'S LAW

FCC Says: Play a Hoax, Pay the Price

by Harry Cole

WASHINGTON OK, you know what to do with people who can't take a joke, right? Well, watch out, because the FCC just joined that club by adopting a rule prohibiting certain "hoax" broadcasts. The result is that stations airing false announcements for the fun of it could find themselves on the wrong end of a hefty fine.

The Commission's concern about "hoax" broadcasts is not new. In fact, as long ago as 1966 it had in place a policy against "contests and promotions which adversely affect the public interest in place." That policy specifically encompassed the broadcast of "scare" announcements. The 1966 policy was deleted from the rules in 1985 as part of the Commission's deregulation program because it was deemed to be "simply unwarranted and unnecessary."

A new reality

That was then, this is now. Citing four "serious broadcast hoaxes" that have occurred since 1989, the FCC (an FCC notably different from the *deregulation uber alles* Commission under former Chairman Fowler) concluded that hoaxes really are inconsistent with the public interest. Hence, that pesky hoax policy is back again, this time in the form of a rule.

According to the Commission, it is ap-

propriate to adopt a rule prohibiting such hoaxes because the FCC would otherwise be limited in its ability to respond to particular hoaxes. As the FCC sees it, without a rule it has only two choices: It can admonish a licensee (*i.e.*, slap it on the wrist) or revoke its license (*i.e.*, nuke it).

So what does the new rule say? Well, the

That pesky hoax policy is back again, this time in the form of a rule.

bottom line is that if you (meaning any station employees) broadcast (a) false information about a crime or catastrophe and (b) you know that information to be false and (c) it is foreseeable that such broadcast will cause substantial public harm and (d) the broadcast does in fact directly cause substantial public harm, then you are liable for a fine or forfeiture. Let's look at each of those components.

First, the false information must involve a "crime" or "catastrophe." So if you broadcast a hoax about a nuclear attack or an invasion or a bombing or a murder or some such, you might have a problem.

If, on the other hand, you suggest that the Beatles are about to perform a free re-

union concert in front of city hall, presumably you would not be in direct violation—even though the latter broadcast might be as likely to cause some significant public hassle.

Second, you have to know the false information is in fact false. Thus, if you air a story from a wire service, believing in good faith that the story is accurate, and it turns out to be wrong, presumably you'd be off the hook.

Third, there has to be "public harm" which must "begin immediately, and cause direct and actual damage to property or to the health or safety of the general public, or diversion of law enforcement or other public health and safety authorities from their duties." One possible way of avoiding any diversion of police or safety authorities would be to alert them in advance to the hoax, so that they would know not to take it seriously.

Fourth, there has to be a foreseeable likelihood of substantial public harm and, fifth, such substantial public harm does in fact have to occur. We mention these two conditions together because, as a practical matter, the foreseeability test seems to us to be diluted substantially by the actuality test. That is, if it is established that big-time harm has in fact been caused, it's probably going to be a good deal more difficult to claim that the licensee could not reasonably have foreseen the potential for that harm.

This is especially so in view of the fact that, in determining whether the harm was foreseeable, the Commission plans to take into account such factors as the number of public complaints received about the broadcast. By contrast, the Commission will *not* give much weight to claims that the public should have known it was being fooled because the broadcast was aired on April Fool's Day.

Some are sugarcoated

The FCC does try to soften the foreseeability element somewhat by saying that

licensees may "presume that the public will behave in a rational manner" and that licensees will not be held "accountable for unreasonable or unpredictable public conduct."

This sugarcoating effort may not prove all that effective in practice, though, in light of the fact that the Commission intends to review hoaxes not merely from a foreseeability perspective (*i.e.*, what could or should the licensee have anticipated), but rather from a retrospective perspective (*i.e.*, with a specific after-the-fact recognition of the effects which the hoaxes actually did cause).

One way to protect yourself is to broadcast disclaimers any time you broadcast anything which might come close to a hoax which might violate the rule. According to the Commission, a disclaimer should be aired at the beginning and end of the program and at least every 15 minutes during the course of the program.

The bottom line here is that, for the foreseeable future, hoax broadcasts are dangerous. This is especially so because the most effective hoaxes—the ones that attract the most public attention—are likely to be the ones that also attract the most public complaints. The question each broadcaster must address is whether the likely gain of any particular hoax is worth the risk of a serious fine.

And remember, the hoax rule applies to the licensee even if management did not know that the air staff was going to pull a hoax—thus, you may wish to take steps to make sure that your air staff is both aware of the hoax rule and under orders to work with management to assure compliance with it.

As always, if you have any questions about the hoax rule, you should contact your communications counsel.

□ □ □

Harry Cole is a partner in the Washington-based law firm of Bechtel & Cole, Chartered. He can be reached at 202-833-4190.

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KEYBOARD CONNECTION

Tapping into the Information Pipeline

by Barry Mishkind

TUCSON, Ariz. Cliche number one: We work in the communications industry. Cliche number two: Most broadcasters don't communicate well with one another.

Unfortunately, both are equally true.

In the case of engineers, this is often due to circumstances. Outside the larger markets, there are often as few as two, or only one engineer in an area. Unfortunately, carrying on a conversation with yourself isn't considered the height of communication, unless you like nice men in white jackets.

Attending trade conventions is a good

way of staying current with the industry. You can get specific answers to problems, build relationships with manufacturers, and network among engineers from around the country. The current cooperation between the NAB and SBE has produced some valuable seminars for engineers.

Reach out

But back home, how can you keep up with what's going on in the industry? How to get questions answered? Obviously, I'm going to mention good old RW. This important resource is constantly striving to provide the information you need. SBE

meetings are another resource. And then, there's that computer sitting on your desk.

Using an inexpensive modem, you can reach out and connect to an astonishing array of services and resources. Indeed, everything from news to advertising co-op leads to an on-line discussion group of engineers awaits you.

Getting started isn't difficult. If you don't already have a modem, a decent 2400 baud modem can be easily purchased for under \$70. It usually takes less than five minutes to unscrew the computer's cover, insert the modem into an empty slot, and connect it to the phone jack. Then it's a matter of run-

ning a program to dial out and connect to the world.

Which program should you use? Several good ones are out there, differing in the features offered, and cost. Some even come free, bundled with your modem. They may not have too many features, but the price is right!

There are also relatively inexpensive shareware programs like Procomm or Telex. They feature dialing directories to save your most frequently called numbers, as well as screen capture (to save what you see).

Crosstalking

On the other hand, commercial programs such as Crosstalk Mark 4™, and Crosstalk for Windows™, offer jazzier menus to make operation easier. They also have the ability to run "scripts" where highlighting a choice and pressing a key (or clicking your mouse) will set off an automated process to dial out and log you in after connection.

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SONY

Using an inexpensive modem, you can reach out and connect to an astonishing array of services and resources.

Since each department has different needs, Crosstalk's automated set-up feature is a boon. It leads you step by step through the process of entering phone number and password for a wide variety of services. Once you've set things up, anyone can access what they need.

For example, the sales and programming departments might want to connect to the Radio Advertising Bureau (RAB) co-op databank. There they'll find instant answers on maximizing a client's ad dollar or promotional ideas that have worked for other stations.

The news department may want to log in on CompuServe or Prodigy to access one of the many national newspapers available.

The SBE network we mentioned in the previous "Keyboard Connection," as well as other broadcast-specific conferences, are available at no cost to send and receive messages from broadcasters all over the world. Would you like to know the top-rated record in Sweden? Or, want to find someone with your exact transmitter/antenna combination, or audio chain? It's possible via computer, and more.

Joining the conversation

Scores of people now read the SBE network each week. While many are "lurkers" (reading without making their presence known to others), you're welcome to add your comments and questions. It's easier than you may think.

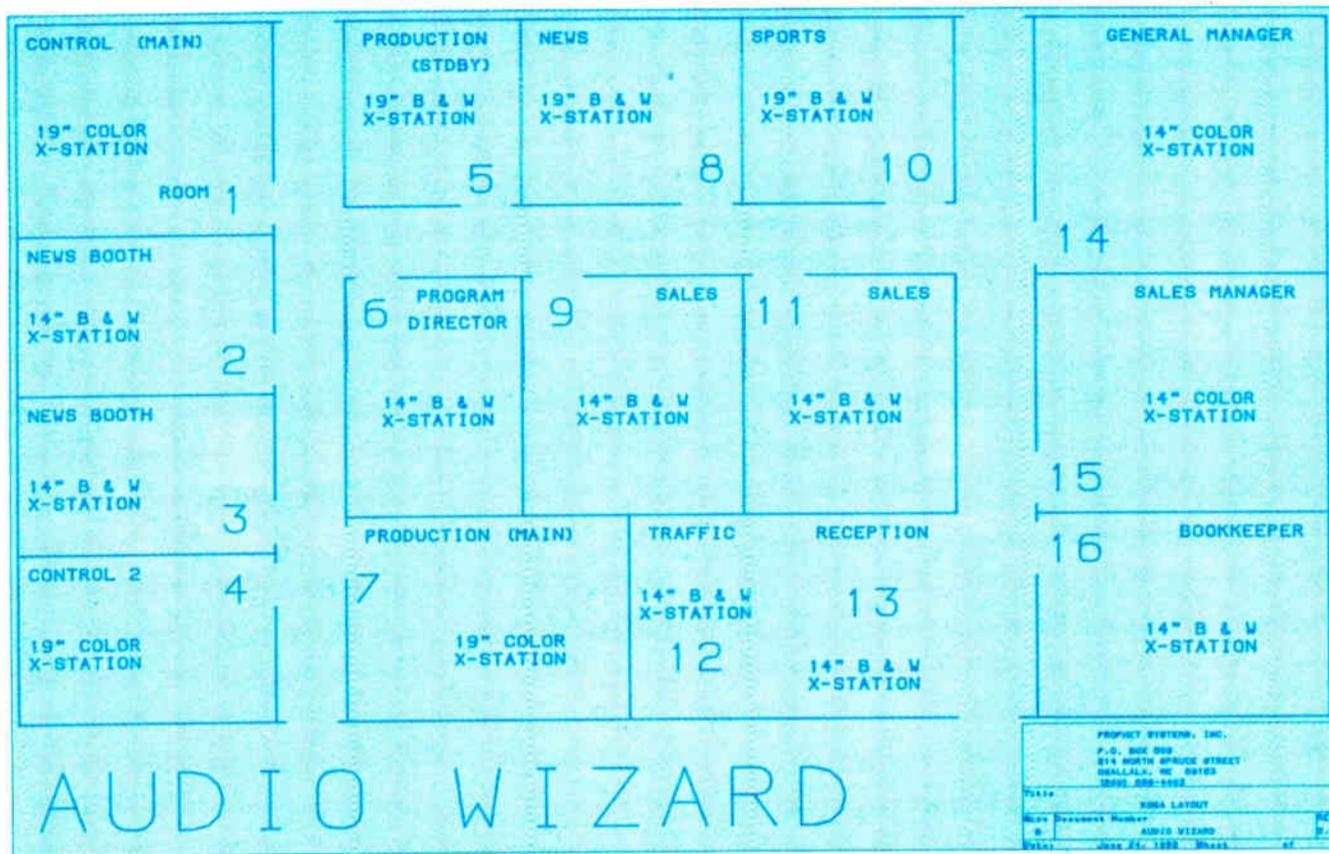
Once you dial into a BBS (Bulletin Board System), the system will ask for your name. If it's your first connection, you'll be prompted for a few questions to identify yourself to the SYSOP (system operator).

Some boards allow full access to their features on the first call, although some broadcast-oriented BBSs may ask a question to prove you're in the industry: What does "PA" mean? Or, who invented FM radio? Nothing too hard for a pro, but it does keep the 13-year-olds out!

So what's your pleasure, engineering or continued on page 21 ►

BRING MAGIC TO YOUR STATION WITH AUDIO WIZARD!

There has been quite a bit of confusion and, frankly, disbelief concerning Audio Wizard. We don't blame you—Audio Wizard is such a powerful system that it is hard to believe. To clarify what our system can do, we have taken this blueprint from one of our stations. Just look how Audio Wizard can bring a little high-tech magic to all parts of your station.



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Also we have made Audio Wizard a breeze to configure. Just attach ALL of your audio wires to one central location and you're done. Plus you can adjust the levels of each source from any x-station. No more twiddling small pots located in unwieldy locations! All levels are fully software controlled. The Audio Wizard Audio Controller

can be expanded to handle up to 32 stereo inputs, 32 stereo outputs and 32 fully digitized storage and playback paths in and out of the computer. With all of these sources and our software controlled digital gain/attenuation you can even use the Audio Wizard as a basic production or control board.

MAIN CONTROL 1&4

Audio Wizard really shines in the control room. For instance, up to 16 control rooms can be playing the same spot at the same time! Your DJ can be doing production at the same time he or she is playing a block of commercials over the air.

PROGRAM DIRECTOR 6

The program director can use an Audio Wizard terminal to edit the salespeople's copy, check on how each control room is doing and even check in on the production rooms to see what is going on. Plus he can take over the control room and run the station right from his office!

GENERAL MANAGER 14

The general manager never had it so good! Any part of the station's operation can be controlled right from the GM's office. The general manager can edit copy, change the log, check on sales reports, change the playlist and even lock the doors!

NEWS BOOTH 2&3

The news booth will benefit from Audio Wizard because actualities can be controlled from the booth. You don't have to tie down an engineer in the control room just to play spots. Plus the news person can take phone calls and record them, play commercials and even pull up copy from the last news cast on the screen—all at the same time.

NEWS & SPORTS 8&10

The real time digital news and sports audio editor will keep your information team ahead of the competition. They can record all of their tracks into the computer directly from the phone (without even having a phone in their room). While the actuality is recording they can be editing out the bits they don't want! Putting a news or sports cast together is a snap for Audio Wizard.

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The real time digital production capabilities of Audio Wizard make top line production a snap. Plus, while you are recording, you can be reading from the copy that was typed in by a salesperson. Audio Wizard uses a highly acclaimed audio storage algorithm so you know your audio will be the best in town.

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PRODUCER'S FILE

Making Tracks with the Roland DM-80

by Ty Ford

BALTIMORE Bang for the buck. That's really what digital audio workstations are about. Typically, the lower the price, the fewer the features and the more time it takes to process the audio. The lower priced systems usually also require some sort of computer interface, therefore, a double learning curve.

The Roland DM-80 doesn't need a computer interface for either four- or eight-track operation; however, the LCD screen on the editor only lets you see tracks 1-4 or 5-8 at a time. To get the big picture you need a Macintosh running Roland's Track Manager™ software.

According to Al Dugas, marketing manager for Roland, a Macintosh running Track Manager™ software also can be used to link three DM-80s together, giving you a total of 32 tracks. Since the DM-80 allows you to internally "bounce mix" multiple digital tracks together, with a little thought you can usually work around those limitations.

Some of what you get

Although the DM-80 can be ordered with four tracks and only one hard drive, I worked with the two-drive, eight-track version, which includes the DM-80F fader unit and the DM-80R remote controller at a combined list price of \$13,500. The three units are linked together by two five-pin DIN cables. The internal drives are 100MB each (16 minutes at 48 kHz per drive). Each drive handles four tracks.

The chassis containing the hard drives and I/Os is rack-mountable with a 7 1/16" front panel. Front panel displays include LED input and output displays and clip indicators for each track as well as the master stereo bus.

You also get sample rate and hard drive activity indicators and record-ready/play status lights. Although I'm sure that mounting the hard drive chassis in an acoustically damped rack system would reduce the amount of noise generated in the studio, I doubt that it would be quiet enough for pristine narration tracks.

Because all of the indicators on the hard drive chassis front panel are duplicated on some page of the back-lit LCD DM-80R

editor screen, being able to see the hard drive front panel is not essential. Nonetheless, I think the best possible scenario would be to have the hard drive chassis mounted in a machine room within visible contact of the operator.

What you'll like

If you like lots of dedicated inputs and outputs, you'll like the DM-80. All inputs



Roland DM-80

and outputs are on the back of the hard drive chassis. There are eight analog inputs and eight outputs, all quarter-inch tip-ring-sleeve (TRS), which also accept unbalanced quarter-inch TS plugs.

Having eight separate analog I/Os (one for each track) allows you to run the audio back through an existing console for additional processing. There is also a stereo mix output bus which allows you to use the

DM-80F digital fader panel to create mono or stereo mixes.

There are two sets of digital inputs, Dig A and Dig B. Dig B has a sample rate converter, allowing you to input digital audio at 32 kHz, 44.1 kHz or 48 kHz and have it converted to either 44.1 kHz, 44.056 kHz or 48 kHz.

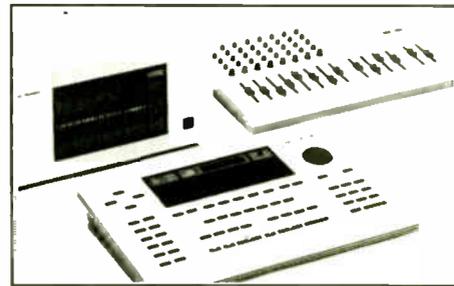
Each digital input is switchable to either IEC (RCA jacks) or AES (XLR jacks). Both digital inputs can also be used as Aux inputs from other digital sources. The DM-80 has only one digital output (Dig A), which is switchable between AES and IEC.

Due to some sort of incompatibility, I was never able to feed AES digital from the DM-80 to the AES digital inputs of either a Panasonic SV-3700 or SV-3900 DAT machine, although I had no problems using the DM-80's IEC digital output.

The hard drive chassis back panel also has MIDI in, out and through, a jack for metronome or click track, a BNC connector for video sync input, linear time code SMPTE input and output, a foot switch for punching in and out of record or working with tempo map info for MIDI projects (the DM-80 does not record MIDI), and four SCSI bus jacks.

Two of the SCSI ports allow you to extend track memory of the "A" and "B" drives to a theoretical limit of 4 gigabytes (4GB), or 12 hours at 48 kHz.

The manuals list a large variety of hard drives that can be formatted as internal or



Roland DM-80-R

external. As internal drives they can continue to record past the limitations of the actual internals. As externals they become additional storage for additional projects.

Roland recommends that access time for additional drives be under 15 milliseconds (15msec). Slower drives may be able to pass unedited sections of audio, but the additional data accompanying heavily edited

continued on page 19 ▶

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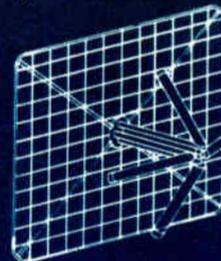
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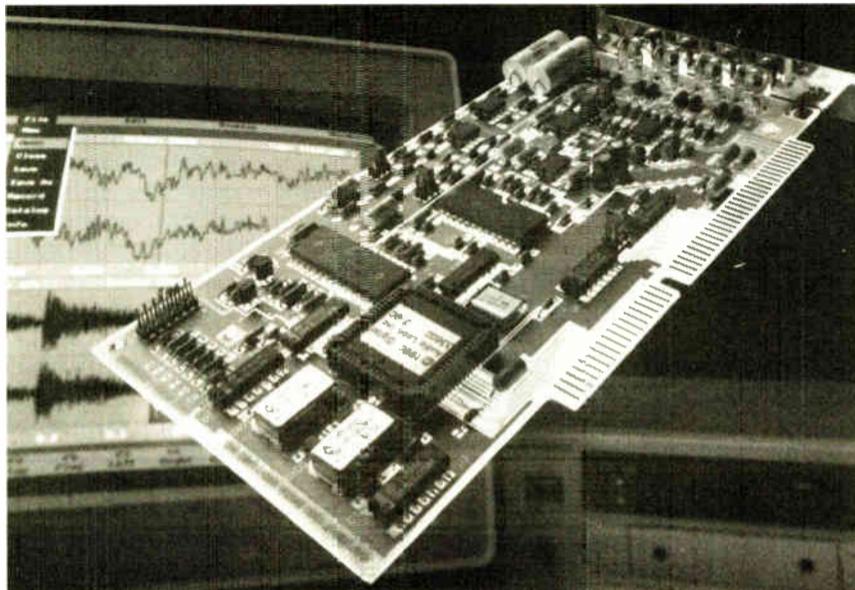
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World Radio History



FROM THE TRENCHES

by Alan Peterson



“Super Jock” Ken Hume

Dear Alex,

Well, as you've been reading, our new WLAD air studio is up and running. No sooner was it finished than we played host to a number of very interesting guests that have blown through town. Being an election year, we've already had a few politicians in the guest chairs.

But now, it's time to prepare for one of my station's most illustrious guest performers of all time: "Super Jock" Ken Hume.

Did I ever tell you about this guy? Take a run over to the coffee machine first. *This* you're going to like.

Ken Hume heads up Kenneth L. Hume & Associates, an insurance/finance com-

edges, plus it gave me the excuse to use the "Superjock" cut off my Cheap Radio Thrills album (yep, still have the vinyl copy).

So the day he'd hit the air, he'd enter with a crash, a bang, the BBC collection's thunderclap and "Sssuuuper Jock Ken Hhhuuuummmme" pitch-shifted down and reverbed to *death*. As long as the guy owned our station for a half hour, he was going to be shown a real good time.

The crowning touch was Jack Becker's computer-printed Super Jock Ken Hume banner in the control room, complete with little Fender Stratocaster guitar graphics at each end. We were ready.

Again, keep in mind this guy *sells insurance*. He's never been on the radio in his life! And now the show was his, in AM stereo with a signal that could skip the Sound and be picked up on Long Island's North Shore (now, don't get *nervous* or anything, Ken).

How'd he do? All told, very well. He took some calls and faxes from a few of his

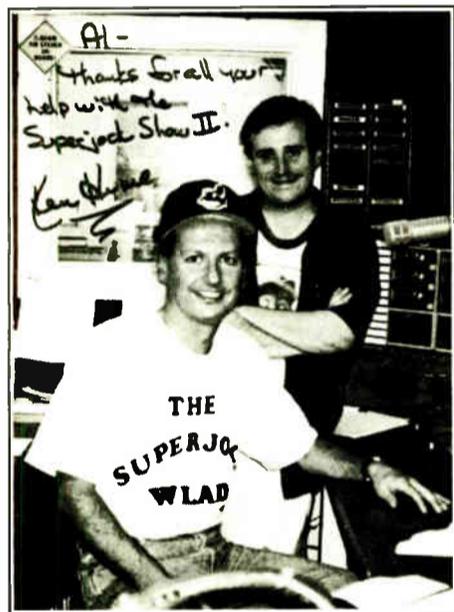
buddies, including a request for the Beatles' "Get Back," (in other words, "stick to insurance, Ken") from a close pal.

He read sports without botching a single name of any foreign tennis player, hit the weather no sweat, talked up a comedy service bit like a pro, and discovered much to his dismay how fast that half hour went. All smiles, he thanked us profusely, photographed everything in sight, shook hands and left a happy, exhilarated man. That was two years ago.

Well, as they used to say in the movies, "We've created a monster, Igor."

Last year Ken missed the annual auction, but didn't want to miss out on his chance to do *this* show again. What does he do? Tracks down the guy who got the high bid and *buys the show from him*. So in he comes to do the Super Jock II show, com-

continued on page 19 ►



Insurance agent and super jock Ken Hume (left) along with whatisname in the old WLAD studio.

pany here in Danbury. Open the Yellow Pages and you'll find his little two-line ad. He's successful in a quiet way, with a wife and young son. A nice guy to know and do business with.

Anyhoo, two years back, WLAD donated a half-hour of airtime ("Be a Famous Disc Jockey") to the Volunteer Bureau of Greater Danbury's annual auction. Ken came in as the highest bidder . . . I suppose he was outbid on the bungee jump over Long Island Sound.

But Ken was determined to get his money's worth. First thing he did was pick over some music at home to put on his "show" (what the hell, he owned that half-hour—so what if we trashed the format for a while?).

Next, he faxed all of his insurance and financial acquaintances so they'd dial in his show and guarantee us two staggering quarter-hours of impeccable demographics.

While he was at home planning his strategy to change the face of AM radio for generations to come, I was busy in production cutting a shotgun and jockshout.

We settled on Super Jock Ken Hume as a gag. We knew he'd be rough around the

At Telos, we had a lot of help designing our new hybrids.

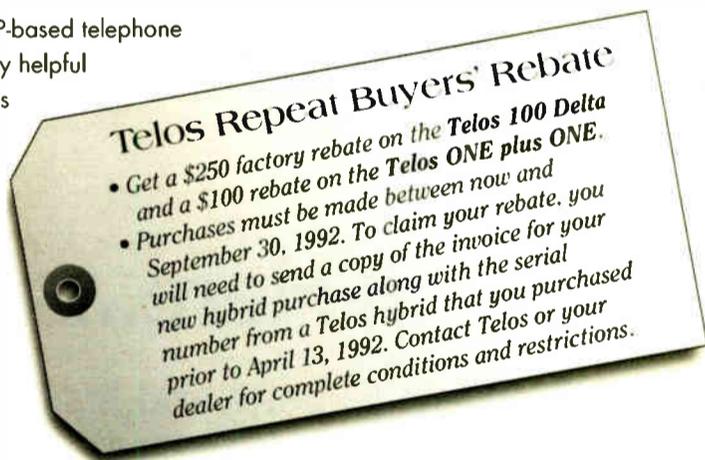


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Making Tracks with the Roland DM-80

► continued from page 15

sections can cause the system to hang. The other two SCSI ports are used for DAT backup which is available for an additional \$1,500.

DM-80 remote controller

The DM-80R remote controller is a sturdy desktop control panel with a backlit LCD display. In addition to showing all of the level and status indicators on the hard drive chassis, the DM-80R also displays time in SMPTE, Minutes:Seconds or Measures:Beats.

There are eight buttons for marking the location of audio, cursor keys for jumping around the various displays, function keys which change depending on the screen, mode select keys to select different operating modes, transport controls, lighted track status buttons, a preview button for finding edit points and an alphanumeric keypad for entering names and numbers.

The DM-80R also features a connector that supports an IBM-style XT/AT keyboard that makes entering text less tedious.

“Super Jock” Ken Hume

continued from page 17

plete with custom-made Super Jock T-shirt and the family in tow with more film and the ever-essential camcorder.

So now, it's late August and time for the return of Ken Hume for the “Super Jock III” show. Yes, he won the half hour again this year as high bidder. Is it worth it to tell you about the bumper stickers he had printed to commemorate the occasion? Or the custom baseball hat, new Hume fashion T-shirt, the press release of him and me in the newsletter of his industry? No, that's pushing it.

We should've just called Ken and told him the come on in for the show and forget the auction. Jeez, it's his third go-round. And between the clothing and the bumperstickers, he's doing a better job of marketing his humble little half hour once-a-year than I am selling my own four-hour, five-day-a-week shift!

Is the guy having fun? You bet. Are we staying in touch with our listeners and our community? Absolutely. Ken gets away from his actuarial tables and telephone to become a local star once a year, and we come out of it as the guys in the white hats once again. I'd say that's worth a half-hour of our time.

It is a little galling that this fellow has been on the air professionally for a total of one hour and the phone never stops when he's on the air! But once he's back at the insurance gig again, we can all dream of the day when we'll all be as famous as Super Jock Ken Hume.

After all, he's lived the dream of knowing what a kick it is to be doing *this* for a living. The same kick that many of us still experience once the cans go on. See you in another year, Ken.

And you'll hear from me in September, Alex.

—Al

□□□

Al Peterson writes from WLAD(AM)-WDAQ(FM) Danbury, CT 06810. Last month he was the subject of a detailed interview in *Radio and Production magazine*. Ken Hume promised him his own bumper sticker.

The keyboard also duplicates many of the controls on the DM-80R panel.

The DM-80F digital fader panel connects between the DM-80R (or Macintosh computer running Track Manager™ software) and the hard drive chassis. Each of the eight mixer channels has its own high- and low-shelving EQ.

The high frequency shelving corner frequency is adjustable from 500 Hz to 18 kHz. Low frequency shelving ranges from 40 Hz to 1500 Hz. Both high and low frequencies can be either boosted or cut 12 dB. Each channel also has dedicated pan control and fader.

There are two stereo Aux inputs which can be used to gang several DM-80s to-

gether, or to bring in stereo submixes from other sources, and a set of stereo master faders. All of the controls on the DM-80F can be run manually or automated. Automation of a single control can be updated at any point in a mix.

Manual labor

As with most Roland equipment, the manuals for the DM-80 don't explain what you need to know very thoroughly. It took a few calls to Roland before I felt comfortable in trusting my operation of the system to a real project. Depending on your schedule, it should take a week or two to get up to cruising speed. Apparently the manuals were written before the system actually made it to market.

Don't let any bad experiences you may have had with the Roland musical instrument division keep you from checking out the DM-80. According to Dugas, the Roland Pro Audio Division is a separate entity, and there's a big push on to offer as much support as necessary to get the DM-80 to market.

Even now Roland is fine-tuning the operating system based on user comments. Upgrades to the system software can be achieved by swapping EPROM chips, so you don't have to worry about buying into “dead-end” technology.

You might want to save this article until next month's edition of *Producer's File* when I'll get into more about the operation of the DM-80.

□□□

Ty Ford may be reached at his beta test site studio at 410-889-6201, via MCI Mail 347-6635 or America Online (Tford).

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WORKBENCH

Don't Lose Your Cool

by John Bisset

FALLS CHURCH, Va. Those dog days of summer—hot temperatures, failing air conditioners, low line voltages. Who has time for a dip in the pool with all these worries? You do, if you plan ahead.

For example, your local Radio Shack has some heat detectors—normally kept with

the security system parts, that can keep tabs on the transmitter site temperature. Sold under the brand name "Safe House," you'll find catalog number 49-482 is a 135° Fahrenheit sensor, for normal room use. If your building has an attic, or is not air conditioned, the number 49-483 sensor trips at 190° F, and can be used where room temperature exceeds 100° F.

While you're hooking up sensors, consider picking up one of a variety of thermometer-type ICs that can provide a temperature reading on your remote control. The LM334 is a three-lead device that, with the addition of a couple of resistors and a plug-in power supply, will provide you with a linear output voltage that can be fed into your remote control system.

Figure 1 shows a typical hookup. There are a number of these devices, costing an average of \$2 or \$3 apiece.

The hot weather is usually accompanied by brownouts, furnished at no charge by the power company. As the supply voltage for your transmitter is cut back, newer transmitters may exhibit peculiar behavior. Most of the newer rigs on the market today have a "phase sequence and loss monitor" of some sort.

On the Continental 816, this monitor takes the form of a plug-in module (K-5). This orange box, located in the HV transformer compartment, just under the fuses, is designed to protect the transmitter against a power company phase rotation reversal. If one phase is lost, the transmitter also will power down.

The module has a trigger level of 190 to 270 volts. This module may have been set during "normal" voltage conditions to trip at 200 volts. During the hot summer

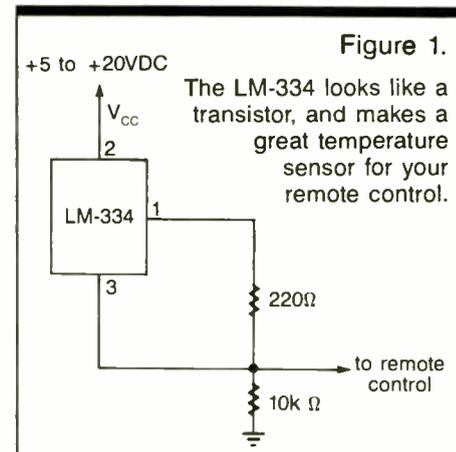


Figure 1.

The LM-334 looks like a transistor, and makes a great temperature sensor for your remote control.

weather, the line voltage may sag to the trip point.

On "soft-start" transmitters, the effect is that of a record skipping—the transmitter alternately powers down, then back on, then down again. What throws you in trouble-shooting the problem is there are no visible signs like overload lights tripped.

Radio Venture's Director of Engineering Chip Fetrow experienced this problem at two different stations. He says the solution is to turn the trigger adjustment screw on the module to the minimum (190V) position.

This advice is confirmed by Continental Field Service Engineer Ken Branton, who added that some transmitter manuals

continued on page 25 ▶



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World Radio History

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World Radio History

WORKBENCH

► continued from page 22

report setting the trigger adjustment to other than the full counter-clockwise position, to eliminate "nuisance calls." Thanks to Chip and Ken for sharing this tip.

One thing to keep in mind is that these "loss of phase" sensors are usually self-contained devices, which operate apart from the transmitter overload or condition indicators. When they activate, you may not get a front panel warning light on the overload panel.

I remember another instance where a late model transmitter just shut down, and acted like the main had been thrown. After checking the breakers and fuses, we stumbled on the "loss of phase" mechanism.

In this case, the voltage had dropped substantially below the trigger point, and the device kept the transmitter off the air until the trigger point was lowered. Check with the manufacturer as to the recommended procedure in adjusting these devices.

★★★

If a summer project includes air conditioning your transmitter site, be sure to include an escape hatch! Too often engineers

As the supply voltage for your transmitter is cut back, newer transmitters may exhibit peculiar behavior.

are fast to seal up every vent and louver when the air conditioning system is installed. This can be catastrophic should the air conditioning fail, and the hot air is trapped inside a sealed building.

Talk to a qualified air conditioning mechanic, and make sure that every base is covered. At the very least, keep a large window fan on hand, to prop in the door, should the main cooling system take a vacation this summer.

Now that you've covered the transmitter site, if you're in the market for a studio thermometer, consider the "Autoclock" by Autogram. In addition to clock and stopwatch features, this versatile module (see Figure 2) can also display the high and low for the day and the time it occurred, as well as the current temperature.

The Autoclock can be mounted in a panel; it also is available in a stand-alone version. If you'd like mounting dimensions, cost, and more information, circle Reader Service 14, or call Autogram at 214-424-8585.

★★★

These hot summer months can bring power failures as well, and if you're tired of finding dead batteries in the flashlight you left in your trunk, or at a transmitter site, Ed Bukont, CE at WPGC-AM-FM faxes an excellent solution—also from Radio Shack.

The "Code Red Emergency Kit" (catalog number 61-2550) features special batteries that do not become chemically active until you twist them—sort of like those Halloween light sticks that you bend to activate. Ed says the batteries have a 20-year shelf life, and a warranty. The

kit, which costs less than \$20, includes a flashlight that uses the standard PR-2 bulb, so it will run on conventional batteries as well.

If your budget won't permit the \$20 splurge, you'll find good luck in placing a quarter-sized piece of shirt cardboard between the positive battery terminal and the bulb. When the battery is to be used, simply unscrew the end, remove the cardboard square, and screw the end back on. I've kept flashlights fresh for over a year using this method.

The only caveat is trying to make the flashlight functional in a dark environment.

Some flashlights like to explode into a million pieces when they are disassembled in the dark. Nothing can be more frustrating than knowing you have all the components for a working flashlight—scattered all around the floor of the darkened transmitter room. Ed's suggestion is sounding better and better!

□□□

John Bisset is a principal with Multiphase Consulting, a contract engineering and projects company. He can be reached at 703-379-1665.

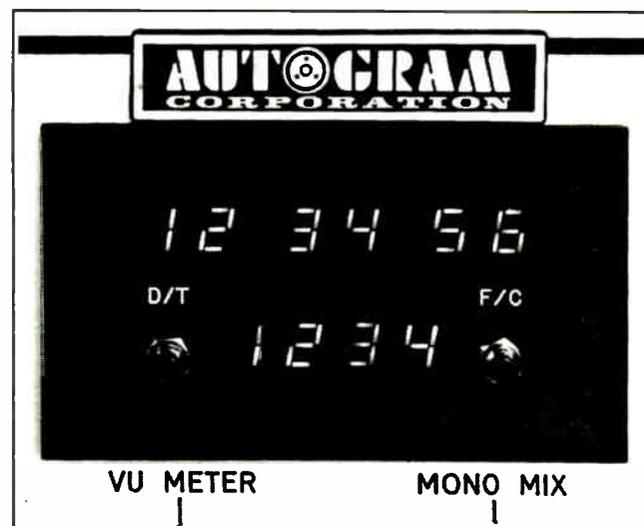


Figure 2. The Autoclock, made by Autogram, combines time and temperature functions at a reasonable price.



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John David: NAB's New Face of Radio

Editor's note: John David was named senior vice president/Radio of the National Association of Broadcasters on June 19 of this year. David was the NAB vice president of broadcaster/congressional relations since 1989. Prior to joining the NAB, David was a member of the NAB board of directors from 1984-1988. From 1971 to 1988, David was owner and executive vice president of J.R. Broadcasting Co., based in Missouri.

RW: Could we start by talking about your background? You started out as a broadcaster. Why did you make the transition from station management and ownership into association work? What were some of the events that propelled you along that path?

David: I've been in radio since I was 13 years old. I went to school at Oklahoma State University, and got a degree in radio and television communications—from a management standpoint.

I was a rock and roll DJ back in Oklahoma City at KOMA, and got an opportunity to get into ownership with a fellow who had a line of credit (I didn't). We went into business together and operated in Missouri for 17 years.

My partner became suddenly ill and passed away. I sold the radio stations and thought it was an opportune time to do something a little different—but I wanted to stay in the business.

I came to work at the NAB in April of 1989 and have been involved in the government relations department. Some of the issues I worked on I had been actively involved in at the Missouri Broadcasters Association.

We had a very active state association board back in Missouri and I am a former president of the association. Part of my responsibility over in the government relations office was to handle the liaison with state associations. Through that process I have become acquainted with a lot of broadcasters around the country and I worked with them on legislative matters.

I've also been traveling to the state association meetings for three years now. It has given me a base of broadcasters to help me find out what is going on in the industry. When I took this job, I said I didn't want to stay in Washington all the time and get isolated from the industry.

RW: Given your traveling experience, coupled with your work with the state associations, what do you perceive as some of the needs of the industry right now? What role do you see yourself fulfilling here?

David: Well, I come from several different perspectives. First from being an owner/manager for 17 years, I've dealt with banks, attorneys, the FCC. I know the perspective of management and I know what it means to make a payroll and all of those things that everybody goes through.

I know the perspective of the board of directors and how they see the NAB staff—how they depend on the NAB staff and how the NAB staff depends on them to set policy. I think it is important that the NAB continue to be responsive to the needs of the industry.

How do we find that out? I think that is through contact with broadcasters. We have a very effective telemarketing program here and the NAB staff members are out in the field all the time, talking to people and attending state meetings. We have a very active board of directors who make the policy for this organization.

We have a lot of issues on the plate. Chief among them, for example is ownership. There is a lot of interest around the country in the relaxation of the duopoly rules.

People are concerned about spectrum fees still. We are concerned that it doesn't come up again. It very well may.

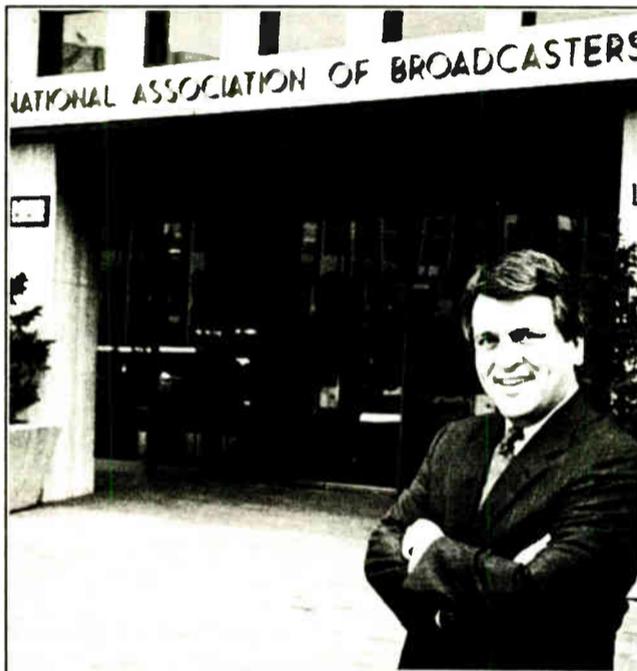
The loosening up of capital for investment in broadcast properties is high on people's minds right now. We have a task force that is being formed—it may be ready by the Radio Show—to try to put the interests of broadcasters and lenders together. There is a question of security interest in licenses which is of concern to many broadcasters.

The technology is being watched very carefully. We have a very active digital audio broadcasting advisory task force that is trying to stay in front of DAB technology. Radio Broadcast Data Systems (RBDS) is something that we have a lot of interest in and it will be interesting to see if the marketplace accepts that technology. AMAX radios for AM stations are of interest. Broadcasters must promote these radios in order to gain consumer acceptance for them.

For radio, of course, there has been a threat of performer's royalty. We would be very

much opposed to that because promotion companies try to get radio stations to play the music of the artists. That, in turn, helps to sell that artist and the music.

We would be very opposed to performers getting additional funds for playing the music on the radio stations. That is something that is being talked about quite a bit. There



John David, Senior Vice President/Radio, NAB

was never a bill introduced in this session of Congress, but we are sure it will come up next year.

There is an active bill in the Congress on beer and wine labeling. We will oppose that—it is kind of like saying in a political spot, "Vote for this congressman," and then adding a five-second spot saying, "Warning, he might contribute to the national debt."

Those are some of the issues that are very important right now.

RW: As far as the association itself, the radio department, Lynn Christian restructured the

department. Are you looking to further restructure or are you satisfied with the current setup?

David: Lynn has done a great job of organizing our department and restructuring. We have tried to maintain face-to-face contact with broadcasters by sending our staff out to meetings and hosting meetings in many cases.

But the telemarketers are making more contacts. They have sustained good membership levels, and are trying to increase them at all times. They also try to make broadcasters aware of the advantages of NAB membership.

What I am going to be focusing on is making sure that the broadcasters know they have a lot of services to work with and to increase the value of their membership.

I am aware of how busy radio programmers, managers, traffic people can get. But sometimes a quick phone call can give you another perspective and your NAB membership provides that.

I would also like to encourage our membership to continue to communicate their thoughts on the policy of the radio business to our board of directors.

RW: The last NAB financial report on radio confirms once again that a large number of stations are losing money. There are technological changes in the works for the industry as well. What do you see coming down the road for the industry? Where would you like to see the industry and the NAB in a few years?

David: I think the most creative people that I know are in the radio business. It is a people-intensive business and we have gone through economic slowdowns before. We have dealt with increased competition before.

There are a couple of things we can do to stay ahead of the coming changes. We need to hold fast to our commitment to localism. That's what really distinguishes us from the competition. Then, we need to use technology to our advantage—to increase efficiency of operations and improve technical quality. We can't afford to let new technology pass us by because the competition certainly won't.

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UPLINK

Negotiate Effectively with Networks

by Karl Baehr and Harry Nelson

ALBUQUERQUE, N.M. What exactly can you expect when you enter into an agreement with a service provider? What are some of the "ins and outs" of negotiation and which party gets what compensation in network contracts?

We spoke with Jerry Thomas, a former salesman with Satellite Music Network (SMN). Thomas worked at SMN from 1987 to 1992, and had the highest closing ratio in his department for all five years.

RW: What was the most challenging as-

pect of selling format on the network level?

Thomas: Probably convincing radio station owners they needed the service and the value a network could provide for them. These were, in many cases, hard-line broadcasters and this was "high-tech" to them. Something new. So convincing them it would save them money and provide excellent programming was a daily challenge.

RW: How does a network get compensation?

Thomas: It was originally structured that stations in a major market would pay roughly \$1,450 per month. Stations in small

markets would pay closer to \$500. However, due to competition from other networks, rates were reduced. One rate was \$750 per month if we provided them the equipment on loan; the other rate, if they bought the gear, was \$500. So we standardized rates.

RW: Is there some room to negotiate particular price, regardless of the market size?

Thomas: I would say in your smaller markets, the non-rated markets, that rate was pretty much set in stone. Now if stations have average quarter-hours, metro-rated—no county by county—we would sometimes

negotiate.

A station posting 1,800 to 2,000 AQH in a rated market would be in a position to have their fee waived or reduced. Of course, my job was to always get as much as we could in these circumstances. But we had that latitude because the network is basically interested in AQH; it's what sets the price on the commercials they sell nationally.

RW: Is it true that the network makes the largest amount of its income not from affiliate fees, but from the commercials it sells?

Thomas: Oh, absolutely! Affiliate fees are basically gravy, though they also offset equipment expenses, pay programming and other budgets. But the bulk of revenue comes from the clearance of spots.

RW: What is absolutely not negotiable?

Thomas: Generally, in the years I did this work, I had never heard of more than one or two instances of stations which upper management said did not have to clear two minutes per hour. For 99.5 percent of stations that is set in stone.

RW: Anything else that is not negotiable?

Thomas: No.

RW: What three things should potential affiliates know before they begin negotiating? What advice would you give them?

Thomas: First thing they should look at is their bottom line. What are their expenses? What percentage of their income is being eaten up?

Number two, an in-house problem to look at is what trouble are they having keeping good help? Many on-air staffs may just be using the smaller station as a training ground, moving on quickly. There's constant turnover with unproven talent.

With a network, the station has a consistent major market sound. In some cases the bottom line is a network will keep them in business.

RW: Any other advice?

Thomas: One question that always comes up is whether a station should have a local morning show. I always state that a station needs some localization. Certain dayparts are more vital than others and the mornings is one of them. If they could afford to do it, I would say go ahead.

RW: How difficult is it for an affiliate who has committed to one format to change to another format?

Thomas: First, if they have a format change in mind they should call their sales rep. The sales rep then clears the format.

Your sales rep will need the request in writing on letterhead, effective on the date needed. The sales rep's job is then to clear the format with upper management, making sure there is not another station in that market that has the new format.

Once the format is cleared there is a nominal fee for handling, insurance, etc., and that's all there is to it. Very simple.

RW: What do you think are the important questions to ask when signing up?

Thomas: Many people want to know about the equipment. They want to know how to implement the format. So we start with automation. I recommend the hard-disk computer systems out there. They can pay out over 60 months, and it won't cost a station more than keeping on one person.

The other thing to learn is how to use the satellite to its maximum potential. A lot of people think you can turn it on and walk away. That's foolish. It takes as much

continued on page 3B ►

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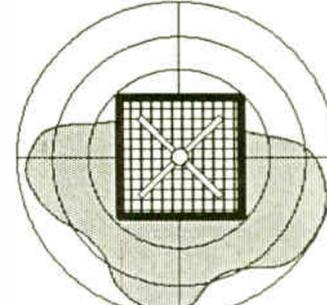
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MARKETING & MANAGEMENT

Understanding Database Marketing Concepts

by John Cummuta

ALGONQUIN, III. There is a marketing revolution sweeping America, and it has recently reached the broadcasting industry. It's called *database marketing*, and it's a revenue-building process that enables you, the operator, to develop relationships with your customers, as opposed to just knowing them on a demographic level.

It's a marketing system for building audience and keeping audience that goes to the heart of how consumers demand to be treated today.

Remember when all telephones were black, all kitchen appliances were white

and all peanut butter was Skippy? Well those days are gone forever.

There are now almost as many types of telephones as there are people to buy them. Kitchens have turned into what looks like a colorful version of Mission Control in Houston, and peanut butter . . . well, we won't talk about that because it has too many fat grams.

Choices

The American consumer wants and gets choices. That variety of selection carries over into their local array of radio stations. In most markets there are stations for every flavor on the radio menu, and consumers usually have

more than one dial position for their favorite *mix* of entertainment.

Technological enhancements in car radios work against us as well. Today's car radios make it all too easy to automatically scan or search for a better song, or to pop in a CD and forget about the buttons altogether.

What that means, of course, is that it takes more than just playing the hot hits to keep a listener.

It boils down to *listener loyalty*. Nothing new there, but while you can develop a certain amount of it through the old strategies of having the more compelling air personality in the time slot, the "no-

talk, no-personality" concept, fewer commercials, longer music sweeps, more prizes, etc., are exhibiting less and less leverage in keeping audience.

Enter database marketing

The term "database" has been around for years, but it has come into vogue with the explosion of PCs. Your Rolodex is a database, the phonebook is a database, your station's advertiser list is a database. A database is nothing more than a collection of *records* that hold similar pieces of information about a number of people, things, places, amounts of money or whatever.

The keeping of information this way had little to do with marketing until competition began demanding that businesses no longer just advertise *at* their customers, but that they maintain a dialogue *with* the people they expect to attract.

Once advertisers had to start communicating with people, they had to know who these people were, where they lived and so on. They needed a database containing this individualized information.

This need to communicate in a more personal way is simply the next evolutionary step in marketing. If one business in an industry begins talking directly to, and listening back from, individual customers, those customers are going to feel a greater affinity and therefore *loyalty* toward that business.

This business will better keep its own customers and more easily steal its competitors' customers. That just makes sense. We all want to feel more important to those to whom we give our patronage.

Designer database

Let me use an example. My daughter used to work as a salesperson at a women's fashion store in a nearby, upscale mall. She was 18 years old and working the summer before college. Within a couple of months she was outselling everyone in the store (including 10-year veterans).

She did it using our home PC and a database marketing software package I co-developed.

When she would serve a customer, she'd gather additional information such as favorite designer, favorite colors, sizes, favorite accessory styles and so on. These were all later entered into the woman's record on the PC.

Then, when a new line came in from a given designer or new accessories showed up, my daughter would have the computer find all the women to whom the new product was relevant, and then send them a personal letter giving them an inside jump on the new fashion.

The letter mentioned that she knew they liked that particular designer and she thought they'd like to be the first to know that "such and such" was scheduled to arrive at the store on a certain date.

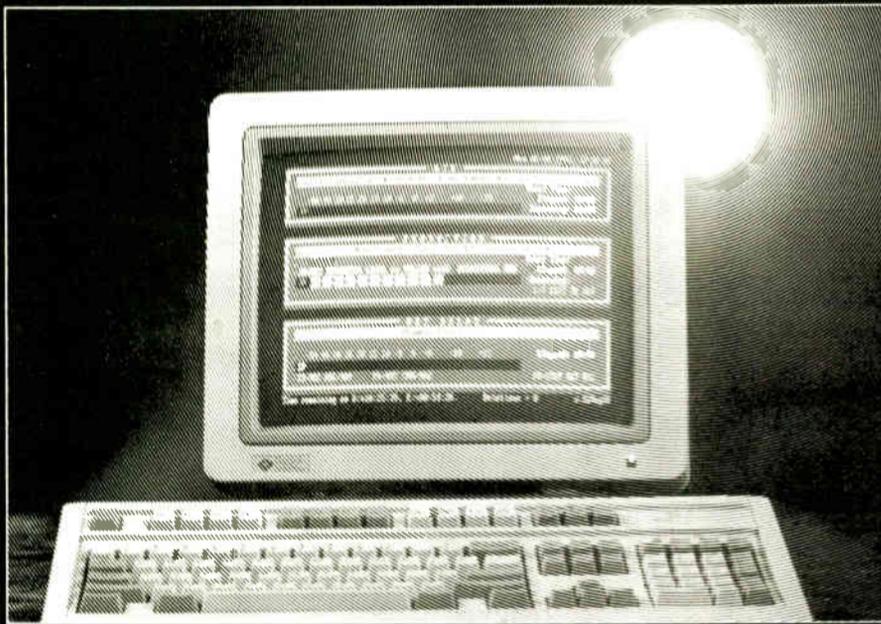
Each customer thought my daughter had sat down at the typewriter and written her a personal letter, but the computer had taken a boilerplate letter and dropped in the customer, the designer, the date and any other information out of each customer's record, and printed out dozens of similar yet individualized letters.

The other salespeople, and eventually the corporate headquarters, wanted to know why streams of customers were coming into the store waving letters from my daughter, and asking to be helped *only* by her.

She was using "impersonal" technology to be more "personal" with her customers, and they responded to it with zeal. There was no competition between these personal, individual contacts and the anonymous, scatter-

continued on page 38 ►

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BUT WE'RE MORE LIKELY TO DELIVER IT.

Radio automation manufacturers love to advertise all the functions they've written into their software. While you're trying to compare their long lists of digital bells and whistles, we just want to say:

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- We keep our basic system simple. Because in digital radio automation, simple is what works.
- Buy a Sentry System. We're developing new features every day. But we won't put a new feature in your radio station until we're sure it'll work for you.

That's why our technology works.

And why so many of our new customers are sent to us by our old customers.

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MEET US IN NEW ORLEANS AT BOOTH 656

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Consider Your Needs in Selecting a Studio Site

by EdwIn Bukont

Part II of VII

GREENBELT, Md. In this second of a seven-part series, we address how the needs of radio affect studio site selection.

Before you begin compiling a list of proposed studio sites, you should have an outline of the space, access and service needs of each major department. Certain details will have to be part of your site selection criteria.

Pay special attention to the evening/weekend environment within which your staff may have to work. Include square footage within the studio area and square footage outside the studio—in storage, parking or technical areas, consider finished ceiling height, ambient noise limitations and noise control and security. Other considerations are access during non-business hours by staff, guests and delivery services, lavatory and kitchen facilities and heating/ventilation/cooling (HVAC) needs.

Additionally, you will need to consider 24-hour electrical power and access to the building's core-area needs. The building core includes lobbies/halls/elevators, elevator penthouse, roof, loading docks, garages, the electrical room, the telephone room, lighting and the general HVAC system.

If you have production vehicles, what clearances are needed and do they require telephone/electrical access?

Team decisions

In assessing the station's needs, your primary team should include the CE, business manager and program or operations director.

Your second team should consist of department heads that actually use the fa-

cility 24 hours a day—the managers of news, promotions, production, traffic and office staff are part of this team. If you have weekend managers or producers, as is common in talk/sports radio, they should be represented here, as should your receptionist.

The third team consists of those who will use the facility for more traditional office purposes. Here is where the sales department, computer planning, office assistants, and research personnel provide their input.

I mentioned sales last because salespeople spend the bulk of their time out of the office. The individual sales person spends maybe four hours a day, four or five days a week in the building.

The on-air and programming support staff spend 24 hours a day, seven days a week, holidays included, in the same building. If the air staff is going to produce results that sales can sell, then the needs of the on-air environment must drive the project.

RF considerations

Careful consideration must be given to the RF (radio frequency) clearances necessary on the grounds or on the roof for your microwave STL (studio-transmitter link), satellite reception, monitoring and RPU (remote pick-up) antennas.

A path analysis of your STL shot should be run using one of the many programs available from STL manufacturers. These programs will allow you to gauge the antenna heights and clearance above nearby terrain necessary for proper operation. These clearances are referred to as Fresnel zones.

Use of these programs will require geographic coordinates for your transmitter site and proposed studio sites. Contact your local geological survey or county extension

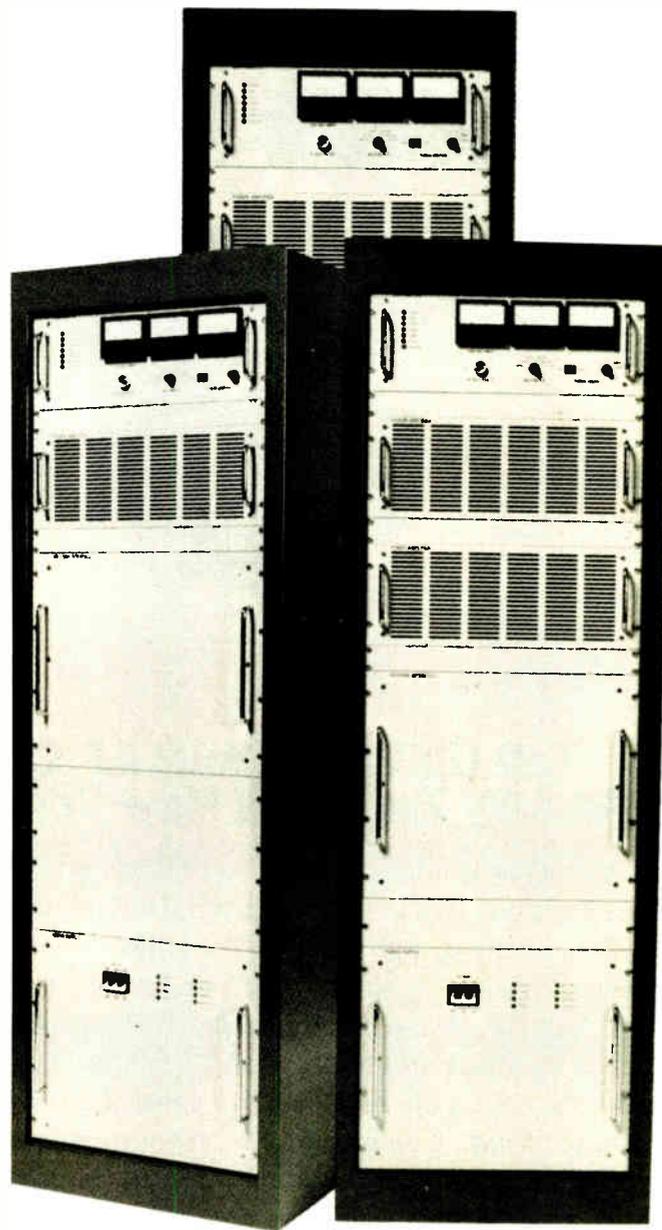
continued on page 34 ►

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These highly efficient solid-state AM transmitters yield the broadcaster superb audio performance whether operating in stereo or mono. The economic pay back can be realized quickly due to the very low power consumption and no routine replacement of vacuum tubes. Modular construction for easy maintenance and each transmitter will automatically reduce power should a failure occur.

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News Services Enter New Age of Specialization

► continued from page 1
provide that service at an affordable rate."

Following an exhaustive survey of station needs by Coleman Research a year ago, AP has launched AP DriveTime, a package of state and national news headlines, weather info, sports scores and schedules, and a new morning-prep service featuring entertainment news, lottery results, daily almanacs and light kicker stories.

As a bonus, AP provides DriveTime subscribers with 24-hour access to bulletin-class stories including major breaking news items and severe weather warnings.

In addition, DriveTime customers and new subscribers to AP's three 24-hour wires will be allowed to sign on for two-year contracts

instead of the previous five-year pact.

"The radio business is changing," says Cassidy. "And we're changing with it."

The 5,200 or so radio stations that currently subscribe to AP will find it placing increasing emphasis on lighter fare such as entertainment news and easily digested "News-Minutes." The company is also venturing into format-specific news and features for country, urban and rock stations.

All of this new data can be funneled into DriveTime, though the service is not customized on a station-by-station basis.

Despite its many travails, UPI was apparently the first to spot the changing attitudes toward full-time wire services in the broadcast market. The company changed its ap-

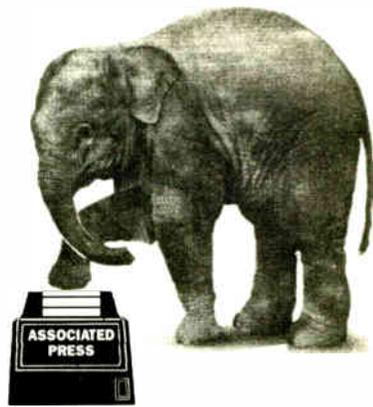
proach to that market back in 1984 when it transformed its satellite-delivered Broadcast Wire (in service since 1935) to CustomNews, intending to allow stations to buy as much or as little of the UPI product as needed.

"We detected a lot of stations dropping wire services because of expense," said Steve Geimann, executive editor and vice president of UPI. "This was our initial way of making it more affordable. With CustomNews, we can program a station's printer to give them what they want, breaking it down by time of day, region and type of story."

UPI also changed its fee structure, charging stations different rates depending on market size and amount of news received.

continued on page 40 ►

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Five years is a long time to be tied down to your AP wire service contract. But don't wait one day longer: Just tell us when your contract expires, and we'll give you plenty of lead time to sign up with Zapnews.

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World Radio History

A Line on News Services

Following is a breakdown of key facts and figures for news services offering quick and easy-to-assemble information packages for music-intensive stations and other light news users.

AP DriveTime

Sources: Newsgathering operations in 143 state bureaus and the AP Broadcast Center in Washington.

Product: Hard copy wire reports. No custom feed at present, though the option is being considered.

Delivery: AP's dedicated satellite circuits to station printers. Will also be accessible through AP Newsdesk computer software.

Fees: Sliding scale from \$40 to \$325 weekly depending on market size.

UPI-FaxNews

Sources: UPI national and international newsgathering operations. State reports where available.

Product: Scripted wire reports. Custom feed available in a menu of ten different packages.

Delivery: Facsimile machine.

Fees: Sliding scale from \$150 to \$400 monthly depending on market size and amount of information ordered.

UPI SelectNews

Sources: UPI national and international newsgathering operations. State reports where available.

Product: Access to UPI news database. Custom feed—stations select only the specific stories they need.

Delivery: Computer and modem.

Fees: Sliding scale from \$10 to \$110 per story depending on market size.

ABC News Wires

Sources: International news from Reuters; domestic news from Gannett.

Product: Hard-copy wire reports. Custom feed that is menu-driven and computer-addressable.

Delivery: ABC dedicated satellite circuits via ABC DATA to station printer or computer.

Fees: Sliding scale from \$50 to \$150 (for a large-market combo) weekly depending on market size.

CBS Zapnews

Sources: Zapnews draws from Reuters, Tribune/Knight-Ridder and Scripps-Howard news services. The CBS Zapnews package is designed to mesh with audio feeds from CBS Spectrum's Custom Cuts.

Product: Hard copy wire reports and audio actualities. Custom feed available. Stations can request additional reports after accepting the basic package.

Delivery: Fax. Service is also accessible by modem for stations with newsroom software.

Fees: Monthly charges from \$400 to mid-\$500 range depending on market size.

Westwood One OptiNews

Sources: NBC and Mutual radio networks newsgathering operations.

Product: Audio reports and actualities read without network ID by Westwood One anchors. Custom feed not available.

Delivery: Satellite channels dedicated to NBC Radio Network.

Fees: None. Service is all-barter with stations negotiating to carry a certain number of Westwood commercials each day.

SLEEP EASY WITH WATCHDOG And Automate Your Remotes

By John Schad, President
SMARTS Broadcast Systems

All broadcasters would like to see absolute perfection in every product they purchase. The ideal piece of broadcast equipment would perform flawlessly for hundreds of years, be so easy to operate that no training is ever necessary, and retail for under \$20.00!

We at SMARTS are always striving toward that perfect concept, but we realize that the realities of the world work against us. That's why we developed our latest product, the WATCHDOG.

The WATCHDOG is really a separate computer, with a separate power supply, whose only job is to watch over the SMARTCASTERS at work in the station. Each WATCHDOG can monitor the functions of two SMARTCASTERS so that only one WATCHDOG is needed for AM-FM operations.

These units keep an eye on both SMARTCASTERS. If any type of failure, for whatever reason occurs, the WATCHDOG resets the SMARTCASTER, then checks to see if the problem is gone. Should the problem persist, one more reset is attempted—and if that doesn't fix it, the WATCHDOG can trigger an alarm or auto-dialer to call for help.

The great thing about the WATCHDOG is that it doesn't care about the original problem. Power spikes, brown outs, total power failures, lightning strikes, spikes from lightning strikes, all can cause a computer to 'lock up'. Usually a simple reset fixes the trouble, but if that reset involves a 20 mile drive at 2 a.m., it looms as a much larger problem! WATCHDOG quietly and efficiently takes care of the vast majority of these incidents, then calls out the Marines only if the problem goes beyond the usual limits.

Another great feature—the SMARTCASTER watches the WATCHDOG! If the WATCHDOG goes haywire, the SMARTCASTER detects it and resets the WATCHDOG itself!

In practicality, our systems work reliably week after week, without any WATCHDOG intervention, but this little computer gives our customers the additional security that comes from one highly reliable system watching over another highly reliable system. That's really important for weekend and overnight walk away.

The WATCHDOG is only available from SMARTS and works only with SMARTCASTER.

Small and medium market stations everywhere are wrestling

with cost cutting measures that allow them to remain viable, but not detract from the sound. The industry is lucky to have a good selection of satellite services providing music and talk programming in a wide variety of formats. These services, when teamed up with our SMARTCASTER, have provided an alternative to the labor intensive 'disk jockey approach to radio.' However, the stations have to work at retaining localism in their sound. That's why we invented another member of the SMARTCASTER team called the SMART-TOUCH.

The SMART-TOUCH allows you to do remotes without anyone at the studio! Everything from simple 2 minute inserts from the car dealership to complex hours-long sports broadcasts can be handled with a simple touch tone phone—even a cellular! With the SMART-TOUCH you can leave the network (or other automated music source), play an intro, put the phone line on the air, play spots, monitor the station, monitor the network, play a close, then rejoin the net (or other source) smoothly and easily. It can all be done from any touch tone phone. The SMARTCASTER responds to the touch tone commands just as it does to network cues. The system answers the

phone, is protected by a security code, and will rejoin the net in the event of an accidental disconnect! You no longer need to have anyone 'riding the board' during those evening ball games.

These two little products we make are indicative of our company's dedication to the total picture of producing equipment and services to reduce the cost of your radio operation, thereby making that operation more profitable. SMARTCASTER digital audio, the Jock-In-The-Box, and the Night Watchman CD System, and the SMARTS Billing, Accounting and Traffic program have helped hundreds of stations with that task.

The SMARTCASTER is a total digital audio storage and retrieval system that can work with satellite, CD, even open reel music sources. The Night Watchman and the Jock-In-The-Box are two levels of CD automation that have advanced features that up to now have been impossible in broadcast automation, yet are priced well below conventional prices.

Can we be of service to you? Give us a call so we can talk about everything we offer the radio industry.



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Consider Your Needs in Studio Site Selection

► continued from page 31

office for assistance in obtaining this data.

Typically, you will need a 7.5-minute scale map and the assistance of a consulting engineer to obtain accurate data. In some urban environments, you may use a hardwired STL within or between buildings. Hardwired STLs use leased or owned copper or fiber optic lines.

Local telephone operating companies are reluctant to provide traditional Class A "broadcast loops" and would prefer that you use a "carrier" circuit. The most common system in use is the "T-1," which requires various components to be provided by both you and the telephone company.

Ask your engineer for a more detailed ex-

planation. Be aware that most local companies are not familiar with the needs of broadcast audio transmission. If you have to use T-1 systems, contact your broadcast equipment vendor. The vendor's system engineer will likely call you to discuss your needs.

The vendor may have a working knowledge of your local Baby Bell and can explain to the phone company, in its own lingo, what it is you are trying to do. Again, this must be researched and planned for each proposed site.

HVAC considerations

When discussing studio equipment, space and lighting, remember that the staff and any item consuming electrical power generate heat. The building standard HVAC is usually

sufficient to handle daily office equipment and a typical number of staff.

However, actual broadcast gear, studios, incandescent lighting and jock work areas will generate significant amounts of heat, beyond the capacity of the general HVAC, and will do so during all hours, thus requiring dedicated HVAC.

The capability of a building to support such dedicated HVAC, which may entail roof, closet and ceiling space as well as electrical power, is a site selection item. Attention must be paid to backup power and telephone systems that we will cover in detail later.

I would recommend that you *not* use building common generators or telephone sys-

tems. Whenever possible, install your own systems. Remember that you will need power, phones and HVAC in your studios and preferably jock work areas during all hours.

These types of services are generally considered to be above "building standard" and are installed on a time and materials basis. The resulting maintenance becomes your concern. Typically, power for studio equipment will have to be obtained from a separately metered service, as your kilowatt-hour usage and time-of-use period will greatly exceed the building's core cost that is included in the lease.

The lease only provides for general lights and appliance power during building standard hours. It is preferable to have a meter from the building's present line rather than a totally separate service. By doing so, you can take advantage of bulk purchasing power and reduce the installation costs of the separate service.

Structure

Attention is due now to structural considerations of your proposed studio site. When you add the types of walls, floors and furniture typical of radio studios, you can exert significant force upon floors and adjoining walls. Your added HVAC and generator systems may have to be mounted on a rooftop, suspended from overhead or on a concrete slab outside.

You will need to discuss these added loads with the building's physical plant manager and possibly a structural engineer. Similar concerns will be raised with regard to your antennas and their mounting apparatus. All antennas, especially "dish" antennas and larger whips, present significant wind load.

Detailed planning is needed to ensure that items are securely mounted with proper materials. Be forewarned that many local covenants and aesthetic considerations may preclude mounting anything outside or require keeping your equipment out of sight. What is allowed and any follow-up work should be part of the lease for your protection.

Similar concerns will be raised regarding roof or ground penetrations for cables or plumbing to generators, HVAC and satellite dishes. If you have to erect a tower for achieving your STL shot, again there will be wind load, aesthetic and structural concerns.

We have talked so far about what you want to do. But that should not be confused with what you are allowed to do by local and national codes. The erection of towers, even small ones, and other items that alter the landscape are the subject of increasingly restrictive local ordinances.

In recent years, the National Electrical Code, fire prevention and building codes have become more detailed and are being more strictly enforced. Local building officials are aware of the subparts of rules that apply to telephone, computer and broadcast wiring. You will find that common areas, primary and secondary exits, lighting, signage and other concerns are all covered by one or more local ordinances.

In the past two years, I have seen an especially keen awareness of the National Electrical Code. The other common manual is the Building Officials' Code of America (BOCA), which covers physical construction and design criteria.

The cost of compliance with this legislation will vary greatly from county to town to office park. Again, have your engineer and a general contractor consult you on the expenses and savings between your site selection choices.

□□□

Edwin Bukont is chief engineer at WPGC-AM-FM Washington, D.C. He can be reached at Suite 800, 6301 Ivy Lane, Greenbelt, MD 20770.



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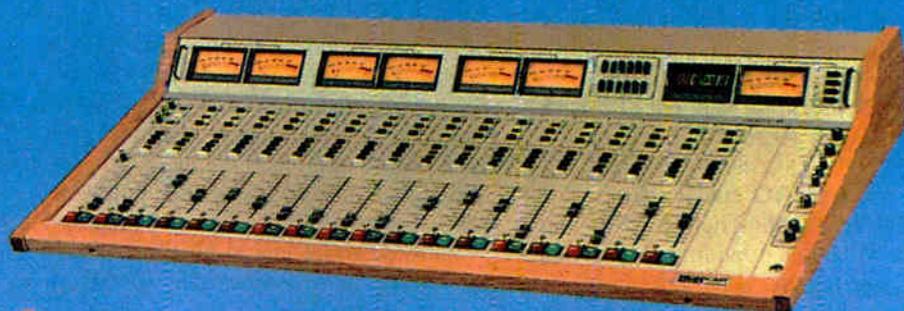
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SYSTEM 16



SYSTEM 20



SYSTEM 24



SYSTEM 8

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All mixer modules can be interchanged freely

because console logic is not programmed on the module and each module is switchable between mic and line levels. Mixers and output amplifiers can be removed or inserted with power on. Additional flexibility is provided by three stereo busses and a mono mix-minus bus which are standard in all units. In short, high-grade construction and audio performance are uncompromising.

Broadcast Audio consoles are installed in every one of the 50 states in the USA. During the past 13 years, over 1,400 consoles have been delivered and virtually every one remains in use today. A 5-year warranty is provided on all new units.

Call Fidelipac for the name of your authorized Broadcast Audio dealer.

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World Radio History

STATION SERVICES

News and Services for Business, Programming & Sales

NAB Publishes Sourcebook

DALLAS The National Association of Broadcasters has published a sourcebook on yield management pricing for broadcast. The book was written by Shane Fox, chief operating officer of Maxagrid International, and will be available at the Radio Show in New Orleans, Sept. 9-12.

For information, contact Fox at 214-550-0977, or circle **Reader Service 133**.

NASDAQ on Radio

WASHINGTON The NASDAQ Stock Market will begin providing radio stations in the top ten markets with daily, cus-

tomized stock market reports. The company plans to roll out the service to more markets after an initial trial period in the top ten.

Stations will have the option of selecting one of three different type of reports using the telephone. NASDAQ will make available a national report—ready for station taping—featuring stock market information of national interest, including the Dow Jones industrial average, the New York Stock Exchange volume, the NASDAQ Composite index and volume.

Stations can select a local report—ready for station taping—featuring national in-

terest stock market reports as well as prices and changes on stocks of local interest.

For information, contact Craig Thompson at 202-728-8268, or circle **Reader Service 113**.

New CD Library

COLUMBUS, Ohio The Sound Studio is releasing a library of 10 mood-music CDs. The catalogue contains 232 titles adding up to more than nine hours of previously unreleased, originally composed music. Different terms of payment will be available.

For information, contact Casper or Alice

at 614-759-6821, or circle **Reader Service 129**.

CBS Debuts Gil Gross

NEW YORK CBS Radio will launch "The Gil Gross Show," its first network talk program, on Monday, Aug. 24. The three-hour broadcast will air 8 to 11 p.m. ET, Monday through Friday.

In a related move, CBS hired Gregg Cockrell as producer of the Gil Gross Show. Cockrell joins CBS from KFI(AM)-KOST(FM) Los Angeles, where he produced the nationally-known "Tom Leykis Show."

For information, contact Ina H. Wallman at CBS at 212-975-3773, or circle **Reader Service 104**.

More Motor Sports

JOHNSON CITY, N.Y. Sportscom Associates will begin production of "Radio Road Test" on Sept. 1. The five-minute program will be hosted by Paul Kaminski, and is designed to give listeners driving impressions of American- and foreign-made cars and trucks.

"Radio Road Test" will be distributed via satellite and Comrex frequency extended phone line, on a *cash* basis.

For information, contact Paul Kaminski at 800-462-5677, or circle **Reader Service 52**.

Dataworld Publishes FM Allocation Map Book

Bethesda, Md. Dataworld's newest map book includes all full service FM, FM translators and boosters as well as pictorial data that includes all licensed facilities and applications and construction permits.

For information, contact Bob Richards at 1-800-368-5768 or circle **Reader Service 77**.

SMN Launches Hot AC Format

DALLAS ABC's Satellite Music Network division will debut a 24-hour, satellite-delivered Hot AC/Adult CHR format in September. The format will focus on playing current mass appeal pop hits as well as CHR hits from the 1980s. Artists featured include Genesis, Micheal Bolton, Madonna, Mariah Carey, U2, Wilson Phillips, George Micheal and Robert Palmer.

For information, contact Marty Raab at 214-991-9200, or circle **Reader Service 138**.

Sports/Business

Radio Network Formed

BOSTON Star Communications of Boston and Colorado Springs, Colo.-based Business Radio Network and American Forum Network, have reached an agreement to form a sports/business radio network, North Star Communications (NSC).

Star Communications produces and distributes 88 hours of sports programming weekly to 130 station affiliates. Business Radio Network and American Forum provide 24-hour business news and features to 130 stations on a daily basis.

NSC will reach 49 of the top 50 U.S. radio markets and 80 percent of the national listening audience, according to Richard North, NSC Chairman.

For information, contact Tim Trainor at 617-523-3700, or circle **Reader Service 65**.

LOG 14 DAYS OF AUDIO ON ONE DAT, PLAY IT BACK WHILE STILL RECORDING!



MDL-14



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The Media

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The new Dynamax DCR1000 is available now, and it's priced like an analog cart machine. You will be amazed by its versatility. Call Fidelipac for more details.



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**AT THE NAB RADIO SHOW, JOIN US FOR LUNCH AND A
DEMO IN OUR SUITE AT THE NEW ORLEANS HILTON.**

Circle (179) On Reader Service Card
World Radio History

Negotiate Effectively with Networks

► continued from page 28

work to implement as any well-planned local programming.

Of course, now an operator would have more time to do this properly. So he or she would need to get educated on the equipment, how to use the satellite properly, how to write liners properly, whether to use a local morning show or not.

RW: Are there any tricks or inside information you can tell our readers about that will make them more effective in entering these negotiations?

Thomas: Well, I think it's vital that they read their contracts carefully. Especially renewal clauses. Many people are not aware that they have an automatic renewal clause that rolls over.

Read the form completely and have your lawyer look it over. I recommend that when you send in a contract you send in an automatic letter of cancellation that negates the renewal clause. Read your contracts carefully.

RW: Do you think stations that have signed up are getting the kind of support they need to be successful? Have you heard complaints

like this before?

Thomas: I've heard it. I know that SMN made an effort to get its reps more involved with customer relations. The stations have to realize they are just one out of a thousand other stations.

There are not enough people to give them constant attention 24 hours a day. However, I have known of certain instances where a particular song was played, an affiliate complained and it was pulled off the air. So they make an effort to customize service.

RW: Back to compensation. Would you tell us how networks are rated, and how they use this

to establish rates for their national commercials?

Thomas: That's where RADAR comes in. RADAR is an audience measuring device where stations acquire so many AQH. That is used to set rates. It is used to determine rates on a network-wide basis. That's why the networks are so driven by AQH in rated markets; that's what determines the price they get from Chrysler, Ford or whomever.

Instead of diaries that go to listeners, however, these are filled out by monitors around the country that work for RADAR and fill out diaries on the length, name, and order network commercials are played. To some satellite services like Jones Satellite, this means nothing because they don't care about AQH—they are only after affiliate fees.

RW: Finally, Jerry, where do you think compensation for networks is headed?

Thomas: I think it'll come down strictly to barter. The stations may have to clear three minutes instead of two, and this may be years in the making. It's purely speculation on my part, but I think it will eventually happen.

Our thanks to Jerry Thomas. Next month, we will look at some of the automation choices available to stations: What to look for in a system, and what to shy away from.

□□□

Karl Baehr is president of KBE Broadcasting By Design, a consultancy offering a variety of services to satellite affiliates. Baehr is a former programmer and air personality. Harry Nelson is president of Harry Nelson & Associates, a satellite consultancy; he was an operations manager at SMN for nearly a decade, and was a programmer and former air personality of the year. Harry Nelson can be reached at 800-67-RADIO. Karl Baehr can be reached at 505-264-0450.

Marketing with Your Database

► continued from page 30

shot ads on TV, radio (sorry) and in the newspapers.

While the store's mass advertising reinforced my daughter's personal efforts, it was her database marketing that forged the loyal, ignore-the-other-stores relationship the customers felt with her and her shop.

You can do it too

Beginning next month we'll start looking at how broadcast stations are using database marketing, as well as how you can get into the database game. You cannot only know who your typical listeners are, but who actual, individual listeners are, by name, address and phone number.

In fact, that's your homework for this month. Before next month's column arrives, think about all the different ways you can start collecting listeners, names, address and phone numbers. I'm confident that, with your contest expertise, you'll be able to come up with dozens.

What you'll be doing is beginning a listener database. Starting next month I'll give you some ideas about what to do with it, using simple PC capabilities. Later we'll examine ways to use this technology to convert other stations' listeners to your dial position.

□□□

John Cummuta is an independent marketing and management consultant, and the author of the Sales Machine database marketing course. He can be reached at 708-658-9107.

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A Salable Sound Starts with Dubs

by Jeff Loughridge

Part III of V

RICHMOND, Va. Last month we discussed the importance of quality control in the selection of equipment, and how to enlist the help of employees to act as quality control agents.

This is a good place to clear up a misunderstanding with at least one reader concerning examples cited in this series. Last month I explained that the effects of your equipment in terms of frequency response and distortion are cumulative. In other words what happens at point A, B, and C will be present at your listeners' radio, point D.

A reader called to point out that distortion products do not necessarily add in a way as to equal their apparent sum. This is true and my example was intentionally simplified to make the point easily understandable.

This series is not intended as continuing education for engineers, but to lay a foundation of understanding of the most basic principles at work in a broadcast audio chain. Examples are therefore as simple and non-technical as possible while maintaining their basic accuracy.

Spot check

Let's continue discussing quality control in your facility, focusing on the dubbing process. These procedures should hold true for both music and spot dubs. Commercials can be a large tune-out factor by themselves; don't add poor quality to the mix and assure an unhappy listener and client.

Because most spots last a minute or less, it is easy to pass them off and whip through them with no thought to their quality. This might seem acceptable until we realize that these spots are played in clusters of four, six or more at one time.

The dubbing process is where most of the technical imperfections are introduced. The most damaging factor is also the easiest to prevent: a lack of consistency. In the first installment of this column, I stated that

to aggressively process audio and have predictable results every time, all the time, requires consistency—which we strive for through quality control.

Cart failures, machine wear and tear and the like, are problems that can be minimized through diligent maintenance.

A bad dub is specifically created by failure to pay attention. This failure can be traced to many factors: a bad attitude, lack of or improper instruction in how to dub, or insufficient time to properly perform the dubbing process.

All of these have one thing in common: They fail to recognize the importance of a meticulous dubbing process. At most stations, music occupies the majority of air time, then spots, then talk. As with everything else, if we look at it as one dub it seems insignificant, but 40 minutes of uninterrupted dubs become quite significant if they aren't consistent.

Basic dubbing

To achieve consistency in a dub, start with the basics. Unless you are redubbing an entire library, assign *one* person to be responsible for music dubbing. When you use more than one person, you introduce more than one technique into your dubs.

You will invariably have a difference in the start time of the carts—the time between hitting the start button and when the music starts. This can confuse your air talent, making their on-air delivery unpredictable.

Have your engineer train this person on the operation of the equipment. It seems obvious that everyone should know how the equipment works, right? *Wrong!* I still run into stations where the people doing the production and dubbing don't know how to operate the cart machines.

One of the most common misunderstandings I find has to do with optimizing carts. It is imperative to understand that when optimizing a cart, it *must not* be touched until the dub is completed. The reason for this is that the record head is optimized relative to the playback head and tape path at

the time it is run. Moving the cart shell repositions the tape relative to the heads and negates the procedure.

A home-brew version of this procedure has been done with success by engineers who do not have a machine that will automatically optimize itself. They have provided a means of easily changing the azimuth of the record head while recording a mono signal (a tone, noise, or full bandwidth program material), and watching the output on a mono meter or scope.

You adjust the record azimuth while monitoring off the playback head for as close to a diagonal line on the scope, or maximum meter deflection on the mono

meter. The problem is how to erase the cart once it has been optimized.

The only practical way is to remove the cart and use a hand eraser. This can significantly compromise the accuracy of the optimization since the tape position, relative to the heads, is changed. It can be successfully argued, however, that the result would be no better than if no attempt had been made to optimize the cart.

Dedicated dubbing

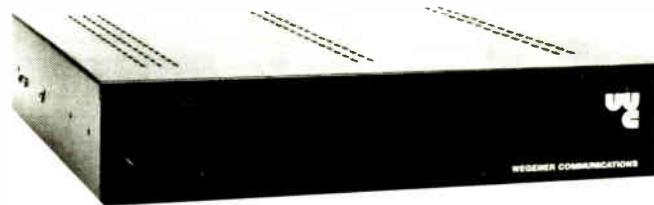
Setting up a dedicated dub station is also preferred. It could ideally go in the office of the person who does the dubs. This way, he or she is in control of the equipment, it is used only for one purpose and suffers less wear and tear. The signal path too, can be kept as simple as possible.

If this is not possible, the next best

continued on page 46 ▶



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News Services Branch Out

► continued from page 32

Last year, UPI went even further to accommodate light news users, such as music-intensive FMs, by introducing two new services: UPI-FaxNews and SelectNews.

FaxNEWS, as the name implies, is a fax-delivered news service concentrating on concise national and international news, sports, business reports, weather and features, aimed at drive times. It is available in ten different packages according to station needs, costing approximately one fourth as much as a station would pay for CustomNews.

SelectNews was originally designed for use by newspapers, but it is also available to radio stations. The service reverses the traditional wire service arrangement by allow-

ing clients access to the UPI databank and cherry-pick the stories they need, billed on a per-story basis.

The ABC and CBS radio networks each assert that they do not intend to enter the wire service business as a profit-making venture. Instead, both describe their new wire service as a value-added bonus available exclusively to their affiliates (ABC News Wire is also available to clients of ABC subsidiary, Satellite Music Network).

Even so, Westwood One Station Relations Vice President George Barber, discussing Westwood's effort to target music-intensive stations with its OptiNews audio news service, wondered if there may not be more than meets the eye in the ABC and CBS wire services.

Strictly for the sake of idle speculation, Barber said that if his company were entering the hard copy wire service business, he would certainly consider what might happen ultimately to United Press International (UPI), recently purchased in bankruptcy court by Saudi-owned Middle East Broadcasting for \$3.95 million.

"Somebody's going to need to fill that vacuum if UPI doesn't survive," Barber said. "But then, I first heard it was going under in 1980, so anticipation of its demise may be ill-founded."

OptiNews, which has been operating since December with approximately 200 subscribers, is not a hard-copy wire service. Regardless, it is approaching the same music-intensive stations targeted by AP, CBS and ABC with a package of three one-minute

reports hourly, each read without network identification by Westwood One anchors. "It's a raw materials service," Barber said.

Whether or not ABC Radio is considering the possibility of competing with AP in the future, the network has been preparing to launch a customized wire service able to meet the needs of individual stations for quite a while.

Derek Berghuis, ABC's senior vice president of business development, said the network has been working on the concept of its ABC News Wire for nearly two years. Its August 3 launch was only held back by the technology necessary to make the service completely station-addressable.

Berghuis said addressability was a critical consideration because ABC wanted its wire service to be as useful as possible to affiliates on the local level.

That meant being able to deliver a lot of specific information very quickly.

In addition, ABC News Wire transmits local, national and international news stories, roundups for all major sports, stock reports, financial news and light features—custom-tailored for each subscriber.

Stations that are already on-line with the ABC Data satellite feed simply encode their individualized data card for printouts of the specific information desired. Those not on the system must invest \$1,000 for a data card and printer.

"If you only want a couple of headlines a day, we can do that," Berghuis said. "If your jocks want to give the latest baseball scores between songs, you can simply add sports to the mix. If you want the whole package, we can do that, too. We can provide as much as you want, when you want it."

CBS Radio Networks has solved the addressability problem by teaming up with

Zapnews FAX network to form a CBS Zapnews package for its affiliates. Instead of complex and costly computer systems, CBS Zapnews' primary means of delivery—like UPI's facsimile service—is an ordinary fax machine, though it can also interface with computers equipped with newsroom software.

Jim Hood, president, Zapnews, believes that providing niche products in news is the wave of the future. "There really is no end to the possibilities once you get started," Hood said. "It is a world of endless specialization that makes life interesting and better for the consumer."

The basic package, as described by CBS Affiliate Relations Vice President Peter Moore, is a hard news roundup of state, national and international events with a taste of business, sports and weather.

That core report goes out to all subscribers. Stations are able to customize the feed beyond that point by requesting additional topics of special interest or more in-depth coverage of basic material such as business and sports.

CBS's main purpose in organizing this hard-copy news service, according to Moore, was to "round out the service we can provide to our current affiliate base." For instance, he pointed out that CBS Zapnews is specifically designed to dovetail with audio actualities provided to affiliates that subscribe to the CBS Custom Cuts news feed.

Denny Jackson, general manager of big band/blues/jazz KRBL-FM Los Alamos, N.M., said he did not sign on with a news service at launch six months ago because the cost was prohibitive. He was also more worried about establishing his music programming than becoming a news presence in the market.

However, he said he was one of the first to subscribe to AP's DriveTime program. "The concept is perfect for us," Jackson said. "I don't want KRBL to be a full-service news station. On the other hand, I want to keep our audience informed."

Jackson said he is keenly aware of research that demonstrates that audiences 25 and older, even when they're listening to a music station, want to know what's going on.

"Thirty or 35-year-olds have a very different appetite for news than they did when they were 18 and didn't give a damn what was going on in the world," said ABC's Berghuis. "Those boomers want information. They want their music but they also expect a little more than that."

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Women Out-Muscle Men on Charts

by Charles Taylor

WASHINGTON Who would have imagined five years ago that a loopy-haired lass named Mariah Carey would effortlessly drop-kick Michael Jackson from the top of the album chart? Or that offspring of The Mamas and Papas and The Beach Boys—Wilson Phillips—would find Bruce Springsteen only a temporary roadblock on their way to the Top 5?

Welcome to 1992, where the tenor of the times is more soprano than bass. Female vocalists are finding their place at the head of an industry that has traditionally been dominated by men, as far back as Elvis and The Beatles.

Successful women have been sprinkled throughout time—Aretha Franklin, Janis Joplin, Debbie Harry and Linda Ronstadt, for instance—but even as recently as a decade ago, the only female artists with real Top 40 muscle were Olivia Newton-John, Pat Benatar and Diana Ross.

Female world

Today, witness: The 1991 album and single of the year Grammy honors were carried away by Natalie Cole, while the No. 1 singles artist was Carey. The biggest and highest-paid star in the world—sorry, Michael—is Madonna.

The new domination dug in its heels



Celine Dion

in the mid 1980s, when Cyndi Lauper, the first women ever to score four Top 5 singles from an album, and Madonna, who broke every traditional code she could muster, offered the music scene a brash, proud new strength. MTV showed us Tina Turner in her 40s, strutting, "What's love got to do with it?"

Suddenly, Tina doesn't need Ike and Chaka can do without Rufus.

With the success of these blockbusters, radio found an ally in female talent. Being the first on the dial to play the new Janet Jackson was as big a draw as the latest George Michael or Bobby Brown. Record companies reacted by signing more of the same—for example, The Bangles, Tiffany, Debbie Gibson and Gloria Estefan. With audience approval, radio made them all airwave mainstays.

Queens of the airwaves

Today, female vocalists continue to show that, while they can be tender, it's not a Connie Francis world anymore. They

are a potent force, one-on-one with the Jon Bon Jovi's and Axl Rose's of the industry.

If you're not yet convinced, here are 10 voices that have played significant roles in the *Lipstick Regime* of the 1990s.

Madonna: A woman who knows what she wants, how to get paid for it and how to look good in the process. Her image transformations are notorious, her outspoken attitudes unequalled, her relentless business fortitude unparalleled and her principle-teasing videos an industry standard. She sings OK, too.

Janet Jackson: The Princess of Groove.

Street-smart, savvy R&B music, along with a paradoxical sweet/shy image. The complete package, Jackson dances and sings and she's smart enough to surround herself with the industry's best production talent.

Mariah Carey: The first superstar of the 1990s hit the old-fashioned way—with her voice. A five-octave range and classic, self-penned pop songs promise longevity.

Amy Grant: Staunch Christian listeners are still squirming, but this once-gospel singer has made a lasting impression with five Top 20 hits from her "Heart in Motion" disk. There will always be room

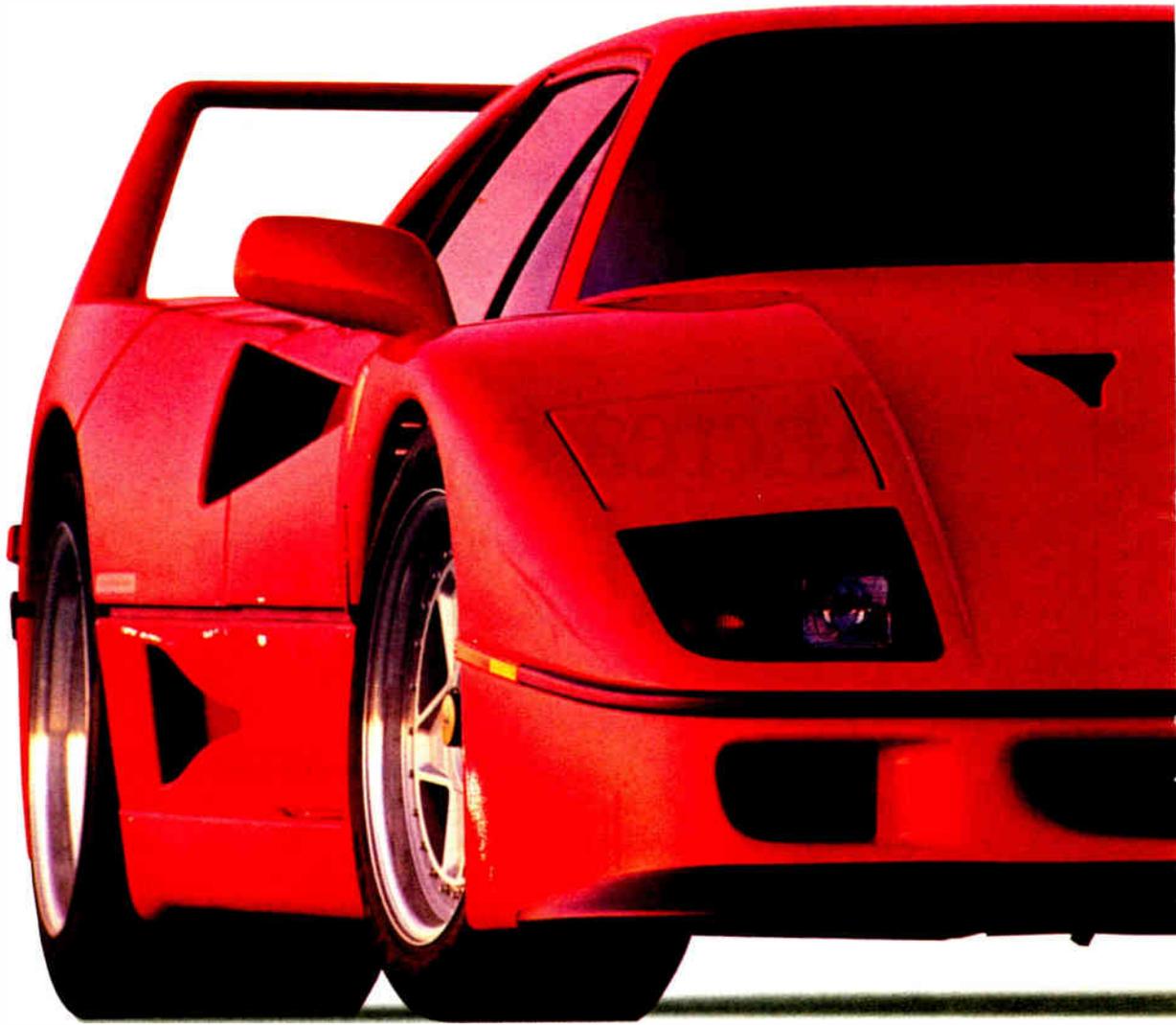
on Top 40 radio for catchy, family-friendly music. And her videos are the most consistently inspiring in pop radio.

Vanessa Williams: This former Miss America is reigning on the pop and R&B charts these days. "Save the Best for Last" will be heard on radio around the world for years. A beautiful, classy vocal style that can also get funky when she feels like it.

Celine Dion: This humble, personable French Canadian got my vote for the best new artist of 1991. Her debut and current English disks are dazzling, first-class efforts. Every song she sings is blessed by some of the richest, surest vocals I have ever heard. One of a kind.

Bonnie Raitt: She quietly built a following while men still controlled the charts, and got her due with four Grammys in

continued on next page ►



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World Radio History

Women on the Forefront

► continued from previous page

1991. Bluesy, straightforward music with a laissez-faire attitude about what might or might not hit. The woman just wants to make music.

Paula Abdul: Thanks for the memories. Her debut album proved that great songs and a solid video image equal success in the 1990s. The follow-up effort, however, established that without the voice to match, you are yesterday's news.

Whitney Houston: Among the great success stories of the 1980s, Whitney has cooled as her material covers less and less new ground. Still, as pop divas go, she is one of the heavies.

Wilson Phillips: Formulaic music saved by lush harmonies and a headline-grabbing family connection within the industry. These three talented singers/songwriters will have to work particularly hard to continually offer us something fresh.

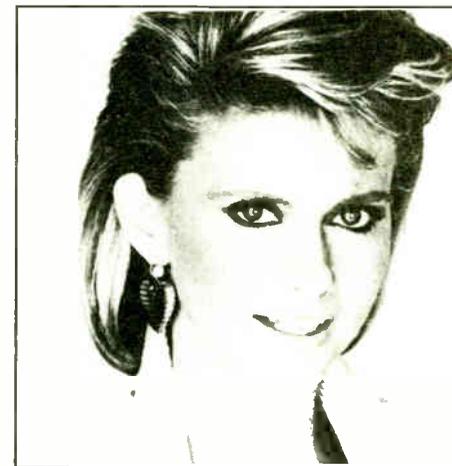
Runners up: **Annie Lennox**, simply not capable of doing injustice to any song she chooses to sing; **Alison Moyet**, the most compassionate, intimate live performer I have seen; **Tori Amos**, whose debut disc is a raw, almost uncomfortably intimate achievement; and **Sheena Easton**, whose versatility and killer voice have escorted her through a decade of successes in a fickle industry.

Ironically, country radio, the hottest format of the day, has been reluctant to shine the spotlight on its ladies; male vocalists still lasso the most hits. Apparently, country prefers to honor one Loretta Lynn, Patsy Cline or Tammy Wynette at a time.

Country divas

Leading the lean class of 1992 are Reba McEntire, Tanya Tucker and Kathy Mattea, who all embody country's enduring penchant for convention. First lady contenders include Lorrie Morgan, Mary Chapin Carpenter, Patty Loveless and the now-solo Wynonna Judd; up and coming: Trisha Yearwood, Pam Tillis and Suzy Boggus. "Bad girls" just don't have much appeal in this genre.

R&B, meanwhile, has always loved its ladies, since the days of the Motown girl groups. Today's leading divas remain an in-

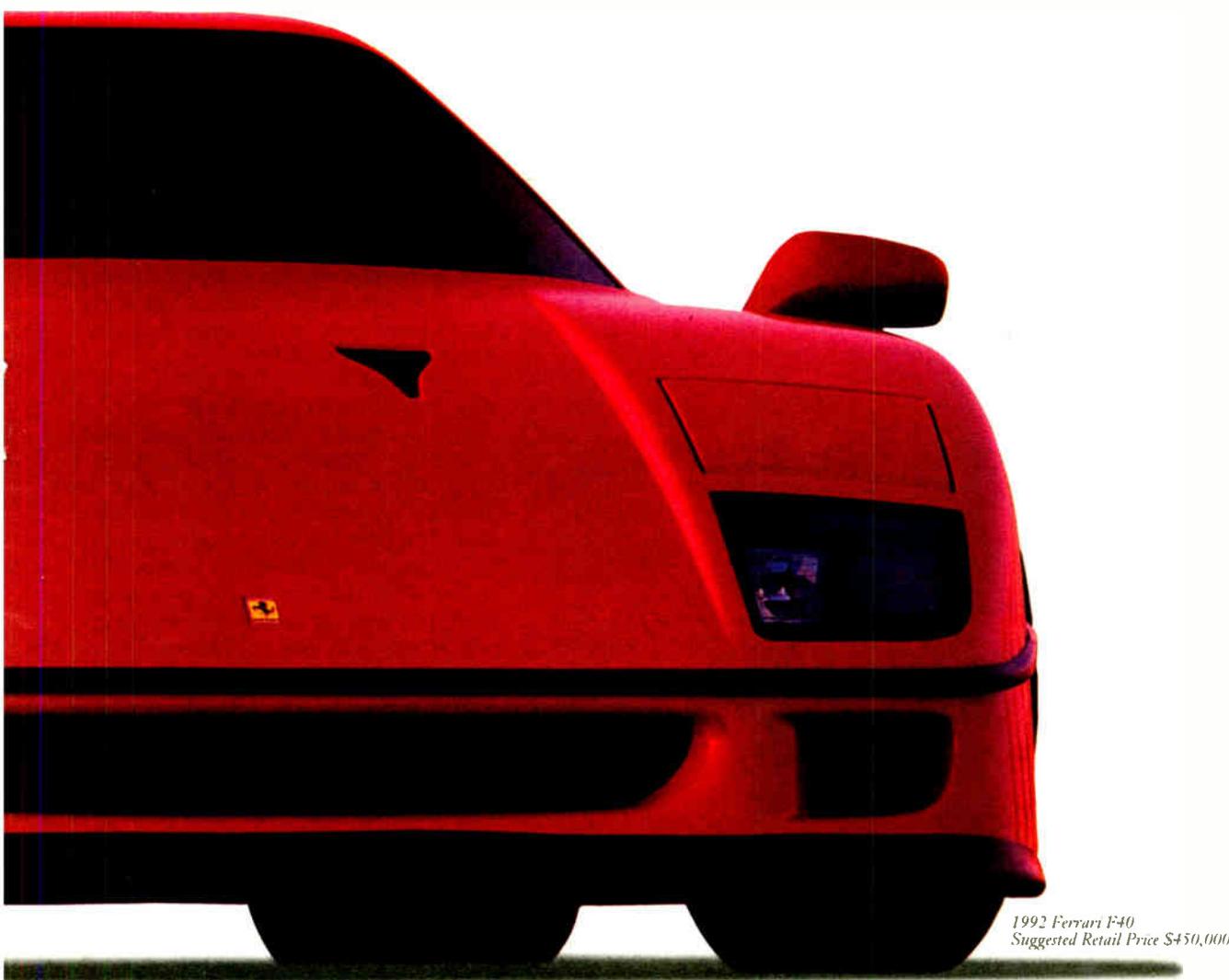


Olivia Newton-John

fluent force, even amid the flourishing male-dominated rap scene.

Topping the list is Patti Labelle, whose trademark blustering vocal style (not to mention that hair) keeps her at superstar status. Runner-up for 1992: En Vogue.

Trends come and go in popular music, from playing records backward to wearing clothes backward. The dominance of female vocalists is more than the fashion of the day. Count on women to remain in front.



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RUNNING RADIO

Beginning with the November 4 issue of RW, Running Radio will focus on a particular aspect of radio per issue. Following is a list of topics to be covered:

- November**
Business outlook and station operations
- December**
Incentive selling; merchandising
- January**
Sales strategies
- February**
Research; sales and programming
- March**
Engineering primer for management
- April**
Networks
- May**
Ad agencies and Radio reps
- June**
Station promotion; Sports and event marketing
- July**
News services; Delivery systems
- August**
Program syndication
- September**
Brokering and financing of station transactions
- October**
Format trends

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Fax Machines Offer Vital News Link

by Gordon Govler

MADISON, Wis. "Anything happen overnight?" is my stock question on the early morning police-beat phone calls. The responses are pretty predictable,

but this morning I got a new one. The dispatcher informed me there had been a serious accident on the interstate. "Do you have a fax machine?" she asked. I gave her my number and quicker than it would have taken to dictate the information over the phone I had all the facts I needed.

I could have called back for comments or clarification if necessary but because my time was tight, this was a welcome innovation. It got me think-

ing about how helpful and easy it would be to make hazardous transportation information more readily available to our commuting listeners.

Convenience and comfort

More and more news is coming in on the fax machine, as agencies and individuals realize its advantages.

The local fire department has been faxing out news releases for roughly eight months now. Lt. Tom Olshanski of the public information office explained how the fax machine helps cut overtime hours.

If there is a fire call at night, the official news release can be compiled and faxed out as soon as it's over. The spokesman doesn't have to wait until the

radio news people come to work and start making their calls.

Plus, the fire department doesn't have to worry about charges of favoritism. Olshanski says his machine is pre-programmed with all the news numbers. When a release is ready, it gets all the recipients on the line and sends out the message simultaneously.

At most radio stations, one fax machine is used for all news, sales, and other station business. And at some stations, the news room is taking priority.

At WOLX-FM across town, News Director Ted Houston estimates 80 percent of the daily fax traffic is for news. The station doesn't have a newswire. It gets national and international news from ZAPNEWS via fax, and state news from

the Wheeler News Service, also via fax.

The fax machine used to be in the WOLX conference room. But news staffers had to tap on the window and interrupt conference meetings to beg for the news, so it was moved to the news department.

WTDY(AM)-WMGN(FM) News Director Toni Dennison says a lot of sports news from the University of Wisconsin and news releases from lawmakers come in on the fax machine they share with the sales department and the rest of the station. The fax machine also seems to be the best way to send out last-minute notices of hastily called news conferences.

Wheeler News Service President Dick Wheeler has about three dozen Wisconsin radio clients for his fax-delivered news service. He began it to serve UPI clients a little over a year ago, when UPI's future began to look particularly precarious. He couldn't have done it without fax technology.

"Rather than make a major investment in unreliable equipment," he says, "I did the second best thing. I used the equipment already in place, telephone lines and fax machines."

Wheeler reports fax clients have had very few complaints, outside of an occasional paper jam, and believes faxes are the wave of the future.

No hardware required

"UPI's and AP's costs are multiplied immensely by having a dedicated machine and a satellite dish to receive it and satellite time to send the stuff. With a fax machine, the telephone companies are responsible for the major investment."

The faxes come in at a clip of about three per hour at the Dallas headquarters of the USA Radio Network. News Director John Clemens says affiliates and listeners often submit news items from their area that they want to call to the attention of the network. Scripts from stories by the 54 foreign stringers under contract with USA also come in by fax.

Clemens has also seen some fax harassment. During a week of news reports focusing on Satanism, a lot of fax pentagrams and upside down crosses arrived. "I even got a resignation from one of my anchors by fax," he says.

A lot of press releases come in on the fax machine and that's the way Clemens wants it. "We're way out here in Dallas," he says. "Don't send me a press release in the mail for immediate release."

In the future, Clemens would like to be sending out information to affiliates by fax. "I would like to send affiliates our headlines for each hour, to allow them to promo our news," he says.

UPI Radio News Director Howard Dicus is less enamored of his fax machine, which seems to be primarily a target of local public relations agencies. "We're paying for paper so other people can sell us things," he grumbles. "It's a big waste of time and paper."

"Public relations firms brag to their clients about the number of 'impressions' they make. A single message often arrives in 10-12 versions addressed to people who used to work here."

Dicus says the fax machine is most help-

continued on page 46 ▶

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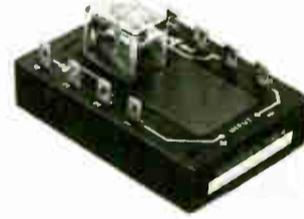


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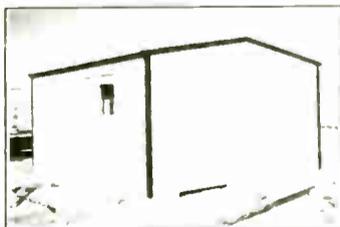
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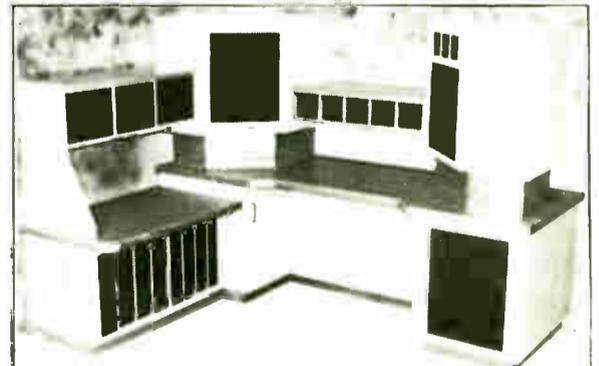
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READER SERVICE NO. 42

A Salable Sound Starts with Dubs

► continued from page 39

approach would be to have your engineer install a bridging patch (this will patch the source output to the cart output *without* breaking the signal path to the console) in the studio where the dubbing takes place.

The purpose here is to remove as much electronics as possible between the source and cart machine. If it is a CD player, you would want to patch from the balanced outputs (of the player or interface box) and patch directly into the cart machine, bypassing the console entirely.

The levels should be such that a direct patch will be satisfactory. If you want to be

able to control a fade and compensate for level differences between channels, add a passive attenuator and balance control to the circuit. At the same time, add a momentary push-button switch to sum the console monitor outputs to mono. We will use this to check on mono compatibility and phase error in the dub.

Since the console is electrically out of the system, but the source and cart signals are still available on the console, we can use the program and audition busses to monitor the signal in real time. This is important to compare the original and the dub as it is being recorded.

Bring the *source* pot up in *program* and the *cart playback* pot up in *audition*. We can now switch the console monitor between program and audition and hear the original and dub. Using this in conjunction with the *mono* push button allows us to compare mono and stereo, source and dub for differences.

In mono, there should be no loss of high end when switching between source and dub. If the dub is different, we have phase errors in the dub and should start over. This flipping between program and audition should be done continuously while dubbing. This is how we assure the quality and consistency of the dubs.

Take your time

It is also important to allow sufficient time for each dub. To perform the proper quality control checks, it is reasonable to expect no more than five to six dubs per hour. This allows the proper checks at a pace that will not encourage mistakes and omissions. Any faster and corners will be cut and potential

problems missed.

Once the dub is completed, have three packs of colored dots nearby. Avery makes many different colors that are perfect for this purpose. We use these to identify the month and year the dub was made (i.e. 7/92), the source (CD, LP, 45—remember them?), and the initials of the person who did the dub.

Place these three dots on the bottom of the cart and keep a station standard so each color is consistent and represents the same information. By doing this we can track the age of dubs, update from one source to another if it becomes available on a higher quality medium, and identify problems with the dubbing procedure if the same initials have the same problems over and over.

Now that we have taken the steps to perfect the product before it is processed, next month we will continue and discuss communication between departments so that everyone is in pursuit of the same goal when deciding how to process.

□□□

Jeffrey Loughridge is president of Audio Concepts and Engineering, a technical consulting firm that designs and renovates studios. He can be reached at 1-800-777-4172.



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Newsgathering by Fax

► continued from page 44

ful in getting WAND and PAND, the daily advisories from the Washington Audio News Distribution and the President's Audio News Distribution services. Occasionally it's also used to fax an audio billboard to a client whose wire is down.

UPI also has begun fax delivery of its news reports to 40-60 clients, mostly in radio.

Georgeann Herbert, managing editor at Chicago's WBBM newsradio, agrees that the fax machine is both a blessing and a curse.

"For things we're looking for that we need right way, it's really helpful," she says. "The problem is that we get bombarded with a lot of stuff that is really pretty marginal.

"A lot of times people are trying to sell us on stories we've already told them have marginal news interest. They think if they fax it over, that'll sell us on it, especially if they

send 15-20 pages. The fax machine is running almost constantly."

Announcements from politicians and political candidates are becoming more and more frequent during this election year. Herbert says special interest political groups are becoming more savvy about using the fax to notify media of events and demonstrations.

The fax is becoming the equivalent of another newswire at a growing number of radio stations. The problem is that the recipients may have little control over what's coming in on this "wire."

Georgeann Herbert says the solution that WBBM hopes to implement soon is a computer fax card. "To be able to capture (fax messages) in the PC and go through them electronically is preferable to having a stream of paper that curls up and falls all over the floor," she says.

□□□

Gordon Govier is news director of WNWC(FM) Madison, Wis. and editor of Scribe, a newsletter aimed at news people in religious broadcasting. He can be contacted at 5606 Medical Circle, Madison, WI 53719; 608-271-1025.

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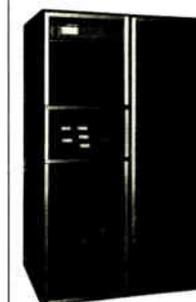
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NAB Show Targets All Facets of Radio

by Lucia Cobo

WASHINGTON The Big Easy will turn into radioland when the National Association of Broadcasters' 1992 Radio Show gets underway Sept. 9-12. Thousands of broadcasters and exhibitors will converge on the city for the annual gathering.

The Radio Show Steering Committee is hoping that tough economic times won't keep broadcasters away. The convention sports a packed and diverse agenda that Steering Committee Chairman Bill Hogan, president, Unistar Radio Networks, feels delves into the

important issues facing broadcasters today. "So many issues have popped up over the

"... broadcasters who ... come to New Orleans for a couple of days can walk away feeling they got their money's worth."

— Bill Hogan

last year that we have tried to address," said Hogan. "We feel we have put together a very thorough program dealing with a lot of direct marketing, ratings, research, sales, pro-

gramming and technical questions which are now more important than ever."

Faith Popcorn, chairman of BrainReserve, will kick off the 1992 Radio Show with the keynote address, "Trendview," on Wednesday, Sept. 9.

Michael Roarty, executive vice president of corporate marketing and communications for Anheuser-Busch, will deliver the sales and marketing keynote on Thursday, Sept. 10. Sales executives can attend a number of sessions designed to explore the topics of creativity, invention and innovation.

Sales, Sales, Sales

Dr. Gene Stanaland will take a look at the U.S. economic situation. "When Will We Stop Singing the Blues?" is an economic review presented in a humorous light, that explores the economic questions businesses are facing. Stanaland is the former head of the Department of Economics at Auburn University, and current president of GSE Inc., an economic consulting firm.

Other sales and marketing sessions include:

- New Business Development—presenting detailed ways to tap into retail, co-op and vendor dollars;
- Yield Management Systems for Broadcasters—Thriving with Information Technology;
- Maximizing National Sales—addressing how to strengthen the national and station rep partnership;
- Value-Added Sales—offering tips on increasing revenue through off-air event marketing, site trade shows and on-air package plans.

Programming on the agenda

Hogan commended the programming committee for its efforts to solicit and react to input from broadcasters. "They spent a lot of time calling out and requesting input from the industry," said Hogan. "We really feel very satisfied that everyone got a chance to say their piece—we polled the people and put together a program that addressed their questions."

The agenda features 18 format sessions, covering hot AC, urban AC, easy listening, oldies, soft AC, urban, AOR, talk, country, news, NAC/jazz, Spanish, MOR/nostalgia, CHR, classic rock and classical. There will also be a session titled, "Niche Formats of the Future."

Management and operations

Managers and operators will have a full plate to select from in New Orleans. Session topics cover everything from the latest news on local marketing agreements (LMAs) to whether there is any financing available to invest in radio.

Management sessions include:

- Expanding Ownership Opportunities—a discussion and update of the FCC ownership ruling;
- DAB Update: Emerging Technology—a discussion and update of the latest developments at home and abroad;
- Group Heads Tell It Like It Is; and
- Washington Update.

The program will close out with the Marconi Radio Awards Show, this year hosted by Deborah Norville and Tom Snyder, both of the ABC Radio Networks. To date, said Hogan, registration was running ahead of last year at the same time.

The thrust of the agenda, said Hogan, was to give the broadcasters what they said they wanted. "Times being what they are, we really feel that broadcasters who take the time and spend the money to come to New Orleans for a couple of days can walk away really feeling that they got their money's worth," he said.

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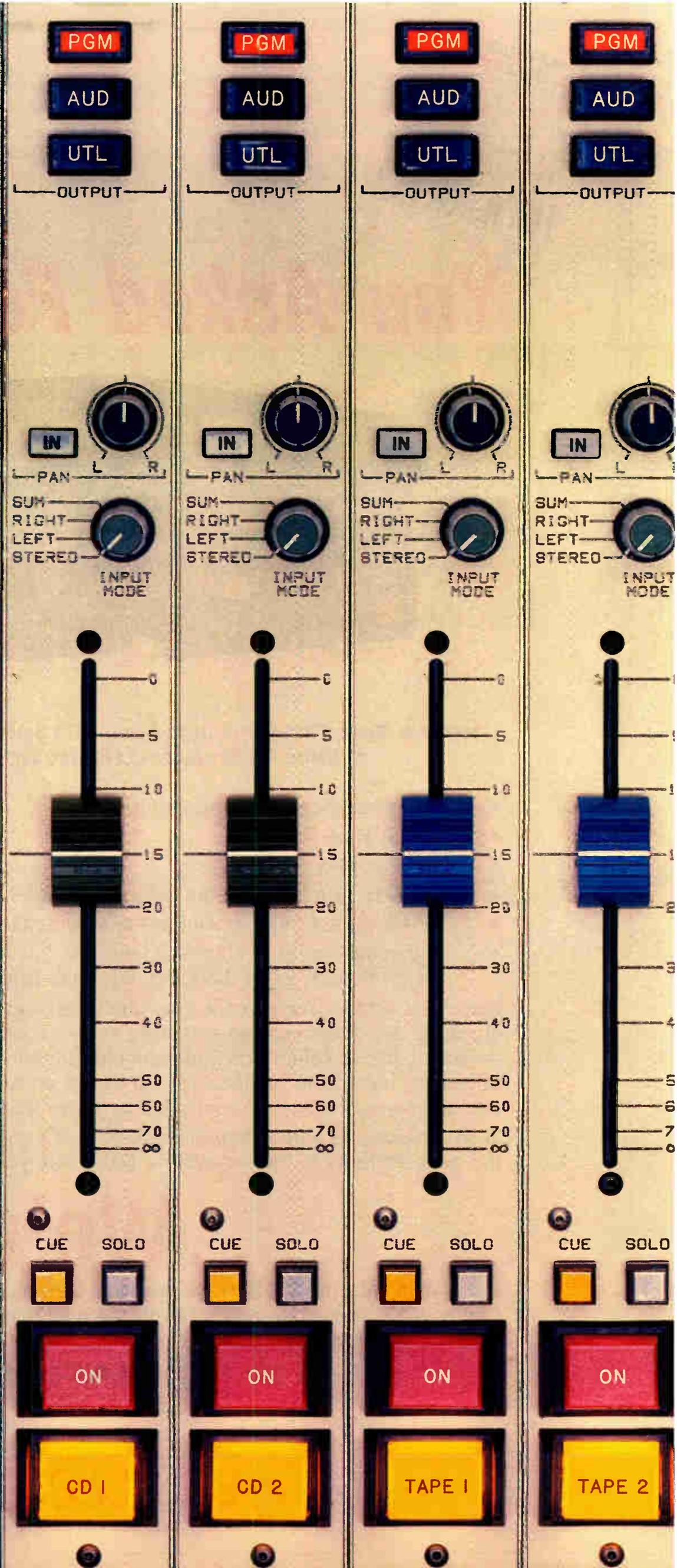
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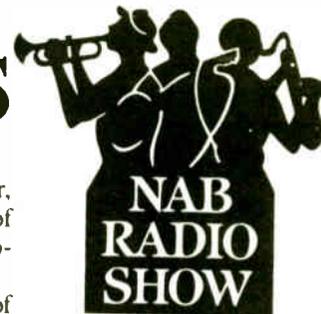
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Technical Seminar to Examine DAB, EBS



by Andy Butler

NEW ORLEANS The Technology Management sessions at NAB Radio '92 are specifically designed to give managers and programmers the information they need to make the right decisions for the future of their facilities.

More than 70 experts from across the country will brief attendees on topics that include the impact of EBS rules, changes of station operations and ways to avoid disaster in configuring digital radio facilities. It's all practical information that can help protect your bottom line and your backside.

Digital experts

One of the primary sessions is the Digital Radio Seminar scheduled for Saturday, Sept. 12. The seminar begins at 9 a.m. with a presentation entitled "A Technology Tutorial—Defining the Basics," by Dr. Ken Pohlmann, director of the music engineering program at the University of Miami in South Florida.

In this workshop, Dr. Pohlmann will examine the basic technologies used in digital audio and digital radio.

The next session, entitled "Building the Digital Radio Facility—Managing the Transition to the Future," Don Lockett from NPR will moderate a panel of experts from the U.S. and Canada who will answer questions about digital applications for radio stations. This session is scheduled for 10:30 a.m. on Saturday.

In the third digital session, "Opportunities for Expanded Service," a group of digital technology purveyors offer broadcasters a look at the possibilities their technologies permit. Doug Talley from Digital Planet leads off with a primer on adding local radio to digital pay-cable systems. Kent Malinowski from Scientific Atlanta follows with his ideas on utilizing the SEDAT technology to bring networking and other side area services within the financial grasp of smaller operators.

SpaceCom's Pam Long will explain how to provide low cost satellite distribution with the company's FM Cubed technology. The session concludes with Linda Donahue from California Digital. Donahue's company offers broadcasters a menu of transmission services ranging from dial-up data lines to transportable Ku-band digital satellite systems. She will provide a unique overview of these technologies and how well they work for specific levels of broadcast operations.

Industry standard update

Digital radio broadcasting is coming; the question is when and in what form. That selection process may already be underway and broadcasters can't afford to

be left out. In part four of the Digital Radio Seminar, participants will get a look at the current status of both the selection process and the systems being proposed.

The session will be moderated by Randy Brunts of Delco Electronics. Brunts is chairman of the Digital Audio Radio Subcommittee of the Electronic Industries Association (EIA), the manufacturers group that will test a variety of digital radio systems beginning of 1993.

Tom Keller, a consultant to EIA on DAR testing, will open the session with a review of the test plans now being developed. The nine proponents, who have indicated they will submit systems for testing, will then be asked to brief the group on their proposals.

At present, these nine system proponents include General Instruments, Strother/Lincom, American Digital Radio, AT&T/Bell Labs, Digital Planet, Kintel Technologies, Mercury Digital Communications, Thomson Consumer Electronics and USA Digital Radio (Project Acorn).

Although Saturday features the all-important digital radio sessions, the Technology Management sessions actually get underway earlier in the week.

The Technology Management Sessions begin on Wednesday, Sept. 9 at 1:30 p.m. when Larry Eads, Chief of the FCC Audio Services Bureau and Helena Mitchell, Assistant FCC Bureau Chief for Emergency Broadcast Systems, present "The Station Level Impact of the Proposed EBS Rules Changes" session. The commission is wrestling with a series of proposals that could radically alter the existing EBS system. Some of those changes could cost stations a significant amount of money while others could reduce the EBS burden substantially.

Outside contractor information

In the next session, "Practical Suggestions for Dealing with a Contract or Consulting Engineer," experienced engineers share their suggestions for getting the most out of outside service providers. The session will begin at 4:30 p.m. Panelists will include Paul Montoya of Broadcast Services; Gary Cavell of Suffa and Cavell, Inc.; Barry Victor of the Victor Group; John Bisset of Multiphase Consulting; Jim Stanley of Stanley Broadcast Engineering; Chip Morgan of Morgan Associates and Chris Imlay, chief council for the SBE.

Don't miss the first public presentation of the production version during the "NAB SuperRadio—Featuring AMAX" session on Thursday, Sept. 10 at 9 a.m. The radio has

continued on page 53 ►

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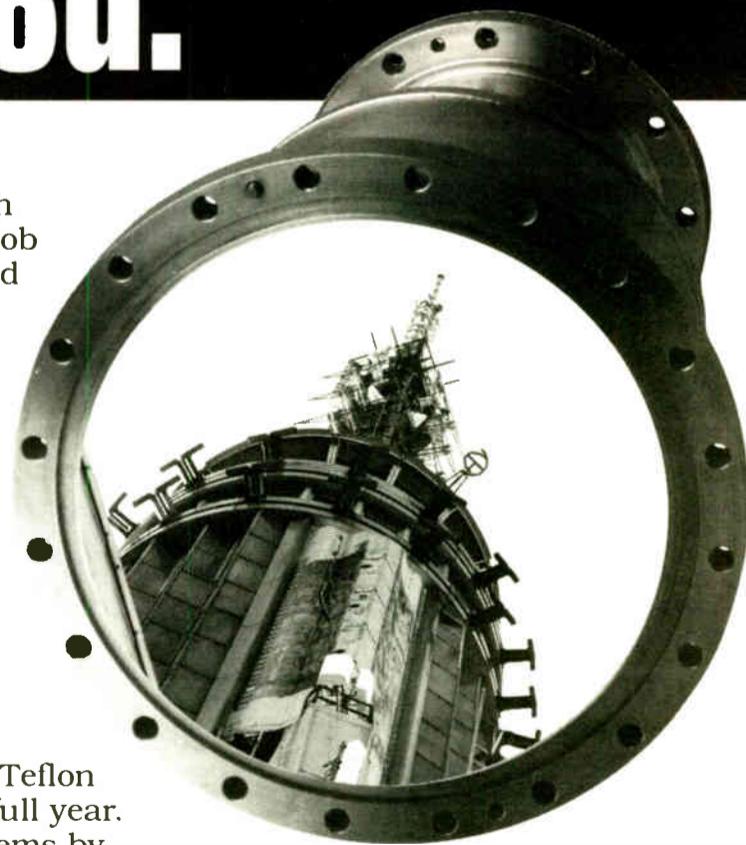
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World Radio History



Digital Radio Standard Talks Planned

by John Gatski

WASHINGTON If the NAB had its way, the National Radio Systems Committee (NRSC) would become involved in selecting a digital audio broadcasting standard.

Following a recent meeting of the Electronic Industries Association (EIA) Digital Audio Radio Subcommittee, NAB Senior VP of Science & Technology Michael Rau said, "broadcasters have much more at stake" than other industry segments that are involved in the standards setting process.

He stressed that an NRSC standards making process would give broadcasters more of a voice. "One of the things we (the NAB) have talked about is moving the process under the NRSC or else doing the EIA process by consensus," Rau said.

The consensus issue came up at the July digital audio radio subcommittee meeting when it was decided to table the original voting procedure that had been proposed by the EIA.

Because of the importance of broadcaster input, the NAB and the EIA have decided to hold formal meetings to discuss broadcaster interests in the standard, according to Springer.

Earlier this year, the EIA's digital audio radio subcommittee had initiated a process that involved eight separate industry segments voting on a standard in 1993.

Under the plan, each industry segment

would have voted on a system according to designated criteria. However, not all industry segment votes were given equal weight.

The receiver industry was allotted four votes while the broadcasters and the networks would get two each. The equipment manufacturers, semiconductor, software and satellite segments were allotted one vote each.

The NAB and other segments were not happy with the voting procedures, which led to a delay in approving them. NAB Engineer Ken Springer said that broadcasters must have more of a say in determining the standard because they will have to invest heavily in a new tech-

nical system that is not likely to gain a lot of new listeners.

Although the NRSC has set numerous

The DAB task force will give a standards' update at Radio '92.

technical standards, the EIA has been involved with such standards as the MTS television stereo mark, approved in

the mid-1980s.

Meanwhile, the digital audio radio subcommittee is moving ahead with plans to further define the technical testing parameters, according to the EIA.

In an effort to keep itself directly involved in the DAB standard setting process, the NAB Digital Audio Broadcasting Task Force is scheduled to give an update of the nine system proponents that are submitting proposals to the EIA subcommittee.

The task force agreed to ask the proponents for an update on each system and report the findings to "an informal meeting of the NAB Radio Board" at NAB '92, according to Rau.

"In preparation for the that meeting, the task force is going to ask each proponent to provide a written update to NAB by Sept. 1," Rau added.

NAB Pushes SuperRadio

by John Gatski

NEW ORLEANS The NAB has promised that it will be taking orders for the Denon TU-680 NAB "SuperRadio" tuner at the New Orleans Radio Show.

Following a delay getting the "SuperRadio" ready for delivery by the spring convention, Denon is now producing its initial run of 2,000 units, according to the company. NAB Member Services will be taking orders at its booth at the show and will process orders placed at the Las Vegas convention.

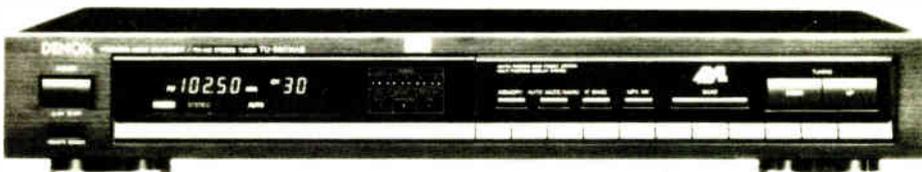
To whet the appetite of showgoers, the

NAB will sell five of the tuners on the show floor, according to NAB Services Merchandise Manager Michelle Cash. At press time, NAB had not set a price, but it's expected to sell below the \$599 retail price Denon has set for the TU-680. Denon will sell the tuner through its retail outlets as well.

There will be two SuperRadios to demo

lems in obtaining high-grade ICs on time pushed tuner beyond numerous delivery deadlines. The NAB, however, said it is now confident that a quality product has been built.

The unit includes an AMAX-certified AM section, AM stereo, and higher grade FM stereo decoder. The voluntary AMAX standard, approved by the consumer and broadcast industries, is given to tuners and receivers with improved performance in the AM band. The standard includes extended



The TU-680 NAB tuner will be on display at Radio '92.

and compare with normal AM on the floor of the convention center. NAB also has set aside one of the Technology Management sessions to allow showgoers to get acquainted with the tuner.

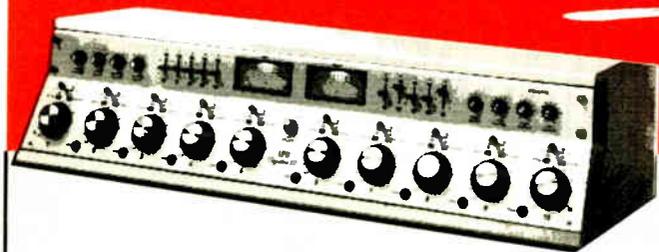
The SuperRadio project began in 1988 as a quest by NAB to build the ultimate tuner. Delays in working with manufacturers on designs and redesigns, and prob-

frequency response (50 Hz to 7.5 kHz or higher), external antenna connection, and noise blanking. AMAX Stereo is a separate designation given to AM stereo receivers and tuners that meet the AMAX standard.

In preliminary evaluations of the TU-680 prototype, the NAB said that TU-680 frequency response was measured out to 10 kHz and the noise blanking was described as "effective in eliminating static noise from such sources as fluorescent lights."

In conjunction with the NAB Science & Technology Department, RW plans to conduct some listening tests and sit in on bench testing of on an actual production model.

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Sessions Highlight DAB, EBS

► continued from page 51

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Session moderator Stan Salek of Hammett & Edison was the primary architect of this outstanding radio as a member of the NAB Science & Technology team. He will be joined by Robert Heiblim of Denon USA. Other panel members will include Glynn Walden of Group W, Ted Snider of the Snider Corporation and audio consultant Almon Clegg.

Remote alternatives

In the "New Backhaul Alternatives for Remote Broadcasts" session, moderator Tom Corelli, Media Services Coordinator for the National Basketball Association, will lead broadcasters on a survey of the latest choices available. The session will begin at 12:40

p.m. on Thursday.

During the session, Dave Anderson from IDB will explore the latest additions in satellite-based services. Bob McCarthy from AT&T will discuss the cost and availability of switched data lines for remote broadcasts. Tom Hartnett, chief design engineer for Comrex, Inc. and Daniel Joffe, a product engineer with Integrated Network Corporation, will profile the codecs their companies produce.

Paul Manuele from GE Americom and Evette Fulton from the Comsat Communications Center will discuss the latest satellite services from both of their companies.

During the session titled "Gearing Up for an LMA—Facilities Case Studies" at 2 p.m. on Thursday afternoon, moderator Mark Rollings will be joined by fellow broadcasters Mike Shott from West Virginia and Norman Lyda from North Carolina to discuss the

technical issues of LMAs.

Also, Dan Rau of Marti Electronics, Darryl Parker of TFT and Bill Sepmeier of the National Supervisory Network will address the solutions their companies have come up with in making LMAs technically successful.

Also on Thursday, at 3:30 p.m., the "RBDS: System Alternatives" session will highlight the potential uses for the data stream technology. Moderator Milford Smith will lead a panel of experts from both groups as they respond to broadcasters' questions on this emerging field. The panelists will include David Benjamin of Community Pacific Broadcasting, Mark Kady of Delco Electronics, Charles Morgan of Susquehanna Broadcasting, Greg Skall of Pepper and Corazzini, Gerry Lebow of Sage Alerting, John Casey of RE America and Matthew Straeb of Axxess USA.

Processing is still a big part of a radio station's sound. Find out what's out there at the annual "Processing Clinic" on Friday morning at 10:30 a.m.. Dennis Ciapura, director of engineering for Noble Broadcast Group,

will moderate a knowledgeable panel including Bill Ammons of CRL, Inc.; Frank Foti of Cutting Edge Technology, Inc.; Steve Hnat of Hnat/Hindes, Inc.; Bob Orban of Orban Division-AKG Acoustics; Vig Sherrill of Audio Animation and Paul Anderson of Gentner Broadcast.

At 3 p.m. on Friday, moderator Al Kirschner will moderate a session titled "Avoiding Obsolescence in Equipment Selection." An expert panel of corporate technology managers and suppliers will include Tom Harle of Harris-Allied, Art Reed of Bradley Broadcast, Tim Schwieger of Broadcast Supply West and Candy Clark of Broadcasters General Store. Bert Goldman of Shamrock Broadcasting and Tom McGinley of Cook Inlet Radio Partners will represent broadcasters.

For additional details on Technology Management sessions at Radio '92, contact Andy Butler at NAB Science & Technology: 202-429-5345, or by fax: 202-775-4981.

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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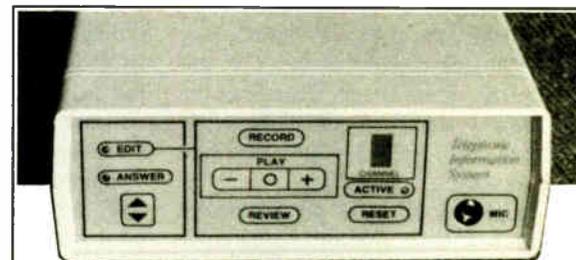
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READER SERVICE NO. 24



AMs Assertive in New Orleans Market

► continued from page 1

welcome news for radio in New Orleans. The last decade has been difficult for many stations. According to the 1990 census, the city had the country's eighth highest population loss by percentage during the 1980s.

"We felt the recession earlier than most," Cooper explained. "It hit the U.S. in the mid-1980s with the oil bust and the city never really recovered. When you combine the recession with deregulation and more stations coming into the market, it's been a tough one-two punch for broadcasters who were in the market prior to that."

Stephanie Riegel, a reporter for City Business, agreed that radio stations in New Orleans—the 39th largest market in the United States—have been hurt by proliferation.

Too many stations

"The pie is divided into so many more pieces than it used to be," Riegel said. "There are about 25, not counting the two public stations and the community station. Ten years ago you had maybe half that number."

WYLD-FM, an urban contemporary station, is among the casualties. The station's owner, Inter Urban Broadcasting Partnership, was pushed into Chapter 11 last winter and, despite the fact that WYLD was ranked consistently in New Orleans' top five, it and its gospel format sister station WYLD-AM are being sold.

The city's economic woes have not created a climate conducive to technical experimentation either, but they have led to creative approaches to marketing like WBYU's "lifestyle fairs."

Also, New Orleans' party atmosphere frequently pervades marketing strategies. Many stations participate in the Mardi Gras parade and the Jazz and Heritage Festival.

WNOE, a very successful country FM, sponsors a stage at New Orleans' famous Jazz and Heritage Festival even though most of the music played there

isn't country.

Operations Manager Dave Nicholson said the promotion is well worth the expense. "It's such a big event and we really wanted to identify ourselves with the community," he said. "Having a good time is an art form here. Everything is a festival, a parade. We work really hard to reflect that."

LMAs popular, too

Local marketing agreements (LMAs) also have taken hold in New Orleans. WEZB-FM, a CHR station, recently took over sales and programming of the adult contemporary station WMXZ-FM. Key-market Communications, owner of market leading WWL-AM and adult contemporary WLMG-FM, has engineered an LMA success story.

Riegel said that last fall Keymarket took over sales and programming of KNOK-FM, a struggling new age station, and changed it to KMEZ, an adult urban contemporary station. "The light rock of urban music" was a new format in New Orleans and the station's popularity rose to sixth place.

Of course, music is one of New Orleans' major assets and this is reflected in radio programming. Wentz manages the urban CHR WQUE-FM, as well as its sister, the new AM sports station. Urban music is very popular in New Orleans.

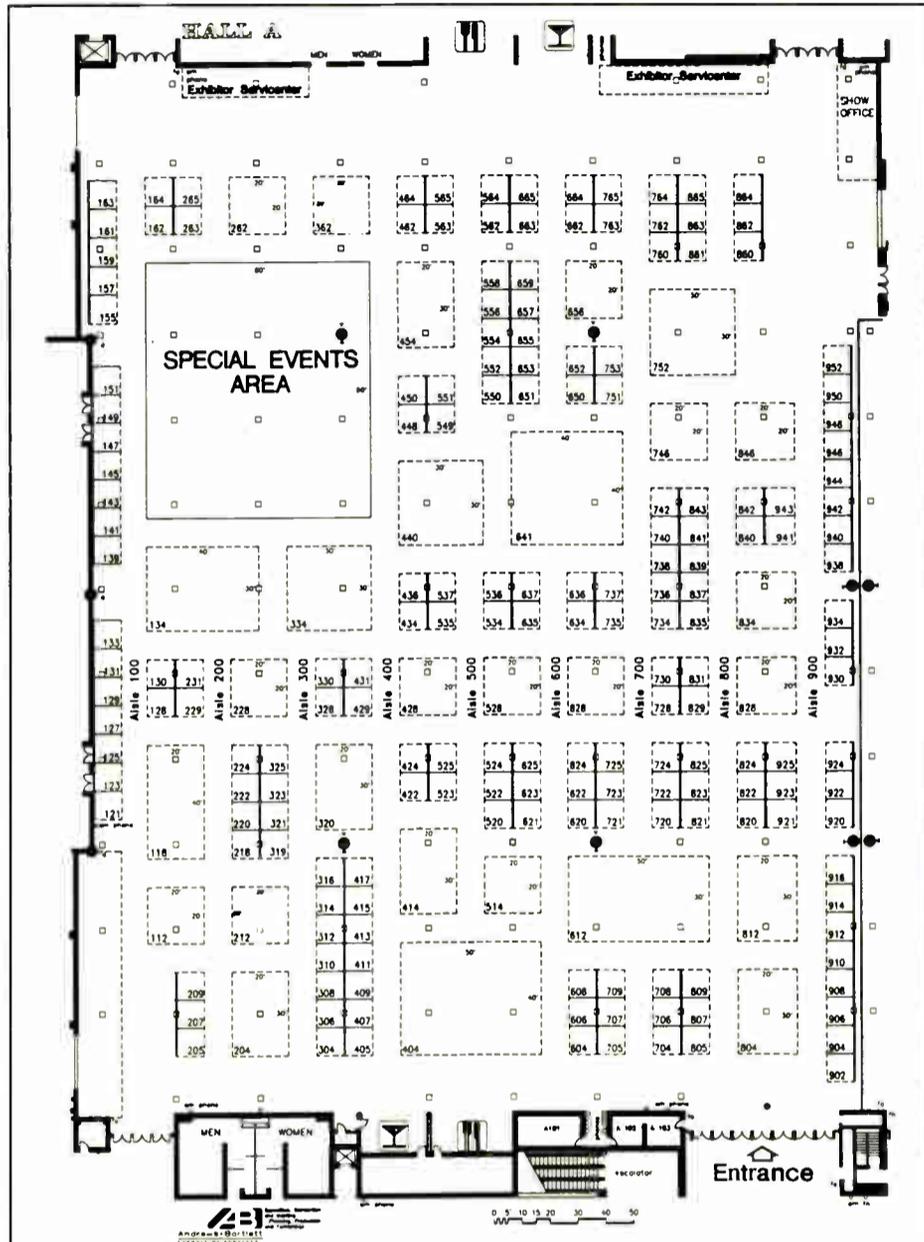
Three of the top ten stations feature an urban format. Wentz said WQUE features a lot of music that is popular nationally, but generated locally. "Music is very special in New Orleans. You've got the French Quarter here and Bourbon Street. When people think of that, they think of music."

The songs played on the radio, however, differ from the music many people associate with New Orleans. None of the top stations feature jazz, Cajun or Zydeco as part of their regular programming, except around Mardi Gras time. Station managers said this reflects listener interest.

Nicholson described music preference tests done by WNOE. "The actual preference for jazz, Cajun and Zydeco with the masses was the lowest of any type of music. Cajun and Zydeco are the types of things where if you're in a club or something, you really like to hear it because it makes you feel like you're in New Orleans."

But it's one of those things you couldn't take a steady diet of on the radio."

WNOE is considered one of the city's surprise successes, since, as Nicholson admitted, "New Orleans traditionally has been a terrible market for country music." He attributed the success to the resurgence of country music's popularity and also to the station's modernized approach to programming, which includes market research, music preference tests, and computerized music scheduling.



Radio 1992 Exhibit Floor

Making sense of a trade show can be a nightmare unless you plan your route ahead of time. Use this floor chart along with the Exhibitor Directory on the following pages as your guide to companies you'll want to visit. Numbers refer to exhibitor booths—although they were accurate at press time, they are subject to change.

Chart reprinted from NAB source materials.



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The NAB Radio '92 Exhibitor Directory is a listing of information provided by exhibitors who responded to a questionnaire sent out by RW. Past and potential NAB radio show exhibitors were asked about new and established products and services to be shown at Radio '92.

Questionnaires returned by the deadline are included here. "TBD" ("to be determined") in place of a booth number means a booth assignment had not yet been made.

All information included in this directory is correct as of press time. Booth numbers and display plans are subject to change. Check with the NAB for additional information.

Company	Booth
2B	709
2B is a marketing and promotion company which specializes in creating, coordinating fulfilling membership promotions for radio and TV stations. Contact: Matthew Mrowczynski, Dir. of Mktg. 6575 Arrow Dr. Sterling Heights, MI 48314-1413 313-254-6900	
360 Systems	835
360 Systems will feature the DigiCart digital audio cart machine, which offers random access to hundreds of audio cuts and stores recordings on removable magnetic disks and optional internal/external hard disks. Contact: Don Bird, GM 18740 Oxnard St. Tarzana, CA 91356 818-342-3127	

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Accu-Weather	450
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A.F.C.C.E.	948
The Association of Federal Communications Consulting Engineers (A.F.C.C.E.) provides through its membership engineering services to all fields of communication, including broadcasting. Contact: Robert Culver 1156 15th St., N.W., Ste. 606 Washington, DC 20005 202-296-2725	
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The Arbitron Company	404
The Arbitron company is a full service audience information company. A number of products and	

Exhibitor Directory

services that help radio broadcasters make the most of their numbers will be on display. Arbitron will introduce the MaximiSer, a pc application that provides the sales and programming answers broadcasters need, whenever they need them. Contact: Jay Guyther, VP Radio Station Services 142 W. 57th St. New York, NY 10019 212-887-1348

Associated Press **612**
AP will show its line of news wires (AP DriveTime, AP Headlines, AP NewsPower, AP NewsTalk, AP Specialty Wires) and audio services (AP Network News, Texas AP Network, New Jersey Sound). Also on display will be AP computer software including AP NewsDesk and AP NewsDesk-LAN. Contact: Evelyn Cassidy, Dir. Station Services 1825 K St., NW Washington, D.C. 20006-1253 1-800-821-4747

Audioarts Engineering **262,839**
Audioarts will be showing its R-30 and R-10 audio consoles and the MR-40 combination four-track production and on-air console. Established products will include the A-50 audio console and rack mounted processing equipment. Contact: Mark Kaltman, Product Mgr. 6720 VIP Parkway Syracuse, NY 13211 315-455-7740

Audio Precision **721**
Audio Precision will exhibit its line of audio test and measurement equipment, including the Portable One Plus and System One FASTrig™. Contact: Tom Mintner P.O. Box 2209 Beaverton, OR 97075-3070 503-627-0832

Audio Processing Technology **824**
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Audio Technologies Incorporated (ATI) **621**
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Auditronics **314**
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BIA Consulting **604**
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Broadcast Programming 656
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Broadcast Supply West (BSW) 262
BSW plans to feature the BE AudioVAULT and Disc Trak digital cart machine, Marantz CDR600 CD recorder, Telos telephone hybrids, and Digital Audio Labs digital workstation.
Contact: Tim Schwieger, VP/Mktg.
7012 27th St. W.
Tacoma, WA 98466
1-800-426-8434

Broadcast TEAM, The 720-722
The Broadcast TEAM offers targeted direct mail campaigns and advanced database management and marketing.
Contact: Mark Edwards, Pres.
770 W. Granada Blvd., Ste. 201
Ormond Beach, FL 32174
904-676-1157

Broadcasters General Store 134
On exhibit will be the Desk Jockey digital automation system by Rodman/Brown & Assoc. Also on display, the Tailor 10-band dynamic limiter/equalizer and the SMO-900 stereo modulation optimizer by Hit Design.
Contact: Ricky Ferguson, Bdct. Sales Rep.
2480 S.E. 52nd St.
Ocala, FL 34480
904-622-9058

Burk Technology 821
Burk will be showing the ARC-16 transmitter remote control systems in single stand-alone and two-unit studio/transmitter and multisite configuration. The LX-1 six-input stereo selector for local or remote control will also be shown.
Contact: Phil Harter, Sales Mgr.
7 Lomar Dr.
Pepperell, MA 01463
508-433-8877



CBSI (Custom Business Systems Inc.) 454
CBSI will feature CBSI for Windows, which allows a computer operator to open and work on multiple operations at once, or to simultaneously work in CBSI and other software programs. Also on display will be CustomNet and the Agency Management System, which allows alpha recall of agencies, tracking of multiple agencies and storage of three addresses.
Contact: Judy Ramsey
P.O. Box 67
Reedsport, OR 97467
503-271-3681

Circuit Research Labs (CRL) 734, 736
CRL will show the Modulation Signature, a single-unit limiter and stereo generator. Also to be shown: a digitally synthesized stereo generator section that uses PEEL (Programmable Electronically Erasable Logic), and the Amigo, a single-unit AGC, limiter and stereo generator.
Contact: Bill Ammons
2522 W. Geneva
Tempe, AZ 85282
800-535-7648

CMBE 823, 825
CMBE will preview AIRgonomics, a new studio/office design concept. The company also provides management and engineering consultation and specializes in architectural design, installation and maintenance.
Contact: Chip Morgan, Pres.
104 Timson Dr.
Folsom, CA 95630
916-983-9834

Central Tower 554
Central Tower will show self-supporting towers (Series SS-STX) for large heights and heavy loads, and will provide information on its turnkey communication construction package.
Contact: Terrence Becht, VP
2855 Hwy 261
Newburgh, IN 47630
812-853-0595

Columbine Systems 628
A new product from Columbine is the PC/2000, a traffic system for radio stations. Also on display will be total automated business solutions which includes Administration, Business, News and Sales.
Contact: Diane Sabo, Mktg. Specialist
1707 Cole Blvd.
Golden, CO 80401
303-237-4000

Communication Graphics 805, 807
The company will presenting screen-printed decals and bumperstickers to include the four-color process and static decals.
Contact: Donna Albright, Sales Mgr.
313 N. Redbud
Broken Arrow, OK 74012
800-331-4438

Computer Concepts Corporation 112
Computer Concepts will demonstrate its Digital Commercial System, a PC-based product that combines a digital audio board and software with enhancements that include a real-time digital editing feature. Also available will be an interactive DCS/CD controller combination and computerized office systems.
Contact: Della Northcutt
8375 Melrose Dr.
Lenexa, KS 66214
913-541-0900

Comrex 228
Comrex will demonstrate its Digital Audio Codecs with a Switched 56 line installed to demonstrate ease of establishing these circuits. Also to be shown is the portable Comrex Talk Console and a full line of frequency extenders.
Contact: Lynn Distler
65 Nonset Path
Acton, MA 01720
508-263-1800

ComStream 523, 525
ComStream offers a point-to-multipoint digital audio broadcast network for private network audio distribution, large-to-small market radio programming, digital audio to unattended FM translators, timely transfers, CD-quality audio transmissions and multi-program delivery.
Contact: Bruce Rowe
10180 Barnes Canyon Rd.
San Diego, CA 92121
619-458-1800

Continental Electronics Corporation 405, 407
Continental will show a sampling of its AM and FM radio broadcast transmitters, as well as RF equipment for studio and transmitter facilities, short-wave transmitters and solid state modulators.
Contact: Steve Claterbaugh
P.O. Box 270879
Dallas, TX 75227
214-381-7161

Corporate Computer Systems 921, 923
CCS will exhibit the CDQ-2000 Stereo MUSICAM codec with a new AES/EBU digital interface. CDQ-2000 codecs enable broadcasters to transmit 20 kHz stereo programming using switched digital circuits available in the U.S., Japan, Australia, New Zealand and most European companies.
Contact: David Lin, Product Mgr.
33 W. Main St.
Holmdel, NJ 07733
908-948-3800

A Broadcast Industry

BEST KEPT SECRET

Mono Record Play

\$1290

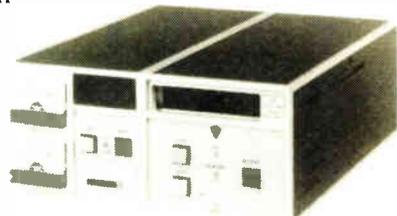
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\$1480

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Phone 309-452-9461 - Fax 309-452-0893

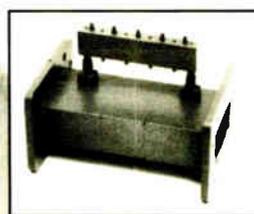
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FAX: 315-463-1467 • Telex: 249-613

Circle (18) On Reader Service Card

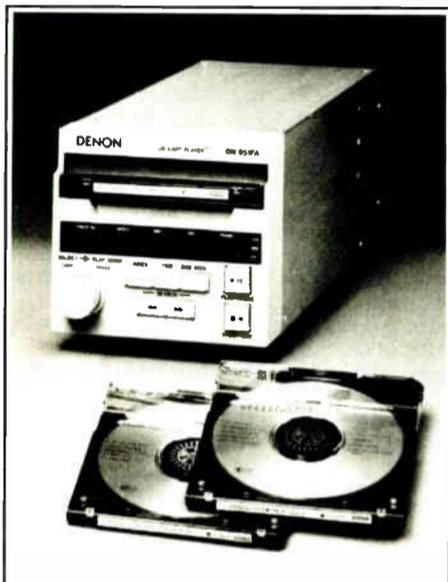
CRN International 549
 CRN will be displaying Ski Watch, the largest independent ski program in the U.S.; Beach Watch, which offers updates on beaches and activities of interest; Summer Watch, a customized program featuring summer events; and Wimbledon Radio Network, which gives live updates and interviews from Wimbledon.
 Contact: Gary Zenobia, Dir. Network Ops. One Circular Dr. Hamden, CT 06514 203-288-2002

the DN-970 FA, DN-2000F, DN-4000F, and the DN-7700R.
 Contact: Barry Seiden, Natl. Sales Mgr. 222 New Rd. Parsippany, NJ 07054 201-575-7810

Dielectric Communications 608
 Dielectric will showcase a wide range of ring and panel antennas, coaxial switches, transmission line and filters. It also will illustrate its new anechoic chamber measurement system, the latest in antenna pattern measurement technology.
 Contact: Colleen Mitchell Tower Hill Rd. Raymond, ME 04071 207-655-4555

Dolby Laboratories TBD
 Dolby will feature the DSTL™ digital studio-transmitter link and the DP5501/5502. Established products will include the DP501/502 AC-2 audio coder and model 363 Dolby SRA noise reduction.
 Contact: Kevinn Tam, Bdcst. Products Mgr. 100 Potrero Ave. San Francisco, CA 94103 415-558-0200

d
Datacount, Inc. 550, 552
 Datacount will show the DARTS (Data Accounts Receivable and Traffic Scheduling) software for broadcasters. The company offers a complete accounting package, a DARTS traffic system download to every major supplier of digital audio, and provides interfaces from the DARTS traffic system to ratings products and rate maximizers.
 Contact: Debbie Hamby, Sales Mgr. 2207 Anderson Rd. Opelika, AL 36081 205-749-5641



Denon DN-951FA

e
Electronics Research Inc. 651
 ERI will highlight the new Lambda FM antenna mounting system that combines electrical and structural engineering concerns. The company continues to manufacture omni and directional antennas, mounting systems, filters, combiners, multiplexers and towers for commercial broadcasting along with engineering and installation services.
 Contact: David Davies, Engr. 108 Market St. Newburgh, IN 47630 812-853-3318

Eventide 121
 Eventide will display the H3500 dfx-sampling Ultra-Harmonizer®, featuring 44.1 kHz sampling, 22 algorithms, 450 presets, pitch shifting, and other effects. Also available will be the H3000 B Broadcast Ultra-Harmonizer, BD980 Broadcast Delay, BD941/942 Broadcast Delay and VR240 Digital Audio Logger.
 Contact: Gil Griffith, sales manager One Alsan Way Little Ferry, NJ 07643 201-641-1200

f
Fidelipac Hilton Suite
 Fidelipac will introduce the MX series modular console with 8-12 mixers in rotary and slide fader versions; the console will support up to two telco hybrids. Also to be shown will be the Dynamax DCR-1000 digital audio cart machines that uses 3.5-inch floppy disks.
 Contact: John Tiedeck, Intl. Sales Coord. 97 Foster Rd. Moorestown, NJ 08057 609-235-3900

Dataworld 434, 436
 Dataworld will preview new issues of its AM daytime/nighttime allocation map books, along with new FM and TV map books. In addition, new services for wireless cable customers, remote access service, AM daytime and nighttime permissible radiation studies and mapping services will be provided.
 Contact: Bob Richards P.O. Box 30730 Bethesda, MD 20824 800-368-5754

Denon America, Inc. 308, 310
 Denon will highlight the DN-951 FA and DN-961 FA broadcast CD players and a 200-disc CD changer for broadcast use. Also on display will be



Fidelipac Dynamax DCR1000

Film House 910, 912
 Film House is a producer of TV marketing campaigns for radio stations, offering custom production aimed at the unique objectives of each station.
 Contact: Wayne Campbell 230 Cumberland Bend Nashville, TN 37228 615-255-4000

Freeland Products 316
 Freeland Products plans to display its vacuum power tube rebuilding service. The company rebuilds tetrodes, triodes, Cermolox, Thomson and UHF Klystron tubes.
 Contact: Lissa Lee 75412 Highway 25 Covington, LA 70433 504-893-1243

FirstCom Broadcast Services 922, 924
 FirstCom offers solutions to marketing problems including sales, programming, promotions and productions. On display will be the Custom Production Library, the Sound Designer Library and two sound effects libraries.
 Contact: Cecilia Garr 13747 Montfort Dr., Ste. 220 Dallas, TX 75240 800-858-8880

g
Gentner Communications 735, 737
 Gentner will present its latest lines of telephone, audio processing and digital audio storage products. Digital Hybrid I and II telephone products will be shown, as will the AUDISK hard disk storage system and LAZER digital FM limiter/ stereo generator.
 Contact: Elaine Jones 1825 Research Way Salt Lake City, UT 84119 801-975-7200

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We can help get you back on the air with our STL Loaner Program. We have STL's available that will be set to your frequency prior to shipping.

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Circle (181) On Reader Service Card

h

Halland Broadcast Services

none

Halland, on hand at the Programmer's Expo, will show "The Eighties Plus" CD Music Library on compact disc. Also, "Rock 'N' Roll Graffiti" and "The Seventies" CD libraries on CD will be shown, all original versions by the original artists, digitally remastered.

Contact: Hank Landsberg, Pres.
1289 E. Alosta Ave.
Glendora, CA 91740
818-963-6300

Harris Allied

514

Harris Allied will featured the AKG DSE-7000, a full-capability digital audio workstation; Arrakis' Digi-Link and Gentner's AUDISK; the Marantz CDR 600 CD recorder; Harris Allied's Audiometrics CD 10 second generation CD cartridge player; Comrex's codec for ISDN/telephone line applications; Digital Audio Labs' "The Card," a software package that adds digital editing capabilities to a PC; Cutting Edge Technology's Unity 2000 digital processor; Fidelipac's DCR-1000 digital cartridge recorder; Henry Engineering's Digistor, a digital message storage unit, and DAT players from Tascam and Marantz.

The company also will provide complete information on Harris AM and FM radio transmitters, antennas and phasing systems.

Contact: Martha Rapp
3200 Wismann Lane
Quincy, IL 62305-4290
217-222-8200

i

IDB Communications

812

IDB will feature pan-European audio distribution on the ASTRA satellite from the U.K., a full-time digital audio link between the U.S. and



International E-Z Up Collapsible Tent

Sydney, Australia.

Contact: Beth Morris
10525 W. Washington Blvd.
Culver City, CA 90232
213-870-9000

International Demographics

746

International Demographics offers the Media Audit, a syndicated, multimedia, qualitative audience ratings report.

Contact: Robert Jordan, Pres.
3000 Richmond Ave., Ste. 170
Houston, TX 77098
713-522-1016

International E-Z UP, Inc.

415, 417

The company will present the Instant Shelter for remote locations. The unit requires no

assembly, comes in various sizes and has optional walls. Also, a free-standing canopy will be displayed.

Contact: Faye Carter, Dir. of Advertising/PR
5525 E. Gibraltar
Ontario, CA 91764
714-466-8333

International Tapetronics Corp.

634, 636

ITC will exhibit the DigiCenter, a hard disk-based digital audio processing system including multiple digital cart machine automation. The DPR-612, a digital program repeater for storing and repeating up to 15 monophonic programs, also will be featured.

Contact: Bruce Helling
2425 S. Main St.
Bloomington, IL 61702-0241
309-828-1381

The Interep Radio Store

319, 321

The Interep Radio Store is the nation's largest full-

service sales and marketing company for radio advertising. It is the parent company that owns and operates seven national radio representation firms: Durpetti & Associates, Group W Radio Sales, HNWH Radio Sales, Major Market Radio, McGacren Guild Radio, Schubert Radio Sales and Torbet Radio, as well as The Interep Radio Store Networks, Caballero/MG Spanish Media and a number of support services including research, marketing and promotional assistance.

Contact: Laurence Norjean
100 Park Ave.
New York, NY 10017
212-769-4647

Intraplex Inc.

462

Intraplex offers a line of standard modular products for voice, data and digital audio application, and custom digital equipment for specialized communications requirements for the broadcast and satellite industries.

Contact: Peter Eadie
80 Taylor St.
POB 2427
Littleton, MA 01460
508-486-0709

j

JAM Creative Productions

738

JAM specializes in creating custom and syndicated station ID jingle packages for all formats. Demonstration CDs will be available at the booth.

Contact: Jon Wolfert, Pres.
5454 Parkdale Dr.
Dallas, TX 75227
214-388-5454

Jampro Antenna Inc.

906

Jampro Antenna Inc. will introduce the JBBP balanced-fed, side-mounted antenna; the JCPD dipole panel; the JLST circular polarized translator/booster; the JLHP JHCP, and the YAGI, VHF/UHF/FM transmitting antenna array.

Contact: Beverly Banning, Sales Sec.
6340 Sky Creek Dr.
Sacramento, CA 95828
916-383-1177

7.5kHz or 20kHz Digital Audio... CCS has a CODEC for every need.

In 1989 **CCS Audio Products** set new standards for 7.5kHz digital audio CODECs with the Micro56. Now CCS is proud to introduce CDQ-2000, the world's first commercially available CD quality stereo **MUSICAM™** CODEC. CDQ-2000 delivers high quality audio yet requires only 112Kbps of digital facility. This means stereo music can be transmitted using as little as half the digital bandwidth of other competing systems. Furthermore, only CDQ-2000 offers you multi-rate flexibility between 112Kbps to 384Kbps, permitting connectivity between satellite services and terrestrial digital telephone networks such as ISDN, switched 56, or fractional T1.

From 7.5kHz news feed to 20kHz symphonic concerts, if you need **Crystal Clear Digital Audio™** come to CCS for the best.



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Crystal Clear Digital Audio™

A Division of Corporate Computer Systems, Inc.
33 West Main Street Holmdel, N J 07733 U.S.A
908-946-3800 Fax: 908-946-7167

TOTALLY TRANSPARENT TRANSMISSION PROTECTION.



TRANSMISSION LIMITER 4000

Pure Sound.

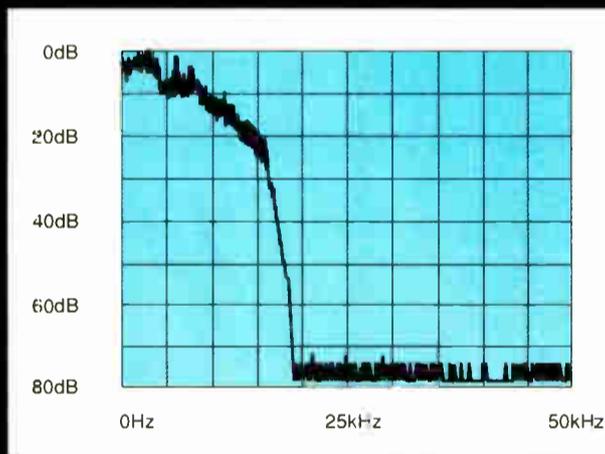
Protecting transmission systems from peak overload without audible artifacts—while stringently preserving natural sound quality—is the primary objective of many of the world's finest broadcast operations. That is why so many facilities around the world are choosing the Orban Transmission Limiter 4000. The 4000 provides the peak control they need, without audibly adding, subtracting or interfering with their signal in any way.

Don't Take Our Word for It.

The 4000 provides transparent limiting with any source. Blind tests confirm that the sound of the Orban Transmission Limiter 4000 is virtually indistinguishable from the original source when driven as much as 15dB into limiting—even to trained listeners. Try it for yourself and hear what your facility can deliver when it is protected, not just restricted.

Sophisticated, Easy to Use.

Orban engineers took years to develop the complex algorithms which permit the 4000 to protect inaudibly. Yet, they kept the front panel of the 4000 clean, clear and businesslike. The precision LED displays indicate any action of the compressor or HF limiter circuitry. The only adjustments are for INPUT level and OUTPUT level. The built-in tone generator and test mode permit rapid system setup and alignment.



Power spectral density at the 4000's output using "maximum peak hold" measurement. (5kHz/div. horizontal; 10dB/div. vertical)

Orban Signature Quality.

The Transmission Limiter 4000 is one of a family of reliable, quality Orban products designed for demanding broadcast applications. Call your local Orban dealer

for a hands-on demonstration of the Orban Transmission Limiter 4000—another breakthrough product from the leaders in broadcast audio processing.

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Finally. Digital audio recording and playback that operates like it was meant to be in a radio station. DigiCenter™ from ITC. Designed by people who have been putting audio equipment in your studios for over 20 years.

Built for radio. Active balanced and differential I/O, selectable impedance and levels, CD quality audio performance, features compatible with the rest of your studio equipment. Desktop or rack mountable versions, plus remote workstations.

You decide what operating features you need: Digital Cart Machine; Live Assist; Satellite Automation; Program Automation. And DigiCenter™ is expandable. You'll be able to meet your station's needs next year, and for years to come.

We designed DigiCenter's™ DSP-1 Digital Signal Processing board to our demanding specifications. Same with the Audio Mixer Board, Analog I/O, and the mechanical interfaces. There's nothing "off-the-shelf" about DigiCenter™ because there's nothing "off-the-shelf" about your sound.

Tested? We've had a DigiCenter™ test system operating for over a year, 24 hours a day, in a commercial radio station, **making money**. We do not expect you to deal with "well it worked OK in the lab."

Service? DigiCenter™ has an integral modem and self-diagnostic software (standard), that can communicate with a host diagnostic system right here in our plant, 24 hours a day. And, you can communicate, toll-free, with our experienced, dedicated Technical Service staff.

Price? There are a lot of "apples vs. oranges" comparisons going on right now. Look at DigiCenter's™ specifications, and what's "standard" versus "optional". Feature for feature, we believe DigiCenter™ offers you the best performance value.

We're not the first ones on the block with "digital"; far from it, but professional audio takes a little longer. Any consumer can buy "digital audio", you need digital audio for **radio!**



For more information call ITC toll-free at: (800) 447-0414
Outside the U.S.: (309) 828-1381
FAX: (309) 828-1386

**See DigiCenter™ At
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World Radio History

L

LDL Communications 635, 637
 LDL Communications will highlight Alan Dick and Company FM antenna systems, with emphasis on high power broad band FM panel antennas and high power combiners.
 Additional products to be offered include single frequency FM antennas and associated FM towers up to 2,000 feet in height. The company will also display its service capabilities for supplying turn-key antenna and tower systems.
 Contact: Jim Wilson
 14440 Cherry Lane Ct., Ste. 201
 Laurel, MD 20707
 301-498-2200

m

Marketron 846
 Marketron will debut FirstRate, a rate management and inventory control software program for broadcast sales. The system combines demand pricing with Arbitron audience information for schedule delivery and cost-efficiencies.
 Also to be displayed will be traffic, management and accounting systems for stations and networks.
 Contact: Shelly Epp, Sales Asst.
 101 Lincoln Centre Dr., Ste. 300
 Foster City, CA 94404
 415-341-4004

Marti Electronics Inc. 534
 Marti will feature the STL-10 aural studio-transmitter link. Also featured will be Marti remote pickup broadcast transmitters.
 Contact: Dan Rau, Dir. Sales & Mktg
 1501 N. Main
 Cleburne, TX 76031
 817-645-9163

Media Touch Systems 362
 Media Touch Systems will introduce the new stand-alone MediaDISK II networked digital audio system. Using an all-new simplified screen layout, MediaDISK II is designed for the station that wants to eliminate tape and maintain its present studio operation.
 Contact: John Connell
 50 Northwestern Dr., #11
 Salem, NH 03079
 603-893-5104

METATEC/Discovery Systems 908
 METATEC will display CD libraries customized for radio stations to use as listener appreciation gifts or sold through retail. New products from METATEC include Good Time Oldies: The 60s and Country Classics Volume 2. Established products include Good Time Oldies: The 50s and Rock Classics Volumes 3-4-5.
 Contact: Donna Snyder, Sales Rep.
 7001 Discovery Blvd.
 Dublin, OH 43017
 614-766-2000

Moseley 704, 706
 Moseley will show the DSP 6000 digital STL encoder and decoder, DigiMax digital audio multiplexer, and the PCL 6060 STL transmitter for high RF environments. Other products include PCL 6000 series STLs, MRC 1620 and MRC 2 remote controls, TaskMaster20 and MasterController software, control products and RPL 4000 remote programming links.
 Contact: David Chancey, Natl. Sales Mgr.
 111 Castilian Dr.
 Santa Barbara, CA 93117
 805-968-9621

Motorola 916
 Motorola will present its latest AM stereo radios, in addition to AM stereo excitors Models 1400 and 1410.
 Contact: Don Wilson, Mgr.
 3701 W. Algonquin
 Rolling Meadows, IL 60008
 708-576-3532

n

National Association of Home Builders 942
 NAHB will provide information on "Right At Home," a daily one-minute vignette available from the association on compact disc, and covering issues ranging from repairs and improvements to financing.
 Contact: Spencer Levine
 1201 15th St. NW
 Washington, D.C. 20005
 202-822-0294

National Guard Bureau 930, 932
 The Army and Air National Guard are volunteers dedicated to serving their country. They depend on citizen support, which is part of what makes them effective as public service advertising.
 Contact: Rita Cunningham
 5109 Leesburg Pike, Ste. 401A
 Falls Church, VA 22041-3201
 703-756-8883

National Supervisory Network 429
 The company will bring its new VISION (VSAT Intelligent Satellite Integrated Operations Network), a combination of services to help radio station groups and networks stabilize costs, improve company communications and generate revenues.
 Contact: Muffy Montemayor
 P.O. Box 578
 Avon, CO 81620
 303-949-7774

Network Music, Inc. 723, 725
 Network will show the Primrose Library of CDs in a variety of styles, from medieval to New Age sounds. Also to be show: The Network Sound Effects Library, including 50 CDs with more than 4,000 effects with frequent updates; and Shock Wave Library, a production elements package that has more than 400 cuts.
 Contact: Ken Berkowitz
 11021 Via Frontera
 San Diego, CA 92127
 619-451-6400

NPR Satellite Services 535, 537
 NPR will display its selection of satellite interconnection services such as fixed and transportable uplinking, SCPC audio transmission, downlinking digital fiber-optic audio channels and service to Galaxy and Satcom.
 Contact: Miriam Lennett, Mktg. Specialist
 2025 M St., N.W.
 Washington, D.C. 20036
 202-822-2613

Omnia Group 650
 Omnia offers personality testing and career counseling products which are associated with the broadcast business. Attendees can receive a profile and receive a verbal interpretation of their results quickly.
 Contact: Dale Smrekar, VP
 601 South Blvd.
 Tampa, FL 33606-2677
 813-254-9449

SEE SPOTS RUN.

On-screen traffic log display

Gas Gauge. Indicates what percentage of the system is available for recording.

The Play Line. Shows what's currently playing on-the-air, with a count-down timer.

Record Line. Shows what DCS is currently recording.

Queue Window. Just click on a listing, to place recordings in the queue for playing.

Filler Window. This special pop-up window gives you quick access to PSAs, jingles, promos and other fillers.

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- **Digital Audio Editing.** The quickest and most flexible real-time editing function available makes editing news stories and commercial cuts simple.
- **Satellite /Live-Assist Operation.** Total support, including automatic back-fill of breaks.
- **Support of multi-cut "carts"**
- **Complete audit of all DCS activity -- airplay of audio, relays, etc.**

...PLUS FEATURES OTHERS DON'T OFFER!

- **Simultaneous Play/Record features.** Handle three stereo sources simultaneously -- overlap two spots for a tight segue, and record from another source at the same time.
- **High quality data reduction, without distortion**
- **No pre-allocation of disk space required.**

Replace the chaos of carts with the speed and precision of the Digital Commercial System (DCS) from Computer Concepts.

By combining a standard industrial-grade PC with an advanced stereo audio board, DCS lets you program a day, a weekend, even entire weeks!

AUTOMATE EVERYTHING, FROM PRODUCTION TO BILLING.

Production Studio. DCS simplifies board work and replaces the muddy sound of analog tape with crisp CD sound quality.

Control Room. No more manual logs! DCS handles all your paperwork automatically, posting a commercial's actual airtime next to that listing. And DCS interfaces with traffic!

DESIGNED BY RADIO PEOPLE FOR RADIO PEOPLE.

Computer Concepts is one company you can count on---we've provided automated business systems to the radio industry for over seventeen years. We know how radio stations work and how to make them work more efficiently. That's why the DCS interface is so easy to learn, so simple to use.

ASK ABOUT OUR AFFORDABLE ENTRY-LEVEL SYSTEM.

To find out more about our entry-level system, or to receive a free DCS demo disk, call or FAX us today. You'll soon see one thing very clearly. You just can't manage as well without us.

FREE UPDATED DEMO DISK!
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For around \$7000, Roland's DM-80 will speed up your spot and promo production amazingly! This

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means you'll have the freedom to experiment with many different approaches—a creative process that will make your programming more exciting. And, because you can remove and add lines almost instantly, updates are a snap!

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Pro Audio Video

Roland Corporation US, 7200 Dominion Circle, Los Angeles, CA 90040-3696

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Circle (92) On Reader Service Card

World Radio History

Orban (a division of AKG) **440**
Orban will highlight the Optimod-FM 8200, the new Model 4000 Transmission Limiter and the 460 Optimod studio level controller.
Contact: Howard Mullinack (See AKG listing above)

Pacific Recorders & Engineering **659**
PR&E will show the ADX digital audio production system with an outboard production mixer for eight-track recording and editing. Also on display will be the Radiomixer on-air console.
Contact: Mike Dosch, VP/GM
2070 Las Palmas Dr.
Carlsbad, CA 92009
619-438-3911

Prophet Systems **414**
Prophet will show its new digital audio product, the Audio Wizard. Available in a variety of models, the system has real-time digital editing on 19-inch color screens, unlimited walk-away automation, copy editing and hot standby backup. The Wizard can be configured to handle up to 16 radio stations out of one system. Also being shown will be the "Wizard's Apprentice," and "Simple System," low-cost stand-alone digital systems.
Contact: Yvonne Groteluschen, Admin. Asst.
113 West Fourth Street, Box 509
Ogallala, NE 69153
308-284-3007

QEI Corporation **840**
QEI will feature a complete family of solid state transmitters with output power levels from 10 W to 10 kW. The company will show CAT-LINK, a real time digital STL/TSL system. The Model 710 digital stereo generator also will be shown; the unit can be connected to the CAT-LINK.
Contact: Jeff Detweiler
One Airport Dr.
Williamstown, NJ 08094
800-334-9154

Radio Computing Services (RCS) **834**
RCS will exhibit the Linker, a schedule management system; Master Control, a paperless studio; and RCS Tracker, an audio logger that can record 14 days on one DAT cassette, and play back while recording. Established products include the Selector, Pro-Rate and Songtrack.
Contact: Lee Facto, GM
2 Overhill Rd., Ste. 100
Scarsdale, NY 10583
914-723-8567

Radio Et cetera **724**
New products on display will be the 1993 Scratch & Win Tickets, The Straight Scoop Against Substance Abuse magazine, My Mom & Dad TV campaign, and the Children's Satellite Network. The company will also exhibit games for radio such as Letter Perfect and Hail to the Chief, database building and management and direct mail systems.
Contact: Rick Lemmo, Pres.
1000 Business Center Circle, Ste. 213
Newbury Park, CA 91320
800-767-1267

Radiomail **536**
Will exhibit its sales and promotional direct mail campaigns. Also on display will be the company's coupon packages.
Contact: Greg Spraul
11300 Sorrento Valley Road, No. 255
San Diego, CA 92121
619-597-0263

Radio Systems **422**
Radio Systems will display the RS-SQUARED, a noise reduction system that uses Dolby S-type circuitry to provide up to 24 dB of noise reduction. Also featured will be the RS-24, the company's largest mixing console, as well as DAT and cart machines, master clocks and distribution amplifiers.
Contact: Paul McLane
110 High Hill Rd.
Bridgeport, NJ 08014-0458
609-467-8000

RE America **162**
RE will exhibit the new RE533 compact RDS encoder, RE331 RDS decoder, d940 digital audio head-phone interface and the RE8720/8730 audio codec. Established products on display include the RE8800 sound interface unit, RE531 RDS encoder, d620

compact digital video interface, d920 serial digital audio reference generator and the d930 digital audio interface analyzer.
Contact: Keith Clark, PR Rep.
31029 Center Ridge Rd.
Westlake, OH 44145
216-871-7617

Reef Industries **943**
The company will be showing its disposable plastic banners that promote radio stations.
Contact: Joe Oppenheimer
P.O. Box 750245
Houston, TX 77275-0245
713-947-2053

Register Data Systems **212**
Register will present the PHANTOM, a complete digital audio animation system that provides recording, scheduling and playback of all commercials, liners, jingles, etc. Also on display will be the DigiCorder, a digital alternative to a cart machine and the company's complete line of computerized sales, traffic, billing and accounting systems.
Contact: Thom Mead, Exhibit Mgr.
P.O. Drawer 980

Perry, GA 31069
912-987-2501

Satellite Music Network Hospitality Suite
Satellite-delivered format distributor. The company will display format information as well as showcase on-air personalities at the NAB's Programming Production Showcase.
Contact: Marty Raab
12655 N. Central Expressway, Suite 600
Dallas, TX 75243
214-991-9200

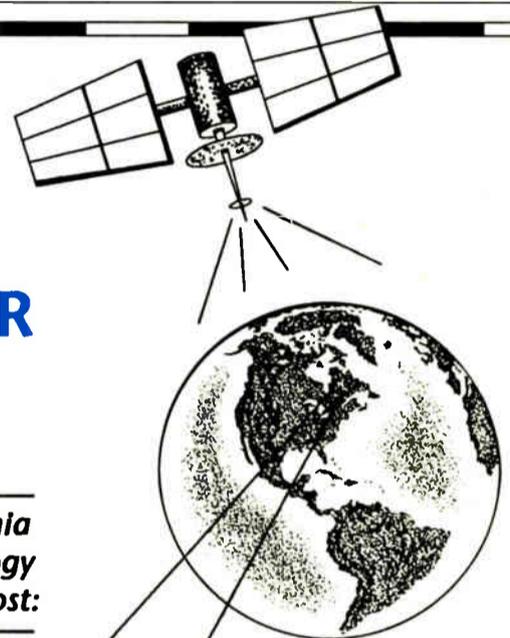
Scientific Atlanta **728, 730**
The company will feature its digital audio satellite distribution systems, including SEDAT, satellite-delivered compact disc quality audio compression system, and data broadcast uplinks and downlinks.
Contact: Virginia Lee, Sales & Mktg. Administrator
420 N. Wickham Rd.
Melbourne, FL 32935

407-255-3030

Sentry Systems **656**
Sentry will preview the Digital Delivery, an all-digital system for music programming; Format Sentry, an automation switcher; and DS-1 Hard Disk Audio, a digital audio storage unit.
Contact: Bob Arnold, Mgr.
2211 Fifth Ave.
Seattle, WA 98121
800-426-9082

Shively Labs **705, 707**
Shively plans to show its complete line of FM broadcast products, which includes side-mount and panel-style antennas, band-pass branched and balanced combines and filters, transmission line, accessories, isocouplers, harmonic filters and pressurization equipment.
Contact: Jon Clark, Mktg. Mgr.
19 Harrison Rd.
Bridgton, ME 04009
710-223-8910

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SMARTS Broadcast Systems

TBD

SMARTS will show the Jock-In-The-Box digital audio CD automation system that integrates billing, logging, traffic and music rotation software with digital audio and full CD automation. The company will also show digital audio devices that can be hooked to a station's computer.

Contact: John Schad
2102 Main St.
Emmetsburg, IA 50536
1-800-747-6278

Sports Entertainment Network

205

SEN, a 24-hour sports talk radio network, will be broadcasting live from their booth with announcers such as Rodd Stowell, Tim Neverett and Joe Chevalier. Contact: Joe Speck, Dir. of Programming

3333 Cambridge St.
Las Vegas, NV 89109
702-731-5200

Strata Marketing

828

Strata will be displaying a new Windows-based ratings analysis system that is interfaced to a yield management system. The company will also be pro-

viding quantitative and qualitative rating analysis systems for radio stations and national representatives.

Contact: Bruce Johnson, Pres.
540 N. Lake Shore Dr.
Chicago, IL 60611
312-222-1555

Superaudio

323, 325

Superaudio will have available a variety of new long and short formats for A/C country, soft AC, urban and CHR radio and hot AC. The company will also display "Open House Party," a live CHR/dance program that it currently syndicates internationally.

Contact: Janie Oliver, Ntwk. Director
250 Yonee St., Ste. 2400
Toronto, Ontario, Canada M5B 2V6
416-599-3949

**TAPSCAN**

528

New products on exhibit will be PrintSCAN, a system for magazine and newspaper buyers; and

Model X FM exciter and S1A series of surge protectors.

Contact: Russ Erickson
Mgr./Radio Products
650 South Taylor Ave.
Louisville, CO 80027
303-665-8000

The Management

625

New products include the EZ-CD live assist multi-disk and machine CD control and playback; CD-DJ live assist and automation of CD and digital hard disk audio storage; Smart Cart live assist commercial playback device; Music Log for CD; Digital DJ server system and Program Record. In addition to these, Super Log, Simple Log and EZ Log Traffic/Billing Systems will be displayed as well as Music Log and Digital DJ with Sky Pilot, Auto Pilot and DJ Pro levels.

Contact: Adrian Charlton, Sales Mgr.
P.O. Box 1-36457
Ft. Worth, TX 76136
817-625-9761

TM Century

804

TM Century will show the Ultimate Digital Studio

radio stations. Meteorologists provide accurate forecasts, personalized to individual stations.

Contact: George Stamos, VP
131 A Great Rd.
Bedford, MA 01730
617-275-8860

Welwood Internat'l Film Production

522, 524

Welwood will present Hot Country, a 30-second television commercial and a number of television campaigns produced for radio formats.

Contact: Barbara Ferrel, VP
160 Washington S.E., Ste. 138
Albuquerque, NM 87108
505-242-5644

Wheatstone Corp.

839, 841, 843

Wheatstone will exhibit the A-6000 audio console with the Bus-Minus system. Also featured will be the Not So Hard Disk, SP-44, A-20, and SP-6 consoles, studio furniture, the TS-500 Talent Station, and rack-

NEW AM RULES**AMSTUDY****DAYTIME ALLOCATION STUDY**

- Both Dataworld and FCC Databases Studied
- Utilizes NEW (Corrected) Groundwave Curves
- NEW Adjacent Channel Protection Ratios Employed

AMNIGHT**NIGHTTIME INTERFERENCE STUDY**

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- Provides Allowable Vertical Radiation to All Pertinent Stations (AM Night Permissible Radiation)
- Includes All Co-Channel and First Adjacent Records

GWAVE**GROUNDWAVE (Daytime) COVERAGE CONTOUR STUDY**

- Utilizes NEW (Corrected) Groundwave Curves
- Allows Input of Measured Soil Conductivity Data
- Counts Population Within Coverage Area Using 1980, 1986 and 1990 Census Data

SKYWAVE**SKYWAVE (Night) COVERAGE CONTOUR STUDY**

- All AM Nighttime Coverage Contours Have Changed Size and Shape
- Utilizes NEW FCC AM Skywave Propagation Model
- Counts Population Within Contours Using 1980, 1986 and 1990 Census Data

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(301) 652-8822

(800) 368-5754



Wheatstone SP-40 series Production-Air Console

MonitorSCAN, that reports advertising activity in local newspapers using data from various suppliers.

The company will display its line of established sales, research and ratings software products, including: TAPSCAN, QualiTAP, TargetONE, GridONE, Multimedia, The Director Series and Continuity Director. Contact: Dave Carlisle, Pres.
3000 Riverchase Galleria, Ste. 850
Birmingham, AL 35244
205-987-7456

Television Technology Corp. (TTC)

207, 209

TTC will debut its FM-275K, a single tube, high performance, 27.5 kW FM transmitter and the FMS-100, a 100W FM solid state transmitter/amplifier. Also on display will be the FMS-4000, XL series FM transla-

with added features; the Voice Tracker computer that allows announcers to record song intros, weather reports or other voice elements to be used on the air. In addition, the Digi Cart hard disk digital audio player will be displayed.

Contact: Richie Allen
14444 Beltwood Pkwy.
Dallas, TX 75244-3228
800-879-2100

**Weather Services Corp.**

809

Weather Services offers forecasts for large and small

mounted audio signal processing.

Contact: Ray Esparolini, Dir. of Sales
6720 VIP Pkwy.
Syracuse, NY 13211
315-455-7740

WireReady

831

WireReady will be demonstrating its wire news management system that pulls in multiple wire services and offers stations news editing and archiving capabilities.

Contact: David Gertsmann
P.O. Box 2356
Framingham, MA 01701
800-833-4459

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See Us At Radio 92 Booths 434, 436

Circle (185) On Reader Service Card

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AMPLIFIERS

Want to Sell

Soundcraftman A5001 stereo 270 W @ 8 ohms, 385 W @ 4 ohms, \$500. B Keaton, 608-362-0086.

BTC B-300 300 W RF, broadband, solid state w/internal harmonic filter, 5-12 W drive needed. C Springer, KSEC, Box 890, Lamar CO 81052. 719-336-2206.

CLA-40A older, \$125. D Sorenson, Sorenson Bldg, 604 N Kiwanis, Sioux Falls SD 57104. 605-334-1117.

Marantz 77 preamp, fair cond, \$125; Yamaha C3, new cond, \$150. J Parsons, 904-532-0192.

Ramko DA-6RS stereo dist, 2 inputs w/6 stereo/12 mono outputs, gd cond, \$135. B Barry, WAMB, 1617 Lebanon Rd, Nashville TN 37210. 615-889-1960.

Marantz 8 McIntosh MC240 (2), \$1175 ea; MC40 (3), A116 (2), \$575 ea; MC2500, black, face sealed, \$3975; Krell Altair w/outboard ps, \$2750; Quicksilver MX-190, \$1975; Audio Rsrch D76A, \$1175/BO/trade. R Katz, Allegro Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

Dyanco ST-120 (2) 60 W per chnl stereo pwr amps, gd cond, \$125 ea/BO. T Steele, WMOO, POB 92, Derby VT 05829. 802-766-9236.

ATI P100 Encore series, turntable amp, little use. BO. P Forest, Musical Starstreams, POB 1989, Sedona AZ 86336. 602-204-1989.

Dynair EQ-1530 post-EQ w/differential input for AC hum rejection, (2) 75-ohm outputs, \$225. P Paine, Video Velocity, POB K, Virginia City NV 89440. 702-847-9647.

JBL 6233 300 W/chnl sound, reinforcement, \$350. M Everhart, KZRC, 111 SW 5 #1550, Portland OR 97204. 503-226-6731.

RCA, Altec tube mic pre's & tube amps & mixers; Langevin AM-16's, sale or trade. Tracy Eaves, 615-821-6099 (evenings before 10PM EST).

New 250 W solid state amp, \$1800. Call for details. Bill Hoffman, 518-583-9490.

Want to Buy

Denon POA4400, 4400, 6600, 8000; Sansui B2301, BA5000, C2301; Fisher SA1000, K1000; B&W 801, 802, MPAB10; Peplow, all; ARC M360, D150, 79, 75, 75; Crown Macro Reference; Marantz 1-10; McIntosh MC2150, 2250, 2270, 2300, 2500; JBL Hartsfield, Paragon, Cascade. R Katz, Allegro Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

High Imped to 600 ohm w/20 dB gain amp needed. Ron, 419-893-7968.

ANTENNAS & TOWERS

Want to Sell

ERI 37CP8 hi-pwr, 8 bays tuned to 107.3, current mdl. K Reising, WRZO, 825 Washington St, Columbus IN 47201. 812-378-1073.

Rohde & Schwarz RBN 10 50-17 dummy load, 10000 W, air forced, cooled, \$400; (35) Cablewave ECG 158-50 1 5/8", \$400 ea. M Cournoyer, CHR, 2070 St Georges, Drummondville, Quebec Canada J2C 5G6. 819-477-3077.

Andrew 13925 hangars (24) spring for 3" rigid line, \$20 ea. B Caithamer, WMBI, 820 N LaSalle Dr, Chicago IL 60610. 312-329-4304.

Advance heavy duty, 48" face, 650', like new cond, will sprt any antennas, dishes. R Wright, WLLX, 1208 N Locust Ave, Lawrenceburg TN 38464. 615-762-6200.

Scala CA-2 horiz, pol, dipole/reflector, single-bay tuned to 88.1 MHz, 250 W max, 50 ohm type N term, excel cond, \$150. D Bailey, KXGQ, Box 3388, Oakland CA 94609. 510-444-3388.

AM directional plg w/Kintronics 4-twr phasor, 4-chnl dig ant mon, (3) 300' Rohn 45G towers w/Kintronics LTUs towers w/guys, insulators, 1 twr w/lights & painted, 1 RCA FI meter, system in use, 5 1/2 yrs old, will part out, buyer take down & haul. R Meredith, 615-457-1380.

FM ANTENNAS

92.7 4-Bay Phelps/Dodge
103.9 3-Bay ERI (Radomes)
104.7 5-Bay Phelps/Dodge
BUY-SELL-TRADE

PMA Marketing, Inc.
414-482-2638
FAX: 414-483-1980

Gorman Redlich CMR mon wired for 3 twrs, can have 6 twrs, 11 yrs old, \$1000. J Randolph, WHIR, Box 1230, Danville KY 40422. 606-236-2711.

Advance w/48" face, 650', like new, will support any ants, dishes, sell all/part. R Wright, WLLX, 1208 N Locust Ave, Lawrenceburg TN 38464. 615-762-6200.

Andrew 13925 (24) spring hangers for 3" rigid line, \$20 ea. J Wagner, WMBI, 820 N LaSalle Dr, Chicago IL 60610. 312-329-4279.

Jampro JSCP-3S 3-bay circ polar FM, 30 kW, tuned to 93 MHz, any freq poss, never used, \$1250. K de Bruyn, ZOE 104.9, Box 16, Antwerp 2000, Belgium.

Andrew HJ8-50B 800' of 3" line, 3 yrs old, perf cond on spool, ready to ship w/3 1/8" EAI conns, \$11200. T Sittner, TX Public Radio, 8401 Data Point Dr, San Antonio TX 78229. 512-271-9600.

HELPLESS?

If you are looking for broadcast professionals to work for you, the people you are looking for are looking through Radio World.

For information on Help Wanted ads, call Simone at
703-998-7600.

ERI FML2E 2-bay, \$2300/BO. Dennis, WCCW, 121 E Front, Traverse MI 49684.

Want to Buy

Shively 3-bay tuned to 99.5. T Yarbrough, WVIQ, POB 4409, Christiansted, St Croix US-VI 00822. 800-773-1180.

UHF TV panel translator on old 70-83 band, any chnl/cond; Scala parapanels; Adler/TTC unitized UHF TV translators; USTA series; Bogner LPS series UHF TV, any chnl/cond, pref LPS-1/LPS-4. J Powley, WIIIM, 1536 Logan Ave, Altoona PA 16602. 814-944-8571.

FM 2-bay tunable to 106.3 MHz; 200' 1 5/8" coax. B Hale, 606-436-5580.

ERI or Shively 5-bay at 97.5. C Spencer, Radio Resources, 800-547-2346.

AUDIO PRODUCTION

Want to Sell

Studio Sound 305 vintage passive filter sets, matched pr, consec #, rackmount, \$175 ea/BO/trade. R Katz, Allegro Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

API 312 (7), \$100 ea; (8) UA 1008 tube (8), \$165 ea; (10) UA 1108, \$100 ea; (12) UA 508 EQ, \$65 ea; (10) Neumann PV-176 preamps, \$100 ea; B&B EQF, 2 EQs, \$275 ea/\$500 pr; (2) API 553 EQs, \$165 ea; (3) API 559 graphic EQs, \$225 ea; (2) API 562 parametric EQs, \$200 ea. M Linett, 818-244-1909.

dbx 224X Type II encoded/decoded stereo noise reduc, -10 unbalance in/out, rack mount, for 7 1/2 ips, analog tape, new, \$115. Brian, 313-584-9201.

Solid Gold Oldies

Custom recorded. From the 30's to the 90's. Your choice of up to 40 selections per tape. For free info, write S&H Recording, Box 1561R, Greenwood Station C, 6 Greenwood St., Worcester, MA 01607-9998.

UREI 545 (2) para EQs w/HP & LP filters, \$275 ea/BO; UREI 556 stereo HP/LP filter unit, rack mount, \$325/BO; (2) AMS DM-DDSA, stereo 16-bit dig delay units, variable delay to 1.365 seconds, super quality, \$1900 ea/BO; Technics Pro SH-9010 pro stereo para EQ, very gd cond, \$250/BO; Sontec DRG-202 dynamic range controller, stereo comp/lm, \$1000; Sontec MEP-250A stereo para EQ, \$1100; Rantsteel/TAM HFL-1 stereo high freq lim ideal for de-essing & disk mastering, \$475/BO, all excel cond. T Steele, WMOO, POB 92, Derby VT 05829. 802-766-9236.

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brokers of line and coarse used equipment
audio village 619/320-0728

PB2000 (2) & (1) OB3 boards for Arrakis SC consoles, never used, \$350 ea; Penny Giles 3210, 12 P+G slide ladders, new, \$720. F Konwinski, WSOY, 1100 E Pershing Rd, Decatur IL 62524. 217-877-5371.

SuperSonic C1 dual-chnl compressor, self contained, compress/recover active controls, \$175; SuperSonic Q1 dual-chnl semi-para EQ, 4 controls per chnl splits spectrum in 2, sweepable overlapping bands per chnl, black panel, \$195, both active balanced in/out, rack mount, 1 owner w/full data. Davis, 803-276-0639.

Nexus 96-pt patch bay (2), 1/4" front, RCA back, new, \$300 ea/BO; Loft 450 (2) delta line flanger, new, \$500 ea/BO; Symetrix SE-400 stereo parametric EQ, new, \$450; (2) Sym phase shifters, new, \$250 ea/BO; (2) Sym SG-200 2-chnl noise gates, new, \$300 ea/BO; Sym A-220 headphone amps, 20 W/chnl, new, \$200/BO; AB Syst 301 amp switcher, new, \$250/BO; (2) AB Syst pwr amp, new, XLR, trans input, \$500 ea/BO; Switchcraft 48-pt patch bay, \$100/BO. J Diamond, Blue Diamond, Box 102C Chubbic Rd RD1, Canonsburg PA 15317. 412-746-3455.

API 312 (5), \$100 ea; (10) UA 1108, \$100 ea; (12) UA 508 EQ, \$65 ea; (10) Neumann PV-176 preamps, \$100 ea; (10) Neumann 3-band EQ, \$175 ea; API 550 EQ, \$500; (2) API 553 EQs, \$165 ea; (2) API 559 graphic EQs, \$225 ea; (2) API 562 parametric EQs, \$200 ea. M Linett, 818-244-1909.

Rane HC-6 6-chnl stereo headphone amp, \$200+s/h; (3) Gentner 96-BA-AB patch bays, \$350 ea/\$900 all+s/h; (3) Fostex 3010 RCA type patch bays (32 ea) in Crown walnut rack, \$70 per bay/\$210 all+s/h. D Crepps, IBS, 29672 Silver St, Val Verde CA 91384. 805-294-9441.

Ashly SC-66 parametric EQ stereo w/manual, excel cond, \$300; Phase Audio DC-01 carting station w/term, excel cond, \$200. D Bailey, Rock Shoppe Prod, 3422 Beech St, Rowlett TX 75088. 214-475-9796.

Want to Buy

Urban/Eventide mic proc/spec effects prc, send descrip & asking price. T Heathwood, Heritage Radio, POB 16, Boston MA 02167. 617-969-9966.

Crown EQ2 dbx 10/20, 20/20, 14/10; Yamaha REV5, REV7; Burwen TNE7000. R Katz, Allegro Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

DBX 162 processor. C Spencer, Radio Resources, 800-547-2346.

Fairchild 600 conae or 602 Conex high freq limiters. J Gangwer, 942 32nd St, Richmond CA 94804. 415-644-2363.

AUTOMATION EQUIP

Want to Sell

Harris 9002 (4) ARS 1000; (3) Carousels; (1) triple cart, (2) single carts, printer, live & net cards, control terminal, \$1700. B Torstenson, Fairfield Bldg, 4200 W Main St, Kalamazoo MI 49006. 616-385-2757.

SMC 250 (4) w/RS random selectors & manuals, \$750+s/h. G Walden, KIHRR, POB 360, Hood River, OR 97031. 503-386-1511.

MEI 100-MP stereo live assist controller, 9 sources, remote, 25 Hz filter & sensor, new, \$2500. B Barry, WAMB, 1617 Lebanon Rd, Nashville TN 37210. 615-889-1960.

IGM 6513/9980 invsc system, (2) 48-tray mono instacarts, (2) ITC 770 w/RAM, under \$10K. W Grabbe, KRIS, Box 666, Russell KS 67665.

Schafer 903E (2), 1 w/5) Audiofile I's, 1 w/2) Audiofile II's w/spares, BO. J Paoli, 818-744-5378.

IGM 500 w/2) Scully 270, (1) Carousel, (1) PB cart, (1) R/PB cart, manuals & extras, nice cond, \$500. R Schneider, KPMJ, 1280 Oxnard Blvd, Oxnard CA 93030. 805-498-1830.

Want to Buy

TM Century Auto Sequer gd cond, 21 system. J Amburn, KTUE, POB 1260, Tullia TX 79088. 806-995-3531.

Sonomag 42 tray Go-Cart. C Spencer, Radio Resources, 800-547-2346.

BUSINESS OPPORTUNITIES

Want to Sell

Musis service business w/2 complete format libraries plus recording equipment, tremendous potential, great price. J Gelo, 813-642-6899.

CAMERAS (VIDEO)

Want to Sell

Hitachi FP-1011BU & Ampex CC500-03 3-tube w/CCUs, cables, lens & RCA dual 9" rack mount monitors TC-1209-04, \$450; (2) Norelco PC-70 BDKS studio, 2 extra lenses, \$450. J Krepol, JVK Studios, 7 Dustin Dr, Claymont DE 19703. 302-798-4052.

Need ITC Quality On A Limited Budget?

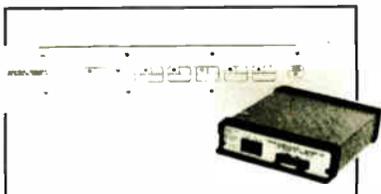
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Ampex ATR 800 2-trk for parts, BO. D Gaydos, NYU, 721 Broadway, NY NY 10003. 212-998-1665.

Tascam Porta One Ministudio 4-trk w/built in dbx noise reduc, excel cond, \$300. M Miller, Miller Audio Prods, Rt 3 Box 188A, Ironton OH 46536. 614-533-0636.

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Otari Mdl MX 7308 1" 8-trk, 15/30 ips, low hrs, excel cond w/remote, \$3900; Ampex 350440 motors & parts, \$150 & under. L Wagner, Ard-nigma Radio, POB 1788, Orlando FL 32802. 407-299-1299.

Sony APR-5000 2-trk, roll-around console, gd cond, 7.5/15/30 ips, \$1700. T Price, Docsi Corp, 1140 N LaBrea, Hollywood CA 90036. 213-462-4966.

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Scully 280 motors, cards; 8-trk 1" R/P com-bo head & erase head to match for Scully 100; Tascam Duplicators T-2640, 8 to 1 spd, 3 slaves, cass to cass, expandable. R Robin-son, 203-269-4465.

Studer/Revox C-270 2-trk, excel cond, \$2875/BO/trade; HS77 MK IV full-trk mono, 10 hrs use, \$875/BO/trade; portable case for A77 w/m on spkrs & pwr amps, excel cond, \$375. R Katz, Allego Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

Scully 280 4-trk 1/2", very gd cond in console, \$2500. F Virtue, Virtue Studios, 8809-11 Rising Sun Dr, Philadelphia PA 19115. 215-763-2825.

Alwa WX110 rcvr w/dubbing deck, works gd, \$150/BO. P Forest, Musical Starstreams, POB 1989, Sedona AZ 86336. 602-204-1989.

Technics RS1500 2 trk; Sony/MCI JH110C on roll around metal cabinet, both excel cond. J Gelo, 813-642-6899.

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Studer Revox PR99 2-trk, 7 1/2 & 15 ips, low hrs, excel cond, \$1950. L Wagner, Ard-nigma Radio, POB 1788, Orlando FL 32802. 407-299-1299.

Revox PR99 MKII 2-trk, 7 1/2 & 15 ips, excel cond, 12 hrs use, manual, \$550. J Gasewicz, Post Modern Prods, POB 64980-418, Dallas TX 75206. 214-504-6743.

Revox PR-99 MK II 1/2-trk stereo play w/25 Hz sensor, \$1100. D Pekuso, KJUL, 2880 E Flamingo Rd Ste E, Las Vegas NV 89121. 702-732-2200.

Forex 250-AV 4-trk combo w/Dolby C, \$400+s/h; Otari CR-705 remote for MX-5005/MKIII/2 1/2 trk, \$100. D Crepps, IBS, 29672 Silver St, Val Verde CA 91384. 805-294-9441.

3M M79 24-trk, excel cond, \$9950. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Scully 100-16 w/8-trk heads, \$2900. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Otari MX-70 16-trk 1", mint cond, \$10,500. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Want to Buy
Studer/Revox B215. R Katz, Allego Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

Tascam/TEAC solid state, 4-chnl, send descrip & asking price. T Heathwood, Heritage Video, POB 16, Boston MA 02187. 617-969-9966.

Otari ARS-1000 stereo reel deck. C Spencer, Radio Resources, 800-547-2346.

Scully '100' recorders, record/play amplifiers, 8, 16, 24 track heads. Sequoia Electronics, 1131 Virginia Ave, Campbell CA 95008. 408-866-8434.

MCI/Sony capstan & reel motors, any cond., recdg heads, most mfgs, machines, new, used. Relapped then sold. Amp Services, 224 Datura St No 614, W Palm Beach FL 33401. 800-826-0601, in FL 305-659-4805.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

COMPUTERS

Want to Sell

Kintron KT7-PC (3) remote terms w/kybds, IBM compatible emulation, amber screens, serial conns, gd cond, \$150 ea/BO; Software Link 8-port serial board w/conns, AT Gizmo, LanLink, Multilink software, \$175/BO. T Steele, WMOO, POB 92, Derby VT 05829. 802-766-9236.

Late mdl AT, excel cond, turbo chrgd, every option, gd svc record, BO. Randy, 919-855-5200.

CONSOLES

Want to Sell

Gates Gateway II mono, gd cond, many spare mods, together/separate. K Kenzie, KSLQ, 13 E 11th, Washington MO 63090. 314-239-0493.

TEAC 2A new cond, \$150; Sony MX16, 8 in, 4 out, \$200; (3) Altec 1567A, gd shape, \$100 ea; Pyramid PR8800, 8 in, 2 out, echo, new, \$400. J Parsons, 904-532-0192.

Neotek Series I 16x4x2 w/patcy bay, \$3500. D Gaydos, NYU, 721 Broadway, NY NY 10003. 212-998-1665.

Shure FP-42 4-chnl stereo, used twice, \$500. P Russell, Bowdoin College, Sils Hall, Brunswick ME 04011. 207-725-3066.

Kelsey 24 24x8x4x2 prod mixer w/talkback, (2) effx send & rcvs, (4) stereo submixers, Anvil case, perf cond w/manual, \$2200. K McCaleb, AEIOU Video, 55 Elm St, Staten Island NY 10310. 718-720-0896.

Opamp Labs 2008-RS 20-input, 8 subs+stereo mix out, gd prod bd, \$2500. L Wagner, Ard-nigma Radio, POB 1788, Orlando FL 32802. 407-299-1299.

Classic British Helios 24/16/24, c.1970s, many updates/mods w/doc, discrete mic preamps, (9) separate ps w/wood rack cab, mahogany desk, poor mans Neve, \$9500/BO/trade; Snake, 16 phantom-pwr inputs w/ext ps, 250' Belden 19-pr cable/mil conns/s strain reliefs, 10' Neumann XLR snake mates w/box or Belden snake, top qual, excel cond, \$750/BO/trade. R Katz, Allego Sound, 15015 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

Altec 1220 10-chnl, mixing, \$350. S Russell, 616-782-9258.

McMartin B-802 8-chnl stereo, rotary pot board w/manuals & spare cards, \$995. M Everhart, KZRC, 111 SW 5 #1550, Portland OR 97204. 503-226-6731.

UREI Quad Mod-One w/P&G faders, PS, spares, XLR snake installed, Anvil case, excel, \$4250. Appleson Studios, 757 SE 17th St Causeway Ste 358, Ft Lauderdale FL 33316-2960. 305-587-7900.

RCA 76C circa 1949 6-chnl, \$450. L Wise, KNEC, POB 845, Neosho MO 64850. 417-451-5636.

Trident Series 65 32 in, 16 out, oak cab, pedestal base, wiring harness, mod extender card, new, \$10000/pr. J Diamond, Blue Diamond, Box 102C Chubbic Rd RD1, Canonsburg PA 15317. 412-746-3455.

Autogram IC-10B factory refurbished and ready for operation, \$4,500. Call 806-372-5130.

MCI 428 28x24, 336 pt patchbay, prod desk, \$7500. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Want to Buy

Stereo, 6-12 chnl. B Hale, 606-436-5580.

8-12 chnl stereo, any cond, no tube, BO. T Crockett, Hot Tracks, Box 10501, Blacksburg VA 24060. 703-953-0222.

Harris Executive 10 ch stereo console. C Spencer, Radio Resources, 800-547-2346.

DISCO & SOUND EQUIPMENT

Want to Sell

Digitech IPS-33 Smartshift MIDI controllable intelligent pitch shifter & harmonizer, works great, \$350; Peavey PEP 4530 Prog Effects Proc w/MIDI, mint cond, \$200; Roland Jupiter 6 synthesizer w/MIDI, mint cond, \$700. M Miller, Miller Audio Prods, Rt 3 Box 188A, Ironton OH 45638. 614-533-0636.

Mastering Lab 604/5 1 pr spkr crossover units, very gd cond, \$300/BO; UREI 521 stereo elect crossover unit, rack mount, gd cond, \$150/BO. T Steele, WMOO, POB 92, Derby VT 05829. 802-766-9236.

Community CSX 52 pair of 3-way sound reinforcement/PB loudspkrs w/15" woofer, 6 1/2" mid & piezo tweeter, 500 W, carpeted w/handles, \$700; Crown Micro-Tech 1200, 2-rack space stereo pwr amp, 320 wch 8 ohms, 495 wchnl 4 ohms, 1315 w/mono 4 ohms, new w/warranty, \$700. B Fisher, KPCK, Box 829, Bowman ND 58623. 701-523-3883.

dbx 208 6-chnl noise reduc unit, \$2000/BO; 165 (2) comp, \$5500 ea/BO; 150 2-chnl noise reduc unit, new, \$300/BO; 154 & 155 4-chnl noise reduc units, mint, \$600 ea; SoundWorkshop 262 stereo reverb, new, \$500; ART DRI & OIA dig reverbs, new, \$895 ea; ADA 2.56 (2) dig delays, new, \$500 ea/BO. J Diamond, Blue Diamond, Box 102C Chubbic Rd RD1, Canonsburg PA 15317. 412-746-3455.

Dolby 361 (4) NR units, \$550 ea. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

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UREI BL-40 EC w/manual, \$165; Neve 33314A w/meters & pwr sply, \$2600. M Linett, 818-244-1909.

Harris/Gates M-6543 Solid Statesman FM w/manual, \$125. T Rosen, KBCC, 1129 Aca-cia, Bakersfield CA 93305. 805-871-6094.

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Orban Optimod 8100A mint cond, 1 yr old w/manual, \$4300. W Williams, KQFX, POB 7762, Amarillo TX 79114. 806-355-1044.

UREI BL-40 EC w/manual, \$150; Neve 33114A pr w/meters & pwr sply, \$2600. M Linett, 818-244-1909.

Aphex 300 Compellor, \$550. P Appleson, Appleson Studios, 757 SE 17th St Causeway Ste 358, Ft Lauderdale FL 33316-2960. 305-587-7900.

CBS Volumax 411 stereo, \$75. M Hiner, WHOK, 1660 Columbus Rd, Lancaster OH 43130. 614-653-4373.

CRL SMC 600-A compressor stereo mod controller, gd cond, BO. B Lacy, KARX, 3611 Son-cy 6A, Amarillo TX 79121. 806-359-4000.

Texar Audio Prism (2), \$1200/both; CRL Dynaflex DX-2 stereo noise reduc unit, \$350. M Golub, WMJS, POB 547, Prince Frederick MD 20678. 410-5353-2201.

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umentation, \$1500. J McDonald, Wind
ar Bdcig, 329 E 3rd, Loveland CO 80537.
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rbn Optimod 9000 manual. P Hess,
/PPJ, 134 Derwent Dr, Pittsburgh PA 15237.
12-366-1249.

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mount, \$350/BO; RCA 74B bi-direc ribbon,
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used 5 hrs. \$325/BO, all excel cond. T Steele,
WMOO, POB 92, Derby VT 05829. 802-766-
9236.

Telefunken/Schoeps CM61 tube, rare, uses
std 6AU6 plu-in tube, orig ps, new cable, mint
cond, \$2475; CR-176 large diaphragm tube,
new, \$1250. R Katz, Allegro Sound, 15015
Ventura Blvd, Sherman Oaks CA 91403. 818-
377-5264.

RCA PB90 A1 late 30's, sim to 44-A in perf
& appearance, different stand mounting, gd
cond, recond, \$500; RCA VAIR Castic poly
direc ribbon, brown gloss finish, MI-6204-C,
gd cond, \$180. R Franklin, Franklin Studios,
1004 Dekalb St, Norristown PA 19401. 215-
646-7788.

AKG D224E (2), dual transducer, mint cond,
\$800. P Russell, Bowdoin College, Sills Hall,
Brunswick ME 04011. 207-725-3066.

EV RE-20 w/cord, \$275. S Russell, 616-782-
9258.

Neumann U-67 & pwr sply, like new, \$3000.
F Virtue, Virtue Studios, 8809-11 Rising Sun
Dr, Philadelphia PA 19115. 215-763-2825.

AKG D2000E, new, \$125; Sony ECM-33P,
new, \$200; Sony C-22 & ECM-22, mint, \$150
ea; Sony ECM-21, mint, \$100; Fostex M55RP,
new, \$300/BO; (2) MB Peerless MB C-520
w/pwr sply, mint, \$400/BO; assorted mic
stands & booms, BO. J Diamond, Blue Dia-
mond, Box 102C Chubbic Rd D1, Canons-
burg PA 15317. 412-746-3455.

Nady 501 wireless w/2 mics, chnl D 209.15
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Telefunken U-47, Neumann U-67, KM-54
mint; RCA ribbon mics (2) KU3A's 100001, (3)
77-DX, (1) 44-BX, (2) BK-5; Altec tube mics
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AKG C24. R Katz, Allegro Sound, 15015 Ven-
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R Van Dyke, Caffrey House, 2 Squires Ave,
E Quogue NY 11942. 516-728-9835.

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UTC LS-141 Hybrid xformer, new, \$50; UTC
LS-33 20 W line to line xformers, \$120 pair;
Cinema Engrg #64266 (Aerovox 170387)
xformers, \$30 pair. R Robinson, 203-269-
4465.

Mag film/videotape degausser, (2) lge
matching studio audio spkrs; alum Pole-cat
set; mag film rec/PB amps; various TV shows;
instruc manuals, etc. B Howard, Academy
Film, 3918 W Estes, Lincolnwood IL 60645.
708-674-2122.

Duntech Sovereign 2001 loudspkrs, light
oak, gd cond, \$6000. 305-866-6048.

Lyrec TIM 1/4" 15 IPS tape timer, gd cond,
\$60/BO. T Steele, WMOO, POB 92, Derby VT
05829. 802-766-9236.

Avcom EBS-100 encoder/decoder w/Motor-
la DS-9660 tube type AM rcvr w/crystals for
1460, 1280, 1240 & 640, gd cond, \$350. D Hei-
nen, KBBO, 2120 Riverside Rd, Yakima WA
98901. 509-248-1390.

Lafayette LT-725 AM/FM/SCA stereo tuner,
just tweaked, \$100; JVC 4DD-5 CD-4 quad-
raphonic disc demod, new, \$75. D Pulwers,
Price Audio Prods, 310 N Howard #103, Alex-
andria VA 22304. 703-751-9346.

Aphex Compellor 300 less than 2 yrs old,
perf cond, \$900. R Reeves, Voice at Large,
5080 Bainbridge Ct, Lilburn GA 30247. 404-
925-8868.

Antique mics, turntables, consoles, remote
amps, mons, xmtrs, etc., list, \$2. R Franklin,
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PA 19401. 215-646-7788.

Shalco 820Q-2B3-10K (7) rotary faders, (2)
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Weston 5 1/2 SQ 0-250 ACA switchboard type w/current xfmr, \$100. Bartkowski, 4923 W 28th St, Cicero IL 60650.

Sola Constant Volt 8.34 amp, 120 V; Computemp 5 temp mon w/o probe, BO. M Hiner, WHOK, 1660 Columbus Rd, Lancaster OH 43130. 614-653-4373.

Printer sound isolation box, hinged lexan cover w/fan, \$125. D Koehn, Central States, 609 S 15th, Quincy IL 62301. 217-228-2115.

Want to Buy

Fairchild 740/750, amps, limiters, 16" stereo tonearms & carts, Neumann/Westrex studio disc recorders, McIntosh hi-fi tube equip, 45/78 records. K Gutzke, Custom Rodg, 7134 15th Ave S, Minneapolis MN 55423. 612-866-6183.

Rock music historian/ bdcter seeks Westwood One Radio Ntwk 1992 Memorial Day Pink Floyd radio show. R Strawn, 1900 SW 1st Ave, Fruitland ID 83619. 208-452-3149.

Dynair Dyna-Mod II TX-4B modulator instruction manual, chnls 6/7/8. J Powley, WJIM, 1536 Logan Ave, Altoona PA 16602. 814-944-8571.

Altec 15095 47ss, 4588 B & plug ins. J Parsons, 904-532-0192.

JBL D130 15" spkrs; 8-10 EV 635A mics; Eventide 1745M dig delay lines; EV horns & drivers; Sentry IV. S Russell, 616-782-9258.

UTC LS-10 & 10X sformers; Western Electroacoustic Labs Cond, Mic PS#120A. R Robinson, 203-269-4465.

Xfer of wire recordings to cass tape. J Cooney, Christian Financing, 601 Brad St SE, Gainesville GA 30501. 404-534-1000.

WE & RCA 16" transcriptions literature; bdct equip. R Van Dyke, Caffrey House, 2 Squires Ave, E Quogue NY 11942. 516-728-9835.

Jazz record collections, 10" LP/12" LP bebop, swing, dixie, highest prices paid. B Rose, Program Recdgs, 228 East 10th, Nyny 10003. 212-674-3060.

Radio transformers by Chicago, UTC, Triad, Peerless, Freed, Sola, send list. J Gangwer, 942 32nd St, Richmond CA 94804. 415-644-2363.

MONITORS

Want to Sell

McMartin AMR1 FM, 1 each. K Kenzie, KSLQ, 13 E 11th, Washington MO 63090. 314-239-0493.

Collins 900F-1 67 kHz FM SCA, BO: 54N-1 FM freq tuned to 93.3 MHz, BO: 900C-3 FM stereo mod tuned to 93.3 MHz, BO. R Egan, WIZM, 432 Cass St, LaCrosse WI 54601. 608-785-7914.

Want to Buy

Any older McMartin mod monitors. C Goodrich, 11435 Manderson, Omaha NE 68164. 402-493-1886.

MOVIE PROD EQUIP

Want to Sell

B&H 16mm 202 opt/mag proj w/sync motor; M-H 816 hot splicer; Beaulieu R16E camera s/Ang 12-120 zoom lens; Bolex 3-D taking & proj lenses, glasses; screens, light stands, re-winds, sound readers, split/solid reels, etc. B Howard, Academy Film, 3918 W Estes, Lincolnwood IL 60645. 708-674-2122.

RECEIVERS & TRANSCEIVERS

Want to Sell

AFI AFI-55 67 kHz, new, \$75. D Sorenson, Sorenson Bdctg, 604 N Kiwanis, Sioux Falls SD 57104. 605-334-1117.

McIntosh MR77 FM stereo tuner, excel cond, \$425. G Gabriele, WFOG, 215 Brooke Ave, Norfolk VA 23518. 804-622-6771.

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Want to Buy

Marti CR 10/similar broadband, rack mounted rcvr w/dual freq capability, need 161.7 & 161.64. G Walden, KHR, POB 360, Hood River, OR 97031. 503-386-1511.

REMOTE & MICROWAVE EQUIP

Want to Sell

Marti dual STL on 949.875 & 950.125 w/combiner, gd cond, \$3000. D Heinen, KBBO, 2120 Riverside Rd, Yakima WA 98901. 509-248-1390.

Moseley 303 (3), 1 nds work, spare f-nals/parts/xmtr/rcvr. K Kenzie, KSLQ, 13 E 11th, Washington MO 63090. 314-239-0493

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 Audio/Video Consultants 215-642-0978

TFT 7610-C & R w/chnl expander & spare parts, \$1100. G McClintock, WNQM, 1300 WWCRA Ave, Nashville TN 37218. 615-255-1300.

Marti MT/MR 30 RPU xmtr & rcvr, old tube-type, hybrid, working when removed w/yagis, line, 150-170 band, BO. M Friend, WTJU, Box 711 Newcomb Hall St, Charlottesville VA 22904. 804-924-0885.

Moseley TRC-15AW 15-chnl unit, gd cond, \$600/BO. G Fullhart, WVKS, 4665 W Bancroft St, Toledo OH 43615. 419-531-1681.

Moseley TRC-15A gd cond, \$750. G Wise, WEKU, 102 Perkins Bldg, Richmond KY 40475. 606-622-1672.

Gentner VRC2000 w/cmd relay unit, mint cond, 1 yr old w/manual, \$1800. W Williams, KQFX, POB 7782, Amarillo TX 79114. 806-355-1044.

TFT 8300 STL xmtr/rcvr, composite w/mdl 7770 auto changeover panel, freq agile; KLM PA 15-80BL, 80 W, VHF pwr amp, 12 V; Sca-la PD2-55 STL pwr divider; Moseley MSC-1 multi-syst combiner, studio & xmtr unit, BO. M Hiner, WHOK, 1660 Columbus Rd, Lancaster OH 43130. 614-653-4373.

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Used van/ truck/motorhome for bdct for F/S station. 602-274-6200/FAX photo to 602-266-3858.

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Rust TLC-O control site unit & TLC-1 xmtr site w/2 direction control functions. J Sassak, WXEE, Box 1340, Welch WV 24801. 304-436-4191.

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Sci Atl 7550 rcvr widemod & FSK decoder cards, used for business radio ntwk, \$4000/BO. M Wilson, WXCT, 473 Denslow Hill Rd, New Haven CT 06514. 203-288-8282.

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FM in southeast AZ, terms avail, \$395000. S Greeley, KZUL, POB 1886, Lake Havasu City AZ 88405. 602-855-1051.

Class C FM 10 kW AM, KMCM/KMTA, Miles City, MT, top audience, regional signals, mint equip, \$595000. Paul, 612-222-5555.

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Want to Sell

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SCG-10 67 & 33 kHz subcarriers, new, \$375. D Sorenson, Sorenson Bdctg, 604 N Kiwanis, Sioux Falls SD 57104. 605-334-1117.

Haeco CSG-2 compatible, rack mount, gd cond, \$250/BO. T Steele, WMOO, POB 92, Derby VT 05829. 802-766-9236.

SCD-10 39 kHz subcarrier demod, new, \$375. D Sorenson, Sorenson Bdctg, 604 N Kiwanis, Sioux Falls SD 57104. 605-334-1117.

Moseley SCG-9, \$600. R Egan, WIZM, 432 Cass St, LaCrosse WI 54601. 608-785-7914.

Moseley SCG-4T 67 kHz SCA, \$150. M Everhart, KZRC, 111 SW 5 #1550, Portland OR 97204. 503-226-6731.

Moseley SCG-4T subcarrier gener & SCD-2AP subcarrier demod tuned to 185 kHz, very gd cond, \$400/both/BO. G Fullhart, WVKS, 4665 W Bancroft St, Toledo OH 43615. 419-531-1681.

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5 kW FM	1971 Sparta 605	5 kW AM	1977 RCA BTA 5L
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Want to Sell

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HP 330-D noise & distortion meter, new cond, \$300; RCA WX 2-B field intensity meter, excel cond, \$150. W Duke, 615-668-9465.

DigiMax D-1200 1.2 GHz freq counter, excel cond, \$150. M Hiner, WHOK, 1660 Columbus Rd, Lancaster OH 43130. 614-653-4373.

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Harris STX-1B AM C-Quam stereo exciter, limiter & manual, gd cond, \$1950; CCA FM-20000DS 20 kW FM w/CCA exciter, gd cond, \$17500. B Barry, WAMB, 1617 Lebanon Rd, Nashville TN 37210. 615-889-1960.

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Shortwave, freq agile, 50 kW. G McClintock, WNQM, 1300 WWCR Ave, Nashville TN 37218. 615-255-1300.

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Audio generator, TE22 (Lafayette), Sencore translator tester (portable); Cannon plugs, male & female 3 prong (new); new & used cable w/Cannons or without. Mr. Oliver, 212-874-7660/0274. Call afternoons till 10PM.

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6072, 5651, 5691, 5692, 6005, 6084, 6386, 7308, 6A05, 6BL7, 6DB7, 6EJ8, 6EM7, 6GK5, 6HU8, 6JK6, 6XKK6, ECC808, ELL80, 300B, 2A3, 13CW4, AOR outlet in rated mkt, prefer drive shift. Jack, 414-242-4375.

TURNTABLES

Want to Sell

Technics SP-25 direct drive bdc, gd cond, \$350; Audio Technica ATP-12T prof tone arm, 12", gd cond, \$150. R Franklin, Franklin Studios, 1004 Dekalb St, Norristown PA 19401. 215-646-7788.

UREI 1122 stereo turntable preamp, excel cond, \$150/BO; Shure/SME 3012-R 16" tonearm, new cond, \$250/BO; Neumann/Lyrec synch drive motors for Neumann lathes, \$700 ea/BO; (2) Scully disk mastering lathes; Grace G-860F 16" tonearm, gd cond, \$150/BO. T Steele, WMOO, POB 92, Derby VT 05829. 802-766-9236.

Scully/Westrex System UP-131 record mastering lathe, \$35000. F Virtue, Virtue Studios, 8809-11 Rising Sun Dr, Philadelphia PA 19115. 215-763-2825.

Technics SL 1200 MK2 w/Stanton 881S cart, like new, \$265. P Forest, Musical Starstreams, POB 1989, Sedona AZ 86336. 602-204-1989.

Want to Buy

16" transcription turntable with tonearm, good or better condition. Jim Pappajohn, 304-599-7000.

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Sony LDP-1000 laser disc plyr w/CAV & CLV int/ext drive, gen lock, RS232 port, remote, manual & cables, \$350; 3M NTSC encoders, RGB in composite, video out, \$200. J Krepol, JVK Studios, 7 Dustrin Dr, Claymont DE 19703. 302-798-4052.

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BUYERS GUIDE

August 19, 1992

Consoles

USER REPORT

WUOT Comes Alive with SP-6 Console

by **Tim Berry**
CE, WUOT(FM)

KNOXVILLE, Tenn. When I was hired at WUOT(FM) in February 1990, one of my first assignments was to equip a new production studio that would accommodate WUOT's varied and special needs. We are a non-commercial 100 kW station owned and operated by the University of Tennessee, on the air since 1949. This would be our first console purchase in 18 years.

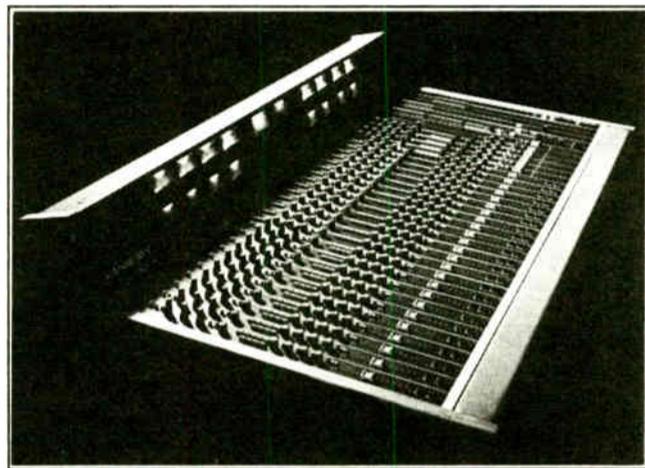
WUOT needed a unit that could be used for live broadcasts from the music studio adjacent to the production room, while also serving as a production facility for several locally produced recorded music broadcasts. It would have to handle the complex functions associated with a multi-track console, yet be simple enough for use by those members of my staff who know more about Mozart than multi-track production.

Personal considerations

Since I was installing and maintaining this console, I had a few personal considerations as well. I had recently spent several hours repairing a console that had a cracked motherboard, and had noisy select switches. I wanted a console that would be

reliable and easy to repair.

I also wanted a console that would utilize components readily available at my lo-



The SP-6 stereo production console from Wheatstone has made WUOT a local leader in live broadcasts.

cal electronic parts distributor. Have you ever had an IC chip fail that was "not available," and you were off the air until the factory opened the next day? Or worse, Monday?

I solicited information from all of the major console manufacturers, keeping in

mind that the console we needed would have to be cost-efficient as well. The only console that met all of our needs was the Wheatstone SP-6.

The console arrived on a Friday in December—before the promised delivery date—and one of our jazz hosts immediately scheduled a live jazz broadcast for the following Wednesday. That left me three days to install the unit to make good on my promise to be ready.

The Wheatstone was easy to install, with the source inputs using the familiar XLR connectors and the outputs using DB-25 series connectors. I was able to wire all of the sources, outputs and send/returns without spending a great amount of time assembling special connectors.

By Wednesday afternoon the console was wired, tested and ready. The management of the station waited at the studio for the evening jazz broadcast to see how this first-ever, live, in-studio event would fare. I was elected to engineer the broadcast, since I had spent the last three days wiring the console that was about to open a new horizon for us.

Regular live broadcasts

The broadcast went beautifully, and led to regular live broadcasts from this studio. The audio quality of the SP-6 has been excellent, meeting or exceeding the specifications promised by Wheatstone. The console has separate studio and control room audio-feed selects, making it easy for me to wire a headphone amp in the music studio so that the talent can hear the air signal. We are actually able to interview performers on the air, and cue them in their headphones using the Wheatstone's internal talkback circuit.

continued on page 79 ►

USER REPORT

PR&E's Radiomixer Console Puts the "Mix" in WZMX

by **Gene Faltus**
CE, WZMX-FM

FARMINGTON, Conn. When new ownership took over at WZMX two years ago, we adopted the attitude that this was a new station. Actually, for the first nine months, it wasn't that difficult, since I constituted the entire staff. Our format: rebroadcasting NOAA weather.

But from the start, Multi-Market Communications was dedicated to building new studios at a site that would allow growth.

I had the luxury of several months to choose equipment for the new site.

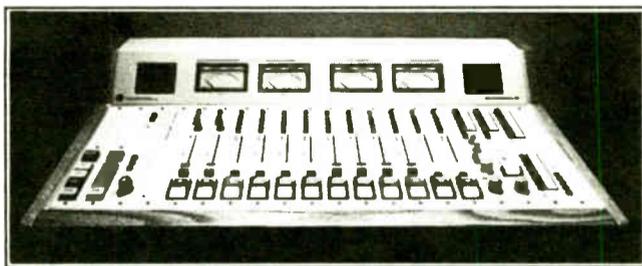
For my console selections, I spent time on the phone asking users how they liked their choices. One message came through loud and clear—those who had the least amount of trouble and the highest satisfaction rate were Pacific Recorders & Engineering users.

Fell in love

I fell in love with the PR&E Radiomixer at once. Starting up a station anywhere is an expensive proposition, but we were originat-

ing a new station in New England during a deep recession, and value for every item was paramount. So I was pleasantly surprised at the final cost for the Radiomixer. We had it customized with a master Mic Off button, so that with one button, all the studio mics could be turned off at once.

This was a feature that our PD wanted, and was put in from the factory. We also had remote control panels for two tape

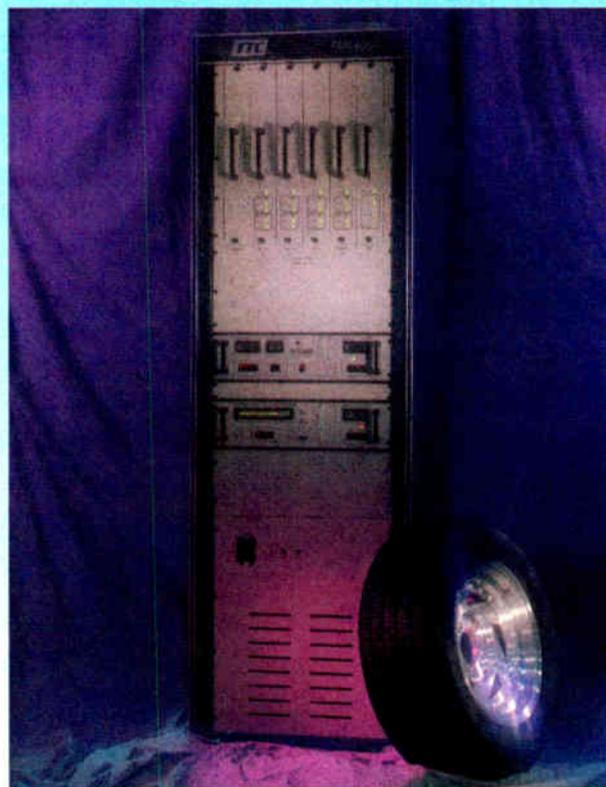


WZMX-FM's air staff learned how to use PR&E's Radiomixer in a day.

decks put in. We also use two channels for "remote" inputs, for such sources as EBS, traffic reports, Marti and other studios. So we added to the Radiomixer two remote input selector panels.

Even with these added features, the bottom line put us under budget for the air studio, and we gained having the Pacific name on the console. In fact, the final cost for
continued on page 72 ►

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USER REPORT

BE's MT-90 Is a Console to Count On

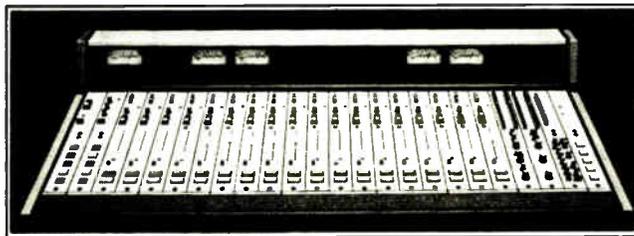
by Michael F. Weaver
Corporate CE
PTI Broadcasting Inc.

RENO, Nev. Two years ago, our company decided to relocate and update our three FMs.

We purchased three Broadcast Electronics MT-90 MixTrak consoles. The sound quality has made our corporate president happy and I have been able to enjoy uninterrupted sleep—no panicky jock phone calls at two a.m.!

For me, after-the-sale service is one of the most important criteria in making a decision to repurchase. Like most of you, I have been through some harrowing service experiences with different companies. I can truthfully say I have never worked with a company that has better service integrity than Broadcast Electronics.

With the MT-90 console, we had no major problems. But we did have a few minor ones. One of our engineers had a problem with an occasional +12 V dropout, so he called BE.



PTI Broadcasting's Michael Weaver has caught up on his sleep since purchasing BE's MT-90 MixTrak consoles.

Their response was *not*, "We've never heard of this problem before." Instead, "Yes, we have had this problem and this is how you fix it." For failing monitor pots, Broadcast Electronics sent new replace-

ment modules to fix the bad pots at no charge, and since the console is hot plug-able, I spent only four minutes of precious engineering time fixing them.

We also have had our MT-90 doused with a cup of Folgers coffee with two lumps of sugar. No failure occurred, although we did take the board apart to clean it.

Our air staff appreciates the MT-90's extra-wide modules. The mic and line modules with the color-coded switches and knobs make it a real

hit with our jocks.

But enough of making other people happy. Why did I really push to buy the MT-90? When asked about the performance of this console, I say, "Incredible,

was short life on indicator bulbs. The other problem was that a couple of the On buttons for two channels shorted, so those channels couldn't be turned off. Pacific was aware of the problems and replaced the switches.

It turned out they had received a bad batch of switches from their supplier. There also was a small error in the manual, which indicated that the talkback button turned the talkback mic on when depressed. Not true, as the mic was always on, and the button provided the ability to externally control the talkback.

To me, the bottom line is: Would I buy another Radiomixer? After 14 months, the answer is yes. As our company grows and we need additional consoles, the Radiomixer will be our choice.

□□□

For information on the Radiomixer from Pacific Recorders & Engineering, contact Jack Williams in California: 619-438-3911; fax: 619-438-9277; or circle Reader Service 116.

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For information, contact Kim Winking at Broadcast Electronics in Illinois: 217-224-9600; fax: 217-224-9607; or circle Reader Service 101.

PR&E Puts the Mix in WZMX

► continued from page 71

the Radiomixer was less than the cost would have been for my second choice of console.

One feature that I think is the best on the market is the hybrid/telephone interface system. The console provides both a composite or dual channel feed to our tape decks.

We normally use the dual feed, which means that one channel of the tape deck gets just the caller and the other gets the talent. Then, on playback, we put the tape deck into mono on the Radiomixer, and we get both sides on the air. This makes it easy to take off listener comments for future use.

Or, playing back dedications, we select the Radiomixer to feed both left and right with just the caller side of the tape playback. At times, we have used the composite feed, which creates a mix of both caller and host, and sends it to both channels of the tape deck.

Three control modes

The system also has three control modes. It determines what gets sent to the caller. The choices are program, off-line mix or auto. The program mode sends the contents of the program bus, minus the caller, while off-line mix can be selected with a button on each channel, which is external, right below the Program 1 and 2 buttons.

No more fooling around with internal DIP switches. The talent can change at any time which channels the caller hears. The auto mode allows for automatic switching between program and offline busses.

Installation was a breeze. I knew that even though I had a lot of upfront time, when the time came to put it together, there would be a crunch. I ordered the Pacific pre-wired logic and control package. This saved me time and the documentation was excellent.

I chose to do the audio wiring myself. The three studios of Pacific equipment and the furniture arrived on the first Friday in May—three weeks later we were on the air from our new site. At first, I was a little concerned over the use of Molex connectors, never having done any large amount of wiring with them. I had in the past used other consoles which used insulation displacement, solder terminals or screw terminals, none of which I really liked.

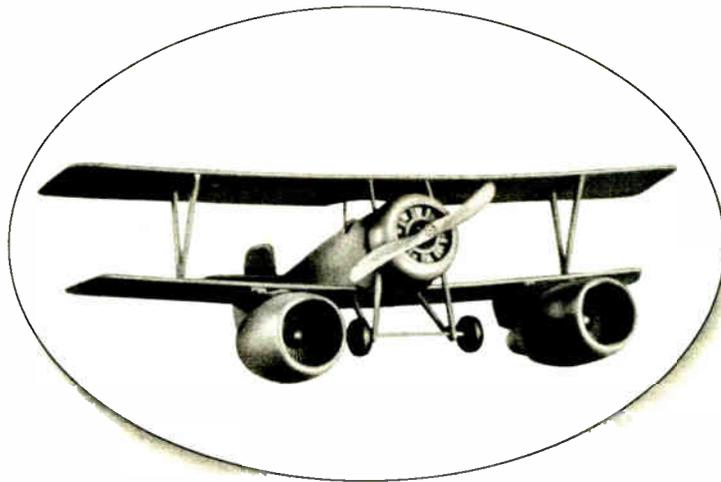
Pacific recommended an optional Molex installation tool, which I highly recommend if you are doing multiple studios or are on a tight time schedule. It is a "ratchet" type tool that saves effort and time. With three studios to do, including an eight-track studio using a Pacific ABX, I know that I would not have made the schedule with any other brand.

Learn In a day

When it came time to teach the air staff how to use the console, they learned in an afternoon. This is noteworthy, since some are not technically inclined.

During the past 14 months, we have had a few minor problems, all of which were taken care of by Pacific. We had incoming power problems, which blew out the power supply to the console in production "B," our only non-Pacific console. The only problem that resulted on the Radiomixer

This is no way to design a digital STL.



TECHNOLOGY UPDATE

Radio Systems Adds RS-24 to Its Line

by Paul McLane
U.S. Sales Manager
Radio Systems Inc.

BRIDGEPORT, N.J. In an election year when "new choices" are touted, broadcasters who need a larger mixing console have a new choice of their own.

Radio Systems of Bridgeport, N.J. has introduced the largest model in its RS series console line, the RS-24. Designed for heavy audio loads, the RS-24 offers 24 Penny & Giles faders, controlling 48 inputs. Any may be set for line level, microphone level or consumer audio sources.

The RS-24 includes every feature of other models in the RS series line, but it is more than just a "stretch" version. The RS-24 also includes circuitry to provide additional outputs. These busses can be wired by the user to any input channel, and grouped as four mono or two stereo outputs.

Now with the RS-24, the user can create multiple mix-minus or dedicated feeds composed of selected audio sources. For instance, the user can feed more than one air chain, each with different audio mixes from the same console. Or the user may take advantage of the extra mix-minus outputs to feed multiple phone lines.

To accommodate the new mix groups, the RS-24 also provides two separate VU meters with peak LED indicators on its ex-

panded meter overbridge.

If a user already has an RS series console (of any size), he or she can obtain a field retrofit kit, consisting of two or more audio cards (depending on the application).

Radio Systems created RS series consoles four years ago, and found a substantial market for affordable, reliable mixers. The design uses a single, lift-up front



The RS-24 mixing console from Radio Systems is the series' biggest configuration yet.

panel, which provides easy engineering access and keeps the cost down compared to conventional modular designs.

The RS series is configured in multiples of six channels: RS-6, RS-12, RS-18 and the new RS-24, each with two inputs per channel. Input levels are set by the user with internal gain-set jumpers and

color-coded selectable input attenuator pads.

All models include illuminated on/off switches, cue amp and speaker, headphone amp and jack, logic-level remote start, two muting outputs, a talkback intercom circuit, digital event timer, stereo and mono meters and channel patch points.

Components are socketed for easy service, and switches are harnessed to allow fast replacement. Input and output audio are wired on push-on connectors; once a source is wired, the user may move the connector without rewiring.

Specifications are intended to accommodate today's high quality audio sources. Distortion of RS series consoles is 0.02 percent nominal. Typical signal-to-noise on

line inputs is 88 dB or better, below +4 dBm with 0 dBv input level.

Inputs are differentially balanced instrumentation amplifiers. Outputs are active balanced, adjustable 0 to +10 dBm.

While RS series consoles are ready to operate out of the box, users also may choose from several helpful options, including internal distribution amp, enhanced remote interface logic, copy stand and monitor amp.

□□□

For information about RS Series consoles and other studio products, contact Gerrett Conover or Paul McLane with Radio Systems in New Jersey: 800-523-2133; fax: 609-467-3044; or circle Reader Service 109.

TECHNOLOGY UPDATE

Autogram Mini Mix 8 Offers Flexibility in Compact Package

by Jim Laird
CE, Autogram Corp.

PLANO, Texas Autogram's newest console—the Mini Mix 8—offers eight channels, 12 stereo inputs with two additional mic inputs and a very friendly price tag.

The Mini Mix 8 is a versatile, high-quality, all-VCA professional audio console built with broadcast standards for those special situations where a small, compact audio console is needed. Such uses include news, mini vans, production studios and education facilities.

Eight channels are featured in the Mini Mix 8. The first two are dedicated to microphones, while the remaining six provide two stereo inputs each. Each channel may

be assigned to either Mix Buss One and/or Mix Buss Two. Both busses may be fed simultaneously.

The eight slide faders operate with D.C. only and drive an associated voltage-controlled amplifier for level control.

A unique feature of the Mini Mix 8 is that the "A" input on channels 3 to 8 is an electrically balanced, professional-type, while the "B" input uses phone jacks to be directly compatible with consumer-type equipment.

The balanced inputs use a miniature plug-in screw-type connector, which makes installation very simple. Sources may be moved around easily for different configurations. Each balanced input is adjustable to accept levels for connecting an external air-monitor source.

Microphone inputs use convenient XLR-type connectors and feature pan pots for controlling the spatial positioning. The pan pots may be disabled if this feature is not desired. A front panel switch turns the microphone channel On and Off while activating the "Mute" circuit when the channel is "on." The muting may be programmed for either microphone channel.

Balanced and unbalanced outputs are provided for the two mixing busses. As with the inputs, the balanced outputs use miniature plug-in screw-type connectors, while the unbalanced outputs use phone jacks.

A balanced output is provided for the Mono sum of Mix buss 1.

Separate select switches and level controls are provided for the headphone and monitor circuits. Buss 1, Buss 2 or Air may be selected. An external monitor power amplifier is required, which may be whatever power range is desired. The monitor driver output appears on phone jacks and is compatible with consumer-type amplifiers. Muting for the monitor output is included and may be programmed to operate from either/or both microphone channels.

A cue speaker and amplifier are built in to provide cue monitoring. A front panel switch on channels 3 to 8 select Cue. When Cue is selected, that channel will be

continued on page 82 ▶

However, this is.

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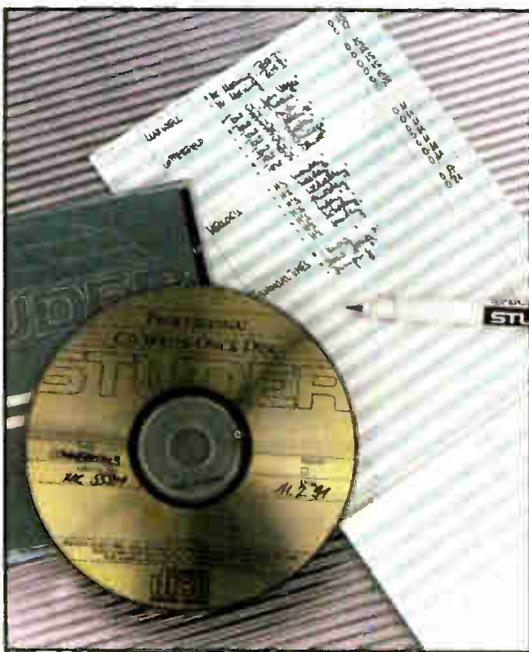
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World Radio History

STUDER

USER REPORT

Comrex STLX Is a Dream for Remotes

by Kurt Haase
 Director of Engineering
 WTAE(AM)-WVTV(FM)

PITTSBURGH "The Comrex STLX is a remote broadcast engineer's dream."

I'm quoting myself here as I remember making that statement more than six years ago when I first experienced the STLX. My sentiments on the product have only been reinforced since. I have always been a big fan of Comrex products. They satisfy the three most important considerations in selecting broadcast equipment... they work, they work and they continue to work.

The STLX is a stand-alone remote production console with integral two-line frequency extension capability. The outstanding performance of two-line frequency extension technology is well established. What makes the STLX unique is its packaging and capabilities.

Comrex has managed to take frequency extension technology to the next level by incorporating it into a production console mainframe that meets all but the most demanding remote broadcast applications.

Immediately impressed

When I first saw the STLX, I was immediately impressed with how it looks. After a few minutes of study, I began to appreciate how well thought out and ergonomic the console layout is. It became readily apparent how the integrated functions of the STLX are designed to save setup time and improve upon existing remote production capabilities. Comparing how we interconnected existing remote equipment showed just how consolidated the process becomes when using the STLX.

The console is equipped with a four-microphone mixer. Each channel has an on/off switch, switchable AGC, a Penny & Giles short fader and PTT intercom capability with the telephone line used for station monitoring or IFB. The latter has proven to be a very effective and convenient method for talent to communicate directly

with the studio. Two of the channels can be switched to accept line level and have a trimmer pot in advance of the console pre-amp and fader. This feature has proven useful at NFL stadiums where unknown levels are present on the ref's mic feed. Each microphone input has a headphone

position. The jacks for mic and headphone are paired side by side in four groups. A seven-pin XLR connector is used for the headphone.

This is because the headphone amplifiers in the console are balanced, two-channel. I chose instead to go with conventional unbalanced TRS jacks, sacrificing the balanced connection and 6 dB of power.

Headphone crosstalk has not been a problem, nor has driving higher impedance headphones (600 ohm). Each headphone position has an independent left/right level control and a five-input pre-selector arranged in matrix fashion for the right channel headphone (ring). It includes a "listen back" position to monitor a dialed connection to the station coupler line.

A master volume control for "listen back" and a variable external input provides flexibility in satisfying monitoring requirements. The remaining three inputs provide the capability to individually monitor the other console channels. The switches are not interlock-

ing, so a mix of all headphone matrix inputs is possible if so desired. The left channel of the headphone is dedicated to monitor the output of the console.

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Extremely easy

Comrex has made use of the two-line frequency extension extremely easy. Switches and jacks associated with this function have been arranged on the right side of console, logically grouped to provide easy control. Those familiar with Comrex's stand-alone 2XP encoder will find many similarities.

Four modular telephone jacks provide interface for three dial tone lines and a telephone. Interlocked switching enables switching of the three lines to a single telephone instrument. A momentary release button makes disconnecting the telephone instrument from the line convenient after the line has been transferred to the internal modem. A group of three locking switches transfers the telephone lines directly to the internal modems and listen back coupler after they have been dialed and connected at the studio end.

An LED alerts you if there is an incoming call or, more important, if you forget to switch the telephone instrument off of one of the outgoing program lines. The latter is grouped with the line balance test tone switch to alert you of impending calibration problems with the studio decoder.

Emergency switching is provided to enable a swap (reverse) of the low and high outgoing program lines and provide optimized single line operation. A selectable fixed transmission equalizer is provided for situations where poor line response may require it.

Other features include a large VU meter with a peak overload LED and switchable 1 kHz test tone.

Vice versa

When we at WTAE think of applications for the STLX, we think of a remote production console with optional two-line frequency extension... sometimes... and

vice versa at other times.

I emphasize this because our STLX is used just as often as a remote production console *only* when an RPU transmitter, equalized broadcast loop or satellite is the transmission medium. The STLX has two +8 dBm outputs for these applications. Its performance in the role of a remote production console has been outstanding.

The console is compact and lightweight (an important consideration, as we all know). An optional custom road case is available, which I highly recommend. It's about the size of a large suitcase and comes with wheels so it can be rolled in an upright position.

The case has additional compartments that can store mics, headphones, cables, etc. This one case is all you'll need for most remotes. An optional battery pack is available, which uses individual replaceable

continued on page 77 ▶

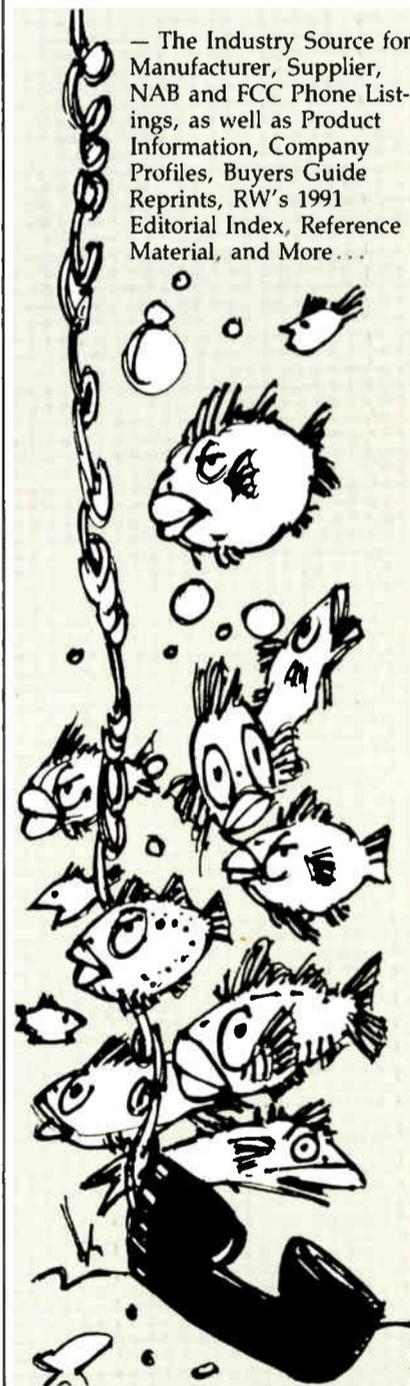


The Comrex STLX is WTAE (AM)/ WVTV (FM)'s idea of a remote broadcast engineer's dream.

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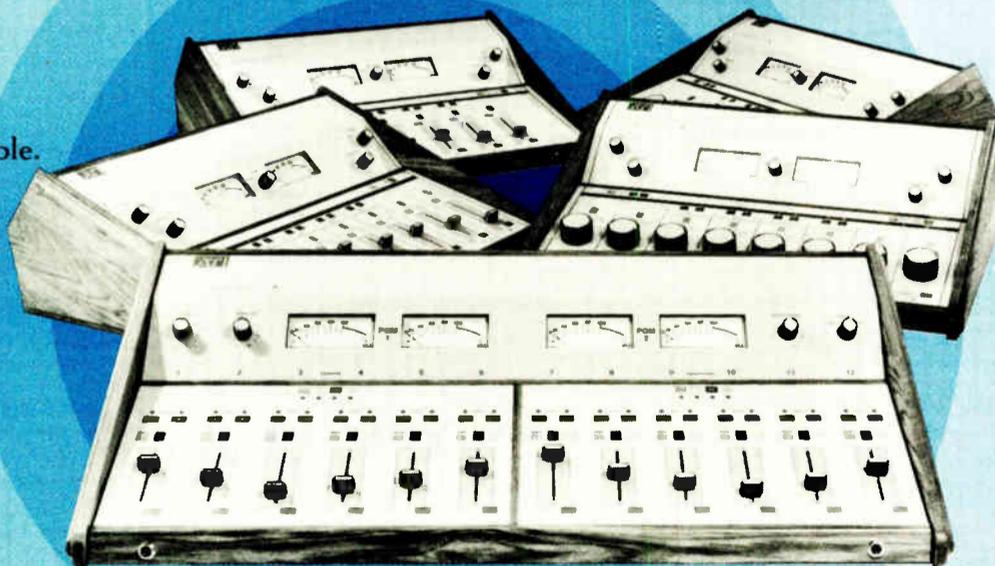
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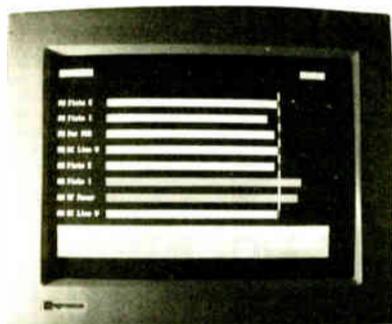
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USER REPORT

BA Series VI Brings WAWZ into the '90s

by Ron Habegger
Chief Operator, WAWZ(FM)

ZAREPHATH, N.J. In the last few years, WAWZ(FM) has added two CD players, four satellite feeds, an AP hotline, a third cassette, NOAA weather and just recently, a DAT source.

But our production and main studio consoles were built long ago—before terms like “human engineered” and “user friendly” were coined. Our old boards had run out of input space, and the operators had put up with the units to the point that their production and air work was being adversely affected.

Our studios were crying out for new audio mixers. Our GM decreed, “It’s time—let’s just do it!” But, being non-commercial and listener-supported with a gospel format, we couldn’t justify spending a whole lot of money on a board loaded with a lot of little extras that we’d never use.

Our worries are over now, thanks to a Broadcast Audio broadcast mixing console now manufactured and distributed by the cart machine and tape people at Fidelipac.

Dave Evans and John Fernandez introduced the Broadcast Audio consoles in the early 1970s. I began purchasing them in the early 1980s. Some broadcast products survive fierce competition because of their inherent common sense design. The BA console is one of those products.

There have been many improvements over the years, but the basic layout and circuit design remain the same. Options available today include modules with pan pots, equalization and test oscillator/talkback functions. Everything about this board brings a smile to the face.

Any operator will warm up quickly to the logical arrangement of the switches, meters and faders. The engineer, after careful inspection, will notice how easy it would be to change a module, output amplifier card or something as mundane as a VU meter lamp (changing a lamp on some consoles

has us muttering all kinds of nasty things).

Let’s get to the real stuff: The BA console comes in five standard sizes—eight, 12, 16, 20 or 24 channels. In all but the System 8-VI, you get three stereo outputs and one mono. The mono output can be used as a stand-alone or as a mono mix-down on any of the stereo outputs.

The mixer works well in an AM/FM combo environment, while providing another stereo output for a record bus, and on top of that, providing a mix-minus channel for your call-in shows.

The way the motherboard is designed and the fact that all audio paths are shielded make for excellent RF immunity also. Each channel can access any of three inputs, which, in our case, opens up 36 hard-wired stereo inputs.

To accommodate non-standard input levels, each channel has a ± 10 dB gain trim. Also, each channel module can be switched from line level to mic level. Fidelipac does not cut corners with cheap faders, either. The Penny & Giles 4000 series long-throw fader renders that solid, velvet action that makes you want to run it up and down again and again.

All monitoring is switched via two independent circuits to three studios. Stereo cue and headphone amps are standard. The main monitor amps are supplied by the user (this allows use of a favorite Crown amplifier—then you can crank up the level to membrane-splitting levels!) All of the output amps are interchangeable with the power on. The meter bridge hinges backward to expose all electronics, except for the channel modules. The power supply is externally rack mounted.

The inputs are active-balanced. The outputs are transformer-balanced with a center tap. These transformers are specially wound for low overshoot and ringing characteristics (a square wave comes out looking like a square wave). THD overall is better than .03 percent, 20-20 kHz at +8 dBm.

Yes, there is 20 dB of headroom beyond the +8. Noise is -90 dBv equivalent from

20-20 kHz. Response is ± 0.5 dB over the same bandwidth. Slew rate is 9 V per microsecond. All of this means that this analog audio mixer can still pass all that CD energy on to your processor quite well.

Hall effect switches are used for channel on-off. All switching logic is 5 V and each input logic state is connected via ribbon cable to the muting/machine logic module. This circuit gives WAWZ (we bought the System 12) three relays and 11 open collectors for machine interfacing.

It’s amazing how fast one can use up three relays and 11 open collectors. WAWZ had to purchase an additional module to accommodate all its sources. This was the only frustrating experience at installation time.

Wiring the inputs is as easy as soldering the Belden 8451 cables to 25-pin D-subminiature connectors. Outputs are brought out to screw terminal barrier strips. The power supply cable plugs into the motherboard via Molex connectors. The greatest amount of installation time we spent was on installing the jumper wires on the matrix field section of the interface module and setting the DIP switches for a latching of momentary action.

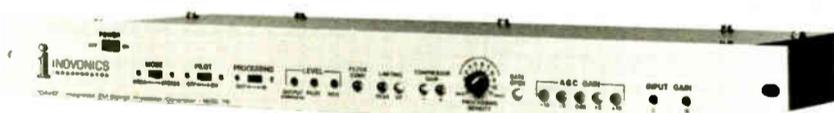
Also, there are DIP switches for either positive- or negative-going 5 V transitions. With the help of our 78-year-old radio network consultant, Elmer Smith (who still solders with one arm tied behind his back), we turned our air studio around in five days. This included some Formica work, painting and installation of halogen track lighting.

The finishing touch was the hand-rubbed walnut armrest, which, when bolted into place, brought smiles to all the WAWZ staff. The quality and cost-per-feature of the BA console is quite apparent acoustically, as well as aesthetically. If WAWZ had seven more studios, we would install seven more BAs.

□□□

For information on Fidelipac’s Broadcast Audio consoles, contact John Tiedeck in New Jersey: 609-235-3900; fax: 609-235-7779; or circle Reader Service 195.

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USER REPORT

MicroMixer Gets an "A" In KPWR(FM) Upgrade

by Tom Koza
CE, KPWR(FM)

LOS ANGELES A few months ago, it became apparent that the KPWR news-room was in need of upgrading. We added some source equipment, such as a second cassette deck, so our news staff could make cassette-to-cassette dubs, or play two actualities back-to-back when doing simple production.

The additional equipment took its toll on the console, which was rapidly reaching its limit. We were out of input channels on the board; we had more sources than the con-

sole could handle. We could either replace the board (not in the budget), or use some external switching device to switch between multiple sources feeding one pot (a hassle to use).

The most logical solution was to take our cart players and somehow feed all three decks into one pot on the board. This would free up two pots, which were needed for other sources. Using a resistive combining network would result in about 10 dB of signal loss; that would create level problems interfacing with our board. The "thing" that solved this problem was the MicroMixer by Henry Engineering.

Console in a box

The MicroMixer is basically a mini console in a box. It's a mixer that has inputs for four line-level sources (cart machines, CDs, etc.). There are two outputs, so it can be used for mono or stereo. In my application, I fed the output of each cart deck into a separate input on the MicroMixer.

The inputs are active-balanced and bridging; the outputs also are active-balanced, and can drive 600 ohm loads.

Each input channel on the unit has a level control, so each deck's audio output can be adjusted. The MicroMixer has two outputs, and can be set for either stereo or mono operation. Each of the two outputs uses four "micro-assign" DIP switches (a total of eight switches). These switches permit the user to select which inputs are routed to the left and/or right outputs. (It's a routing switcher, in a sense).

You can assign any input to feed either the left, right or both outputs in any combination. In my case, I fed all three inputs to the left output, since this was a mono application. The MicroMixer also could be used to combine two stereo sources (for example, a pair of stereo CD players) into a stereo output. Or you could create two independent "mixes" of the input signals.

Lots of headroom

The MicroMixer has no output level VU meter or LEDs; I'd suggest setting the

levels using a VOM or VU meter temporarily connected across its output terminals. Even with a standard output level of +8 dBm, there is almost 18 dB of headroom above that. Our unit clipped at +26 dBm.

The unit was installed and operating in about five minutes. Once the levels for the cart decks were set, we were done.

The MicroMixer is another "black box" that solves a problem with a minimum of cost or hassle. The folks at Henry Engineering seem to have a knack for this kind of product. They've done a good job with MicroMixer.



Henry Engineering's Micro-Mixer: "Basically a mini console in a box."

For more information, contact Hank Landsberg at Henry Engineering: 818-355-3656; fax: 818-355-0077; or circle Reader Service 189.

Comrex STLX: A Real Dream

► continued from page 75
nickel cadmium D cells. The charger is built into the console and conveniently connects to the pack through a three-pin DIN connector. A momentary push button will measure the charge from the front panel VU meter.

The STLX has been in operation at WTAE(AM) AND WVTY(FM) for the past six years. It has been up and down the three rivers of Pittsburgh, traveled all over the USA covering the Pittsburgh Steelers and University of Pittsburgh play by play and has had a little R&R in Disney World (it's even been to Ireland once).

We have two STLX units and I'm happy to report they have never failed on us. That's quite a testimony when you consider the rough handling remote equipment goes through at airports and on the road. I highly endorse the Comrex STLX for every radio station who has broadcast rights for professional or college sports.

□□□

For information, contact Lynn Distler at Comrex Corp. in Massachusetts: 508-263-1800; fax: 508-635-0401; or circle Reader Service 29.



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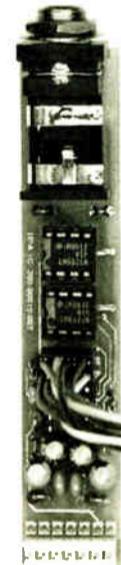
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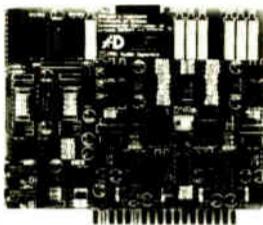
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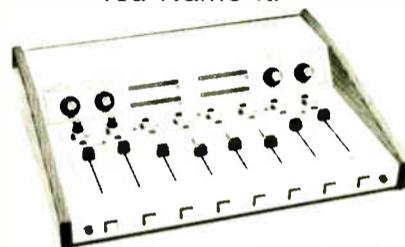
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TECHNOLOGY UPDATE

Ramko XL Series Designed For Ease of Use and Value

by Ray Kohfeld
President
Ramko Research

RANCHO CORDOVA, Calif. More than ever, the word "value" plays an important role in a station's equipment budget.

In essence: How much satisfaction will you receive for money spent? We have designed the new XL series to bring a new meaning to the concept of value.

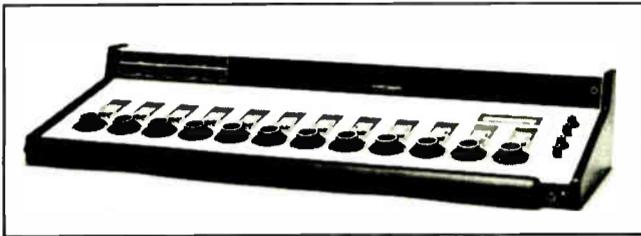
New developments in IC technology and hardware have allowed us to design a series of consoles with fewer components, less manufacturing and labor, and higher performance than previously possible.

The double module shielding and "star" grounding system and MOV-protected outputs used in the XL series have virtually eliminated problems with RF and static or lightning discharge.

In addition, ease of operation was given top priority. The operator's arm rests comfortably at the controls. All input/output selectors are illuminated and operable

with the hand on the mixers. The meters are large and readable from across the room.

All installation can be performed simply with a screwdriver and wire stripper and, since all hook-up information is promi-



Ease of operation is only one of the features Ramko Research offers in its console line.

nently displayed in the interior, the consoles can be set up without even referring to the manual.

The weakest link of most consoles is inherently the mechanical faders and select switches. This has been overcome in the XL series via custom pots and silent switches offering five to 20 times the life expectancy of similar components.

Since we don't believe that consoles can become part of this value and quality equation until you have test driven them, all units come with a built-in two-week trial and two-year warranty.

For information, contact Mike Pardee, national sales coordinator for Ramko, in California: 916-635-3600; fax: 916-635-0907; or circle Reader Service 158.

WUOT Taps SP-6 Console

► continued from page 71

Since its installation, the SP-6 has been busy, with our staff using it to produce almost all of our locally produced programs. Its ease of operation and superb audio quality have made it appealing to our air staff who had never used this type of console before.

We produce at least one live broadcast a month from this studio and have had people come into the station to see whether we really are live with such quality audio. In fact, our console has sold another SP-6 in this market, and another station's staff has been by for a hands-on demo. We have recorded several multi-track performances, one of which went on to be the demo tape for a group seeking a recording contract.

In the event that this console is placed into emergency service as our on-air control console, it has all of the remote-start logic built in that we need to control audio sources. This is a plus when selecting a backup to your air console without having to sacrifice in the production environment.

I would not hesitate to recommend the Wheatstone series of consoles—so much so that we just signed a purchase order for an A-500 with furniture for our on-air studio.

For information, contact Ray Esparolini at Wheatstone in New York: 315-455-7740; fax: 315-454-8104; or circle Reader Service 47.



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"CAT-LINK makes money for us, and it improves the sound of the station."

Mike Callaghan, KIIS-FM, Los Angeles CA

"CAT-LINK has held up through extreme heat, a hostile RF environment and nasty summer lightning storms."

Dick Byrd, WZGC-FM, Atlanta GA

Two-way multi-channel communications

CAT-LINK digitizes the entire composite signal with no data compression, so you can run the stereo generator and processing at the studio, where they really belong. At the same time, CAT-LINK sends and receives up to four customized auxiliary channels with no crosstalk—SCAs, control channels, voice communications, RS232 data, AM audio, transmitter readings and satellite or remote program feeds. What's more, CAT-LINK gives you extra capabilities like transmitter building surveillance via closed circuit TV and an analog telemetry channel.

Transparent digital transmission

CAT-LINK encodes the fully processed composite signal, then decodes it at the transmitter. You always get full stereo separation, without the phase or amplitude variations that plague two-channel STLs. Dynamic range is up to 84 dB, and your processed composite signal can use virtually all of it. You hear clear, clean, undistorted audio—all the time.

No audible delays

CAT-LINK's real-time digital encode/decode process doesn't introduce audible delays as data compression can. Jocks can monitor on-air without problems.

Flexible signal path options

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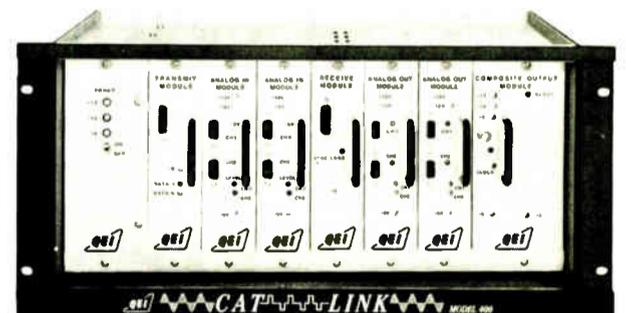
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BUYERS BRIEF



NASHVILLE Studer's line of compact mixing consoles, the 961/962 series, can be used for radio production as well as remote recording.

The 961/962 mixers offer stereo line level input modules, either with or without a three-band equalizer section. The equalizer is standard in the mono microphone module, which also includes a new proprietary input combining the advantages of both active differential and transformer-balanced designs.

The master input modules feature a built-in compressor limiter, which operates on the PDM (pulse duration modulation) principle. Additional module options feature a selection of monitor auxiliary talkback and communication functions.

Circuits for the 961/962 series were developed and refined from similar circuits in the Studer 900 series of studio production consoles, resulting in similar digital-compatible performance specifications.

For information, contact Sandra Hale at Studer in Tennessee: 615-254-5651; fax: 615-256-7619; or circle Reader Service 143.

USER REPORT

Auditronics 800 Matches KHMx's Needs

by Don M. Stevenson
CE, KHMx (FM)

HOUSTON When KHMx made the decision to build new offices and studios, the most carefully researched item on the replacement list was a new console for our on-air studio.

At the time, I couldn't find any console on the market that fit our needs. I wanted a unit with active inputs and outputs, a simple, user-friendly telephone mix and mix minus system, jock-proof durability and flexibility to grow with the needs of the radio station.

When I found the Auditronics 800 console at the 1991 NAB show in Las Vegas, I knew I had found just such a console. It has one of the best telephone mix minus systems I have seen, three stereo mix busses (Program, Audition and Utility), two mono mix busses and an auxiliary send and receive buss (stereo). I knew this console would be able to meet our needs both today and tomorrow.

Split busses

The Program and Audition busses both feature a split Music and Voice buss. This allows the user to utilize one processor for all of the microphone inputs and also to insert a processor to handle only the music portion of the audio. The voice and music busses are then summed together in the output modules and output as one.

The two mono busses (denoted M1 and

M2) are unique in operation. Each channel module may be configured to have the buss turned on/off by the channel logic or cons-



It's thumbs up for KHMx (FM) since acquiring Auditronics 800 console.

tantly remain on independent of the channel logic. The audio also may be fed from a pre- or post-fader position in the console.

This is useful for configuring the mix minus on the console. You can set it up so that anything assigned to the M1 buss will feed the telephone system, regardless of the fader position or channel logic. This makes for an easy-to-use and versatile mix minus system.

There is a module specifically designed for telephone interface. It can accommodate up to two telephone hybrids at one time. The audio in/out from the hybrids is routed to this module. It can support both hybrids separately and also has the ability to conference the two hybrids together, regardless of

the brand of the hybrids. This is all done with the controls to the operator remaining simple and easy to use. Our operators have been able to easily understand how to operate it without any problems.

Each input channel module has a variety of extras that make it versatile to the user. An auxiliary send and receive buss may be used to allow some production effects devices to be inserted if required.

This could be useful to some of the morning shows that need access to production effects boxes on the fly. Each channel also features a balanced patch in/out insert point and a direct output that may be pre- or post-fader. The direct output may be configured to turn on/off with the channel or always remain on, independent of the channel logic.

Intercom system

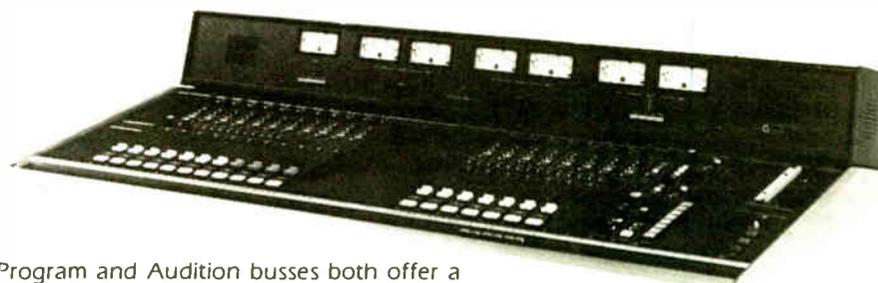
An eight- or 18-station intercom system also is available. We installed the eight-

Installing the console is easy because all cables may be made up in advance. All audio and remote cables may go directly to the console. The connections have a pin crimped on the end, which is then inserted into the plug. The plug is actually a printed circuit board connector, which goes directly to the channel module. This drastically reduces the amount of wiring inside the console and reduces the possibility of wiring problems.

All logic outputs are capable of controlling every device in our studio and the logic outputs may be configured for a continuous output or a momentary pulse. This means that there is no need for any logic interface boxes, which reduces the clutter of miscellaneous devices required to make the studio work and makes the installation easier. A built-in skimmer interface also helps to reduce the wiring clutter.

The air staff has been happy with the console since we put it on the air last September. We found that the sound of the station improved, and at the same time it is easier to operate for the air talent.

Auditronics' field service has always been there when I needed help or had ques-



Program and Audition busses both offer a Split Music and Voice Buss on the Auditronics 800 console.

station unit at KHMx. This gives the operator instant communication to any other studio. This has become a very important part of our morning show, where they regularly use two studios and must be able to easily communicate back and forth. It also can be tied to other items such as two-way transmitters, building paging systems, intercom stations and IFB systems.

tions during the installation process. They gave us a quick turnaround on any factory service and had overnight shipping for parts that were needed.

□□□

For information, contact Director of Sales and Marketing Murray Shields at Auditronics in Tennessee: 001-362-1350; fax: 901-365-8629; or circle Reader Service 57.

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MARKETPLACE

Radio World's Marketplace, a compendium of new and recently introduced radio broadcast products, appears monthly in Buyers Guide.

Remote Control

CircuitWerkes offers a number of electronics products designed to improve the quality and ease of broadcasting functions.

The TeleRadio is a remote-controlled listen line radio. Using DTMF tones, a remote user can operate the functions of the radio, changing presets, bands or scanning frequencies. This product is intended for group owners, group program directors and program consultants who need to listen to stations in distant cities. The TeleRadio allows them to listen in real-time and avoid the constant expense of overnight air checks.

The AC-2 autocoiler offers a host of features for 30 to 50 percent less than similar products on the market. It is FCC Part 68 registered for connection to standard voice lines. The AC-2 has both an auto-answer mode and a manual mode for users that sometimes need to use a manual coupler.

The DTMF-12 remote control can be either a companion to the AC-2 or operate as a local stand-alone controller. The unit offers 123 opto-coupled outputs that are activated when the unit receives a DTMF tone. When the unit is coupled with an AC-2, it becomes a stand-alone dial-up remote control. An optional combination lock is available, which allows more than 11,000 user programmable combinations, providing access security.

For information on CircuitWerkes products, contact Kyle Magrill in Florida: 904-331-5999; fax: 904-331-6999; or circle Reader Service 127.



One-Step Deoxidizing

DeoxIT is a one-step treatment deoxidizing solution from Caig Laboratories that cleans, preserves, lubricates and improves conductivity on all metal connector and contact surfaces.

The new formula contains improved deoxidizers, preservatives, conductivity enhancers, anti-tarnishing compounds, arcing and RFI inhibitors and provides extended temperature range (-34°C to 200°C).

DeoxIT also prevents dissolved oxides and contaminants from re-attaching to metal surfaces, providing longer lasting protection. It is available in spray, liquid, wipes and pen applicators.

Use on switches, potentiometers, relays, PCB edge connectors, batteries, faders, interconnecting cables, plugs, jacks, etc.

For information, contact Mark Lohkemper at Caig Laboratories in California: 619-451-1799; fax: 619-451-2799; or circle Reader Service 74.

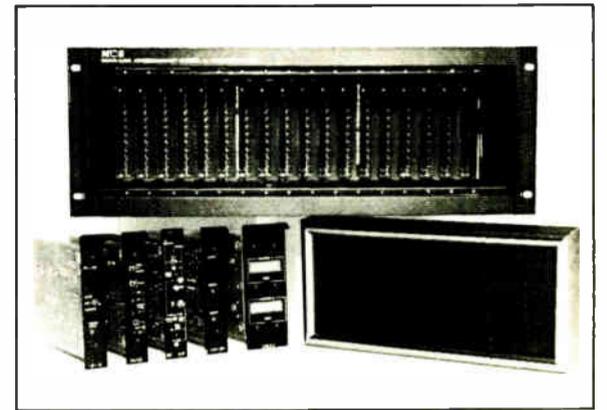
Call Management

Miwltronic's MCS multiline and one-on-one system was conceived with the idea of multiple line applications such as managing contests, providing information, tallying surveys, yes-no voting or polling.

It replaces wall mounted phone line interfaces and bulky couplers with a space efficient, organized card rack system. The rack's independent terminal strip backplane allows individual specialized slot usage to meet various one-on-one needs.

Also featured is Multiline Coordinating, the ability of a system to synchronize the answering and disconnecting of many phone lines simultaneously with one playback source in control. For example, in a 10-line system, if five phones are ringing, all five will be answered simultaneously.

For information, contact Michael Waldman at Miwltronic in Missouri: 314-429-5900; or circle Reader Service 153.



TTC Intros FMS-100

TTC has added the FMS-100 100 W, solid state transmitter to its FM line. The unit can function as a stand-alone amplifier or can be used in conjunction with an exciter as a transmitter.

Using only 5.25 inches of rack space, the FMS-100 is completely self-contained with a high performance FET amplifier. The unit is protected for VSWR, over-voltage, overcurrent and high temperature.

The FMS-100 is especially useful as an auxiliary transmitter for emergencies or for broadcasters who need to boost signals in remote areas. The FCC's recent translator ruling allows up to 250 W of effective radiated power (ERP) for translated FM signals. The FMS-100 allows broadcasters to take advantage of these new limits.

The FMS-100 rounds out TTC's FMS line from 100 W to 16 kW. For information, contact Russ Erickson at TTC in Colorado: 303-665-8000; fax: 303-673-9900; or circle Reader Service 163.

Total Automation Solution

Time Logic's AirWave Radio Automation System offers a "total solution" for immediate on-air automation. Features include control of music selections from up to 32 Pioneer PD-TMI 18-disk CD players for thousands of selections on-line. It incorporates commercial spots, jingles, station IDs and announcements from digital audio hard disk record/playback.

Also included in AirWave are unlimited walkaway time; automatic, live-assist or satellite feed scheduling; and user-definable formats, such as overlap time, repetition protection, commercial break insertion, and your hourly, daily or weekly format with different commercial breaks for various formats.

For information, contact Cindy Spencer at Time Logic in California: 805-529-1115; fax: 805-529-6744; or circle Reader Service 41.



World proven. And improved.

First, there was the original TEX-20 FM exciter from BEXT. It was bulletproof. It was priced right. It found its way into over two thousand FM stations around the world. Owners raved.

Next, this popular exciter was redesigned.

Front panel frequency selection, a BEXT advantage, is now accomplished in 10 kHz increments. Custom phase locking is provided for compatibility with external references. The TEX-20's internal layout is now completely modular, so testing and service are accomplished easily and quickly. The capacity to run on 24 volt DC is added. Main operating parameters are brought out to the back panel for remote control, including remote raising and lowering of output power. Specifications are enhanced.



Now, stations have found the TEX-20 "flawless" and "perfect in every way" (we're not

making this up). Nearly three thousand are in the field, in most cases with BEXT amplifiers at the output. More and more FM's are finding that they don't need to spend more to get more reliability, features, or performance from their transmitters.

The TEX-20 is a phase locked loop exciter with continuously variable output power from 2W to 20W - other BEXT exciters produce up to 80W. Our FM amplifiers are available from 100W to 30,000W (the solid state, broadband, 250W and 500W are our most popular). Delivery is prompt, direct from our San Diego offices.

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USER REPORT

LPB Signature Is a Clear Choice for Reading Service

by Robert Scheid Jr.
Owner
Scheid's Audio/Video Consultants

LANCASTER, Pa. In the 16 years I have been involved in the audio/video industry, I have depended on LPB consoles for 12 of them.

My work centers around the Radio Reading Services offered by the Lancaster, Harrisburg and York associations for the blind. As the engineer for the stations, I use LPB consoles for all on-air and production work.

LPB has worked with me to modify its Signature II and Signature III consoles to meet the specific needs of the visually impaired operators at these stations. These modifications include using the Signature

II-style knobs on the Signature III console so that the visually impaired operator can better set levels and find which input is on the air. These knobs have a pointer for identification, which makes them easier to adjust.

Additional modifications have involved muting for on-air warning lights and monitor muting. This was done for studio flexibility, so operators can use more than one studio as an on-air facility at a time.

Due to the nature of Radio Reading Services, these modifications were essential, because they enable the board operator to do on-air and production recording at the same time through the main console. While each Radio Reading Service is different, they all have certain common needs, which

make the above-mentioned modifications easy for the engineer to implement into the studio. They also make it easy for the board operator to do his or her job without engineering assistance.

My experience with LPB has been extremely rewarding: they have worked with me to design and build these modifications into their consoles to fit the specific needs of the Radio Reading Service. These consoles were not off-the-shelf units, but were custom built to my specifications.

Because they use stock parts, I only have to maintain an inventory of basic ICs, transistors, etc. The consoles are very easy to work on and repair, when necessary. In addition, they are worked very hard and have proven extremely durable in day-to-day use.

I currently maintain four LPB Signature consoles for the Reading Services, as well as an M-8S console in my studio. In the past 10 years, I have had to replace only one pot in a Signature II console.

One other feature that makes these consoles quite easy to work with is the fact that I can pull cards while the consoles are active and still keep the radio station on the air. This ease of maintenance and service makes LPB consoles my choice for radio station installations.

I plan on using LPB consoles in all future installations because of service, parts availability, technical support and the fact that the manufacturer's engineering department will work with me on my specific needs for future applications.

□ □ □

For information, contact Edward Devecko at LPB in Pennsylvania: 215-644-1123; fax: 215-644-8651; or circle Reader Service 84.

Autogram's Mini Mix 8

► continued from page 73
removed from the output busses.

Four LED bar graphs provide visual indication of output level for the Left and Right channels of Buss 1 and Buss 2. A special circuit enables the graphs to respond with "ballistics," which correspond to the standard VU Meter. Additional LEDs are used to give indication of an Overload condition (10 dB above 0 reference, adjustable) and are designed to give fast response to audio peaks.

Eight front-edge switches provide dry contacts, which can be used for remote starting equipment or for other purposes. Connection for the switches is on a rear-mounted DB-25 connector.

An internal relay is included to activate on-air lights and may be programmed to either/or both microphone channels. The relay follows the monitor muting assignments.

A small jack is provided to give access to the cue output. When a plug is inserted into the jack, the internal cue speaker will be disabled.

We've been serving the broadcast community for more than 23 years, and the Mini Mix 8, the latest addition to our console line, supports the Autogram tradition of quality at an affordable price.

□ □ □

For information on the Mini Mix 8, contact Ernest Ankele at 800-327-6901; fax: 214-423-6334; or circle Reader Service 170.

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The New Wheatstone Production – Air Console



In Fact, a Whole New Console Family...

These consoles give you full multitrack production capability while at the same time providing familiar program and audition busing so your production room can double as a back-up on-air facility. They free up your primary Air studio for routine calibration and maintenance sessions. They are a perfect solution for complex talk or news formats.

Beyond its on-air capability the SP-4 is a powerful production console offered in 2, 4 and 8-track formats. Production crews will love the smooth sounding equalization, the auxiliary send buses, and, of course, the full on-air type machine and console logic. There's also plenty of room for those special functions: like a phone module that can handle multiple callers, yet

doesn't tie up your line inputs: an intercom module that lets you communicate with other Wheatstone consoles and rackmount locations throughout your facility; plus a studio control module, line preselectors, tape controllers, and automatic timers.

And, of course, there's the componentry: all gold contact switches for the ultimate in reliability, gold bus connectors, gold I/O connectors, solid state on/off lamps, and triple burned-in ICs. Naturally, each console is also triple-tested.

The fact is, Wheatstone's got the features, the componentry, the reliability, the performance and the reputation you can depend on.

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SP-44/4-Track

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factory support from a technically competent and responsive staff.

We've also handled your special requirements as well with a super family of accessories, including a choice of three different telephone modules, an intercom module, an off-line mixer module for your remote feeds, talent control stations, accessory panels, failsafe power supplies, and auto cart and CD sequencing options.

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The BETTER We Look!

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World Radio History

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