

'ol 20, No 3

Radio's Best Read Newspaper

Ratings Rock Richter Scale in L.A.

Lynn Meadows

1.OS ANGELES No high-fives greeted ELVE(FM) when the Spanish-language tation landed the number one spot in Arbitron's Los Angeles Fall '95 Book. Instead, 13 radio stations formed a task prce to question the validity of Arbitron's

ethod for surveying Hispanics. The issue in Los Angeles is the 40 percent

imp in KLVE's ratings. The task force redits not the skill of KLVE's program director, but the recent changes in

Arbitron's surveying technique.

Adequately represented Arbitron has been tweaking its survey methods since the 1970s to make sure Hispanics are adequately represented.

For instance, a Hispanic diary-keeper gets bilingual materials, two dollars instead of one for his time and three follow-up calls rather than the standard one to ensure the diary comes back.



A Valentine's Day Dip in Chocolate: Just one of the antics Don and Mike are famous for. See page 36.

Portland Stations Held Hostage by Gunman

by Bob Rusk

PORTLAND, Ore. Terror gripped KOIN Center, a downtown office building where a gunman was charged with shooting and wounding two people and taking four others hostage.

CBS affiliate KOIN-TV and two FM radio stations, KUPL and KKJZ are located in the high-rise. None of the TV or radio employees

were among those shot or taken hostage during the four and half hour standoff. When the national sales manag-

er for the FM station, Joe DiBello, entered the KOIN Center lobby at bout 2 p.m. on Jan. 4, the gunman was demanding that people follow his orders.

"I was returning from a late lunch and was walking fast," DiBello said the following day. "I got to the middle of the obby before I realized one of the people

there was this guy dressed in camouflage fatigues, a black beret and combat boots. He had an assault rifle held up against his chest and told me to stop.

"I just blew him off with some comment about not having time to deal with him. Then he raised the gun from his chest, pointed it up to the ceiling and

pulled the trigger a few times." A clicking sound told DiBello that the gun had jammed.

DiBello kept walking toward the mezzanine level, where KUPL and KKJZ are located. "By the time I got to the base of the escalator that leads up to my office, I heard shots," he added.

The gunman, 24-year-old James H. Rincker, had thrown his rifle to the floor, pulled a pistol out of a gym bag and fired several rounds into the air of the lobby.

Rincker first entered the building through the basement where he allegedly continued on page 8

These steps were taken, said Thom Mocarsky, vice president, communications for Arbitron, because Hispanics do not participate in surveys to the same extent as the population at large.

Arbitron also employs bilingual interviewers. Up until the fall survey, the company had been using a mix of English-only and bilingual interviewers in high-density Hispanic areas (HDHA).

English-only interviewers were trained phonetically to say in Spanish, "Sorry, I'll have somebody who can speak to you in Spanish call you back," in the event a Spanish-speaker answered the phone.

With the fall survey, there were two changes in methodology. First, Arbitron received the latest population update for Los Angeles from Market Statistics Inc. - something it does in every market. Second, only bilingual interviewers were assigned to place calls in HDHAs.

Measured by heritage

In Los Angeles, 36.7 percent of the 12+ population is Hispanic according to Arbitron. Of the diaries returned, 36.8 percent were from Hispanics.

Task force members stated in a letter to Arbitron Radio general manager Pierre Bouvard that measuring by heritage is not continued on page 11



by James Careless

OTTAWA Within the next two months, Canada officially will relax foreign ownership rules for radio STATIORS.

Under the changes, non-Canadians can own one-third of a holding company with broadcasting subsidiaries. That is up from the old 20-percent limit - a restriction that still applies to direct ownership of broadcasting stations.

In addition, non-Canadians can buy as much non-voting stock as they want, can serve as CEOs of broadcast holding companies and can sit on the boards of radio.

Money's the thing

Ottawa is loosening its grip on foreign investment "to increase access to capital for all broadcusters," said Ian Ironside, a senior government analyst in the continued on page 3 >



Now you can own the industry's most powerful multiuser digital audio system for the price of a stand-alone box.

Whether application is liveassist, automation, or multistation/multi-studio, DDS is for vou.

World Radio History

Call Harris today to learn why DDS by Radio Systems is broadcast's most flexible, expandable, and affordable digital solution.

TEL: 800-622-0022 FAX: 317-966-0623

2 RIS

Grde (16) On Reader Service Card

and listening habits and turning basic donors into major givers.

The conference will conclude with the NFCB business meeting and a pizza party.

Market Revenue Winners

AUSTIN, Texas Congratulations and pay raises are in order in this city. Austin was the fastest growing radio market in terms of radio revenues last year according to BIA Publication's "Investing in Radio 1996" and its MasterAccess Radio Analyzer database software.

continued on page 6



STUDIO SESSIONS

STUDIO SESSIONS	
Shaping Audio in the Sound Forge	
by Read G. Burgan Vocalist Is Silicon Singing Group	17
by Alan R. Peterson	19
Riding Gain with Automatic Mixer	
by Ty Ford Eliminate Those Pesky Singers:	22
Part Two	
by Alan R. Peterson Audience Adds Texture to Recording	25
by Bruce Bartlett	9,
with Jenny Bartlett	27
RUNNING RADIO	
Analyze, Improve Station's Service by Sue Jones	20
Coast-to-coast Fun with Don & Mike	29
by Alan Haber	30
Early Religious Program Spoke to Mill by Read G. Burgan	ions 32
BUYERS GUIDE	
USER REPORTS	
Building a Foundation with Fostex	
by Jeremy Savage SADiE Cornerstones Studios at WCCO	37
by Steve McFarland	37
DigiDesign Meets Goals for NewCity	
by Conrad Trautman and Ed LaComb	38
ProComm Business Grows with Stude	
by Brad Jones Sonic Offers Solution for ABC,	39
SW Networks	
by Leslie Mona-Mathus and Dino Tortu	41
VoxPro Passes Time and Money Test	
by Louis Galzerano PR&E Keeps Radio in Mind with ADX	42
Digital Editor	
by Steve Scoville MTU Proves Trustworthy for Muddy H	42
Studios	VIE
by Jim Smith Orban Provides the Need for Speed	44
by Jim Cutler	46
KCIN/KRPM Gets Decked Out With OS	-
by Rick Kemp Take a Byte Out of Time	47
by Jeff Ryan	47
No Pictures Needed with Akai DR-8 by Val Davis	50
Dalet Works Like a Pro	
by Argie D. Tidmore Fairlight Satisfies Paul and Walt	50
by Stewart Sloke	52
DM800 Reflection of Reel to Reel by John Glavin	55
Studioframe Is a Breeze	35
by Stuart McCrea Susquehanna Installs Six Spectrals	55
by Brian Wilson	56
Making Music Fit with TuneBuilder	
by Randy Hale Catching Digital Processing Waves	57
by Robert Lee	58
FEATURES	
Optimize Stereo Performance of	-
FM Exciter by David P. Hebert, CPBE	15
Shore up Your Defenses Againt Diaster	
by Thomas G. Osenkowsky	60

NEWSWATCH

CBS Shakes It Up

NEW YORK With the ink drying on the merger agreement, Westinghouse is out to make over its CBS marriage partner.

Andrew Heyward is the new president of CBS News. He has been the executive producer of the CBS Evening News with Dan Rather and vice president of CBS News since October 1994.

Heyward succeeds Eric Ober who had held the position since 1990 and had been with CBS for 30 years.

"I want to thank him for his years of service and wish him all the best," Peter Lund, CEO and president of CBS Inc.,

said of Ober. Dan Mason, president of the CBS Radio Station Group. conveyed the same wishes for Anna Mae Sokusky when she was replaced by Ed Goldman as vice president of the CBS AM stations.

"I know she's eager to tackle new challenges and I wish her every success," Mason said. Sokusky had been with CBS since 1970 working her way up to her current position in 1988.

Goldman joined Group W Television Sales in 1980 as New York group manager. He became Vice President and Eastern Sales Manager in 1985.

In a separate announcement, Gil Schwartz is now senior vice president of communications. Previously. Schwartz was vice president of corporate communications. He will create a communications department that incorporates existing public relations, media and internal communications functions throughout CBS.

Annual Community Radio Conference

SAN FRANCISCO The National Federation of Community Broadcasters will hold its annual community radio conference Feb. 16-19 at the Miyako Hotel.

The conference includes workshops on digital production techniques, lifestyles



Then look at our competition.

OF COURSE many stations are cost-conscious these days—just remember why you wanted a new console in the first place: to UPGRADE.

The R-60 has what's needed, with all the right features: our SIMPLE PHONE® module for easy error-free talk segments; twin six bank preselectors, so you won't run out of input capacity; onboard machine control panel, clock, timer, a welldesigned cue system, and a truly effective control room and studio monitor interface. And because it's totally modular, service is easy-even while you're on-the-air! Documentation: this can determine whether you have an installation day or an installation week. We've done it right to guide you through. And PERFORMANCE? Of course we've handled that; simply compare our specs.

DON'T MISS your opportunity to upgrade. Choose the R-60 radio console from AUDIOARTS.



World Radio History

DIM

Line

HEADROOM

20 KHz

20 KHz

BUS CROSSTALK

Mic

FREQUENCY RESPONSE Line (10Hz-20KHz) ±1/10dB Mic (20Hz-20KHz) ±1/10dB

ref +4dBu 24dB OFF & ASSIGN ISOLATION 1 KHz -110dB

005%

.005%

.004%

.005%

114dB

98dB

-105dB

-100dB

-75dB

THD+N (20Hz-20KHz) Line, +4dBu Mic & Line, +16dBu

IMD (SMPTE) Mic & Line, +4dBu

Mic & Line, +16dBu DYNAMIC RANGE

Canada Keeps Strings on Investors

continued from page 1

Department of Canadian Heritage, responsible for relaxing the rules.

The government wants Canadian broadcasters to be able to bring in more foreign cash to help underwrite the move to digital technology and strengthen the national information infrastructure.

The government also wants to help the financial health of the country's private radio stations, 52 percent of which are losing money.

Although Ottawa now is showing a more friendly face to foreign investors, the changes manage to keep effective voting control of Canadian broadcasting in Canadian hands. Canada makes a concerted effort to preserve its national identity — something that's not easy to achieve as a sparsely populated country alongside the world's broadcasting powerhouse, the United States.

"There must be continuing recognition that broadcasting and telecommunications (which has the same level of foreign ownership limits) are different because broadcasting involves responsibility for content and the pursuit of Canadian cultural objectives," said Canadian Heritage Minister Michel Dupuy in a prepared statement that accompanied the foreign ownership announcement.

"We must ensure that those who choose what goes on the air are Canadians and have a personal interest in the future of our country."

This refusal to let non-Canadians actu-

ally control radio stations is why Gary Slaight doesn't think the new rules will do much to boost foreign investment in Canada.

Slaight, president and CEO of Standard Radio, an 11-station group that owns toprated Toronto talk station CFRB(AM), said investors, foreign or otherwise, want to control the properties they buy. Even with the higher ownership limits, he said, "you still don't have control."

Currently, foreign investment in Canadian radio is marginal: so marginal, in fact, that none of the major radio executives interviewed could cite any off-hand.

Even the Canadian Association of Broadcasters had no answer when asked about the impact of foreign money into Canadian radio.

The same, however, is not the case in Canadian cable TV. The old 20-percent ownership restriction has not hurt the cable industry's ability to attract U.S. capital. Both The Discovery Channel and Bravo! have struck deals over the past few years with majority Canadian partners.

Why does cable receive foreign investment when radio doesn't? There is a key difference between the two businesses, said Tony Viner, president and CEO of Rogers Broadcasting, Rogers, with 20 stations across Canada, was to be listed on the New York Stock Exchange under parent company Rogers Communications

Employees to Receive Bit of Broadcast Pie

SIOUX FALLS, S.D. Employees at Sorenson Broadcasting are enjoying the benefits and pitfalls of ownership. On Jan. 1, the company transferred 30 percent of its stock into an Employee Stock Ownership Plan (ESOP).

Dean Sorenson, president of Sorenson Broadcasting, sees the plan as a good recruitment tool and as a way to reduce turnover.

This is also "an exit plan for myself," Sorenson said. "It's our intention to transfer enough stock for the ESOP to become the controlling player in the company in six or seven years."

Until then, the company is still in the hands of managers and a board of directors. When the next 30 percent of stock is transferred, Sorenson said while laughing, then employees can change the format.

"For ten years. I have wanted to do this." Sorenson said. Before getting started, he talked with Danny E. Jenkins, CFO and secretary/treasurer of Great Empire and its wholly owned subsidiaries. Great Empire began its employee stock ownership program in 1989.

Today, the 176 employees at Great Empire own \$10.7 million in stock, said Jenkins. That is 44 and one-half percent of the stock. The company can boast an excellent retention rate. Many employees have worked there since the original acquisition in 1977.

Sorenson said that eight out of 10

people he has worked with in radio since 1957 dreamed of having some equity in a broadcast company. He is making that possible.

The broadcasting company owns 13 stations in six markets throughout South Dakota and Iowa.

When Sorenson visited each property to discuss the plan, a few employees mentioned that if the group buys more stations, it would "dilute our deal." said Sorenson. He said part of the process will be to show employees how to think like entrepreneurs.

That is what has happened at Great Empire, said Jenkins. He said the company's leveraged ESOP is teaching employees how to play the game of business and make a profit at the same time. He sees it as a great idea for radio operators.

All employees who have worked 1,000 hours are eligible for Sorenson's plan. That includes someone who only works 20 hours each week.

Employees who leave, retire or have a disability can receive their money from the stock plan. According to Sorenson, there are primarily two rules: only employees are eligible for the ESOP, and if an employee has a "sizable amount" when he or she leaves, the money will be parceled out over time.

That prevents someone from quitting to make a car payment, Sorenson pointed out — or worse, to buy a competing station.

World Radio History

Inc.

"Being a 20-percent owner in a Canadian cable service gives foreign investors another market," he said. "They win both ways: They are able to enjoy the growth in equity in the service. (and) at the same time, they are able to sell and license their American-produced programming to a Canadian affiliate."

In contrast, an American programmer buying into a Canadian radio group may be able to see some equity returns but cannot count on any program sales. "Radio is a local medium," Viner said. "There's not much really that can be transported from Detroit to Toronto."

Foreigners will not invest

Beyond their inability to realize the minimal benefits enjoyed by The Discovery Channel and Bravo!, there are other reasons that radio-focused investors tend to stay out of Canada.

The country's largest radio companies are extensively involved in other broadcast activities, said Pierre Morrissette, president and CEO of Pelmorex Inc., which owns 16 stations in Northern Ontario as well as the popular Canadian cable channel The Weather Network. There are not many companies in Canada with only radio holdings.

Still other factors keep foreign investors at bay. By and large, they are the result of government regulation that restricts what the radio industry can and cannot do in the name of nationalistic cultural policies.

"One of the reasons that is often cited for the recent huge growth in the U.S. market is the ability for multiple license ownership," Viner said.

"But in Canada, owners are confined to only one AM and only one FM in each market." Duopolies are considered a radical concept by the federal government.

One exception is CHUM Ltd., which is

RBDS



Other restrictions include Canadian content, or 'Cancon,' as it is known in the trade. Domestic stations have to play at least 30 percent Canadian music content in order to keep their licenses plus make donations to help underwrite the development of domestic talent.

Canadian FM also is restricted in the number of hits it can play. Viner said. AM is virtually unregulated and, in an effort to preserve AM as a music medium, at least half of the music played on FM must be 'non-hits.'

All told, the operating environment of the Canadian radio market has kept foreign investment here to a bare minimum, as shown by the case of Radiomutuel. Radiomutuel is a Quebec company that owns 11 stations solely and co-owns two more.

"We've got to have 5.8 million shares trading." said Michel Arpin, vice president of planning. "And I don't think we have more than 10,000 shares owned by foreigners. We've never had more than that, and it's been more than 10 years that we've been on the public market."

Ironically. Arpin found himself discussing the foreign ownership increases with Dupuy a few weeks prior to the announcement on lifting ownership limits.

He told the minister because foreigners could already buy up to 1.16 million shares of Radiomutuel under the old rules and had not. Ottawa's attempt to attract more non-Canadian capital by raising the ownership limits would not be effective.

Based on discussions with top radio executives, higher ownership limits alone will not be sufficient to bring substantial foreign capital into this market.

In the end, Ottawa may have to take additional steps, like deregulating and allowing meaningful ownership of stations, to make the Canadian radio market more attractive to investors.

James Careless, an audio producer, covers the industry in Canada for **Radio** World International.

EASILY INSTANTLY INEXPENSIVELY

... with these two, brand-new products, INOVONICS has you covered, coming and going!

<u>710</u> ENCODER: Just \$995 and **no** computer required! The non-volatile memory holds 16 separate frames of program and format identifiers, alternate frequencies, radiotext messages and traffic or emergency flags. A built-in data interface lets you upgrade later to full dynamic operation for revenue-generating paging, GPS, coupons, contests, etc.

510 DECODER: Connects to your existing FM Mod-Monitor. The front-panel LCD display shows RBDS injection level and allows you to scroll through and read all the data groups. An RS-232 port gives unlimited access to raw RBDS data for telemetry and other in-house functions.



Circle (102) On Reader Service Card

EARWAVES®

Deregulation Is Not Radio's Panacea

WASHINGTON Government agencies are easy targets for the media and for just plain folks tired of shutdowns and backlogs and myriad other excuses why things don't run the way they should.

But the rumors flying around Washington for the last few years — you know, about the Congress doing away with the

Federal Communications Commission (FCC) surfaced again recently and are as troubling now as they were the first time I heard them.

There is way too much at stake for the future of the radio business and the broad

business and the broadcast business in general to let this happen.

With the election of a new Republican Congress in the fall of 1994, there came a promise of major changes in the way government regulated — basically less of it.

Congress has been attempting to apply

already implemented rules that reduced bureaucratic red tape for stations. I favor deregulation, generally, as it can be effective when it removes impediments to a thriving radio business.

Altering the ownership rules, now, may be moot because the FCC is figuring out ways to grant the mega-mergers announced in 1995 (in fact, the

CBS/Group W one is *fait accompli*) and doing a pretty decent job of it.

An owner should be allowed to own more stations than the current limits, as long as the group has the means and desire, and the license is available.

The FCC role is crucial when it comes to ensuring that in a *laissez-faire* world the smaller players can still play — possibly by a tax incentive plan or other means if congressionally mandated deregulation results in a no-ownership limit rule what-

Lucia

Cobo



 $P_{A}G_{E}$

The current administration has, to date, deflated the Congress's deregulatory zeal.

the "less government is better" dictum to the radio industry since then. Look back at 1995 and you can see that the FCC soever (an eventuality that I hope will be highly unlikely). Tax incentives and market-incubator options were suggested two years ago during deliberations when the minority ownership limits were increased from 20 to 25 nationally.

If congressional effort results in the ownership limit increase merely being raised for everyone, then perhaps the minority station limit could remain a bit higher than other owners as it is now.

I am also opposed to the foreign ownership limits being lifted. (Look at our front page story on Canada's efforts to raise foreign capital for its broadcast properties with a grain of salt — U.S. broadcast stations are a far more lucrative purchase than our neighbor's to the north). Broadcasting stations are a limited resource in this country and represent the unique interests of our population.

Overall, the allowance of total foreign or an increased percentage of ownership would not enhance broadcasting in any significant way. Keep control in the hands of U.S. owners.

The issues that the FCC controls number many more than those which directly affect broadcasters. Aside from protecting stations from each other, from technical interferers and pirates, etc., the commission can best be relied on to nurture new technologies as the only agent with its sole purpose in life to regulate that kind of business and the management of our spectrum.

The move to deregulation has been well-intentioned. Congress, however, should move toward it with prudence, mindful of those it could hurt with its legislation.

$\star \star \star$

And speaking of those who would regulate us, the introduction of new electromagnetic compliance (EMC) regulations in the European Union has made it a bit more difficult for U.S. manufacturers wanting to export products to the European Union member nations.

As of the first day of this year, most pieces of electronic equipment, including broadcasting gear, must meet type certification in at least one E.U. member nation (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden or the United Kingdom.

If you need help navigating the maze of certification, U.S. broadcast equipment manufacturers can contact the European Union Office of the International Trade Administration at the Department of Commerce at 202-482-5276.

 $\star \star \star$

And last but not least, radio stations, advertising agencies and radio production studios again will compete for \$200,000



in cash awards honoring excellence in radio advertising at the fifth annual Radio-Mercury Awards competition. Deadline for entries is March 1.

Call for entry forms at 212-681-7207; fax: 212-681-7223.

Last year's winners in the "station-produced" category were Barnstable Broadcasting's WGKX (Gold, \$20,000) and Infinity Broadcasting's WBCN (Silver, \$5,000).

Event chairmen this year are Capital Cities/ABC Inc. Radio Station Group President Don Bouloukos and Katz Radio Group President Stu Olds. The black-tie dinner will be held Wednesday. June 12, in the Grand Ballroom of New York's Waldorf-Astoria Hotel. See you there. That's it for now.



World Radio History

OPINION

Readers Forum

If you have comments for Radio World, call us at 800-336-3045 or send a letter to Readers Forum (Radio World, Box 1214, Falls Church, VA 22041 or MCI Mailbox #302-7776) All letters received become the property of Radio World, to be used at our discretion and as space permits.

Local stations can cope

Dear RW.

It is hard to believe that we hear of the economic hardships and poor listenerships that small local AMs are having to live with. As you scan the AM dial in virtually every small market area in America, you find that many of the stations have made themselves part of satellite music or news formats that make them sound very sterile and unattended.

Part of the true magic of the smalltown AM is to serve the communities in which they are licensed with local news and information. This seems to be one of the many problems that these stations are having.

Having worked in broadcasting for more than 35 years as a manager of AM and FM stations in the top 100 markets and as a consultant to many small AMs. in the South, I find it all but impossible to convey to the owners of local stations to stop looking at the convenience of automated programming. Owners need to think of ways to enhance their formats with local PSAs and get involved in their small communities by offering opportunities to local business and civic leaders to use the station as a true source of communication to the area residents.

It is not rocket science, it is simple logie. If a small AM is on a satellite format, use those local positions to their fullest with 60- and 90-second local fillers. Give birthdays of local residents and news of local school issues from school district leaders, have a real-estate company welcome new residents or have the police and fire departments talk of neighborhood watch programs and fire safety.

By offering your airwayes to these local officials, you automatically have people who are known in the community on the air. Your sales will increase

RadioWorld Vol. 20. No. 3 February 7, 1996

	· · · · · · · · · · · · · · · · · · ·
Editor in Chief	
Managing Editor	
Technical Editor	Alan Peterson
Associate Editor	Angela Novak
Staff Writer	Lynn Meadows
Assistant Editor	Christopher Nicholson
Technical Advisors	John Bisset, Tom McGinley
Editorial Director	
Assistant Editorial Directo	or/Audio Alan Carter



Radio World (ISSN: 0274-8541) is pub-lished bi-weekly by Industrial Marketing Advisory Services, Inc., 5827 Columbia Pike, Suite 310, Falls Church, VA 2041, 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, PO. Box 1214, Fails Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Giselle Hirtenfeld, PO. Box 1214, Fails Church, VA 22041; (703) 998-7600, Fax; (703) 998-2966. Copyright 1995 by Industrial Marketing Advisory Services, Inc. All rights reserved.

Radio World (ISSN: 0274-8541) is pub-

-PRINTED IN THE USA-

Next Issue of Radio World February 21, 1996

simply because business owners rub elbows with these people. Eight out of 10 times you can make a sale to a local merchant if he hears people he knows on the air.

Seventy-five years into AM radio finds small-town stations in trouble. We are about to enter the digital age of AM radio, which will open many new avenues and maybe save these stations. I hope that the programming aspects of these stations will advance with the technology by doing what they are designed for, serving the communities of their license with local people.

> Ken Rogers Easley, SC

Where are the radios

Dear RW.

I keep reading articles in RW about RBDS and how great it is and the possibilities it holds for everything from fund-raisers to paging. Although I will admit the technology is virtually unlimited. I don't agree with the speculations about the current benefits to the consumer.

Recently, I was in the market for a new radio for our new engineering vehicle here at WKSU, which has been operating RBDS now for over a year. I found that no one in the after-market sales knew what RBDS was, let alone how to spell it. I called RE America for a list of receivers that are available.

Thave been told at a few SBE meetings and a public radio conference that radios exist. After calling RE America for the list, they informed me that some of the radios were only prototypes. I got some manufacturers' phone numbers and started calling.

I found no RBDS-capable radios in the market. I was told that it is an option on new GM cars so I called my local GM dealer. The parts department had never heard of such a thing.

My problem is, if the industry will not get radios out to the after-market dealers, this technology will never be incorporated in the daily lives of the general listeners. I have lost faith in the RBDS system for the consumer and I ask that RW stay away from articles about the benefits to the consumer until this happens.

By the way, I purchased a regular car stereo for the new engineering vehicle.

> Don Danko WKSU-Kent State University Kent, OH

Not so funny

Dear RW.

Loved your Earwayes column in the Jan. 10, issue of RW.

One question though. As co-founder, creative director and chief announcer of Companion Radio, a satellite-delivered radio service to senior living facilities nationwide. I had the opportunity to learn a lot about the music of the 1910s, '20s, '30s, etc.

Smith Ballew was one of the most

Protect Your Freedom

Freedom of the press in this nation was guaranteed by our founding fathers when they penned the First Amendment. Since that time, the Fourth Estate - so dubbed by Edmund Burke in 1841 as one of the components of the British realm along with clergy, nobility and commoners has enjoyed a privilege and stature envied by many nations and used by them as a

model for their own fledgling democracies.

It is ironic that this paradigm of freedom does not extend to the electronic press. Content regulation of television and radio- in the form of "safe harbor hours" and V-Chips and possibly even an A-Chip — is, by extension, unconstitutional.

Our governmental system of checks and balances failed the broadcasters recently, when the Supreme Court of the land upheld a "safe harbor" set forth by the U.S. Court of Appeals last summer.

With the high court's endorsement, the Federal Communications Commission can enforce the 6 a.m. to 10 p.m. ban on the broadcast of indecent material.

Never mind that now, as one group of broadcasters put it: We are "forcing adults to see and hear only programming that is suitable for children."

Consider the implications for any new technologies in development. The sheer multiplicity of electronic distribution pipelines in existence now and soon to come reinforces the argument that First Amendment protections must be equally applied to electronic and printed press. The distinction is getting harder to see by the minute.

The question begging to be asked is: Will an uncensored Washington Post or Playboy magazine, for example, need to be censored for distribution on the electronic pipeline? And if so, why?

The pioneers of electronic media, including radio and television broadcasters (who have, after all, only been around a short 75 years) will have to make a stronger effort to protect their rights if First Amendment parity with the printed press is to be achieved. ---- RW

prominent of the early crooners and he had a lot of hits. He was a good lookin' guy with a smooth singing style but, as far as I know, he wasn't a comedian.

> Jack Mindy Rochester, NY

Quicker creativity

Dear RW.

I was tickled to read in your Jan. 10, issue the story about major market stations that carry NFL games joining forces to install visitor phone lines and cooperating on the cost of those lines.

In small market radio, visitor lines have been standard practice since phone deregulation in the early '80s.

PRODUCTION LIBRARIES GUIDE

The following is an update for the Production Libraries Guide that appeared in RW, Jan. 10.

Capitol/OGM should have been listed as OGM Production Music.

Promusic

941-A Clint Moore Rd. Boca Raton, FL 33487 470-995-0331; fax: 407-995-6986 Contact: David Walters or Mike Spitz

Promusic, Inc. is a production music and sound effects library of over 1,300 CDs, offering a diversity of music styles second to none from the most current pop and rock rhythms and sounds to the classics. Promusic also offers a vast selection of ethnic and specialty music. CDs are available

for review at no charge. We are the United States agent for the Sound Ideas sound effects series, the Digiffects sound effects library, Audio Pro sound effects, The Big Whoosh!, The FX Collection, The Mega Disc and The Multimedia SFX (CD-ROM).

Manhattan Production Music

355 W. 52nd St. 6th floor New York, NY 10019 800-227-1954 or 212-333-5766 Contact: Ron Goldberg 50-CD specialty music library, brand new cutting-edge music library called Appletrax. 6-CD Audiophile sound effects series.

With local high school sports play by play, a staple with many small town radio stations, we needed to control the costs of getting those broadcasts back to

our studios. Avoiding the ever-increasing installation charges on phone lines was a major step in cost control. I'm tickled when I read of major mar-

ket stations implementing practices the small town guys have discovered years. ago. Doesn't mean major or small is better than the other.

But, it may again prove that lack of resources causes you to become creative anicker.

> Dean Sorenson Sorenson Broadcasting Sioux Falls, SD

Percent

Chang

17 9%

16.8

16.1

16.0

16.0

15.1

15.0

14.6

14.6

FCC Goes Easy on New York Pirate

by Lee Harris

NEW YORK They called it "Nasty Radio," and not only was it nasty, it was illegal.

Thanks to some intrepid detective work by an engineer in the local Federal Communications Commission (FCC) field office, the high-powered New York City pirate broadcaster has now lowered the "jolly roger" and its antenna mast.

Nasty Radio first came to the attention of the FCC last September when a citizen called to complain about radio station WJQR operating at 91.9 MHz.

The complainant charged that the station, which went by the slogan "Nasty Radio," was living up to its name by transmitting lewd material.

FCC Field Engineer Jud Mansbach told RW he was less concerned about the programming than the obviously illegal status of the station. Mansbach tuned in WJQR and the strong stereo signal with high quality processed audio told him right off that this wasn't some 100 milliwatt "Mr. Microphone" operation.

Mansbach also checked out the programming, which consisted largely of dance music played by "club-style" DJs who were indeed peppering their patter with a great many sexual innuendoes and rude noises.

Tracking them down

The jocks were giving out a phone number in area code 718, which meant the station was probably located in Brooklyn or Queens. Because WJQR wasn't actually interfering with any local stations, Mansbach decided to put the case on the back burner for a few weeks while he attended to more pressing official business. As soon as he had the time. he hopped in the FCC's radio-directionfinding van and set off in search of the pirates.

From his earlier monitoring, Mansbach had a general idea where the station was located. Within 15 minutes he was in

Woodside, Queens, at the front door of a five-story apartment building sporting a tell-tale dipole antenna on a long mast.

Mansbach, who was taping Nasty Radio in his van, decided that this would be an opportune time to call the request line number the jocks were giving out. Next thing he knew, he was on the air. Without identifying his official status, the engineer inquired as to whether the pirates knew that what they were doing was illegal. The announcers allowed that it might be, but as they explained it to their caller, the FCC doesn't really care. Mansbach thanked the pirates for setting him straight and hung up.

From his field measurements, Mansbach determined that Nasty Radio was running

The high-powered New York City pirate broadcaster has now lowered the "jolly roger" and its antenna mast.

at least 100 W. With its antenna a good 100 feet above average terrain, it was clearly in violation.

He subtly asked around the neighborhood, determined who was operating the station and fired off a cease and desist order. The station went silent in mid-December and hasn't been heard since. While Mansbach had considerably tougher enforcement options at his disposal, he said his main interest was in getting compliance and getting the pirates off the air.

"It's no use fining guys like these, because they usually can't pay," Mansbach said. He decided to forgo search and seizure and the ultimate enforcement possibility, arrest.

He did check out the entrances and exits in case the pirates decided to continue broadcasting in defiance of his orders and a bust became necessary. Mansbach also had a word with the landlord of the apartment building, who subsequently ordered the removal of the pirates' antenna mast.

The Nasty Radio pirates have posted a few notes on Internet newsgroups asking for help in returning to the air. The notes from wjqrrep@aol.com did not specify exactly what could or should be done.

Case closed

For Mansbach, as long as WJQR stays silent, the case is closed. Mansbach has busted his share of pirates during his years in the New York field office most notably two stations broadcasting in Creole to the large Haitian immigrant

population in Brooklyn and Queens. Both stations were operating at 87.9 MHz, just below the FM band. Both appeared to be running several hundred watts.

The stations were prominently featured

on local and national TV newscasts a couple of years ago during the crisis in Haiti. But none of the TV coverage alluded to the fact that the stations were pirates. One of them, Radio Soleil, even had a store-front location with a large sign.

Although the situation held some serious political implications, Mansbach was able to shut down both operations without incident. With the apparent demise of Nasty Radio, Mansbach says the New York area appears to be free of major pirate operations.

There are a few FM stations on Long Island that timidly sneak on for a few minutes at a time once every few weeks. but Mansbach says they're hard to catch. For now, he'll save his pirate-busting for the more blatant and more easily located broadcasting buccaneers.



(215) 443-0330 FAX: (215) 443-0394

Revenue Revenue (in millions) Estimated Austin, Texas 36 3M 42 9M Dothan, Ala. 5.4 6.3 Raleigh, N.C. 34.8 40.5 Daytona Beach, Fla. 5.2 6.0 Charlottesville, Va. 49.4 57.3

Market

Las Veaas

Greensboro, N.C.

Cincinnati, Ohio

Amarillo, Texas

continued from page 2

More than 3,000 stations participated by sending in their estimated revenues. Here are the top ten fastest growing radio mar-

kets and their estimated revenues for 1995:

Estimated (in millions)

1995

38.0

33.0

81.1

7.5

1994

33.0

29.0

70.8

6.5

Imus to be inducted

LAS VEGAS Don Imus, host of the nationally-syndicated "Imus In the Morning" radio talk show, will be the 1996 radio inductee into the National Association of Broadcasters' Broadcasting Hall of Fame.

Imus started his career in radio in 1968 as morning host of KUTY(AM) in Palmdale, Calif. He continued as morning host at KJOY(AM) in Stockton, Calif., KXOA(AM) in Sacramento and WGAR(AM) in Cleveland.

"Imus in the Morning," based out of WFAN(AM) in New York, mixes news, satire and guest appearances from people in the media and politics. It has been a ratings leader for two decades.

Imus will be inducted on April 16 during the NAB '96 convention in Las Vegas.

Great Lakes Conference

LANSING, Mich. The Michigan Association of Broadcasters (MAB) will host the Great Lakes Broadcasting Conference & Expo Feb. 26-28, at the Lansing Center in downtown Lansing, Mich.

Other sponsors of the event include Michigan Public Broadcasting, SBE Chapter 91, Radio Television News Directors Association, Specs Howard School of Broadcast Arts and the Michigan Chapter of the National Association of Telecommunication Officers & Advisors

John Parikhal, marketing and trend strategist and author of "The Baby Boom - Making Sense of Our Generation At 40," will be the keynote speaker for the conference.

This is the largest state-sponsored broadcast conference and expo in the United States. Over 85 booths will be included and more than 30 speakers were invited to conduct sessions in tracts for sales, management, fundraising, engineering, news issues and radio programming.

Ad Revenues Slip

DALLAS Revenue did grow in November, but just barely. The Radio Advertising Bureau reported a 2 percent increase in combined local and national spot advertising revenue over November 1994.

Local revenue grew five percent while national spot revenue decreased seven percent. According to the RAB, economists suggest that consumer concern over personal debt and the drawn-out federal budget impasse might have contributed to a lackluster fourth quarter.

Circle (131) On Reader Service Card World Radio History

Compatibility, Confidence, and Cost Savings



- The ideal solution for remote broadcasts, ad hoc networks, voiceovers, distribution of commercials, backup to satellite and microwave links, and many other applications.
- Designed by Telos specifically for radio applications over ISDN and Switched 56.
- Clean, uncluttered front panel for simple operation. Full metering, coll durotion timer, headphone jack, and mic/line inputs.
- · Built-in input protection limiter. When your talent screams, your audio does not distort.
- Zephyr has an ISDN integrated terminal adapter designed for the non-technical operator. You can even place a standard voice-grade call to a Plain Old Telephone Service (POTS) telephone.

o product lets you connect so

easily to more sites via digital phone lines than Zephyr.®

Zephyr has Layer III which delivers 15kHz mono audio on just one of the two digital channels of an ISDN circuit. You save

just one ISDN circuit and one Zephyr. In stereo mode, Layer III and Zephyr preserve critical stereo information for superior

Why buy an ordinary codec, when for about the same price you can have a Zephyr?

Zephyr will communicate with these codecs and more!

Comrex DXP

Comrex DXR

Comrex DX200 Contact us for complete compatibility details. Some codec modes of some codec models may not be presently supported

CDQ1000 CDQ2000 CDQPrima

Need to call a site that only has Layer II or G.722? No problem. Zephyr is backwards compatible with all Layer II implementations, such as MUSICAM. Connecting to another Zephyr site? Now you really have options!

because the transmission cost is half that of other schemes which require both channels for broadcast quality.

A split channel mode allows you to transmit two different mono programs to two separate locations using

musical events. And in all modes, Zephyr is full duplex for twoway transmissions.

Micro 56

Micro 66

RE 660/661

Telos quality and value result from more than a decade of exclusive dedication to products for the broadcast-totelephone interface.





2101 Superior Avenue Cleveland, Ohio 44114 +1.216.241.7225 FAX: +1.216.241.4103 email: info@zephyr.com



The Best Way to Hear from There™



Telos Systems, the Telos logo, Zephyr, and The Best Way To Hear From There are trademarks of TLS Corporation. All other trademarks are property of their respective holders. Find us on the World Wide Web at http://www.zephyr.com

Grele (136) On Reader Service Card

KUPL/KKJZ Work under the Gun

continued from page 1 shot a computer engineer and a delivery man.

While some people in KOIN Center were overcome with fear, DiBello was more angry than afraid upon realizing that he had walked into the middle of a hostage situation.

"By the time I made eye contact with Rincker, I was five feet away from him," said DiBello. "There were a couple of people in the lobby who he had ordered not to move and they obeyed him. They were frozen like a deer when it looks

get your own space is to ignore what's going on around you. I wasn't focused on Rincker.

According to police, Rincker was armed with an AK-47 rifle, a 12-gauge shotgun, an SKS 7.62mm Assault rifle, a 9mm handgun, about six knives and 1,000 rounds of ammunition.

into headlights. But I grew up on the East Coast and take the attitude that the only way you the

"Had he pointed the weapon directly at me instead of toward the ceiling, I might have reacted differently. It doesn't take a great amount of skill to get your hands on a gun. I don't

think anyone who succeeds in getting a gun has the right to take away my freedom or control my life."

As a precaution, the staffs of Baycom-owned KUPL and KKJZ, except for the air personalities and chief engineer, took the escalator down to a back



The original Shure FP32 set the standard in field production for portable stereo mixers. Now, with the new FP32A, you can count on getting even less. Noise, that is...30dB less! In fact, the FP32A is so quiet and improved that it's perfect for use with DAT and other digital recording media.

Professional Mixing You Can Take Anywhere.

The Shure FP32A is a 3-input, 2-output portable mixer specifically designed for:

- remote audio recording
- electronic field production
- electronic news gathering
- location film production
- The FP32A weighs just 3.5 lbs and is only 2-1/4" H x 6-3/8" D x 7-1/4" W in size.



With 8 hours use from two 9V alkaline batteries — or powered by any 12 to 30 VDC source — the FP32A goes wherever you do. And since it's from Shure, you can count on its durability and ruggedness.

コース

The Sound of The Professionals Worldwide.

Circle (115) On Reader Service Card

World Radio History

So Many Features In So Little Space.

SHURE

You get all the features of the original FP32 plus:

- 48V phantom power
- pop-up pan potsinput level LED indicators
- mix bus jack and cable
- headphone mode switch
- mixer/monitor switch
- adjustable peak output LEDs
- stereo link for inputs 2 and 3
- more than 30 other new features and improvements
 So go to your pearest dealer and pick

So go to your nearest dealer and pick up an FP32A. Once you use it, you'll see why we're making so much noise about something so quiet.

For the Shure FP dealer nearest you, call 1-800-25-SHURE.

entrance and exited the building to safety. Both stations continued regular programming during the incident, breaking in occasionally to broadcast updates from employees on the street who reported via cell phone.

Gordon Lee, midday host at "Smooth Jazz" KKJZ, was on duty in the glass-enclosed studios and watched the events unfold.

"I could see what was happening and watched as people were leaving the building," he said. "Police were coming from every direction. It was a serious situation. I have full view of the lobby. It's like a fishbowl, so I immediately turned the control room lights off and kept myself out of what could have been the line of fire. I was ready to put on a continuous play CD and leave the building if necessary."

Lee felt secure with the way police handled the situation and remained in the KKJZ booth.



Both radio stations had security systems in place with controlled access to offices and studios.

Portland TV stations provided live coverage of the entire hostage drama — except for building occupant KOIN. KOIN made the unprecedented decision not to run its 4 p.m. or 5 p.m. newscasts. Station management felt broadcasting the breaking story might encourage the gunman to demand access to the channel 6 airwaves and potentially put the lives of KOIN employees in danger.

Police negotiators eventually convinced Rincker to free his hostages. Then he surrendered. Rincker reportedly told police that he had planned to use the hostages as a bargaining chip to get on TV so he could verbally attack the media, the banking and insurance industries and the federal government.

In addition, Rincker, who previously worked for a delivery company, reportedly revealed that he wanted to get even with two women at the KOIN Center building whom he said had been disrespectful to him when he made deliveries there.

According to police reports, when Rincker arrived at KOIN Center on the day of the attack, he was armed with an AK-47 rifle, a 12-gauge shotgun, an SKS 7.62mm assault rifle, a 9mm handgun, about six knives and approximately 1,000 rounds of ammunition.

Rincker faces two counts each of attempted murder and attempted aggravated murder, two counts of first degree assault, and four counts of kidnapping. He was lodged in the Justice Center Jail on \$550,000 bail. KOIN Center management, meanwhile, was reviewing building security.

The Future— Today.

AUX

* 6 .

Your on-air system isn't cutting it. You want something that was "made just for you." Look no further. The system of the future is here today from Gentner and Harris—your complete source for audio conferencing.

Manneto

Simplify the process of bringing callers together with fingertip control from **Gentner's TS619 DCT**. The TS612's dual superhybrid technology provides crisp, clean caller audio with much more flexibility.

Callers will be less likely to switch since you'll get that smoother on-air sound you've been looking for.

The control surface is easy to use. It seems like an ordinary business telephone. But, ordinary it's NOT!

On-air talent can screen a call; transfer it from the handset to on-air conference with as many as four callers together; and lock in a VIP guest.

Thanks to line status indicators that are multi-colored, the user can instantly tell who's on the air, on hold, screened or talking to the producer.

With Gentner's SCREENWAIR software and a PC, the screener uses a keyboard and headset instead of the control surface and preselects calls for on-air and adding names, comments, etc. An additional monitor is placed in the studio where the talent can see who is on screened hold.

00000

With NETWORK INTERFACE you can expand the TS612 system into multiple studio configurations. Add a Network Interface for each mainframe and the communications link between studios for proper management of 12 phone lines is provided.

Telephone calls for broadcast teleconferencing and pro audio applications are made easy with **Gentner's TeleHybrid**. Simply connect it to your existing telephone to deliver full duplex audio to your console or conference system without the fear of echo or feedback.

The TeleHybrid "installs" between your telephone and its handset. Audio connections to your equipment are made with XLRs.

With the TeleHybrid, the hassle and expense of dedicated phone lines are a thing of the past. Your regular telephone system becomes your "on-air" system. Anyone in your facility can screen a call or transfer it to the studio or boardroom. Best of all, the TeleHybrid is very affordable.

> Grde (118) On Readin Service Cert World Radio History

The TeleHybrid is the key to simple, great sounding telephone calls on your professional audio system.

Your telephone can be single or multiline, analog or digital—the TeleHybrid doesn't care. The only requirement is that your telephone have a detachable handset with a modular connector.

1-800-622-0022 FAX 317-966-0623 http://www.broadcast.harris.com



10 1996 HARRIS CORI

We let Rick Dees use one and now he won't give it back!

"Nope. No way. Forget it. This Instant Replay is mine."

Hey, we understand. After all, Instant Replay puts 1,000 of his favorite noises right in front of him — ready for instant playback. No other audio player makes it so easy to be spontaneous and creative. It's fast, it's easy and it's fun.

Check it out. One Instant Replay can store up to 16 hours of stereo sound. That's 16 hours of sound effects, spots, promos, even entire songs — anything — and you can play any of them back instantly just by pressing one of 50 Hot-Keys! There's no need for a computer and no need for training. It's self-contained and it works right out of the box — just push the buttons and go!

> Try Instant Replay Free! Call 818-991-0860

To prove how Instant Replay can make your

station better, you can Test Drive one with no obligation! Call us now for free overnight delivery of your Test Drive unit. And like Rick Dees, once you get your hands on Instant Replay you won't want to give it back either.



thousand between machines using the D-NET high-speed

digital audio network





Print hard copy lists of all stored cuts so you always know what's where! Store up to 16 hours of CD-quality digital audio on Instant Replay

audio on Instant Replay's internal hard disk.

PROFESSIONAL DIGITAL AUDIO

5321 Sterling Center Drive • Westlake Village, CA 91361 • (818) 991-0360 • fax (818) 991-1360

If you're a call-letter station, you can try Instant Replay for 10 days with no obligation. If you decide to buy Instant Replay, we'll make arrangements through one of our authorized dealers. Offer good in the continental US only. Offer expires July 1, 1996. *Suggested retail prices: \$2995 for 4 hours of storage; \$3495 for 8 hours of storage and \$3995 for 16 hours of storage. 360 Systems Instant Replay is a registered trademark of 360 Systems.

Grcle (69) On Reader Service Card

World Radio History

STANT PEPLA

عا ها دا ها ها ها ها ها ها ها ه

Signal Takes Long Road to Market

by Lee Harris

NEW YORK This year could bring a decision by the Federal Communications Commission (FCC) on the fate of one of the New York area's most unusual and controversial FM broadcast operations.

Depending to whom you talk, Jukebox Radio is either a vital broadcast service to one of the nation's most populous and under-served counties or an illicit scheme to gain an unfair advantage in a \$40 million radio market.

Challenges mounted

Bergen County, N.J., with a population of more than 825,000, is the largest county in the nation without a commercial FM station. While dozens of FM signals, including all of the New York stations, bombard Bergen, none of those stations is devoted to coverage of the county.

The last open frequency so close to New York City was gobbled up during the Eisenhower administration. That left broadcast engineer Jerry Turro with a seemingly insurmountable challenge.

For years, Turro dreamed of serving Bergen County with its own FM station. After years of unsuccessful efforts to get the FCC to change its rules barring program origination on translators, Turro came up with a circuitous system that met his needs.

Jukebox Radio, with studios in Dumont, N.J., sends programming over landlines to WJUX-FM, a 6 kW Class A facility at 99.7 licensed to Monticello, N.Y., 60 miles to the northwest. WJUX is owned by Turro's friend Wesley Weiss, The WJUX signal is picked up off-air 50 miles to the southeast in Pomona, N.Y., and retransmitted on Turro's W232AL, a 3 W translator operating at 94.3. Finally, that signal is picked up off-air another 20 miles to the south in Fort Lee, N.J., and retransmitted on Turro's 34.5 W translator W267AQ operating at 103.1 MHz.

Because its antenna is located on a highrise apartment building on the Palisades overlooking Manhattan, that little translator covers a lot of real estate and millions of potential listeners.

Critics of Turro's operation say that translator is the real reason for the existence of the rest of Jukebox Radio. As Turro explained in to the Bergen Record, Jukebox Radio is only a service in Dumont, which provides programming 24 hours a day, seven days a week to WJUX.

Task Force Fumes Over First Place KLVE(FM)

continued from page 1

enough. With first and second generation Hispanic listeners, the group wants Arbitron to find a way to measure the Hispanic population based on language preference.

"A technique for determining language must be developed so appropriate weights can be applied to the Hispanic in-tab sample where none currently exist," they stated.

KLVE general manager Richard Heftel, although excluded from the task force, said he would like Arbitron to quantify and survey Spanish-speaking and English-speaking Hispanics.

"They are asking for a radical change in methodology," said Mocarsky. He added that preliminary studies on language enumeration in HDHAs showed that when language surveys were employed, reported listening to Hispanic stations increased.

Two Spanish language stations, KLAX-FM and KWKW(AM), are on the task force. KLAX saw its ratings slip in the Fall Book. According to locals, Spanish stations make dramatic shifts from survey to survey.

One of the reasons for the current hoopla, said Bill Sommers, general manager of KLOS and leader of the task force, is that KLVE's jump came with a dramatic decrease in listenership to non-Hispanic stations.

Arbitron's fault

AccuRatings is having a field day in Los Angeles. Ads for the AccuRatings Report read. "It appears that virtually all of the rock stations have lost a quarter of their listeners between spring and fall. Is that possible?" "It happens," said Mocarsky, He pointed out that with gavel-to-gavel O.J. coverage last summer, some stations rocketed 400 percent without any second guessing. KLVE has been making steady gains.

"The worse thing someone can do is pretend a real event is Arbitron's fault." said Mocarsky. "Arbitron stands by this book."

The debate over language preference is sure to spread to other HDHAs like Miami and New York. In New York. Alfredo Alonso, general manager of second-ranked WSKQ-FM, another Spanish station, said that if Arbitron only measured Spanish-speaking Hispanics, his station would never be No. 1. In his estimate, approximately 70 percent of WSKQ-FM's listeners are bilingual; the station tries hard to lure fisteners away from English language stations.

"There is a lot of racism involved in this as well," said Alonso.

When Spanish language KLAX topped the list in Los Angeles, nobody complained because it was just one station, he said.

As more Spanish stations inch up into the top 10. Alonso said the other general managers are getting edgy. With so many Hispanics and so few Spanish-language stations, he added that it only makes sense they will do well.

"I'm surprised that they would so quickly want to discredit the company that's been doing their ratings for so long and that they would question the methodology that has been in use for so long," said Heftel in Los Angeles.

There was talk of some of the 23 Arbitron subscriber stations refusing to pay for the fall survey. Stations will have to decide that individually, said Sommers. Turro added that five other stations are interested in taking the service. FCC rules prevent WJUX from paying Turro to carry its signal on his translators. Instead, Turro pays WJUX to carry his "programming service."

Those programs and commercials are then retransmitted on Turro's translators the more powerful of which happens to be located in Bergen County. In addition to providing music and announcers for WJUX, Jukebox Radio also provides weather, news, traffic and commercials.

Nearly all of this material is aimed at Bergen County, and the majority of the commercial advertisers are located in the county. Listeners in Monticello might conclude that they are listening to a station from New Jersey. That is where the complaints come in.

Vocal critic

The most vocal of Jukebox Radio's critics is Howard Warshaw, owner of WVNJ, an AM station licensed to Oakland in Bergen County, His complaint filed with the FCC charges that Turro's system is a case of "the tail wagging the dog."

The complaint suggests fines and license revocations on the grounds that Jukebox Radio is "making a mockery of the commission's rules that require that FM translators operate as a secondary broadcast service and not a primary originating service." The document asks the FCC to keep the

complaint confidential as "Turro can be

expected to mount public opinion and political pressure against any threat."

Indeed, Turro's format of big-band and adult standards music has an incredibly loyal following of older, affluent and politically important listeners who have been apprised of the threat to their favorite station and have been asked to contact their representatives.

Rep. Marge Roukema, R-N.J., reviewed the complaint and concluded that both WVNJ and Jukebox Radio are necessary.

At the heart of Warshaw's complaint is the contention that Jukebox Radio is cutting into WVNJ's revenues — a claim dismissed by Turro and his supporters who maintain that the market has more than enough radio revenue to support both stations.

This conflict pits the needs and desires of a radio audience against strict interpretation of FCC rules. The thousands of listeners who have come to depend on Jukebox Radio are probably not concerned with the translator origination rules and are likely even less concerned with the financial health of WVNJ.

Jukebox Radio's big band/adult standards format is unique on the local FM dial, and no other commercial FM station is focusing its news and traffic reports on Bergen County, Local businesses, priced out of the New York radio market, have found Jukebox Radio to be an affordable and effective advertising vehicle.

FCC rules dictate that radio stations operate in the public interest. In the case of Jukebox Radio, the FCC may have to decide if its own rules are in the public interest or are merely serving to protect the interests of broadcasters.



RBDS ROLL CALL

The following is Radio World's quarterly listing of RBDS stations, equipment and receiver manufacturers, and service providers. If you would like to be included in the next listings, contact Lynn Meadows at 703-998-7600.

RBDS Equipment Manufacturers/Distributors

AEV (Encoder) Via Saviolo Budrie Di S. Perisceto Bologna Italy

> Belar Electronics Labs Inc. PO Box 76 Devon PA 19333 Contact: David Hirsch 610-687-5550 Reader Service 41

Broadcast Supply Worldwide (Encoder) 7012 27th St. West Tacoma, WA 98406

Circuit Research Labs (Encoder) 2522 W. Geneva Tempe, AZ 85282

Harris Allied (Encoder) 3712 National Road West Richmond, IN 47374

> Inovonics (Encoder/Decoder) 1305 Fair Ave Santa Cruz CA 95060 Contact: Anne Chaney 408-458-0552 Reader Service 77

Modulation Sciences (Encoder/Monitor) 12A World's Fair Drive Somerset, NJ 08873

RDS Diagnostix (Test/Decoder) 74 Hanover Road Mountain Lakes, NJ 07046

Audio Broadcast Group (Encoder) 2342 S Division Ave Grand Rapids, MI 49507

AZTEC S.A. (Encoder) 31 Rue Du Chemin de Fer 67200 Strasbourg France

> RE America, Inc. (Encoder) 31029 Center Ridge Road Westlake, OH 44145 Contact: Soren Pihlman 216-871-7617 Reader Service 113



Rohde and Schwarz (Encoder) 4425 Nicole Drive Lanham, MD 20706

SCA Data Systems (Encoder) 2912 Colorado Ave. Suite 200 Santa Monica, CA 92404

The Wizard[™] has gone **STEREO!**

The new **DIGITAL** FMSA-1 gives The Wizard System unmatched stereo monitoring capabilities...



Superlative stereo performance. Linear-phase filters that reveal the true performance of your audio processing. The stability of digital stereo demodulation. The sophisticated graphical presentation of The Wizard. And—with the RS-232 port—operation on site or off.

Contact Belar today for more details on what should be *your* next modulation monitor



BELAR ELECTRONICS LABORATORY, INC. 119 LANCASTER AVENUE • P.O. BOX 76 • DEVON, PA 19333-0076 USA (610) 687-5550 • FAX (610) 687-2686

all, write or FAX for more information on Belar AM, FM. Stereo, SCA, and TV monitors

Teli AB (Encoder) 14980 Nunashamn Sweden

Tectan (Encoder) Box 27157 Concord, CA 94527

VG Electronics (Encoder) Theaklen Drive Hastings East Sussex TN34 1YQ England

RBDS Receiver Manufacturers (with current U.S. models)

Advanced Digital Systems (PC RDS Receiver) 13909 Bettencourt Street Cerritos, CA 90701 Contact: Mike McCoy 800-888-5244 Reader Service 167



Axcess (Paging) 6620 Riverside Drive, Ste 200 Metairie, LA 70003

AZTEC S.A. (Mobile Data Receiver) 31 Rue Du Chemin de Fer 67200 Strasbourg France

Delco Electronics (Car) 1 Corporate Center MS CT-16A Kokomo, IN 46904

Denon (Car/Home) 222 New Road Parsippany, NJ 07054

Grundig (Portable) 3520 Haven Ave., Unit L Redwood City, CA 94063

Indy Automotive Electronics 2420 E 55th Place Indianapolis IN 46220

Modulation Sciences (Data) 12A World's Fair Drive Somerset, NJ 08873

Nokia Paging, Inc 12345 Starkey Rd, Ste K Largo FL 34643

Nokia Mobile Phones Ltd PO Box 86 FIN-24101 Salo, Finland

Onkyo (Home) 200 Williams Drive Ramsey, NJ 07446 Philips Car Stereo (Car) 9600 54th Avenue N. Minneapolis, MN 55442

Pioneer (Car) 2265 East 220th St. Long Beach, CA 90810

RBDS Service Providers

Axcess/Spartan (Paging) 6620 Riverside Drive, Ste 200 Metairie, LA 70003

DCI (Global Positioning) 10121 Miller Ave, Cupertino, CA 95014 Contact: Jim Bradley 408-446-8350 Reader Service 42

Coupon Radio (Information Services) 10 Rockefeller Plaza New York, NY 10020

Sage Alerting (EBS) 700 Canal Street Stamford, CT 06902

SATX (Data Broadcast Software) Milestone Technologies 2221 Mariner Circle Raleigh, NC 27603

Specialized Comm. (Music Information) 1638 153rd St. SE Bellevue, WA 98007 Contact: Allen Hartle 206-641-9043 Reader Service 83



Terrapin (IVHS Services/Diff-GPS) 11958 Monarch Street Garden Grove, CA 92641

> To feature your company's logo and information on the RBDS Roll Call page, contact Christopher Rucas at 800-336-3045

STATION	FREQ.	CITY	WAAG-FM WKKX-FM WKBQ-FM	94.9 104.1 106.5	Galesburg Granite City	KNPR-FM* KOMP-FM KNPR-FM*	91.7 99.3	Beatty Henderson Indian Springs	KKRZ-FM KMCQ-FM	100.3 104.5	Portland The Dalles
ALABAMA WZYP-FM	104.3	Athens	WWTE-FM WSWT-FM	93.9 106.9	Jerseyville Lincoln Peoria	KNPR-FM* KNPR-FM* KNPR-FM*	88.7 89.5 88.7	Laughlin Moapa Valley	PENNSYLVANIA WRTI-FM*	97.1	Allentown/
WRJM-FM ARIZONA	93.7	Geneva	WDBR-FM WGFA-FM	103.7 94.1	Springfield Watseka	KNPR-FM* KBUL-FM	88.7 98.1	Pahrump Reno	WITF-FM WRVV-FM	89.5 97.3	Bethlehem Harrisburg Harrisburg
KZZZ-FM KKFR-FM	94.7 92.3	Kingman Phoenix	WPGU-FM INDIANA	107.1	Urbana	KNEV-FM KNPR-FM* KNPR-FM*	95.5 88.1	Reno Scotty's Junction	WIBF-FM WROZ-FM	103.9 101.3	Jenkintown Lancaster
KSLX-FM CALIFORNIA	100.7	Scottsdale	WYEZ-FM WSHW-FM	96.9 99.7	Bremen Frankfort	KLUC-FM* KFMS-FM	105.1 98.5 101.9	Searchlight Las Vegas Las Vegas	WDAS-FM WFLN-FM	105.3 95.7	Philadelphia Philadelphia
KSBR-FM KALX-FM	88.5 90.7	Anaheim Berkeley	WENS-FM WZPL-FM	97.1 99.5	Indianapolis Indianapolis	KWNR-FM KEYV-FM	95.5 93.1	Las Vegas Las Vegas	WKXW-FM WHYY-FM	101.5 90.9	Philadelphia Philadelphia
KPFA-FM KPFB-FM	94.1 89.3	Berkeley Berkeley	WITZ-FM WZWZ-FM WWKI-FM	104.7 92.7 100.5	Jasper Kokomo Kokomo	KRRI-FM KOMP-FM	105.5 92.3	Las Vegas Las Vegas	WMGK-FM WMMR-FM WRTI-FM	102.9 93.3 90.1	Philadelphia Philadelphia Philadelphia
KSIQ-FM KFMF-FM KPPL-FM	96.1 93.9	Brawley Chico	WEZV-FM WGLM-FM	95.3 106.7	Lafayette	KEDG-FM KFBI-FM KYRK-FM	103.5 107.5 97.1	Las Vegas Las Vegas	WPLY-FM WUSL-FM	100.3 98.9	Philadelphia Philadelphia Philadelphia
KYHS-FM KVHS-FM KOHL-FM	107.5 90.5 89.3	Colusa Concord Fremont	WMRI-FM WLTA-FM	106.9 94.3	Marion Plymouth	KLNR-FM* KTPH-FM*	91.7 91.7	Las Vegas Panaca Tonopah	WXPN-FM WIOQ-FM	88.5 102.1	Philadelphia Philadelphia
KUFX-FM KCRH-FM	94.5 89.9	Gilroy Hayward	WLEZ-FM WXKE-FM	102.7 103.9	Terre Haute Ft. Wayne	KEYV-FM*	103.5	Laughlin	WXTU-FM WWDB-FM	92.5 96.5	Philadelphia Philadelphia
KHQT-FM KKLA-FM	97.7 99.5	Los Altos Los Angeles	IOWA KGRS-FM	107.3	Burlington	WBHG-FM WLNH-FM	101.5 98.3	Laconia Laconia	WDUQ-FM WRTI-FM*	90.5 97.7	Pittsburgh Reading
KLSX-FM KPCC-FM KPFK-FM	97.1 89.3 90.7	Los Angeles Los Angeles Los Angeles	WMT-FM KMGO-FM	96.5 98.7	Cedar Rapids Centerville	NEW JERSEY			RHODE ISLAND WWBB	101.5	Providence
KTWV-FM KCRW-FM	94.7 89.9	Los Angeles Los Angeles	KRVR-FM KMFG-FM KRUU-FM	106.5 103.3 98.3	Davenport Des Moines Des Moines	WFPG-FM WKDN-FM WMGQ-FM	96.9 106.9 98.3	Atlantic City Camden New Brunswick	SOUTH CAROLI WWDM-FM	NA 101.3	Sumter
KFSG-FM KKBT-FM	96.3 92.3	Los Angeles Los Angeles	KLYV-FM KIAQ-FM	105.3 96.9	Dubuque Ft. Dodge	WBGO-FM WFME-FM	88.3 94.7	Newark Newark	SOUTH DAKOTA KOLY-FM	99.5	Mobridge
KKGO-FM KREA-FM	105.1 93.5	Los Angeles Los Angeles	KOEL-FM KJJC-FM	92.3 106.9	Oelwein Osceola	WNNJ-FM WPAT-FM	103.7 93.1	Newton Patterson	KRRO-FM KBWS-FM	103.7 102.9	Sioux Falls Sisseton
KSCA-FM KUSC-FM KATM-FM	101.9 91.5 103.3	Los Angeles Los Angeles Modesto	KUOO-FM KDCR-FM KAYL-FM	103.9 88.5 101.5	Spirit Lake Sioux Center Storm Lake	WADB-FM WPST-FM WBSS-FM	95.9 97.5	Point Pleasant Trenton	TENNESSEE WSKZ-FM	106.5	Chattanooga
KHOP-FM KCSN-FM	104.1 88.5	Modesto Northridge	KENTUCKY			WPSC-FM	97.3 88.7	Millville Wayne	WQZQ-FM WYPL-FM	100.5 102.5 89.3	Dickson Memphis
KSHA-FM KFOX-FM	104.3 93.5	Redding Redondo Beach	WMMT-FM LOUISIANA	88.7	Whitesburg	NEW MEXICO KKOB-FM	93.3	Albuquerque	WYCQ-FM TEXAS	102.9	Shelbyville
KNPR-FM* KSFM-FM KPBS-FM	88.1 102.5 89.5	Ridgecrest Sacramento San Diego	WGGZ-FM KQXL-FM	98.1 106.5	Baton Rouge Baton Rouge	KKSS-FM NEW YORK	97.3	Santa Fe	KEAN-FM KNLE-FM	105.1 88.1	Abilene Austin
KPLM-FM KYXY-FM	106.1 96.5	Palm Springs San Diego	WYCT-FM KFXY-FM	94.1 96.7	Kentwood Morgan City	WAMC-FM WGY-FM	90.3 99.5	Albany Albany	KNTU-FM KTTX-FM	88.1 106.1	Denton Brenhane
KDFC-FM KECG-FM	102.1 88.1	San Francisco San Francisco	WNOE-FM KCIL-FM KMJJ-FM	101.1 107.5 100.1	New Orleans Houma Shreveport	WZRQ-FM WDRE-FM WMHT-FM	102.3 92.7 89.1	Albany Garden City Schenectady	KTEX-FM KKYS-FM	100.3 104.7	Brownsville Bryan
KEAR-FM KALW-FM KFOG-FM	106.9 91.7 104.5	San Francisco San Francisco San Francisco	MASSACHUSE WAAF-FM		Boston	WSKG-FM WKJY-FM	89.3 98.3	Elmira Hempstead	KORA-FM KTEX-FM KAYD-FM	98.3 106.9 97.5	Bryan Bryan Beaumont
KFRC-FM KKHI-FM	99.7 100.9	San Francisco San Francisco San Francisco	WBUR-FM WGBH-FM	90.9 89.7	Boston Boston	WFUV-FM WHCR-FM	90.7 90.3	New York New York	KQXY-FM KYKR-FM	94.1 95.1	Beaumont Beaumont
KKSF-FM KUSF-FM	103.7 90.3	San Francisco San Francisco	WBOQ-FM WBCS-FM	104.9 96.9	Gloucester Newton	WHTZ-FM WNEW-FM WNYC-FM	100.3 102.7 93.9	New York New York New York	KRTK-FM KCBI-FM KDMX-FM	97.1 90.9 102.9	Cleveland Dallas Dallas
KSJO-FM KCBX-FM KUSP-FM	92.3 90.1 88.9	San Jose San Luis Obispo Santa Cruz	WBOS-FM WCRB-FM WJMN-FM	92.9 102.5 94.5	Brookline Waltham Boston	WHUD-FM WBEE-FM	100.7 92.5	Peekskill Rochester	KERA-FM KVTT-FM	90.1 91.7	Dallas Dallas Dallas
COLORADO KBCO-FM	97.3	Boulder	WMJX-FM WSSH-FM	106.7 99.5	Boston Lowell	WSIA-FM WMRW-FM	88.9 98.5	Staten Island Westhampton	KYNG-FM KPLX-FM	105.3 99.5	Dallas Fort Worth
KHIH-FM KMJI-FM	97.3 95.7 100.3	Denver Denver	WXKS-FM MARYLAND	107.9	Medford	NEW MEXICO KKOB-FM	93.3 97.3	Albuquerque	KBNA-FM KEGL-FM KBXX-FM	97.5 97.1 97.9	El Paso Fort Worth Houston
KCFR-FM CONNECTICU	90.1 IT	Denver	WHFS-FM WEAA-FM	99.1 88.9	Annapolis Baltimore	KKSS-FM NORTH CAROL	INA	Santa Fe	KMJQ-FM KHYS-FM	102.1 98.5	Houston Port Arthur
WSHU-FM WPKT-FM	91.1 90.5	Fairfield Hartford	WIYY-FM WOCT-FM WPOC-FM	97.9 104.3 93.1	Baltimore Baltimore Baltimore	WKJA-FM WMIT-FM WUNC-FM	101.1 106.9 91.5	Belhaven Black Mtn. Chapel Hill	KILT-FM KRTK-FM KUHF-FM	100.3 97.1 88.7	Houston Cleveland Houston
DISTRICT OF WAMU-FM	COLUMBIA 88.5	A Washington	WWMX-FM WXYV-FM	106.5 102.7	Baltimore Baltimore	WSOC-FM WXRA-FM	103.7 94.5	Charlotte Eden	KJMZ-FM KOOI-FM	100.3 106.5	Irving Jacksonville
WASH-FM WETA-FM	97.1 90.9	Washington Washington	WETH-FM* MICHIGAN	89.1	Hagerstown	WKOO-FM WCXL-FM WTQR-FM	98.7 104.1	Jacksonville Kill Devil Hills	KYKX-FM KFMX-FM	105.7 94.5	Longview Lubbock
WDCU-FM WGAY-FM WGTS-FM	90.1 99.5 91.9	Washington Washington Washington	WIOG-FM WLLZ-FM	102.5 98.7	Bay City Detroit	NORTH DAKOT		Winston-Salem	KKMY-FM KFTG-FM KATX-FM	104.5 88.1 97.3	Orange Pasadena Plainview
WHUR-FM FLORIDA	96.3	Washington	WKQI-FM WJLB-FM WQRS-FM	95.5 97.9 105.1	Detroit Detroit Detroit	KSSS-FM KDVL-FM KRRB-FM	101.5 102.5 92.1	Bismark Devils Lake Dickinson	KCRN-FM KXTN-FM	93.9 107.5	San Angelo San Antonio
WAPN-FM WNDB-FM	91.5 95.7	Daytona Beach Daytona Beach	WDBM-FM WKAR-FM	88.9 90.5	East Lansing East Lansing	KFNW-FM KNOX-FM	97.9 94.7	Fargo Grand Forks	KRTS-FM WACO-FM	92.1 99.9	Seabrook Waco
WSFP-FM WAOA-FM WLRN-FM	90.1 107.1 91.3	Ft. Myers Melbourne Miami	WGLQ-FM WLAV-FM	97.1 96.9	Escanaba Grand Rapids	KQDJ-FM KYYZ-FM	95.5 96.1	Jamestown Williston	UTAH KSOS-FM	106.9	Ogden
WTMI-FM WMFE-FM	93.1 90.7	Miami Orlando	WKLQ-FM WRKR-FM	94.5 107.7	Holland Portage	OHIO WOUB-FM	91.3	Athens	KSOS-FM* KSOS-FM* KISN-FM	92.1 96.7 97.1	Salt Lake City Salt Lake City Salt Lake City
WOCL-FM WUFT-FM WOWW-FM	105.9 89.1 107.3	Orlando Gainesville Pensacola	MINNESOTA KAUS-FM KKBJ-FM	99.9 103.7	Austin Bemidji	WGUC-FM WVXU-FM	90.9 91.7	Cincinnati Cincinnati	KLZX-FM KSOS-FM*	93.3 98.3	Salt Lake City Utah County
WFLZ-FM	93.3	Tampa	KDNW-FM KEEZ-FM	97.3 99.1	Duluth Mankato	WWNK-FM WCLV-FM WCPN-FM	94.1 95.5 90.3	Cincinnati Cleveland Cleveland	VIRGINIA WLTY-FM*	95.7	Norfolk
GEORGIA WDMG-FM WSTR-FM	99.5 94.1	Douglas Smyrna	KKCK-FM KBEM-FM	99.7 88.5	Marshall Minneapolis	WGAR-FM WENZ-FM	99.5 107.9	Cleveland Cleveland	WNVZ-FM WESR-FM	104.5 103.3	Norfolk Onley
WABE-FM WCLK-FM	90.1 91.9	Atlanta Atlanta	KQQL-FM KNOW-FM KSJN-FM	107.9 91.1 99.5	Minneapolis St. Paul St. Paul	WKSU-FM WLTF-FM WQAL-FM	89.7 106.5 104.1	Cleveland Cleveland Cleveland	WKOC-FM WCDX-FM	93.7 92.7	Virginia Beach Richmond
WKLS-FM WZGC-FM WAFT-FM	96.1 92.9 101.1	Atlanta Atlanta Valdosta	KSTP-FM KTIS-FM	94.5 98.5	St. Paul Minneapolis	WLVQ-FM WDFM-FM	96.3 98.1	Columbus Defiance	WASHINGTON KISM-FM	92.9	Bellingham
IDAHO			KDJS-FM MISSOURI	95.3	Willmar	WKRJ-FM* WGLE-FM	91.5 90.7	New Philadelphia Toledo	KXXO-FM KFAE-FM KISW-FM	96.1 89.1 99.9	Olympia Richland Seattle
KCIX-FM	105.9	Boise	KFMZ-FM KGR C -FM	98.3 92.9	Columbia Hannibal	WKKO-FM WGTE-FM WXKR-FM	99.9 91.3 94.5	Toledo Toledo Toledo	KUOW-FM KMPS-FM	94.9 94.1	Seattle Seattle
KNJZ-FM WRMS-FM	100.3 94.3	Alton Beardstown Carbondalo	KYYS-FM KMJM-FM WFUN-FM	102.1 107.7 95.5	Kansas City St. Louis St. Louis	WKRW-FM* WKBN-FM	89.3 98.9	Wooster Youngstown	KMTT-FM KDRK-FM KEZE-FM	103.7 93.7 105.7	Seattle Spokane Spokane
WCIL-FM WCBH-FM WLRW-FM	101.5 104.3 94.5	Carbondale Casey Champaign	WIL-FM	92.3	St. Louis	WHIZ-FM WOUZ-FM WGLE-FM	102.5 90.1 90.7	Zanesville Zanesville Lima	KEZE-FM KRPM-FM KVTI-FM	105.7 106.1 90.9	Spokane Tacoma Tacoma
WBEZ-FM WCCQ-FM	91.5 98.3	Chicago Chicago	MONTANA KCTR-FM KKBR-FM	102.9 97.1	Billings Billings	WGLE-FM WZAK-FM WZJM-FM	93.1 92.3	Cleveland Cleveland Heights	WEST VIRGINIA WHCM-FM		Parkersburg
WJKL-FM WKKD-FM WKQX-FM	94.3 95.9 101.1	Chicago Chicago Chicago	KATH-FM KBOZ-FM	93.7 97.5	Bozeman Livingston	OKLAHOMA KSYE-FM	91.5	Frederick	WKWK-FM WISCONSIN	97.3	Wheeling
WLLI-FM WXRT-FM	96.7 93.1	Chicago Chicago	NEBRASKA KNEN-FM	94.7	Norfolk	KIRQ-FM KTST-FM	98.1 101.9	Lawton Oklahoma City	WIZM-FM WERN-FM	93.3 88.7	La Crosse Madison
WLS-FM WNUA-FM WSSD-FM	94.7 95.5 88.1	Chicago Chicago Chicago	KESY-FM NEVA DA	104.5	Omaha	KXXY-FM OREGON	96.1	Oklahoma City	WNWC-FM WUWM-FM	102.5 89.7	Madison Milwaukee
WNIJ-FM WLLR-FM	90.5 101.3	DeKalb East Moline	KKLZ-FM KNPR-FM	96.3 89.5	Las Vegas Las Vegas Boulder City	KZEL-FM KYTE-FM KOPB-FM	96.1 102.7 91.5	Eugene Newport Portland	WMYX-FM WMSE-FM *translators	99.1 91.7	Milwaukee Milwaukee
			KNPR-FM*	88.7	Boulder City		01.0	, ordand			

LIGHTEN UP



MARANTZ PMD101 PORTABLE CASSETTE RECORDER

- Compact / Lightweight
 - ±20% Pitch Control
- AGC & Tone Control
- Built-in Speaker & Mic

• FREE Carry Bag

*mic and cable not included



Phone: 800.426.8434 800.231.7055 Fax



7012 27th Street West Tacoma, WA 98466

*Limited time offer

Circle (14) On Reader Service Card

5

by Lynn Meadow

WASHINGTON The Emergency Alert System (EAS) has faced obstacle after obstacle trying to replace the Emergency Broadcast System (EBS). First, the Federal Communications

Commission (FCC) took 11 months to rule on five petitions for reconsideration regarding EAS. Equipment manufacturers, eager to begin selling, had to sit on their hands and stall suppliers while they waited.

When the FCC ruled

on the petitions in October 1995, manufacturers turned in their applications for certification and waited. Next, an ugly budget debate forced the FCC to power down indefinitely on Dec. 16, 1995, and so manufacturers waited again.

Finally, just when the president and Congress decided to reopen the government, mother nature walloped Washington with 24 inches of powdery snow. Driving conditions were abysmal, and federal workers were told to stay home once again.

Broadcasters looking to get a jump on the Jan. 1, 1997, deadline for EAS were not able to purchase any equipment. Without certification, companies cannot quote prices on their equipment, let alone sell it. And manufacturing product without certification can be risky if the FCC determines it is not completely up to spec

"We still expect the January 1997 deadline to be upheld," said TFT Marketing Director Darryl Parker on the third day of the "Blizzard of 1996." TFT makes the EAS 911 encoder/decoder. FCC employees simply had not been at work long enough to certify TFT or anybody else's EAS equipment.

"Everybody is in the same boat, Parker said. He expected the FCC would do what it did in 1975 with the

0

old EBS system when the agency wound up posting equipment certifications on the same date so no one system had an advantage.

Acts of God, Congress Slow EAS

"If we receive certification, we will be delivering well before NAB in quantity." Parker said. He expected that TFT will be

Without certification, companies cannot quote prices on their equipment, let alone sell it.

able to sell the unit for its original price because the company has been refining the product "by using economies of design.

"We're full speed ahead in manufactur-

ing," said Gerald LeBow, president of Sage Alerting, 20 days into the government shutdown. Although the ENDEC had not been certified, LeBow called the production "a micro-risk."

LeBow said he was trying to keep his schedule free in early January to be

available when the government reopened. He had suggested to the FCC certification office that it connect the various EAS machines together with the National Weather Service's system just to make

sure they all worked together. LeBow said he was prepared to be in Washington "within hours." He added that there will be plenty of ENDECs manufactured by the spring NAB show.

Supreme Court Refuses to Look at Safe Harbor

WASHINGTON Broadcasters trying to defend their First Amendment rights bumped into a wall last month when the Supreme Court upheld the "safe harbor" set forth by the U.S. Court of Appeals last summer.

With the high court's endorsement, the Federal Communications Commission (FCC) has no worries enforcing the 6 a.m. to 10 p.m. ban on the broadcast of indecent material.

Two groups of broadcasters asked the Supreme Court to review the lower court's decision. Non-commercial broadcasters said the original 18-hour ban violated the First Amendment by "forcing adults to see and hear only programming that is suitable for children.'

The coalition of commercial broadcast-

ignal One can locate tenants, execute lease

revenue you never realized was available.

throughout the USA and has a large customer base that

includes BellSouth, PageNet, PageMart, Federal Express,

motorcarriers, and other financially-sound users that can

Call Signal One today ... and let us

demonstrate how we can fill your tower site with tenants.

Fax your tower site information to (423) 954-3222.

database for our many customers to utilize and lease on.

SIGNAL ONE

5700 Brainerd Road, Uptain Building, Suite 407

"One Call and Your Signal Is On" The

(423) 954-1111

We will include your information in our nationwide site

Chattanooga, TN 37411

S help you enhance your operations.

agreements, & manage your tower site to produce

Signal One manages and owns communication sites

ers, including the National Association of Broadcasters (NAB), had also argued that the FCC's indecency enforcement program is unconstitutional. Both groups took their case to the Supreme Court.

"It's being read to have broad implications," said John Crigler, partner in Haley. Bader & Potts. FCC Chairman Reed Hundt was already interpreting the court's decision as a strong case for the V-Chip, Kidvid quantitative standards and indecency regulation on the Internet.

Broadcasters could have done worse. Sen. Jesse Helms (R-N.C.) originally proposed a 24-hour ban on indecent material. When that was overturned in court, the ban was reset to last from 6 a.m. to midnight except for non-commercial stations that went off the air at midnight. In those stations, it was shortened to 10 p.m.. Last summer, the U.S. Court of Appeals decided that commercial broadcasters deserved the same time frame

That may be the only victory for broadcasters for a while.

"It's very unfortunate and disappointing," said Larry Helfer of Rabinowitz, Boudin, Standard, Krinsky & Lieberman who was working on the case for a coalition of non-commercial broadcasters, broadcasting and literary associations and poet Allen Ginsberg.

The Supreme Court did agree to hear a case filed by Denver Community Media that addresses some similar issues. But the court could decide that case on procedural issues, said Crigler, rather than on indecency.

Crigler suggested that there are two ways that the policy on indecency could change. Congress could instruct the FCC to change the hours of the safe harbor or the FCC could modify its definition of indecency. The definition of indecency was last modified in 1986 when commissioners decided that the long-standing seven-word ban was too lax.

Given Hundt's passion for children's television, it is unlikely he would support an attempt to relax the definition of indecency. (

Circle (206) On Reader Service Card

World Radio History

Optimize Stereo Performance of FM Exciter

The Proper Matching of an FM Exciter to Its Transmitter Is Essential for Happier Equipment, Better Sound and Top Performance

by David P. Hebert, CPBE

PASCO, Wash. Optimum RF and stereo performance of modern FM exciters can be enhanced by proper matching to its transmitter.

Normally this can be as easy as tuning the transmitter until the exciter reflectometer indicates minimum reflected power. However, this method does not always indicate the true state of the impedance match at both ends of the exciter output cable.

The proper location to measure load VSWR is at the load itself. But this method is not too practical when the reflectometer is located at the exciter.

Calculating cable

Most exciter/transmitter installations use a random length of coaxial cable, cut primarily to a convenient length. Unfortunately, coaxial cable will act as an impedance transformer unless

Occasionally, an efficient transfer of power from the exciter to the transmitter can be too much of a good thing.

the length is specific to the operating frequency.

Electronic theory states that a quarterlength of coax will act as an impedance inverter. This is to say that if the output or load end is shorted, the input end will present an open circuit to RF and vice versa. Further, a reflectometer measurement will indicate infinite VSWR.

However, if the reflectometer is inserted at random distances from the shorted or open end of the load side of the coax, this infinite VSWR indication will change.

It is conceivable that even a moderately bad load can indicate a satisfactory VSWR match if the reflectometer is placed at just the right distance from the load.

In this example, the operating impedance within the coax is constantly changing throughout its length, changing the indicated VSWR. An easy test to determine if any degree of mismatch exists would be to add a random length of coax at the exciter output and observe if the reflectometer indication changes. Most times, it will.

Half-wave

I have remedied this situation by using one-half wavelength coaxial cables between exciters and transmitters with great success. Because the impedance at both ends of the coaxial cable is theoretically the same, one can be reasonable sure that a true "matched" condition has been achieved when tuning the transmitter input.

One can determine the proper length of coaxial cable for one-half wavelength

with the formula: 492 divided by frequency in MHz. This figure is then multiplied by the velocity factor of the coax being used.

As an example, to construct a halfwavelength coaxial cable for 98.3 MHz, using solid plastic dielectric (velocity factor .66), one would arrive at a length of 3.3 feet.

This length may be a little short, but if more length is needed all that would be required would be to multiply this length by a whole number to arrive at a suitable length. Maybe a length of coaxial cable just less than 10 feet long would be more suitable.

If the exciter reflectometer indicates a mismatch with the right cable, further work will be necessary. One can be sure that the exciter will be happier and the station will probably even sound better.

Occasionally, an efficient transfer of power from the exciter to the transmitter can be too much of a good thing. In this case, the exciter output power must be greatly reduced to satisfy the drive requirements of the transmitter.

Some exciters become unstable with

their output power lowered too much, becoming unstable and even causing interference. This problem can be solved with an exciter-to-transmitter coaxial cable length of 10 or 20 times the halfwavelength. The cable then becomes an attenuator, and effectively provides isolation between the two units.

The exciter can then be run at a power level it is happy with and the transmitter drive requirements can also be satisfied.

David P. Hebert heads up Dave Hebert & Associates, P. O. Box 2442, Pasco, Wash., 99302-2442. He can be reached at 509-545-9672 or by e-mail at dhebert @oneworld.owt.com

There Are Those Who Believe Turning 50 Is a Landmark Event...

We Prefer To Look At It As A Really Great Beginning

• 50 years of innovation in RF technology.

- 50 years of building top quality products which set the industry standard for performance and reliability.
- 50 years of making sure our customers receive the best service.

1946-1996. At age 50 Continental Electronics takes great pride in our history of leadership in RF communications. But just like you have to make constant changes and adjustments in your formats, talent, and studio equipment to remain competitive, we remain committed to looking ahead and providing broadcasters with the technological advances in RF technology needed to keep them competitive with other communications channels. Our recent acquisitions of TELEFUNKEN Sendertechnik (1995) and Lensa S.A. (1994) enable us to offer a significantly broader range of RF products and increase our advanced RF and terrestrial communications research efforts. So we look back at our first 50 years with pride, but look forward with even greater anticipation to broadcasting in the next 50 years.

Visit the Continental booth at NAB '96 and see where we're taking RF technology to meet your needs today and tomorrow.

For 50 years, Continental Electronics has provided excellence in broadcast transmission products worldwide. Refuse to compromise... call Continental first!



PO. BOX 270879 • DALLAS, TEXAS 75227-0879 • 214-381-7161 • FAX 214-381-4949

World Radio History



[The DSE 7000 Version 5.0]

With a workstation this fast, nothing can slow you down.



laces "With time compression, the DSE has added ten years to my creative career.' John Frost...Creative Director

KROQ-FM, Los Angeles



A "Anyone can learn to do anything on the DSE in an hour. And UNDO it in a second."

Debby DeLuca.. Commercial Production Director HOT-97, WQHT-FM, New York



Peter Belt...Chief Engineer Radio 10. Amsterdam

 \wedge " The ear is faster than the eye. And

the DSE is still the best editing system

Gundolf Weber...Tonmeister

Producer MDR life, Leipzig, Germany

for radio."

laces "I've stopped looking for a better digital workstation for radio. With upgrades, the DSE is future proof." Russell Kerr...Planning & Development Manager IBC, Auckland, New Zealand

From Auckland to Amsterdam, the DSE 7000 has earned a reputation as the fastest editing system for radio. Now, with time compression and expansion, nothing can slow your creativity down. The DSE is the only digital workstation that lets you edit by ear in real time. You don't have to stare at a complex waveform screen, "name" every sound, or mix with a mouse. Just cut, leader, erase, move, loop, copy and mix in a completely natural manner. The DSE 7000. Now with Version 5.0 the New Speed of Sound is making quick work of the world of radio.



H A Harman International Company

© 1995 Orban and DSE 7000 are registered trademarks. 1525 Alvarado St., San Leandro, CA 94577 USA Phone 1+510+351+3500 Fax 1+510+351+0500 E-mail custserv@orban.com

> Circle (108) On Reader Service Card World Radio History



Equipment and Applications for Radio Production and Recording

PRODUCT EVALUATION

Shaping Audio in the Sound Forge

by Read G. Burgan

LAKE LINDEN Mich. An item on the Internet first piqued my interest in Sonic Foundry's Sound Forge digital audio software.

I spend a lot of time transferring 16inch program transcriptions of old radio programs to digital audio tape. Sonic Foundry has recently added a noise reduction module to its Sound Forge software, so I was anxious to test this new product.

What I discovered was much more than a noise reduction system.

Sound Forge is full-featured digital audio software with a stunning array of

hard drive.

The software definitely runs faster on the Pentium. In many cases it ran twice as fast as the 486, despite the latter's faster hard drive.

When installed, Sound Forge and two optional plug-in modules took about 4MB of space. Sonic Foundry includes a set of disks for Windows 95 which reportedly increases the program's operating speed by a good 50 percent.

Installation

Installing Sound Forge is straightforward, but had a feature reminiscent of software copy-protection.

In this case, Sonic Foundry has placed



The Spectrum Analysis Plug-in for Sound Forge

truly useful tools. The longer I worked with Sound Forge, the more great features I discovered and the more I found myself using it for a variety of digital audio tasks.

Quality PC audio

Sonic Foundry was founded in 1991 by Monty Schmidt to provide quality sound editing for the Windows platform. It was designed to appeal to a broad spectrum of users including sound designers, CD mastering facilities, studios, game developers and Foley artists.

Sound Forge will run on a 386 PC, but Sonic Foundry recommends a minimum of a 486/33 computer with Windows 3.1, a 16-bit sound card and large hard drive.

For test purposes, I installed Sound Forge on two machines. The first was a 486 DX-100 with 16MB RAM, a Digital Audio Labs CardD Plus sound card and a 1.0GB SCSI hard drive.

The second was a 100 MHz Pentium with 16MB RAM, a Turtle Beach Monterey sound card and a 1.0GB IDE a label in the inside front cover of each of its manuals with an individual activation number. When you install the program, it asks for the activation number. No number, no installation.

This demonstrates the frustration software manufacturers feel because so many users feel it is all right to share copies of their software with colleagues and friends. It is not legal and if enough people continue to do it, innovative software companies will be out of business. Enough said.

The user's manual is well-written. nicely detailed and even contains a good primer on digital audio that will bring the digital neophyte up to speed in record time. If you have already used digital audio software, you will find yourself mastering the basics of Sound Forge very quickly.

Because Sound Forge has so many rich features, it will probably take several weeks before you begin to master all of its best features.

There are more tools than most individuals will need, but as you get better and look for new and better ways to work digitally. you may find Sound Forge has all the features you will ever need.

Two tracks

Most digital audio software falls into two camps: two-track and multitrack. Sound Forge is two-track software, but performs nearly all of the functions many of us use multitrack software for.

For example, when creating basic production, you are mixing an announcer over a music sound bed. This is easily accomplished in Sound Forge by pasting the announce sound file over the music bed sound file. The Mix menu gives you full control of the levels of both.

The Sound Forge Record menu is straightforward and reminiscent of an analog tape deck. It is complete with screen buttons for all functions (record, play, *et al*). A three-color-bar level indicator is present to check recording levels. Options allow you to make multiple takes on the same sound file, automatically erase any previous material on the sound file, or even punch in and out at a specific point to change just a portion without rerecording the entire sound file.

Digital Jingle Singers

From DigiTech

See page 19.

When you are done recording, the main screen displays a small portion of your sound file in .WAV format in the Waveform display. At the top is an Overview window which represents the entire sound file.

By double-clicking on an area of the Overview, you can cause the Waveform display to move to a new area of the waveform. The main window includes a Transport toolbar, again with push-button controls emulating analog operations. These give you the functions for Record, Play All, Play Normal, Pause. Stop, Go to Start and Go to End.

Navigating around the waveform is intuitively simple, as a good digital audio window should be. It is easy to zoom in or out on the screen or to zoom in on a particular selection that you have marked.

A favorite feature of mine is the ability to drag an area of a sound file you have selected outside the waveform display window and create a new waveform file continued on page 20



Circle (51) On Reader Service Card

Do you want a better sounding station? CRL Systems can help you.

No matter the size of your station or the size of your budget.

DP-100 FM DIGITAL PROCESSOR



The NEXT GENERATION of FM Audio processing has arrived. Our newest system, the **DP-100**, uses the latest in 32 bit floating point DSP technology to bring your station to a new level of sound quality that will attract and hold your listening audience. CRL's **DP-100** will give your station a natural sound with superior loudness and outstanding audio clarity.

Unlike other systems, the **DP-100** is based on a 100% digital platform. Our exclusive GUI operating menu system lets you harness its full

power with only a few finger strokes. Of course we offer full RS-232 remote control, a wide variety of program presets and multiple level password protection. The **DP-100** consists of an wideband leveling AGC, 5 band compressor and multi-band limiter. The **DP-100** offers two composite outputs, AES/EBU, fiber optic and analog outputs. Four internal expansion ports make the **DP-100** ready for the future. The **DP-100** is your answer to staying ahead of the competition!

THE SIGNATURE SERIES FM PROCESSOR



Looking for real value in a processing system? Then CRL's **Signature Series** is for you! Our two unit system is perfect for those with split-site processing needs.

Our popular Audio Signature is an easy to use AGC / four band Compressor that features program pre-sets and full RS-232 remote control. Our powerful multi-band Limiter, the **Modulation Signature** is combined with a digitally synthesized Stereo Generator. Plus, our exclusive stereo soundfield enhancement circuitry is included.

Tired of the flat sound that your old 8100 delivers? The **Signature Series** will deliver the competitive sound you need at a very affordable price!

THE AMIGO FM AUDIO PROCESSOR



The **Amigo** FM is a complete FM processing system in a single rack high chassis. It includes a wide range dual band AGC (over 25 dB), transfer function multi-band Limiting and a drift free digitally synthesized Stereo Generator. The **Amigo** FM is a very popular upgrade from the old 8000 and

will provide you with years of rock stable operation. The Amigo works well with any format. Internal processing options let you tailor the **Amigo** to fit your station's needs. The **Amigo** costs much less than you might think and delivers much more!

Discover how good a CRL system will make your station sound!

Call today about our two-week demo program. Try a CRL audio processing system on your station today.



Circuit Research Labs, Inc.

2522 West Geneva Drive • Tempe Arizona 85282 USA 602 438-0888 • 800 535-7648 • Fax 602 438-8227 E-mail: crl@crlsystems.com • Web site:http://www.crlsystems.com

See us at NAB '96 Booth #2008

Circle (30) On Reader Service Card World Radio History

PRODUCT EVALUATION

— STUDIO SESSIONS -

Vocalist Is Silicon Singing Group

by Alan R. Peterson

WASHINGTON Radio production people of all skill levels often leave to form their own production companies. I did in 1987.

Among the services they may promote is jingle production. This can be difficult when it comes time to book capable singers. Cousins and best friends' girlfriends cannot always cut it.

It is possible for one or more singers to overdub multiple harmonies, but this is time-consuming, track-intensive and may run up the studio clock.

The MIDI Vocalist from DigiTech is a clever voice processor that may come to the rescue for radio producers looking to add jingle production to their list of services.

Beach Boys in a box

This processor accepts a vocal input then calculates and outputs multipart harmony. One male singer can become the Beach Boys and a female singer turns into Wilson Phillips.

And it is good harmony too, with the pitch-shifted voices sounding authentic and not chipmunky. DigiTech and IVL Technologies (licensers of the harmony process) put some thought into this device.

Digitech sent Studio Sessions a MIDI Vocalist to try out. The factory sticker was dated January '96, and the unit appears to have been yanked right off the line before anyone had a chance to initial the attached quality control tag. No matter, this model clearly passed.

The MIDI Vocalist accommodates a balanced XLR mic on the front panel or linelevel signals on the rear panel. The mic input is transformerless with a clean preamp stage.

The Vocalist has no VU meter or LED bar. A single two-color LED shows optimum level and clipping. Full-scale mic input level is -31 to -3 dBu. Both inputs were used during the review.

Six backlit buttons on the front panel positions the harmony above or below the lead voice. Rotary controls regulate the input level, the lead vocal output and the harmony mix.

Six more buttons select harmony modes, bypass the Vocalist and activate a Defune feature to humanize the process.

The back panel also contains MIDI jacks; a MIDI keyboard or sequencer must be plugged in to the Vocalist to control the harmony

The two-sided PC board is neatly made. with a mix of surface-mount and discrete components. A socketed ROM contains the Vocalist's data. Digital and analog chips were manufactured by LSI. Toshiba, OKI and Philips. Nicely done.

Two stout ferrite beads at the power rails eat up any RF noise that tries to get in through the supply. Similar protection at the audio inputs would have been desirable but rejection seems very good as-is.

Strangely, the Vocalist runs off a wall wart power supply. The actual circuit board takes up less than half the entire case, leaving lots of room for an internal transformer. I am surprised DigiTech went this route.

Three different harmony modes come packaged in the Vocalist: Scalic, Chordal and Vocoder.

The first, Scalic, is probably the simplest. Play a chord (three notes together) on the MIDI keyboard only once and the Vocalist calculates harmony for the entire piece based on the structure of that chord.

For some radio jingles this may be enough, but the jingle singer must be very accurate. Even a small amount of jitter may cause the Vocalist to compute an entirely different chord than what was desired.

For more complicated changes, Chordal mode is the way to go. This requires you to play a chord change for every new chord in the piece. The Vocalist recalculates the harmony around the new chord.

This allows the singer to be a little more forgiving with pitch, as the Vocalist stays anchored on the desired harmony. It also allows the jingle producer to test out some uncharacteristic and novel harmonies.

The Vocoder mode intrigued me the most. The singer can hit a horribly flat note and the Vocalist will pitch-correct it to be dead

eared singers will appreciate this feature.

Vocoder mode lets you try harmony

from Mars, Strange atonal combinations

can be created by holding down whatever keys are desired on the keyboard. Some

real Manhattan Transfer-bebop-sounding

lead voice, resulting in a "thicker" sound.

While possible with a delay line, the

Vocalist also adds a slight degree of random pitch-shift and timing, sounding

For anyone who has never heard a good,

tight backup group working with them.

the Vocalist's performance comes as a

The MIDI Vocalist was evaluated with a

Roland D50 keyboard, PG Music's

Power Tracks (sequencing software for

Vocalist output was routed through a

I started slow with some quasi-monkish

chanting, then the vocal intro to Queen's

"Bohemian Rhapsody." The Vocalist was

set on Vocoder mode and the front but-

tons were set to create harmony both

Once I found the right combination of

keys on the D50, my lame attempt at

cloning Queen sounded surprisingly

Next, an attempt at the old chestnut

'Shine On Harvest Moon." There is a Bass

button on the Vocalist which drops harmo-

ny down to a low octave. On someone

else's voice it may have sounded good, but

mine came out buzzy and brittle-sounding.

I could not find a Glide feature on the

Vocalist, which was too bad. Barber-shop-

style harmony sometimes depends on

"scooping" a pitch for effect. This can be

approximated by the bend lever found on

Finally, a trip back through my old four-

track cassette projects yielded a home-

made version of the Beatles' "Nowhere

Man" and a jingle for a Danish furniture

I muted the harmony track I created

most keyboards

outlet that never sold.

good. The pitches stayed dead on.

new Mackie 1202-VLZ mixer with a ten-

Windows) and a Sennheiser 421 mic.

year-old Alesis digital Midiverb.

above and below my voice.

passages can be done by one singer. A Unison button effectively doubles the

more like a second performer.

The test ria

pleasant surprise

ages ago on the Beatle song and sent only the lead vocal through the Vocalist's Line In jack. The harmony parts were performed on the D50 and recorded into Power Tracks as MIDI data. This way, my PC "voiced" the Vocalist for me.

With the tiniest amount of plate reverb, it sounded real good; better than my first recording thirteen years prior.

Then came the old commercial jingle. The Vocalist was set for three voices below the original female lead part.

Despite it being an embarrassingly bad piece of music, the vocal track blossomed nicely and sounded much like a McGuire Sisters arrangement.

What surprised me was the Vocalist's ability to create harmonies that sound like actual voice. DigiTech wants to keep the secret all to themselves, but clearly the Vocalist owes



much of its ability to vocoder technology. stable. Budget producers who recruit tin-

Pitch-shifting algorithms normally found in multi-effect processors make voices sound cartoony or Darth-Vaderish because they also shift the voice's harmonic structure (or timbre) up and down. The Vocalist analyzes the timbre of the voice and imprints those same character-

istics as a constant on new pitches generated by the device. A very interesting process indeed.

Conclusions

The project must dictate the way the Vocalist is to be used. In many instances, the harmony must be somewhat lower in volume than the lead vocal and used as sonic "wallpaper" behind the lead part.

This is due in part to the limited bandwidth of the harmonized parts. The DSP output scopes out to only 11.5 kHz, kept low to avoid aliasing.

Still, even with the absence of that upper octave, intelligibility is high and harmony is accurate. And once reverb is added, you will never notice it.

DigiTech included a "get-started" card that bypasses the manual and helps you begin exploring the Vocalist. The manual contains a brief music theory lesson that explains how the harmony is generated.

I would like to have seen a "how-to" card, describing settings that would simulate the harmonies of favorite groups.

For the smaller studio that cannot find five good singers — or even for the larger facility needing an accurate pitch-corrector - the DigiTech MIDI Vocalist is a versatile, good-sounding processor. It is a breeze to run and a kick to use.

The MIDI Vocalist retail price is \$429.95. Studios will find it pays for itself in savings after two or three jingles where multiple singers would have been booked. In fact, if you are a fledgling jingle singer, get one of these yourself; it may make you more marketable to come to a session with your own backup group.

Which Digital Audio Workstation Allows Professionals To Be **Productive In 1 Hour?**

"I've been using MicroSound™ for nearly 4 years and love its quiet, pristine, squeaky clean editing and mixing capabilities. It was very easy to learn, even though I'm not a computer wizard. I was able to edit our first program within an hour of turning on my MicroSound Workstation. Thanks to MicroSound, top quality audio is heard in our broadcasts every day worldwide.

Only the prices look as good as the spees." -Bob Vermeulen, Engineer Words of Hope

MicroSound improved the quality of first time I used MicroSound!

Whether I'm producing one spot or cranking out 6 hours of programming, MicroSound has become an

invaluable tool. I can't imagine how I ever did without it." Todd Chatman. **Operations** Manager, CCM Radio



Discover the industry's best kept secret, polished for 18 years. MicroSound records crystal clear sound with -110dB noise from 8K-48KHz sampling rates. The 56-bit DSP based MicroEditor[™] software gives you the true non-linear freedom of Project-Editing[™] — every sound free floating in an audio palette mixing up to 100 tracks. Radio spots • Multimedia • Multi-hour audio for video · CD mastering. With MicroSound you will proudly say "I master with MicroSound" ... ahead of schedule!

Peripherals from \$2,995 • Workstations from \$6,995.

"Quality Digital Audio Workstations Since 1977" Isn't it time to revolutionize your studio or station? Call, fax, or write now.

Micro Technology Unlimited PO Box 21061, Raleigh, NC 27619-1061 USA Voice: (919) 870-0344, FAX: (919) 870-7163

Circle (18) On Reader Service Card

"After years of producing programs on everything from analog 8-track to ADAT. I increased my output the very first week. But more amazing, my work immeasurably. I achieved that elusive perfect mix the very

STUDIO SESSIONS -



SHURE SM7 Studio Microphone

Warm, Silky-Smooth Voice Reproduction

Multiple EQ Curves

Internal Shock Mount

• Leading On-Air Mic



Mfr. List \$566.00 Save 47%

Phone: 800 . 426 . 8434

Fax: 800.231.7055



7012 27th Street West Tacoma, WA 98466

*Limited time offer

Circle (151) On Reader Service Card

Sound Forge Software for PC Users

display window by just dropping it anywhere outside its current window. Sound Forge automatically creates a new window. This is a fast way to edit a sound file.

You can create any number of regions in a sound file and then create a playlist that will sequentially play them in the order you select. This speeds up the process of editing because it is nondestructive.

When the sequence of sounds is satisfactory, you can then turn the playlist into a new sound file. However, you cannot create an edit list made up of regions from more than one sound file. This is a feature which Innovative Digital Quality's Software Audio Workshop (SAW) has that I find a real time saver.

Processing

Sound Forge contains all of the basic processing features that you would expect in capable digital audio software. These include Fade, Insert Silence, Mute. Normalize, Reverse and Volume adjust. All of them work well, just as one would expect them to. But Sound Forge contains a whole host of other advanced features as well.

One is Time Compress/Expand: the ability to adjust the length of an audio file. This is a basic feature available in most digital audio software, accomplished by changing the length of the sound file which raises or lowers the pitch as a varispeed tape recorder would. Sound Forge provides a means of compressing or expanding the length of your sound file without changing pitch. This means a 65-second spot can be reduced to 60 seconds without an audible change in its sound.

Like all forms of magic, the effectiveness depends on the kind of material you are trying to compress/expand and how much you want to change it. I tried it on several sample sound files, and it worked well.

Pitch Change provides just the opposite. Normally when you want to change the pitch of a recording, you change the playback speed. This alters the length of the sound file.

Pitch Change has an option that lets you preserve the original duration of the sound file. Again, how well this feature works depends on the extent to which you raise or lower the pitch and the complexity of the sound. I tried it on several samples and found that it worked best on instrumental music and when used in small increments.

Sound Forge provides both graphic and

parametric equalization. The graphic EQ display resembles an analog 10-band equalizer with mouse-activated sliders. The graphic EQ provides 15 dB of cutand-boost on each band.

The Parametric Equalizer accomplishes what its analog counterpart does, but is laid out differently. This screen gives you four filter types to choose from: Highpass, Lowpass, Bandpass and Notch.

While you can do virtually anything you can with a hardware parametric equalizer, you cannot do it all at once. On a hardware-based parametric equalizer, you could elect to use a low shelf, high shelf and as many as three or more notch filters simultaneously.

Here, you pick just one function and process the sound file. If you want another function, you can then reset the equalizer and process the sound file again.

The strength of this approach over its hardware equivalent is twofold. You can design a filter with much greater accuracy and sharper cut, and you can cut much deeper; as much as 60 dB.

The weakness is that much more time is consumed in using this approach.



Processing one 60-second stereo sound file using the highpass mode of the parametric equalization required 32 minutes on the 486 computer. That is a lot of time just to process a simple 60 dB rolloff from 20 to 220 Hz.

Other digital audio software can take similar time to do the same function, so this is not a just a characteristic of Sound Forge. If time is important, do not be swift to throw away all of your hardware-based tools yet.

Sound Forge has a whole host of other tools, including Chorus, Delay/Echo, Dynamics, Noise Gate and Reverb. They are all good, solid useful tools.

Almost all of the tool and effects menus provide a series of presets to get you started. The reverb menu contains



Circle (80) On Reader Service Card World Radio History Cathedrals 1, 2 and 3; Large Halls 1 through 4 and many more choices. The reverb sounds are rich and realistic.

In many cases, these presets will be all you will ever need. But if you want to make your own presets, the screen can display the tools and effects to edit the parameters of the presets, even start from scratch.

You can set up to eight delay-taps and adjust the time elapse, right/left pan, amplitude and feedback of each one. The fastest and most productive way for me was to start with a preset, make my changes and then preview the edits.

There are tools to allow dynamic adjustment of a sound file, including Noise Gate, Compression, Limiting and Expansion. These too come with presets enabling you to use the tools without the need to master the details underlying the effect.

For example, you can have 2:1 compression with low level gain or expansion with a specified noise gate. At the same time, you can fine-tune all of the parameters of the dynamics tools to meet your own requirements.

Sound Forge is one of the few digital audio software packages I have used that allows you to adjust the cursor position when playing back a soundfile. Many soundcard drivers do not position the cursor accurately on the screen. Although the discrepancy may be small, it can make a significant difference when trying to do a precise edit.

Sound Forge allows you to apply a positive or negative offset value which adjusts the position of the cursor. I found this especially helpful and wish other audio software programs I now use had the same feature.

Sound Forge comes with more features, like sync to MIDI and SMPTE, FM synthesis, looping sound files and more. You can even embed more than 30 text fields in your sound file, providing necessary information on title, engineer, artist and copyright date.

continued on next page

	MOVING?
	Don't leave us behind!
	Mail or fax your current label and new address (with effective date) to: Circulation, RW, PO Box 1214 Falls Church, VA
	22041 or
the second	FAX 703-998-2966.
	Address changes will be processed
	within four weeks of receipt.
	Thanks!

February 7, 1996

I put information I have done to a file in the Comments section; this could consist of reverb, noise reduction and the like.

In addition, Sonic Foundry is committed to upgrading its product through modules that can be added to the basic software package. Two currently available modules are for noise reduction and spectrum analysis.

The Noise Reduction Module has components for noise reduction and click removal. The reduction tool allows you to make a noise print by marking a portion of the sound file where there is no source material (say when a person who is speaking pauses for a breath).

You can then have the noise reduction tool create an envelope emulating the characteristics of the noise print. You apply this envelope to the sound file (or a selected portion of it) and the envelope will effectively mask the background noise selected.

It is designed to work on constant noise sources, such as tape hiss or even loud air conditioners.

My home studio has a chest freezer and fluorescent lights creating audible noise in the background when I record a narration. Now instead of turning them off, I record the narration digitally and then apply Sound Forge's noise reduction module.

Careful adjustment

The effectiveness of the noise reduction module depends on many factors, including the type of noise and the signal-tonoise ratio. My attempts at applying too much noise reduction to a signal that was marginally better than the surrounding noise created unacceptable artifacts.

But in all cases, the software dramatically reduced the noise and in many cases eliminated it all together. It is not designed to deal with intermittent noise, like a large recurring bump on a phonograph record.

The Click Removal tool is designed to remove impulsive noise disturbances like phonographic clicks and pops. It worked well, but not as effectively as Tracer Technologies Digital Audio Restoration Technology (DART) software. In both cases, the software missed some pops and clicks that had to be removed manually, and if set too aggressively, can create its own distortion. Nonetheless this is a very valuable feature.

Sound Forge also contains an intriguing tool: A Pencil mode. This allows manual redraw of a portion of a waveform after you have zoomed in on it.

Theoretically, you could repair the minutest of glitches and remove minuscule amounts of noise. The tool certainly works, but is tedious to work with and takes a great deal of time and patience. It takes trial and error to successfully redraw a waveform sufficiently well to remove a glitch while retaining all vital information.

I suspect that this tool can be refined, but I am not yet sure how.

The Spectrum Analysis module lets you look at the frequency components of a selected slice of a sound file. This can be a valuable tool for evaluating a sound file and determining what kind of filtering to apply.

There are two basic modes. One allows viewing a selected area as a factor of amplitude versus frequency, displayed as either a line graph or a bar graph.

The other mode creates a sonogram that

displays the amplitude of the various frequencies in different colors over a speciwith just the N

fied sample time length. Each of these modes provides useful information and the module is easy to use. However, with the exception of the make printouts. This way you can get by with just the Noise Reduction module and save a hundred dollars.

Conclusions

Sound Forge is a very full-featured dig-

Sound Forge is full-featured digital audio software with a stunning array of truly useful tools.

sonogram portion and the ability to print out the display, this information is already available in the Noise Reduction module screen display.

Live with the bargraph mode and use the Windows PrintScreen feature to ital audio software package. The basic program can be purchased for a street price of about \$349. Add-in modules must be purchased separately.

The Noise Reduction Module is priced around \$170 and the Spectrum Analysis

Module runs about \$110. Given the cost of hardware equalizers, reverbs and compressor/limiters, Sound Forge represents a real value. And the noise reduction module adds capabilities not available in any hardware package.

This is a full-featured package with lots of bells and whistles that offers almost any audio processing tools that you are likely to need both now and for the foreseeable future.

Sonic Foundry is at 100 South Baldwin, Suite 204, Madison, Wis., 53703. They can be reached on the Internet at sales@sfoundry.com and at their home page http://www.sfoundry.com

Read Burgan is a free-lance writer and a former public radio station manager. He can be reached at 906-296-0652 or e-mail at rgb@up.net

Audio quality and processing power

50

Digigram PCX audio. It's all in the cards!

When you choose a workstation that uses Digigram PCX digital audio cards, the deck is stacked in your favor.

Digigram PCX audio cards, installed on the PC platform, compress/decompress digital audio data using world-standard MPEG-Audio, in addition to supporting uncompressed audio. Professional level analog and digital hardware interfaces, carefully crafted design, and innovative software drivers provide stellar audio performance and outstanding features. With Digigram PCX audio cards, you're assured a winning hand. Draw on a host of audio and multimedia applications of the more than 80 developers who bank on the Digigram platform.



Digigram PCX advantages

 Ease of use and enhance productivity
 Simultaneous play and record; pitch shifting: equalization;

noise reduction; time compression/expansion; fade-in, fade-out, and cross-fade; audio file merging and mixing; and many other features. Several models.

Applications for radio, television recording studios, multimedia.

Parc de Pré Milliet 38330 Montbonnot - France Tel. US: 202-293-2790 - Fax US: 202-728-0 E-mail berger@digigram.alpes-net

Circle (39) On Reader Service Card

- STUDIO SESSIONS -

Riding Gain with Automatic Mixer

by Ty Ford

BALTIMORE Talk radio audio has come a long way in the last five years. Big numbers and big money have a way of focusing attention on any project. Talk radio is no different.

The good news is that the pressure to improve the audio quality has led to the development of a number of different devices that were not around before.

The Audio-Technica AT-MX341a Smartmixer (\$799) came to market in February 1995. This is one that deserves a listen. You do not need certified Golden Ears to determine whether this box will help your sound, you just need to listen.

Magic hands

By automatically turning down any mic that is not being spoken into, the AT-MX341a dramatically improves the audio in almost any application where multiple mics are used.

The mixer has plenty of uses in on-air air and production studios (multi-mic dramatic radio production, for example). Applications can also include teleconferencing, church sound, court room and city council sound systems. All of these situations usually have to deal with the problems of bad acoustics and multiple open microphones.

While there are more powerful, featureladen and expensive units on the market (notably the Shure FP-410), you alone must judge the cost/benefit ratio.

In a 1U half-rack size space, the AT-MX341a provides four mic/line channels of automatically controlled expansion. Front-panel controls are simple. There is a power switch, an input gain control and active channel LED for each input, a master output level LED display and a al also makes the point that the unit can be operated from a 15VDC supply with a 150 mA minimum.

Inside the AT-MX341a, a series of easy-to-get-to switches allow further adjustments. For example, each channel has a -50 dB switch that allows each input to be set for either mic or line input. Each has its own switchable

The AT-MX341a dramatically improves the audio where multiple mics are used.

master threshold control.

Rounding out the controls are a screwdriver-adjustable output control, an LED to indicate mic lock-out bus activity and a dipswitch for assigning priority to each input. There is no headphone jack.

On the back panel are four female input XLRs, one male XLR output, a pair of eight-pin mini-jacks for daisy-chaining multiple units together, the 12VAC input power jack from the wall wart power supply and four separate +4VDC control voltage outputs for triggering external devices.

The simple, but explanatory manual includes five schematics for using control voltage to activate driving lamps, logic gates, relays and LEDs. The manu12VDC phantom supply and a -10 dB pad. Another switch determines whether the main output is mic or line and the final switch changes the LED level meter on the front panel from Peak to RMS. Four trimpots allow adjustment of attenuation for each channel when inactive.

A non-conductive tweek-stick can be used to change these from -6 dB to a maximum of -20 dB. Why would you want to alter these settings? Hang on.

According to Kelly Statham, Audio-Technica's development engineer for the AT-MX341a, the mic preamp section consists of a long-tailed pair of 2SA1174E transistors configured as difference amps, coupled by emitters with current-source-to-ground.

I found that while the mic preamp's gain did the job for dynamic and condenser mics, the gain required for loweroutput ribbon mics resulted in an expected increase in preamp noise.

Whatever mics you choose, Statham suggests using the same model of mic on all inputs to minimize the sound changes when different mics become active. Of course, even with this approach, there is likely to be some difference due to the placement of the mics in the studio.

Setup

Setup is easy. Plug in a mic or line-level signal to one of the four inputs, set a good level, and move on to the next input. The threshold-sensing circuitry happens after the gain control, so you would want to adjust the gain up for a soft-spoken person on one channel, and adjust the gain down for a louder person on another channel.

The general idea is to adjust the individual levels so that each channel hits at about the same level. As the manual states, the threshold control determines the level that must be exceeded for a mic to be in use or take priority.

After setting proper levels, you set the threshold control high enough so that changes in ambience will not cause inadvertent mic switching. Be aware that positioning a mic too close to an HVAC continued on page 24

STATION/STUDIO SERVICES



Promote your services to **Radio World's** 18,000+ readers. Reach Radio Station and Recording Studio owners/managers and engineers with your message. For information on affordable advertising call **Simone** at **1-800-336-3045**.

PRODUCT GUIDE

Companies with new product announcements for Studio Sessions Product Guide should send them to Radio World, c/o Studio Sessions Editor, 5827 Columbia Pike, 3rd floor, Falls Church, Va. 22041

Studer CD Recorder

The second-generation D741 CD recorder is now available from Studer.

The new D741 is the successor to the D740 and features analog I/O, AES/EBU and SPDIF digital interfacing and a standard SCSI-2 interface. A built-in alphanumeric keypad allows titling and index numbering and self-contained monitor speakers allow quality control of the recording.



The SCSI interface permits writing CD-I and CD-ROM discs in addition to audio recording.

For more information, contact Studer at 615-848-5321 or circle **Reader Service 154**.

New Mackie Mixers

Two new small mixers have been introduced by Mackie Designs. The 1202-VLZ, successor to the origi-

nal 1202 model is a 12x2 stereo mic/line mixer with rotary controls.



Four mono mic/line channels, four stereo line inputs, three-band EQ and two auxiliary busses are among the features offered.

The 1402-VLZ adds two more mic inputs and offers 60mm linear faders instead of rotary pots.

Both mixers borrow design elements from Mackie's popular CR-1604 console, including a mute/alt switch which either mutes a channel's signal or routes it to a second stereo bus. It is possible to use these boards for four-track recording and mixdown.

For more information, contact Mackie Designs at 800-898-3211 or circle **Reader Service 191**.

Drawmer Preamp

Drawmer began shipping the 1962



Digital Vacuum Tube Preamplifier in January.

The 1962 combines low-noise preamps, vacuum tube technology and two integral, full 24-bit resolution A/D converters. A switchable zero-overshoot limiter gives full dynamic range with no fear of digital overload.

Digital hardware is modular, which means the 1962 can be configured as an analog-only device and upgraded to full digital performance at a later time.

For more information, contact Drawmer's U.S. distributor, QMI, at 508-435-4243 or circle **Reader Service 149** ABOUT THE ONLY THING IT CAN'T DO FOR YOUR TALK SHOW HOST IS MAKE EVERY CALLER SOUND INTELLIGENT.



World Radio Histe

Occasionally, every talk show has to deal with an out of touch caller. But that's probably not the worst of your talk show host's problems. Chances are, your host is also trying to screen calls, conference multiple lines and make smooth transitions to commercial breaks - all while trying to come up with a snappy comeback for the space cadet on line 3. That's why we've updated the old talk show phone with the TS612. All the important functions are clearly marked and the phone lines color coded to make on-air decisions hassle free. Want to screen calls? Press SCRN. Want to conference up to



THE TS612 CAN NOW HANDLE YOUR MULTI-STATION, MULTI-STUDIO APPLICATIONS.

four lines? Press CONF. Don't want to lose a very important caller? Press VIP. Your host can even call for pastrami on rye while on-air some caller explains the finer points of cloud-watching. The point is, the TS612 is simple, versatile and lets your host concentrate on the show rather than the phone system. To find out more, call us.

Circle (60) On Reader Service Card



24 Radio World

- STUDIO SESSIONS -

AT-MX341a Mixer from

> Audio-Technica

Riding Gain Using the Audio-Technica Mixer

continued from page 22 unit may cause threshold problems as the

air circulation system cycles on and off. Also, setting the threshold control too high can cause the loss of low-level sounds and noticeable jumps in audio if the threshold is exceeded in the middle

of a word or phrase. The priority system is determined by the four dipswitches (one per channel) on the unit's front panel. When the dipswitch for any channel is in the up or On position, any audio passing through it cannot be "locked out" or turned down.

As the manual notes, attenuation for

channels that are locked out ranges from 6 dB to 20 dB depending on the adjustment of the internal trim pot. Channels are never turned completely off.

The All Priority Up mode is called the "free for all" mode, because there are no mics connected to the Lockout Bus. The All Priority Down mode is called the "Filibuster" mode because only one mic at a time has control.

For switching to occur, there must be a short period of silence followed by another speaker saying something, thus taking control.

The One Priority mode, called the



"Chairperson" mode, allows the user of that channel to override any other speaker. Any number of channels can be set to Priority.

When properly adjusted, the first thing you will notice is how much clearer and closer voices sound. Even better, you will notice the reduction of HVAC, fluorescent light and other ambient noises you previously took for granted.

To get an instant assessment of how



main threshold control all the way off. This transforms the unit into a regular manual mixer. Once you hear the difference, you will be sold. There are several things you need to

well the AT-MX341a is doing, turn the

pay attention to to get the most out of one of these boxes. The paramount issue: the choice of mics and their placement.

Take the typical multiperson morning show with two or three open mics. With an automatic mixer, three directional mics worked closely in a broadcast control room or studio will give you more of the individual people, less room-tone and improved intelligibility.

In other PA-assisted applications (like teleconferencing, church, court room or city council sound) the automatic mixer helps to reduce feedback problems that normally occur with multiple open mics.

Your choice of microphones can make a big difference in the performance of the AT-MX341a.

Mic selection

Although I really like EV 635 mics, they have a way of slipping out of the newsroom and into the interview room. While one omni mic is not necessarily a bad thing, two or more in the same room can be, unless the room is quite acoustically dead.

Omnis are very forgiving, and a logical choice for talk show participants who will not stay on mic. Unfortunately the price you pay is compromised audio.

The only time I will recommend an omni for this application is if they are lavalier or mini-lavs positioned very close to the mouths of the people speaking. Cardioid lavs, if positioned properly, will result in even better sound. The nice thing about lavs is that when people forget they have them on, they become much less self-conscious.

By the way, leaving a long cable length is a good idea because people who forget they are wired have a tendency to want to walk out before removing the mic.

Although effective adjustment depends on specific application, keeping the number of priority mics to a minimum works best for sound reinforcement environments because it lets you turn the PA up. Increased use of priority works better for broadcast or recording applications, because switching between channels is more seamless

In conclusion

The only things that the AT-MX341a needs are a good limiter (or maybe one for each input) and a headphone jack. The mic preamp gain limitations I ran into with the ribbon mics do not concern me because most people do not use ribbon mics in these applications anyway.

For the price, the AT-MX341a costs a lot less than hiring someone to attempt to do as good a job manually, which, of course, they could not anyway.

Advanced Audio Production Techniques by Ty Ford is in its second printing. For more info go directly to http://www.bh. com/bh/fp/24080082.htm

	Three years ago, I installed my first DSTL® on a challenging 46-mile
	path at one of my stations in Michigan. Because of that success and
THE ONLY THING THAT	many others since, I now consider it my problem solver. With its
DOLBY COULD DO	new, lower price, all my clients can afford the best. For about the price
TO IMPROVE THEIR	of an analog STL, they get a complete digital STL solution.
DIGITAL STL IS	Michael Bradford, Consulting Engineer
LOWER THE PRICE.	

For a no-obligation demo, call 800-DOLBY-RF (365-2973).

AND THEY DID.

Experience for yourself what Michael's talking about.



That's right, we lowered the price of our 2-channel DSTL, including a digital stereo generator, to \$9,900. And who doesn't want digital connectivity? Digital AES/EBU input and output modules are now available. If you want to double your STL's capacity, a four-channel DSTL with a digital stereo generator is \$10,900. Dolby Laboratories Inc. 100 Potrero Avenue, San Francisco, CA 94103-4813 Teleph Dolby, DSTL and the double-D symbol are trademarks of Dolby Laboratories Licen one 415-558-0200 Facsimile 415-863-1373 sing Corporation ©1995 Dolby Laborator Inc. \$95/10776

Circle (163) On Reader Service Card

World Radio History

February 7, 1996

- STUDIO SESSIONS -

losses in signal equal on both channels."

balance of the signal going into the

transformers. Walther says, "This

improves the quality of frequency

response and null. I believe the control maintains a better reactance response

between the two primaries. Without it,

the balancing of the signal doesn't seem

This circuit also provides the principal element for matrix surround-sound. Add

a budget amplifier and smaller speakers

to create a poor-man's L-R surround-

Restoring bass with corrective EQ

works, but not always satisfactorily.

Walther's solution is to perform EQ prior

sound system for the TV room at home.

to work as well."

Equalization

to the subtractive process.

Potentiometer R1 allows varying the

Eliminate Those Pesky Singers: Part Two

by Alan R. Peterson

WASHINGTON Late last year, Studio Sessions ran an article on vocal elimination techniques ("Song Parody Easier Than You Think," Nov. 29 RW).

The original article explained the basics of common-mode cancellation circuits and allowed the creative technician or production person to experiment along the way.

Because the normal rule in radio is "I need it now," jocks want to flip only one switch to whack the vocals. To this end, the circuits shown in the original piece work quite satisfactorily.

Since then, two readers wrote with their own thoughts and circuits to accomplish monophonic nulling. The suggestions they offer are excellent and well worth considering by anyone practicing vocal removal techniques in the studio.

Indiana Marv

Marvin Walther is the chief engineer of WEFM-FM, Michigan City, Ind., and the owner of MW Audio Services in nearby South Bend.

Walther comments on the quick-anddirty method of phase-reversing one channel at the source and summing to mono, as described in the original article.

Walther points out this method could possibly "screw up the ground reference of the source material and introduce

Depending on the pickup, it could sound very fine or very bad.

hum, buzz and a host of other problems," when mixing unbalanced sources

Walther's suggestion is to add audio isolation transformers to float the grounds of the equipment. See Figure 1. His method is time-tested; transformer cancellation circuitry has been a key-

stone of telephone technology for decades. "I recommend using two transformers

one in phase, one out of phase, bridged together on their output. This keeps the frequency skewing as well as



The Ariel Digital Satellite Receiver:

- 5 card slots for up to 10 audio channels
- compatible with Fairchild Dart 384
- adapts easily to current equipment
- next day shipment of replacement boards
- 1-year warranty



The Ariel Digital Satellite Receiver, exclusively from Satellite Systems

In addition to the Ariel, Satellite Systems sells Zephyrus 700 SCPC, along with receivers for all networks. Plus, Satellite Systems repairs all major brands of satellite equipment, including the Fairchild Dart 384 and Scientific Atlanta.

Satellite Systems has made a name for itself by providing consistent, excellent service to radio stations & networks. Call the professionals with the proven track record in sales and repair for all of your satellite needs.



615 East Brookside **Colorado Springs, CO** 80906 Ph: (719) 634-6319 Fx: (719) 635-8151

"I've found that equalizing a signal before vocal elimination works best to tailor the lost bass and to maximize the vocal null to compensate for track-totrack differences of the composite stereo signal," says Walther. "No amount of post EQ will compensate for a bad null or lost bass."

This method may be difficult to implement in smaller two-track rooms where EQ may be hard-wired into the signal path in an inflexible location. If stereo EQ is assignable or can be routed through a console auxiliary bus, it can be done

Alan Rauchwerger, president of Virtual Image in South Hackensack, N.J., is also a champion of the EQ process.

According to Rauchwerger, "If you are interested in having a higher quality continued on page 26



- Self-contained modules with
- own power supply regulator
- Compact size reduces ship-
- ping costs, allows affordable air shipment
- Power levels between 300 Watts and 6 kW
- Modular design offers buy-only-what-you-need affordability and convenience

For the same price you pay for a tube transmitter, you can now have a superior solid state FM transmitter with high-power, advanced technology exciter and cableless combiner. The modular design of QEI's QUANTUM-Series FM transmitters offers the advantage of buying only the amount of power you need...and means that you can upgrade to higher power levels whenever you're ready.

QUANTUM from QEI-the people who have been designing and building solid state transmitters longer than anyone else in the industry.

You need to know more! Call Jeff Detweiler today toll free (800) 334-9154.

QEI Corporation One Airport Drive • P.O. Box 805 Williamstown, NJ 08094

Tel (800) 334-9154 Fax (609) 629-1751

24-Hour Service Hotline (609) 728-2020

Circle (150) On Reader Service Card

Remove Vocal Tracks

continued from page 25

signal with less degradation from the process of vocal elimination, use a midrange bandpass filter."

Rauchwerger states when used on the channel being inverted, frequencies outside the midrange region come out unscathed, although still in mono.

Taken to a higher level, Rauchwerger gets around the mono problem completely with a novel solution. Refer to Figure 2.

In his own words, "Use two such filters and mix the left and right channels with bandwidth-limited right and left channels respectively. This method results in a stereo signal without vocals. Break out the old op-amp cookbook and get to work."

The stereo image will not be as wide as the original recording, but enough spatiality stays behind to give it better-thanmono sound.

The case of no bass

In the original article, it was explained that bass lines would get thinner as a result of partial cancellation, due to their center-channel position in the stereo spread. Tone-arms that tracked with very little pressure could be derailed by a loud bass passage recorded on only one channel.

Walther offers another valid explanation

The complete list of reasons **not** to integrate your station with advanced digital software from Computer Concepts.





why bass tracks are recorded in the center.

A partial list of reasons why you should.

- Integrated for peak efficiency, each area of your station operates better than ever before. Talent, managers, producers and engineers all enjoy instant communications.
- Complete on-air audio and information control with Maestro[™].
- Comprehensive digital multitrack recording, editing, and mixing environment with StudioFrame[™].
- Instant access to news as it breaks with Newsroom[™].
- An end to cart-clutter with touchscreen control of sound FX, music beds and more with Cartrack[™].
- System flexibility. Choose one or two components, or a complete system, and expand any time.
- Prompt, personal service, day and night.
- Reliable performance. Computer Concepts is proven in stations like yours.

Want the full list? Please call "Bass ceased to be recorded on only one channel because recording engineers later found that the vinyl pressings exhibited phase distortion in the playback," he said.

It seems when the stylus encountered a bass line on one channel, it could not move at the same velocity as the high frequency material in the opposite groove. This would damage the treble material and cause audible intermodulation (IM) distortion.



"Depending on the pickup and the stylus, it could sound very fine or very bad," says Walther.

Simplest method

Rauchwerger proposes a variation on turntable rewiring, notable for its "whydidn't-I-think-of-that" simplicity.

He offers, "Purchase a used spare turntable and wire the cartridge permanently out of phase on one channel. Use this turntable solely for elimination of vocals."

For stations primarily using CDs, spare turntables are in abundance back in the engineering morgue. This assumes, of course, there is still a supply of vinyl records left to play on the turntable.

Jocks will require huge signs reminding them of proper use of such a turntable. Odds are they will take it for a normal component rather than a specialized device.

Legal stuff

Repeating part of the original article, obtain clearance to the music if you intend to market any parodies produced by you or your station. This is very important.

Publishers and writers want to know what their music will be used for. Normal requests are often for commercial or background use.

A publisher also must know how widely the piece will be distributed, how long it will be distributed and on what kind of media. All of these factors affect the price the publisher or licensing agency will ask to authorize use of the music.

This process sounds cumbersome and unnecessary now, but the licensing procedure assures proper use and will avoid costly legal problems later.

8375 Melrose Drive, Lenexa, Kansas 66214 • Phone 800-255-6350 • Fax 913-541-0169

February 7, 1996

- STUDIO SESSIONS -

LINE-OUT

Audience Adds Texture to Recordings

by Bruce Bartlett with Jenny Bartlett

ELKHART, Ind. Cheers, claps, singing, laughs, applause — that is what makes a recording sound "live."

So be sure to pick up plenty of audience reaction when you record a concert, game show or church service. Hearing the audience greatly enhances the feeling of being there at the live event.

How do you mic an audience? Basically, you want the mics to pick up only the audience, not the musicians or the PA system. This is why you need to use directional mics and aim their "dead" end towards the rear of the stage.

A good choice would be flat-response condenser mics with low noise.

Boundary mics

To cover an audience, it seems reasonable to use boundary mics on the ceiling. This is not recommended. The mics will pick up too much noise from ceiling fans, air conditioning and building vibration.

Do not put the mics on the side walls either. If you do, the stereo spread will be ping-ponged, and the mics will pick up the PA speakers.

Probably the best spot for boundary mics is on the front face of the stage — the flat surface that faces the audience. See Figure 1.

Tape a pair of boundary mics there about 3 feet apart. Because the mics are in the sound "shadow" of the stage, they will not pick up much sound from the musicians or monitor speakers.

When mounted on the stage front, the mics become directional with their axes aiming at the audience. Run some mic cables from the mics into your stage box.

Raised mics

Another method uses a stereo mic (or a pair of cardioids) on a tall stand, or hung from the ceiling. Place the mics in front of, above, and aiming back toward the faces of the audience. Again, refer to Figure 1.

Voice articulation is best with the mics in front of the people's mouths. If you mic the audience from overhead or behind them, you lose speech clarity. That is because high frequencies radiate in front of the mouth.

Do not put the audience mics far from the stage, because their signal will be delayed by sound's travel time. When you mix in the audience mics, you will hear an echo.

How much delay will there be? Sound travels 1130 feet per second. You can calculate delay times by the formula distance (D) divided by the speed of sound, or D/1130 = delay.

So if the audience mics are 100 feet from the stage, they will pick up the PA with an 88-millisecond delay. You could delay the stage mix by 88 msec (or whatever value is appropriate for a given distance) to coincide with the arrival time of sound at the audience mics.

Experiment with stereo miking techniques, such as spaced pair. XY, MS, and ORTF. If you use XY or Mid-Side (MS), the recording will be mono compatible. By feeding the Mid signal to one track and the Side signal to another, you can use a matrix box to vary the stereo width during mixdown. Spaced mics give a desirable spacious feeling to audience reaction because of the random phase between channels. Another advantage of spaced mics: The mic stands are left and right of center, which looks less distracting than a single stand in the middle.

More tips

To reduce pickup of air conditioning rumble and bass from the PA, roll off the lows below 100 Hz, or use a 100 Hz highpass filter. Of course, do not feed the audience mics through the PA speakers or you will get feedback.

If the audience mics are run into the PA mixer, be sure to un-assign them from the PA mixer main outputs. Send their signals



(by direct-out jacks) only to your recording mixer. Better yet, bypass the house console entirely and plug the audience mics directly into your recording mixer.

What if you are recording live-to-multitrack, but you do not have enough tracks for the audience mics? Because audience reaction is so important, you must find a way to record it. Here are a few suggestions: DAT recording onto two more DAW tracks, roughly in sync. Slide the audience tracks in time so they sync exactly with the music tracks.

Send the audience mics to two tracks

that are also used for instruments. For

example, assign the audience mics to a

guitar track and keyboard track. While lis-

tening to a well-balanced stereo monitor

mix, bring up the audience mic faders just

• Record the audience reaction on a sep-

arate DAT recorder. During mixdown,

sync the DAT roughly by ear with the multitrack. Mix in the DAT's recorded

• Use a digital audio workstation

(DAW) that lets you time-slip tracks.

Record the music mix onto two DAW

a little, and only when you need them.

applause only after each song.

• Create your own audience. Use a sound effects CD of audience sounds and add it to the mix during post-production. If you do not have enough mixer inputs,

feed the CD into a pair of aux return (bus-in) jacks. Try to EQ the applause so it blends well with the stage mix.

You might even record a few audience handclaps into a sampler, and trigger the sampler in time with the music.

Bruce Bartlett is a mic engineer, writer and recording engineer, and the author of Practical Recording Techinques published by Howard Sams. Jenny Bartlett is a technical writer. Bruce can be reached at 219-294-8388.

Watch for reviews on the following products in future Studio Sessions: Mackie 1202-VLZ Mixer Penny and Giles MM-16 MIDI DAW controller Otari DAT Recorder ART MP Tube Preamp DigiTech TSR-24S **Effects Processor** Denon DN-1100R MiniDisc Recorder

Only In Radi & World.

his year, RDS/RBDS consumer radios are being purchased by your listening audience, which means the time is right to pursue the revenue opportunities RDS/RBDS has to offer.

RE AMERICA continues its tradition as the leader in RDS/RBDS technology, now with a family of products. Whether you choose the RE 533 for single-user datacasting or the RE 532 for multi-user datacasting, RE has the right encoder to meet your budget and operational needs.

RE takes the risk out of choosing an RDS/RBDS encoder by employing flashprom technology in both the RE 533 and the RE 532. Future upgrades and enhancements are simply downloaded via disc software available from RE. You make the choice, the RE family has got you covered.





Available through: A Broadcasters General Store A Harris Allied A RF Specialties

Circle (65) On Reader Service Card World Radio History

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.



Running Radis With Don and Mike

Your Resource for Business, Programming & Sales

MANAGERS NOTEBOOK

nalyze, Improve Station's Services

by Sue Jones

BURKE, Va. Every general manager is thinking of ways to out smart the competition, to improve the ratings and keep profits up. In the constant quest to find the slickest promotion, the most popular format or the best sales incentives, the simplest but often the most important aspects of success are overlooked by the management staff.

These basic quality of business concepts have far reaching effects for the station's advertising clients as well as the listeners. Failing to provide one of the items listed in the following box may not put you at the bottom of the ratings. However, a weakness in one or more of these items, even over a short period of time, can take its toll. The severity of your station's weakness may be amplified if a competing station is strong in the areas where your station could use improvement.

Take a look at the items in the box and evaluate them in relation to your station and your main competitor. To gain further insight, give a copy of the box to each of your department heads or key staff members and ask them to complete the same evaluation. Ideally, you and your staff should have similar responses

If you have a basic consensus of strengths and weaknesses, you can formulate an action plan for improving your weak areas and possibly taking advantage of your competitor's weaknesses.

Let's take a look at each of the quality factors

Courtesy

This seems so obvious. Of course the sales staff is courteous to the clients. Advertisers are the revenue source. But courtesy must be abundant in all parts of your station. Do your employees treat each other with courtesy no matter what their position is at the station? Workers who treat one another well will serve customers better

Does the receptionist answer the telephone by snapping: "Hello, hold please," and then leave the caller dangling so long that they hang up and promise never to deal with your station again? How do the announcers handle phone requests? Is it brisk, just to get the request because he or she is required to do so, or does the announcer interactively talk with (not to) the listener? Remember, this interchange is heard by everyone who is listening to the station, not just the caller.

Southwest Airlines insists on capitalizing the word customer whenever it is used in ads, brochures, even the annual report. Disney trains the staff to think of everyone visiting their theme parks as "guests." These practices may seen

picayune, but they are effective ways to flag employees and the public that the Client and Listener matter.

Promptness: This item is most likely the first impression that Clients and Listeners have of your station. It starts with how prompt the receptionist answers the telephone and how efficiently the call is transferred to the appropriate staff person. Naturally the sales staff is aware of how important it is to be

contests? These should also be mailed the same day. A listener who receives a CD four weeks later would hardly conclude that you thought he or she was important.

Price, value

Take a look at how your prices for air time compare with the competition's. So what if your station is the top rated station in your area. More than one station has lost that top rating because

a cracker jack new competitor hit the

air with lower rates. The rates must be

monitored constantly and compared

with the other stations in the area and

in similar markets because some

Your Station Versus Your Main Competitor

Using the following Quality of Business Factors listed below, try to honestly compare your station to your principal competitor. When grading, simply put a winner's check mark where you think it belongs - your station or your competitor!

	Your Station	Competing Station
Courtesy		
Promptness		
Follow-up Service		
Price/Value		
Ease of doing Business	A	
Innovation		
Responsiveness to Needs		

Now think about ways to eliminate your weaknesses - and ways to exploit the weaknesses of your competing station.

prompt for a meeting with a Client. This would also apply to an on-air personality who might be joining a sales representative for a presentation to a Client.

How prompt is your staff for internal meetings? If you do not require staff members to be on time for meetings, you are wasting other staff members' time. If this is not an internal standard, it may not be as important externally either.

How fast does the staff return business calls? Even the business staff can make a difference in handling delicate billing matters in a prompt manner. Your creditors and debtors talk with several other businesses daily. These other businesses may be considering buying air time and could be easily influenced by their business associate without ever coming in direct contact with one of your staff members.

Follow-up service

Your station may be very good at sending out sales materials that are hand picked for the customer who called for advertising information. You should have a standard response time for sales information to be mailed. It should be the same day that the interested client called for the information. Better vet, have a sales representative hand deliver it that day, if possible, and if it is convenient for the client. If not that day, as soon as it is possible for the client.

How fast does your station send out prizes won by the listeners for on-air

World Radio History

Surprises in terms of the agreement can sour future deals. The business staff must be aware of the sales agreements and work closely with the Clients. Promotions and Programming must also be part of the team that delivers the product expected by the Client. The on-air talent must keep the rates up, maintain or improve the ratings for the target market.

Innovation

The key operating concept here is: Innovate or evaporate. Even if your station is on the way up in the ratings and revenue, the market can be fickle. What pulls in revenue and increases the ratings now may not work six to 18 months from now for any number of reasons.

Top ratings guarantee nothing six continued on page 32



advertisers buy air time in several markets

Coast-to-coast

See page 30.

It is not just the rates, but the value offered to the client. Providing advice on frequency factors for first time advertisers will help the Client's decision process on how much time to buy. Offering possible slots on three stations owned by one company in a market for a discounted rate will also extend the Client's advertising dollars. Discounts for ads on the AM and FM station will have the same impact.

Ease of doing business

This is another area where the whole staff can make a difference. The sales staff must be efficient marketeers and be informed about the station's sales policies and practices. The information they provide to the Clients regarding the contracts and payment must be accurate and fully explained.

Circle (82) On Reader Service Card

– RUNNING RADIO —

Coast-to-coast Fun with Don & Mike

by Alan Haber

FAIRFAX, Va. The question is asked, and the red wheel is spun. "Who's fun-nier? Jerry or Dick?" Clickety, clickety, click, click ... click! The wheel runs out of juice and stops. Mike O'Meara, sprawled out on the flesh colored couch that lines the far wall of the office for the "Don and Mike Show," jumps for joy — as much as you can jump for joy on a couch.

Not faking it

As the famous Wheel of Van Dyke has proven, Jerry is the funnier of the two comic actor brothers. Jerry is also triumphant when the Wheel is spun on the air later in the day, a revelation which prompts newsman Buzz Burbank to concede that, "It's a Jerry kind of day."

"When we spin that wheel, we both really want to win, and we're not faking that," said O'Meara. "Don really wants to see it land on Dick, and I really want to see it land on Jerry, so it makes it fun. Otherwise, it wouldn't be fun at all.'

And fun is the name of the game on the "Don and Mike Show," syndicated by Westwood One Entertainment and heard for four hours every weekday afternoon in such cities as Sacramento, Calif., on KHTK(AM); Portland, Me., on WZAN(AM); Cleveland on WERE(AM) and "beautiful and really toothless Fairfax, Va.," on home base WJFK-FM. An hour, produced especially for WJFK's Washington-area listeners, which includes a 20-minute segment known as the "festive pre-show," precedes the network fun-fest.

You never know what you're going to get when you tune in --- no two days on the show are alike and no two yucks are the same. Geronimo might be talking about his driving problems or relating a story like the one he told last fall about getting stuck in a self-serve car wash in Ocean City, Md., on Thanksgiving morning. You might hear sports being bandied about, especially during football season,

or tune in on a Monday when Don and Mike and their on-air crew deliver their wacky weekend recaps.

In some ways, the "Don and Mike Show" is a celebration of pop culture in all its forms. But what's the show about? Who exactly are Don and Mike? If you said they were two guys who represent the listener who likes Star Trek, Jeopardy, movies, some sitcoms and Dick Van Dyke reruns, but doesn't get too much out of Regis and Kathie Lee and isn't afraid to admit it, you'd be pretty close.

Geronimo started in radio when he was a teenager; he has worked at 25 stations, including WJFK and such music outlets as the old 99X in New York City when he

school students every day, you know?" They are also two guys who want to

keep their audience happy.

"Obviously, if the audience isn't happy, we're not happy," said Geronimo. "But as long as each of us is happy that we've cracked each other up and we've had a good time, that's really all we've ever worked with."

Everything that's heard on the "Don and Mike Show" is real with a capital R, served up for a loval audience who loves its radio gods. You want real? The Wheel of Van Dyke is real, and so were the show-closing, in-studio bowling tournaments and setting off of firecrackers of a few months ago.



Don Geronimo (right) and partner Mike O'Meara laugh it up live from the NAB convention in New Orleans

was just 17, KISS-FM in Los Angeles and WLS in Chicago. Geronimo and O'Meara started together in 1985 working mornings at WAVA-FM in Washington. The pair moved to the afternoon shift at WJFK in October 1991.

"We're just two guys having fun, goofing around," said O'Meara. "We used to say something on the air - we don't say it anymore — 'Forever Teen,' because it's basically two guys in their mid-thirties now - they get on the radio and act like high

Also real is Don and Mike's latest intern, a dwarf named Scott who has a genuine, wonderful sense of humor. On his first day on the show, he was told that he'd be dressed up as Don and Mike's New Year's baby, as Cupid on St. Valentine's Day, and as a leprechaun on St. Patrick's Day.

"He's already tracking with us," beamed O'Meara. "I think he's going to be a lot of fun."

Scott is the latest in a long line of happy



Circle (135) On Reader Service Card World Radio History O'Meara's voices are "the ones that, to

famous Chicago Cubs broadcaster; Harry Morgan, famous actor (M*A*S*H, Dragnet); and Werner Klemperer, famous sitcom star (Hogan's Heroes) and orchestra conductor. Just by listening to the show a couple of times, you get to know them all

wacky, and most importantly, genuinely funny radio guys who can always be counted on to provide some laughs and answer some of life's tougher questions. Like, "Who's funnier? Jerry or Dick?"

Truthfully, both are pretty funny, and so are Don and Mike.

and willing staff that has shared the show's considerable spotlight. Traffic reporter Shari Liquor also participates in the on-air fun, as does Burbank. Alex the intern, for example, was recently grilled on the air about her date with former intern Joe Rockhead, who is affectionately referred to on the air as an "idiot" (apparently, the date was no great shakes).

The human piñata

But all segments involving show staff will likely forever pale next to those featuring beloved production assistant Robert Wadams "Robbay" Spewak, Jr., who most recently was hung out in front of the station as a human pinata, and has been known to prowl Main Street, right outside of WJFK, dressed as "Bobo the Smoking Clown."

All of this on-air ribbing comes out of a love that Geronimo and O'Meara share for their brothers and sisters-in-arms.

'Mike would agree, I'm sure, that we like the people we work with, and that comes across," said Geronimo. "It's our show, but it's their show, too."

You like bits? Don and Mike feature bits o' plenty on their show. O'Meara said he thinks that nine times out of 10, spontaneous bits end up being the best. A recent example, during which Geronimo and O'Meara eavesdropped, live on the air, on a guy who was desperately trying to record a spot in the production room, involved the pair taking a big chance.

"When we're listening to a guy just screw up a commercial, he might get it right, and then it's over," said Geronimo. "Or he might cuss ... we'd have to delete it out. That's why you're walking a tightrope, and (Mike) and I both know it, which makes it exciting."

You like games? Don and Mike play a lot of them, including "Low Budget Jeopardy," a version of the famous television quiz show which features one of O'Meara's psychotic characters as the announcer, and "Strip Trivia," during which five men and five women answer trivia questions live in the studio toward the ultimate goal of - gasp! - total nudity for the losers (or winners - you make the call). "Strip Trivia" is featured on Don and Mike's new CD-ROM, a multimedia souvenir of the show that may very well be the first DJ product of its kind.

Voices galore

You like voices? O'Meara's got a million of them — he might be one of the top voice talents working on the radio today — but they are not the voices you would expect to hear. In fact, you probably don't hear most of his voices anywhere else.

Nevertheless, Geronimo said that

men our age and women our age, are instantly identifiable." Like Harry Carey, You also get to know Don and Mike, and more people are getting to know them all the time. They're a couple of

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.



World Radio History

Early Religious Program Spoke to Millions

Broadcaster Built Station Affiliate Group Patiently And Methodically, One Station at a Time

by Read G. Burgan

LAKE LINDEN, Mich. A grim faced Rudy Alber walked purposefully into the small office in Pasadena on a late August day in 1937. He wished he was somewhere else. For years he had built his R.H. Alber Agency by successfully representing his clients with the radio networks. Now he had failed and would have to say goodbye to a client who had become a personal friend.

ROOTS OF RADIO

Charles Fuller looked up as Alber entered his office. Fuller was a large man, six feet tall with a size 12 double E shoe and a full head of gray hair appropriate for his 50 years. Even before Alber spoke, Fuller knew the news was bad.

"It's all over Charlie. A national tobacco company has told Mutual that they're ready to sign a coast-to-coast contract for your time slot beginning the first Sunday in October."

The news was devastating. Since 1929 the Reverend Charles E. Fuller had used radio to expand his preaching ministry. For several years he experimented with varying program formats

Improving Quality Of Service

► continued from page 29

months from now. Our economy is full of examples of the need to continually scan the market and innovate. Look no further than IBM and the American automobile and electronics industries.

Responsiveness to needs: The successful sales representatives of this decade will be good facilitators, not just pitchmen. They have to be expert on the customer's total business, which will assist them in formulating an ad sequence that will meet the Client's needs and budget. Furthermore, the sales reps must coordinate with the whole station's staff to make buying easy and efficient. Use Client follow-up surveys to determine how well the station's staff responded to the advertiser's needs and how effective the ad campaign was for the client. Do not forget to ask how you could serve them better the next time.

Evaluating these quality business items can provide some insights about how well you compete in the market. They may seem like small items, but to your Clients and Listeners, they may be the most important things about your station.

Sue Jones is a senior manager for Computer Data Systems, Inc. in Rockville, Md. She can be reached at 703-323-0491. on local Southern California stations. In 1935 his Heart-to-Heart/Radio Revival Hour" program could be heard in several states over powerful KNX(AM) in Hollywood. On Jan. 10, 1937, Fuller's long-standing dream of a network radio broadcast approached reality as he signed a contract with the fledgling Mutual Broadcasting System for a 13 station hookup that would carry his "Old Fashioned Revival Hour" from San Francisco to Gary, Ind.

Fuller, who had quit a lucrative position as manager of an orange packinghouse to become a pastor, had a plan. As soon as listener support surpassed current expenses, he would add another station, until one by one his program was carried coast-to-coast on every Mutual radio station.

But now the dream was over. Shattered.

Charles Fuller gazed out the window in silence. Then he turned to his friend and radio agent and said, "You tell the Mutual Broadcasting System that the 'Old Fashioned Revival Hour' will take the network coast-to-coast." Alber was stunned. "Can you cut it, Charlie?" "No," Fuller replied, "But God can."

The cost was staggering at a time when the country was in the midst of a depression. From \$1,441 per week for 13 stations to \$4,500 for 50. The money was due in full the Friday prior to the next Sunday's broadcast. He didn't have a nickel in reserve and only five weeks to tell his current audience of the need. Fuller had no denominational or institutional support, only the nickels, dimes and dollars of loyal listeners.

Recalling that event several years later, Fuller declared, "I'll never forget that day as long as I live. When we came up to the first Friday before the first Sunday in October, we not only had the \$4,500 to put down, but we had \$4.29 left over. We weren't broke, but we were badly bent!"

Fuller continued on the Mutual network until the fall of 1944. At one point during the war years, he was carried on more than 1,000 stations at a cost of \$3,500 a week. Stations around the world carried delayed broadcasts of the program on 16-inch broadcast transcriptions.

But Fuller's success did not go unnoticed. The Federal Council of Churches had long opposed paid religious broadcasts. Their pressure on NBC and CBS had resulted in longstanding policies permitting only sustaining broadcasts of religious programs approved by the Federal Council of Churches and representing the three major religious groups: Judaism, Roman Catholicism and Protestantism.

In 1944 the Mutual network succumbed to the increasing pressure and Charles Fuller's "Old Fashioned Revival Hour" was dropped. But Fuller was not about to quit. The R.H. Alber Agency negotiated with hundreds of independent stations and the program continued on 16-inch tran-

World Radio History

scription. It meant the loss of key metropolitan stations and of a coordinated schedule, but his listening audience soon adjusted.

In the spring of 1949, the fledgling ABC radio network invited the "Old Fashioned

Revival Hour" to join its programming schedule. During this period the program continued to add international stations. During the Christmas of 1950, a special Chinese version was produced by **Cinemart Sound Studios** in New York, using the "Old Fashioned Revival Hour" musicians singing in English but with all of the speaking done by Chinese nationals. In the early '40s, Fuller had tried producing a special Spanish version of the "Old Fashioned Revival Hour" directed at South America. But it only lasted a few weeks.

In the fall of 1950, Fuller began a weekly half hour television broadcast entitled the "Old Fashioned Meeting" on the ABC television network. If successful, Fuller intended to turn this ministry over to his 25-year-old son Daniel, who was completing his studies at the newly founded Fuller Theological Seminary in Pasadena. However, the

program never broke even and was discontinued after 26 weeks. His son Dan went on to earn two doctorates and established himself as a respected theologian.

In 1958, radio's decline caught up with the "Old Fashioned Revival Hour." Responding to falling income and a desire on ABC's part to eliminate hour-long programs, the "Old Fashioned Revival Hour" was cut to a half hour broadcast, moved to a studio, eliminating both the live audience and the male quartet. Grace Fuller died of cancer in 1965. As Charles Fuller's health deteriorated, his son Dan took over the administrative responsibilities for the broadcast and Fuller Theological President David Hubbard became the regular speaker. Charles Fuller died March 18, 1968. The last broadcast of the "Old Fashioned Revival Hour" was the final Sunday, December 29, 1968.

Fuller's "Old Fashioned Revival Hour" was a success by any standard of measurement. During its peak years in the 1940s and '50s, an estimated 20 million people listened every week. Thousands of letters received each week told of people who listened in brothels, gambling dens, cocktail lounges and prisons. People who wouldn't dream of opening their doors to a local pastor or priest couldn't wait for another broadcast of the "Old Fashioned Revival Hour."

Fuller's particular vision was for those in what he called the "lonely, far off places." As he stepped before the microphone at the Municipal Auditorium in Long Beach, Calif., in his mind's eye he saw only individuals — a lonely grandmother knitting in her living room, a prospector in a remote mountain outpost, a farm fami-



Charles Fuller

ly huddled before a wood stove during a winter blizzard. And for a few minutes every week, each listener felt that Charles Fuller was sitting in his living room and speaking just to him.

Why was the program so successful? Part of the answer is Dr. Fuller himself. He considered himself an expository evangelist. Unlike most evangelists who preached on specific topics, Fuller would use studies of Old and New Testament books as the basis for his evangelism. It was an unlikely approach for an evangelist, but it allowed him to both evangelize and disciple at the same time.

His greatest asset was his ability to attract and motivate a staff of talented people. H. Leland Green who directed the chorus choir had an earned doctorate in music and was coordinator of music for the Pasadena school system.

Music played a big part in the program's success. More than half of the hour-long program was devoted to music by the choir and male quartet. Many listeners wrote that initially they had absolutely no interest in Dr. Fuller's preaching, but the music was irresistible and so they stayed tuned until they eventually heard Fuller's message.

Many of the program's musicians were highly trained. Soprano soloist Beth Farnum studied music at the University of Iowa, Drake University and Morningside College. She appeared often as a soloist with symcontinued on page 36 re·li·a·ble (ri lī/ə bəl), adj.
1. that may be relied on; trustworthy.
2. dependable in achievement, accuracy.
3. the PR&E BMX III.

PACIFIC RECORDERS & ENGINEERING DESIGNS THAT MAKE THE DIFFERENCE

2070 Las Palmas Drive, Carlsbad, CA USA 92009Tel: 619-438-3911Fax: 619-438-9277

GSA Contract: GS-03F-4064B E-Mail: sales@pre.com

Circle (141) On Reader Service Card

World Radio History



Trak*Star III is a *NEW* multipurpose digital audio workstation for multitrack mixing and editing. Fully compatible with the #1 selling and industry standard Digilink & Trak*Star II, the Trak*Star III has four times the raw processing power of the Trak*Star II with many new features that utilize this remarkable new power... *real time fade, effects loop, 4 autolocator points, edit files up to 6 hours long, punch in-out, a 1.2GB drive standard, Digilink backup software, & 100's of others.*

Trak*Star, by Arrakis Systems, is the first cost effective multitrack digital audio recorder, mixer, and editor designed specifically for the radio broadcast professional. Also, Trak*Star is the only multitrack editor that is a complete backup to your Digilink on air workstation in every way right down to the audio routing switcher and control logic. More than just a digital editor, a Trak*Star digital workstation is a completely integrated digital solution that interfaces throughout your station to On Air, News, Editing, Traffic, etc. for transfer of digital audio, schedules, text, E-mail, and News wires.

With Trak*Star, creating spots, jingles, and liners has never been easier. Record and store on disk all of your standard music beds and sound effects. Select any combination of up to 4 stereo or mono sound files for editing and mixing. Once selected, you can easily scrub, cut, splice, copy, move, delete, fade, and mix any combination of these files to create your new spot or jingle. Record or overdub new voice tracks into the system while simultaneously playing back your preassembled mix. No matter how much you cut, splice, or throw away pieces of files... non-destructive digital editing leaves your original files unchanged. With Trak*Star you have unprecedented levels of control when you cut and splice by expanding tracks and actually working with the waveform itself. Trak*Star completely revolutionizes multitrack



The 22,000 series console can add even more functionality to Trak*Star by providing video & audio monitoring, plus audio input & output feeds

audio production for radio.

Trak*Star is literally a complete multitrack studio in a compact box. As a radio specific product by Arrakis Systems, the Trak*Star works the way you do with the features and price that you need.

Call now to find out how this amazing new workstation can be made to work for you.

for more information call... (303) 224-2248 in some areas, call (970) 224-2248







World Radio History

in some areas (970) 224-2248

Audio Consoles

The standout #1 leader in reliable, high performance, digital ready consoles for radio, Arrakis has several console lines to meet your every application. The 1200 series is ideal for compact installations. The modular 12,000 series is available in 8, 18, & 28 channel mainframes. The 22000 Gemini series features optional video monitors and switchers for digital workstation control.

1200 Series Consoles



Digital Workstations

#1 in digital workstation sales, Arrakis has over 1,600 workstations in use around the world.

As a multipupose digital eudio record-play workstation for radio, it replaces cart machines, reel machines, cassette recorders, & often even consoles. Digilink has prover to be ideal for live on air, production, news, and automation applications. Place a workstation in each studio and then interconnect them with a digital network for transfering audio, text, & schedules between studios. Arrakis is the #1 choice of hroadcasters.



Digilink & Trak*Star Workstations

Studio Furniture

(303) 224-2248

With over 1,000 studios in the field. Arrakis is #1 in studio furniture sales for radio.

Using only the finest materials, balanced laminated panels, and solid oak trim, Arrakis furniture systems are rugged and attractive for years of hard use.

attractive for years of hard use. Available in two basic product families with literally thousands of variations, an Arrakis studio furniture package can easily be configured to meet your specific requirement, whether it is simply off the shelf or fully custom. *Call Arrakis to find out how*

easy it is to design and build your next studio.

> Desk*Star studio furniture systems





Modulux studio furniture systems

Complete systems...

As illustrated in the Sony Worldwide Networks master control studio on the right (one of seven Arrakis studios in the Manhattan, New York complex), Arrakis can provide complete major market studios with Arrakis consoles, digital workstations, video-audio switchers, furniture, and system prewiring. With a choice of several console lines; digital workstations

With a choice of several console lines; digital workstations for live air, production, news, and automation; and two major studio furniture product lines, Arrakis can meet broadcasters needs from the compact news studio to the major market network origination center. Complete Arrakis equipped studios can be found around the world from Tokyo, to Moscow, to Japan, to Tahiti. *Call Arrakis today for your equipment or studio needs,*

> Sony Worldwide Networks Manhattan, New York



Gircle (160) On Reader Service Card

- RUNNING RADIO —

'Revival Hour' Touched Millions

continued from page 32

phony orchestras. John Lundberg who sang top tenor with the male quartet had a doctorate in music from the University of Southern California and was a professor of music at Westment College in Santa Barbara. Jack Coleman, who sang second tenor in the quartet, had a master of arts degree in music from the University of Southern California and was supervisor of music for Orange County, California.

Pianist Rudy Atwood was an extraordinary talent. His hands seemingly flew over the keyboard with right hand arpeggios and left hand octave bass runs. People came to the broadcasts just so they could see for themselves the incredible blur of notes they heard each week on their radios. from a selection of letters written by listeners. Listeners eagerly waited this feature and quickly expressed their disappointment when she was absent

Listeners came to the broadcast just so they could see for themselves the incredible blur of piano notes.

Charles Fuller's wife deserves credit for her husband's success as a radio broadcaster. Every Sunday she'd read from the broadcast. In addition, there are those who are convinced that she was the "power behind the throne,"



trusted and reliable transmission methods in the business. Even in inclement weather. Plus you get the **radio-only experts** at NPR Satellite Services. You don't have to be a rocket scientist to see the benefits. Call us today for more information at (202) 414-2626.

635 Massachusetts Ave., NW., Washington, DC 20001-3753 • (202) 414-2626

counseling her husband and ghost

writing his correspondence.

"Old Fashioned Revival Hour" had access to a vast pool of evangelical musical talent. As the center of the entertainment industry, Southern California was a magnet for talent and one of the few places where an artist might make a living at his craft.

Part of the genius of the program was its format. It was live. But not just live. "The Lutheran Hour" in St. Louis was also live for a time. The "Old Fashioned Revival Hour" was live from Long Beach's Municipal Auditorium with a potential audience of 5,000 people who actually participated in the service. They were always eager to respond when Dr. Fuller asked them to sing his little chorus, Heavenly Sunshine. Often he'd have the people shout out where they were from. Each radio listener hoped that someday he, too, could attend a live broadcast of the "Old Fashioned Revival Hour." And many did, often using their family vacation to make a pilgrimage to the Long Beach broadcast.

Part of the genius of the "Old Fashioned Revival Hour" was Fuller's friend and agent, R.H. Alber. It took a rare business savvy to successfully negotiate with network executives and a myriad of independent stations. The Alber Agency had the resources and was able to secure a top flight mix of stations.

While the "Old Fashioned Revival Hour" has been off the air for nearly 30 years, it continues to have an influence today. The Reverend Jerry Falwell dates his conversion experience to an "Old Fashioned Revival Hour" broadcast he heard in the early 1950s. There's no doubt but that much of his television ministry was influenced by what he heard on the program in his youth. Many church pianists emulate the style of playing that they heard by accompanist Rudy Atwood and continue to purchase his piano arrangements.

Last year Fuller Seminary received a grant to allow it to begin the process of databasing and archiving the hundreds of 16-inch program transcriptions that were gathering dust and mold in the basement of a house on their campus. Eventually digital copies will be available for interested scholars and students. The Seminary has almost no holdings from 1937 until mid 1946, and hopes that it will be able to locate private collectors who can help fill in the missing programs. I'm working with them on this project and anyone having information in this area can contact me at my e-mail address or phone number.

For further reading: Give The Winds A Mighty Voice: The Story of Charles E. Fuller by Daniel P. Fuller, Word Books, Waco, Texas, 1972.

Read Burgan is a free-lance writer and a former public radio station manager who can be reached at 906-296-0652 or through e-mail at rgb@up.net

NPR Satellite Services

Link up with us.
BUYERS GUIDE

Digital Editing & Production

Building a Foundation with Fostex

by Jeremy Savage Vice President of Operations WKSS(FM)

USER REPORT

HARTFORD, Conn. In the fall of 1994, I packed my bags for the NAB convention. One of my many goals was to look closely at digital audio workstations (DAW). With the high production load and the continual need to produce creative promos and sweepers for WKSS(FM), our analog four-track system had to go.

I came back from the convention with several ideas and eventually, after a long and interesting process. WKSS ended up with the **Fostex** Foundation 2000 DAW.

After watching DJs work with several demo systems, I found out that the most important feature of the system had to be the user interface. The Fostex Foundation has a great looking, easy-to-use ergonomic work surface called an edit controller.

Fast learning curve

The buttons closely mimic a tape machine and are well-placed. Even with its highly advanced edit functions, DJs were doing spots on the Fostex Foundation after only an hour of playing around. It has one of the fastest learning curves of any DAW out there.

An essential function of any DAW is the scrub. I found that if the system used a mouse to scrub, nobody touched it. The Fostex Foundation has a scrub so good that you would think you were actually rocking the reels.

Another important property of a DAW is how deep its editing ability goes. That is what I like best about the Foundation. There are some amazing edit functions that I use now and still, there are functions it can perform that I have not begun to use.

One of the nicest edit functions on the Foundation is the Split function. A single track can be split onto itself. For example, when you want to overlap your voice with itself you only use one track and not two. It makes this device a 16-channel, eight-output recorder.

On the Fostex Foundation, the edit functions are well thought out and extremely useful for radio spot production. Edit functions like Align, Trim, Fade, Paste, and Sync are controlled by well-placed buttons that are used in conjunction with an amazing touch screen.

Precise editing

While some would argue that the Fostex touch screen is too small, I have found it to be just the right size and brightness. The Foundation's Zoom capabilities and display of actual audio waveforms make for precise audio editing.

Other functions that I find very useful are the time compression and expansion function. Fostex has done a great job coming up with an algorithm. The Foundation also features six levels of undo and redo.

The directory system software is great. Production personnel can find their materials on the Foundation easily with a couple of touches to the screen. Plus, there is an area for library clips that can be cut and pasted anywhere.



WKSS looked to the Fostex Foundation 2000 to fulfill its digital audio editing needs.

The electronic patch bay makes it easy to channel audio from any of the analog inputs to any of the tracks. Additionally, levels and phase can be controlled and observed via the touch screen.

The Foundation has an entire section dedicated to holding, locating and dialing in specific locations. Specific regions of a

track can be alphanumerically labeled for reference during an edit session.

Disk-based editing

The Fostex Foundation is a disk-based editing system that uses a removable hard drive called a Removable Project Environment (RPE). Recording time can be increased on the Foundation by getting a larger RPE, adding an external Scuzzi (SCSI) drive or doing both.

Another nice feature about the Foundation 2000 series is that it can be expanded. The LX model that we purchased runs through our analog audio board for mixdown. However, for a reasonable price it can be expanded to have digital mixing capability, internal DSP and more.

Our system was not trouble free. There were a few software and hardware glitches at first. Because it is a proprietary system, we depended on great response from Fostex. The Fostex people were extremely quick and helpful and I am happy to say that the system has been trouble free for the last 10 months.

My only concern with this system was one that I had with most other DAW systems that wield the power of the Fostex Foundation 2000. The noise from the fan was too loud and the processor had to be moved out of the studio to a remote location. I am told this problem does not exist in the newer RE model.

With the Fostex Foundation, a whole new level of production excellence has been achieved by all of the production personnel at WKSS. It is a truly unique, trouble-free DAW that is simple to use, a breeze to install and has a very reasonable price tag.

For more information from Fostex, contact the company in California at 800-7-FOSTEX (367839); or circle Reader Service 106.

Another advantage to consider is the time saving factor. We have found that for certain programs that require many of the same basic production elements, being able to produce clips and jingles and beds only once and then storing them to be recalled and positioned in multiple promos has saved us vast amounts of production time without losing quality.

Highly produced IDs

Imagine creating a highly produced top-of-the-hour ID for each baseball game of the season. SADiE has allowed us to do that in record time. I cannot tell you how often SADiE has saved us by having a promo stored that

had to be aired quickly and required an edit of only one word.

Marking, editing, trimming and crossfading basics become second nature once you begin to leave the mindset of analog

production and step into the world of non-destructive digital editing with SADiE; but that is not all that is available. I have found myself taking advantage of the convenience of SADiE's digital signal processing.

Functions included are: bounce; dynamics, including compressor controls, expander controls and gate controls; EQ, which is very handy; noise abatement; resampling, including digital varispeed, sample rate conversion and sub-sample microtiming; and timescrunch.

I am glad that I still have a separate harmonizer because SADiE's continued on page 41

USER REPORT SADIE is Cornerstone of Studios at WCCO (AM)

by Steve McFarland Production Director WCCO(AM)

MINNEAPOLIS After spending almost two years using **SADiE**, we feel certain that it has and will continue to be the cornerstone of our digital studio. After spending much time searching for a platform to fit in with existing equipment and looking for the means to spread the latest technology throughout the other recording studios, we found that SADiE's strengths would allow us to accomplish our planned future growth.

Much of the beauty in SADiE revolved around the ability to install it on an existing PC, a 486 DX2/66, using the familiarity of a Windows-based system. We also wanted to take advantage of SADiE's advanced DSP technology.

Affordable price

Very important in our consideration was the affordable price. Recently being able to upgrade to the Windows 95 platform was painless, unlike many other software-only based systems. Though SADiE's manual states that the software has been designed to be simple to understand and consequently simple to use, it is a very complex system. Prior knowledge of Windows and MS-DOS based computers will be helpful in flattening your learning curve. There are many bells and whistles, but do not be put off by the system's complexity. Once you learn the basics, you will be amazed at the ease with which you will jump into the extra features.

One great feature is the fader automation. I find that I use it in the creation of almost every promo or commercial. It also may be necessary when using a mouse to control up to eight tracks at

There are many bells and whistles, but do not be put off by the system's complexity.

once. With the fader automation, you can make countless corrections to the necessary details to achieve that great mix. The automation information can be stored and recalled, recreated, changed or overlayed with another track.

A great advantage of SADiE is that the length of time for any given production is limited only by the size of your storage space on a SCSI hard drive. There have been many instances that call for longer productions above and beyond normal commercial and promo lengths, and having the extra room to maneuver and work within has been a lifesaver.

USER REPORT

BUYERS GUIDE –

DigiDesign Meets Goals for NewCity

By Conrad Trautman and Ed LaComb NewCity Production Services

SYRACUSE, N.Y. It has been over a year since NewCity Communications Syracuse installed its first ProTools Audio Workstation from **Digidesign** and we have already purchased another unit for a second production room. Our intent was to acquire a system that accomplished some basic goals: ease of use, industry standardization, highest quality, good support and upgradability.

The Digidesign ProTools III audio editing system has been agreat asset to our production department. Just when our 10 year old MCI JH-110B reel-toreel machines were about to give up and be replaced, we installed our first system. No more heads to align or Molex connectors to clean and no more bias and equalization adjustments to make; just clean, noise-free audio.

Increase productivity

The software interface is clear and easy to understand, making ProTools a huge time saver. As a result, we saw an immediate increase in productivity.

On the technical side, installation of this system is a breeze. We bought our first system preconfigured and built the second one ourselves. The Digidesign interface is a NuBus card with a special cable that plugs into the audio interface. uses balanced XLR connectors in and out. The newer 882 system has all eight channels in a single rack-panel high box and uses balanced TRS 1/4-inch connectors for the audio in and out.

The JL Cooper CS-10 mixing console allows for external hands-on control of the software and connects using a MIDI interface that is very easy to hook up and

The software interface is clear and easy to understand, making ProTools a huge time saver.

There are four channels of audio per interface on the older 442 system and it



Integrated Transmitter Systems by **CROWN**®

Applications

- Suited for FM translator service
- Ideal for satellite or terrestrial-fed systems
- Use it as a stand-alone transmitter
- Use it as a stand-alone exciter with composite input
- Use it as an FM exciter with built-in IPA
- Great for community and campus radio
- □ A perfect backup transmitter system

Models

- □ FM30, adjustable from 3 to 33 watts output
- □ FM100, adjustable from 20 to 110 watts output
- Given FM250, adjustable from 20 to 250 watts output
- □ FM500, 50 to 500 watts (available third quarter '95)

Integrated System Components

- □ FM exciter (digitally tunable, frequency-agile)
- □ Audio processor (with compressor/limiter)
- Stereo Generator
- RF Amplifier
- Lowpass Filter
- □ New, optional FM Receiver Module
- New, optional FSK IDer

- Excellent signal quality and reliable performance
- □ Lightweight, compact, easily shipped worldwide
- □ 110/120 VAC, 220/240 VAC or DC powered
- Built-in digital metering and diagnostics
- User tunable from 88 to 108 MHz
- □ Optional tuning for 65–73 MHz in 10 kHz steps
- Modular, flexible design
- **G** Fully illustrated and detailed user information
- □ Type notified for FCC part 73 & 74; meets FCC, DOC, and CCIR requirements
- Quick setup; designed for easy installation even by non-technical people

For more information, contact Crown Broadcast Sales at (219) 294–8050 or fax (219) 294-8222.



A Division of Crown International, Inc. 1718 West Mishawaka Road Elkhart, Indiana 46515-1000 Phone: (219) 294-8050; FAX: (219) 294-8222 e-mail: broadcast@crownintl.com configure. We also use the Mezzo Media Archiver software/hardware solution for data archiving. The Archiver is a combination IGB hard drive with a 4 mm DAT drive. This allows for easy retrieval of old commercials for easy changes to things like dates or locations.

Currently, we are in the process of networking all of our MacIntosh computers together so that they may easily share audio files from room to room. We have already run into problems where a file resides on the drive of one computer and cannot be accessed while someone else is in the studio working. Because NewCity has Digidesign equipment in all of our markets, it is possible for us to share files among our stations via modem.

The best way

Because we have stereo audio consoles, we had to decide the best way to bring the eight tracks into the console and how we should feed audio to the Digidesign. My best advice would be to get a console designed for multitrack mixing.

Each line input module has the ability to pan, sum and play left or right exclusively, in addition to the stereo feed. The Digidesign has mixdown features built in as well, giving us the flexibility to do what we need. Also, each of our line input modules runs through a patch bay so we can process any channel with external audio processing if necessary.

We have a staff of over 12 to 15 producers who regularly use our system. The average learning curve is somewhere between two days and two weeks, depending on the level of computer skill.

The producers are using the system at different levels, but at least they are all using it. Some have investigated and learned most of the software's features while others know enough to produce a basic voice/music commercial. If you have a good knowledge of MacIntosh or Windows, you will pick it up quite easily.

The only failure we have had so far on the system is a hard drive that crashed. It was a Seagate drive in the Mezzo Media system, but fortunately, we lost very little information since we had been backing the drive up.

On a scale of 1 to 10, with 10 being best, we give Protools a 9. Why a 9? Because there's always room for improvement.

For more information from Digi-Design, contact the company in California at 415-688-0616; or circle Reader Service 137.

Circle (165) On Reader Service Card

Features

February 7, 1996

BUYERS GUIDE

ProComm Business Grows with Studer

by Brad Jones Production Manager ProComm Studio Services

ARDEN, N.C. What would you say if I told you I can copy, cut and paste, store my EQ settings, automate my mix, timecompress a sound file, restore an old mix in less than 30 seconds with one MO disk so I can change one word from the announcer, and then make the new mix sound identical to the old one.

What if I could have another engineer pick up in the middle of my project and know exactly what I was working with, pop the MO disk out and move from one control room to another and never ever scrub any audio to make an edit? I can do it with the Dyaxis II from **Studer**.

All you need is a Dyaxis II audio processor and a Macintosh computer with either a trackball or a mouse.

Buttons for each track

There are Input, Repro and Record Ready buttons for each track. Punch-ins and overdubs are just like those on an analog recorder. There is even a transport window that looks just like a tape recorder transport panel.

All this fits onto one screen so you never have to change back and forth. Studer

Brad Jones (top) demonstrates the finer points of Studer's Dyaxis II to Andy Briskar.

them to have a mix that would normally take six hands to do on an analog console.

cut and paste between

The Dyaxis II browser is easy to navigate. The browser is like a library. I go into the library, open a file and there are all the catalogs for that file. Open each catalog and there are the individual sounds. I place those sounds onto an edit desk that is automatically stored in the session folder I am working on. It is easy for me to find any sound file for any

project that any engineer recorded.

Smorgasbord of options

There is always a smorgasbord of options available on the Dyaxis II. If I want to edit my cues by scrubbing, I can. If I do not want to scrub and simply make the edit visually by using the waveform, I can do that too. If I want to fade a cue out slowly, I grab the corner of the cue with my mouse pointer and pull until

There is always a smorgasbord of options available on the Dyaxis II.

calls this Multi-Mix. The Dyaxis II is easy to learn and makes spot production faster and more cost-effective.

If you hate computers altogether, you can use the MultiDesk, which has welllabeled buttons for easy operation. With a 1GB hard drive and Dolby AC-2 audio compression, I have more than 12 hours of recording time.

With virtual tracking, I never run out of outputs. I can have 200 events in mono or stereo happening at the same time and have them all come out of four XLR connectors on the back of the processor.

The Dyaxis II is cheaper than you think. We bought our first Dyaxis — a Dyaxis I — in 1991. It was so much fun that we upgraded and bought two Dyaxis IIs in 1993. We have been building digital nonlinear radio spots for nearly five years now.

ProComm Studio Services is a national voice over recording studio. We sell voices and provide radio spot production for agencies and broadcasters nationwide.

Quick problem resolution

Ninety-eight percent of our clients are out of town. We never see them and they never see us. So, what we send them is critical and if there is a problem, we need to be able to resolve it within a few hours. That is where the Dyaxis II comes in.

The Dyaxis II has DSP and mixer automation that make changes easy. We run the audio out of the Dyaxis II into a TAC Bullet. The faders on the console that receive the output of the Dyaxis never move; they are preset at yardstick level. We only use the console for microphone inputs, headphone feeds, telephone patches, reverb and effects sends and master level out to all recorders. We do AES/EBU digital out of the Dyaxis II to DATs also.

All audio processing, EQ, level of sound files, level of track outputs and panning is done inside the Dyaxis II. All digital signal processing, including EQ changes, is automated so the Dyaxis II makes the same moves each time I play the mix. Or, I can try different automation passes and

> Square peg, Round hole...

Sound like your transmitter remote control?

Are you tired of trying to adapt a fixed-platform remote control to your situation?

Want a transmitter remote control system that exactly meets your requirements? How about friendly Windows® operation? How about unprecedented expandability?

It's all in the **NEW GSC-3000** Site Control system from Gentner ... the people who originated dial-up remote control.

See it at NAB '96 — Booth 2016.



Gentner Communications Corporation 1825 Research Way Salt Lake City, UT 84119 1-800-945-7730 (801) 975-7200

Windows® is a registered trademark of Microsoft Corporation.

Circle (73) On Reader Service Card World Radio History the fade looks good, or I enter the exact amount of time for the fade into a time window.

The Studer guys are like my mom and dad when it comes to support. If we have a problem, they either walk us through it over the phone or, if it is a part that needs to be replaced, they send it to us overnight. You cannot ask for better technical support.

Would I buy another Dyaxis II? How about two more for 1996. We plan to have four rooms, each with a Dyaxis II, running 12 to 16 hours a day.

Do they make money for us? You bet. We have doubled our gross income and tripled our profit margin since we went the Dyaxis II way.

For more information from Studer, contact Guy McNally in California at 415-562-0500; or circle **Reader Service 130**.



Circle (170) On Reader Service Card

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.





New, affordable, frequency-agile receiver, direct channel entry by keyboard, selectable companding 1:1, 2:1, 3:1, wide/narrow bandwidth, de-emphasis selectable, 950-1450 MHz, line output 600 ohms, muting, transponder agile, LNB power supply, 50-channel memory, full baseband output, high-quality audio. Every needed feature at a sensible price (lowest in the industry). Write or call for full information on this quality receiver—the answer for your station. Networks call for prices.

ELECTRONICS, INC. 4555 Groves Road, Suite 12 Columbus, OH 43232 Communications Specialists Phone: (614) 866-4605 Fax: (614) 866-1201 UNIVERSAL **READER SERVICE NO. 157 REMEMBER THE CORTANA** Inique FOLDED UNIPOLE ANTENNA? WE STILL MAKE IT WITH THE SAME HIGH OUALITY MATERIALS Shively FM Antennas offer standard features often unique in the industry: AND WORKMANSHIP. Our unique fine-matching transformer, **IT FEATURES...** included as standard equipment on Shively commercial antennas, can correct VSWR BROAD BANOWITH mismatches of up to 1.5:1 to compensate GROUNDED ANTENNA ' PROVIDENT CONTRACTOR for tower effects. Unlike most others, it is · ELIMINATES ISOCOUPLERS / VEIF and UEIF antorna inc. tunable both under power and pressure, so · BEST ANTENNA FOR DIRECTIONAL ARRAYS. it requires no disassembly of the system, ALSO and no adjusting of taped slugs for tuning. D. LINES OF REAL FOR ANY REAL THE DOUBLES TOUR W This means a better match, with less rigging time and costs. Watch future issues of Radio World for other unique FOR INFORMATION CALL, FOR CREWHITE Shively features. Shively A Division of Howell nott ltd. Laboratories, Inc 4001 La Plata Hwy 19 Harrison Road, Bridgton, ME 04009 amento MERTAR 207-647-3327 FAX 207-647-8273 905-327-56db For 525 325 1142 184 READER SERVICE NO 195 **READER SERVICE NO. 17**

With its HI-GAIN mode for Power-Mac* and other digital editor sound cards



Get MATCHBOX II to convert your Power-Mac* audio to *balanced* professional levels!

Only MATCHBOX II has *programmable gain* that's optimized for digital editor sound cards. 15,000 units in use worldwide!

♦ HI-GAIN mode for digital editors

- ♦ All four outputs adjustable
- Pro-grade gold-plated RCA jacks
- Over 110 dB dynamic range
- Self-contained power supply

OPOwer-Mac is a trademark of Apple Computer

Sonic Offers Solution for ABC, SW Networks

Digital Audio Workstations from Sonic Solutions Help Simplify Production at ABC and SW Networks.

by Leslie Mona-Mathus Senior Technical Producer ABC Sound and Dino Tortu Director, Production Services SW Networks

USER REPORT

NEW YORK ABC Sound consists of two multitrack broadcast studios that are part of the ABC Radio Network facility. The studio provides services not only to the radio network, but to intercompany departments such as WABC and Network News Promotions and outside clients such as advertising agencies, publishing companies and public relations firms.

The studios are each equipped with networked **Sonic Solutions** eight-channel digital workstations with full No Noise capabilities. Each system has a 2.4GB and a 1.6GB sound drive. Macintosh 950 Quadras with 40MB of memory are the drivers for the Sonic. The networking is of utmost importance, allowing each engineer and studio to access and share files.

At ABC Sound, Sonic Solutions has been integral in producing commercials, books on tape and program material. In the past, when producing "Mrs. Bush's Storytime," the dialogue, music and sound effects were assembled on 16-track, but with Sonic Solutions, the assembly has become less cumbersome and more creative.

Quick and easy location

For instance, custom music edits are often designed to enhance the script. With the dialogue in place on the edit list, you are able to time out and see where the hits need to fall. Sonic has great waveform graphics and allows quick and easy location of cut points and construction edits.

In layering multiple sound effects, the click-and-drag function can be employed to place the elements while the copy-and-paste feature is often used to duplicate an effect or music

WCCO Secure With SADiE

continued from page 37

timescrunch leaves quite a bit to be desired, although the speed of the processor plays a big role in that function.

The WCCO(AM) facility also includes a Kurzweil K2000 keyboard. I have created MIDI-sequenced music tracks using Cakewalk Professional 3.0 and processed them to SADiE that is also running on the screen.

If you are thinking about **the possibil**ities of using your studio **to generate** added income, SADiE can possibly help there as well. The system allows for controlled CD and cassette premastering and audio-video post production. A complete DAT backup system is also included.

If you are considering SADiE, I

cue that occurs more than once.

No Noise has come to the rescue on more than several occasions, including cleaning up sound bites from the O.J. Simpson trial. In 1996, ABC Sound is looking to use No Noise and Sonic's CD prep and printing programs to aid in the restoration of the ABC Radio News Library.

Sonie's biggest job at ABC Sound however, comes during the network sweeps production period when we churn out radio spots for WABC, ABC affiliates and Network News Promotions. In a two day period, 14 30-second radio spots all containing voice, music, sound bites and sound Sony Studios. This gave SW the luxury of auditioning many different workstations for use in its own facility. Largely due to its high-powered editing, multitasking capability, industry-standard CD prep and networking features, the Sonic Solutions system won, hands down.

Most of SW's shows start the same way. All the preproduction material is loaded into the Sonic hard drives prior to the arrival of the voice talent. In the case of SW's weekly hard music show, all of the music and sound bites are loaded into the Sonic and laid out in order. The host can then simply come in and voice his song intros, outros and features as if he was doing a live radio show.

Besides saving time in the booth. SW's shows sound like live radio shows. After the voice tracks are read.



Sonic Solutions provides the flexibility and freedom necessary at ABC Sound and SW Networks.

effects were produced using one system. One of the key factors in generating this

many spots in such a short period of time is Sonic's ability to record directly into the Edit Decision List (EDL). The voice talent was able to read to pre-cut music beds, providing a better sense of mood and time. This not only halved the post time, but added to the integrity of the spots.

Creative freedom

Overall, using Sonic Solutions provides the engineer/producer expediency, flexibility and, most importantly, the freedom to be creative.

Before SW Networks had its own studios, its first shows were produced at the

would suggest a large monitor, possibly a 17-inch variety. Some icons and buttons may not seem terribly intuitive at first, particularly if you have trouble seeing all the detail. It is a loaded system, but there is always help available, and that may be the best value of an already value-packed deal.

We purchased our SADiE system directly through the stateside representative. The service and followthrough have been outstanding. We have put beta versions of software through the grinding mill and made many improvement suggestions that have always been welcomed with an open mind. Software updates are always delivered promptly, questions answered quickly and solutions to system challenges handled professionally.

For more information from SADiE, contact Jeff Mack or Jeff Boggs in Tennessee at 615-327-1140; or circle Reader Service 67. the show is fine-tuned for timing and aesthetic reasons and then mixed from eight channels down to two back into the Sonic. Commercials are then added and a PMCD is burned.

With show production sometimes stretching out over several days and the staff usually working on five shows at a time, the multitasking features of the Sonic really come into play. While loading songs for one show in the background, sound bites for another show can be edited in the foreground.

Staying organized

To keep things organized, SW purchased a 4GB drive for each of the shows produced in New York and keeps all the material associated with each show in its own drive. Both eight-channel USP Sonic Systems also have an additional 4GB drive to afford the space needed to mix each week's show back into the system.

Sonic's Project Manager allows SW to load all the material being used for a given week's show under a common folder heading, so when that week's shows have been mixed and the PMCDs are cut, the left over material can be easily found and deleted from the drive.

Sonic's Medianet allows SW to mount sounds from all six drives to a common EDL and play them simultaneously. At times, both rooms have been working on the same show, editing the same soundfiles to speed production. Even though each room has three drives, the work for the show can be done in either studio.

Digital cable enables SW to get AES/EBU and SPDIF feeds into the Sonic. The software switching on Sonic's new USP eards means you never have to leave the room to switch between digital and analog inputs or to adjust sampling rates. When people ask how SW can maintain such a busy schedule, they are usually told that it is because of the production staff and the most versatile workstations on the market.

For more information from Sonic Solutions, contact Jonathan Snyder in California at 415-893-8000; or circle **Reader Service 123.**



Circle (11) On Reader Service Card

42 Radio World

- BUYERS GUIDE

VoxPro Passes Time and Money Test

by Louis Galzerano **Chief Engineer** WDVE(FM)-WXDX(FM)

PITTSBURGH There are two things I consider when purchasing a new piece of equipment, like Audion Labs' VoxPro on-air digital phone editor distributed by Harris. How much is it going to cost me in time and money and how much am I going to get out of it?

USER REPORT

How much time a piece of equipment is going to require to set up, learn and maintain is important to me. Determining the amount of time new equipment demands is always a tough question to answer because there are so many variables to consider.

The VoxPro unit included a 14-inch color monitor, keyboard and PowerMac 6100. Harris-Allied is also sending the new Henry Matchbox II as part of the package. For an additional cost, both my air staff and I recommend a dedicated control panel.

I found setting up VoxPro to be fairly effortless. Connecting the monitor, keyboard, mouse and dedicated control panel went quickly. The VoxPro software is preloaded and comes up at start-up.

Harris-Allied has a long list of VoxPro users to call and a video that shows the product in use in control rooms within three different formats. The video also includes a demo of the product that is a great help.

The amount of time to learn VoxPro was surprisingly minimal. Audion Labs said the basics of recording, playback, cut and paste editing would take no more than 15 minutes to learn. To be honest. I know that all digital audio editors claim a fast learning curve, but the reality was, what they said was true. This machine is amazingly simple and that is one of VoxPro's biggest pluses as far as I am concerned. The less time it takes to learn a box directly impacts the amount of time before the air staff will accept a new piece of equipment. VoxPro's simple screen display is a lit-

• Complete delivery, set-up and

PC/Video monitor arms

• Pull out keyboard drawers

• Durable Pionite® laminate

• AC wiring and cable runs

installation

Solid oak trim

tle deceiving. The power of the machine becomes evident in the speed of its operation. Like more expensive audio editors, VoxPro's waveform moves across a fixed cursor in the middle of the screen mimicking a tape moving across a playback head. Doing this requires a lot of processing power since there is much more on the screen to be continually refreshed, but the payoff is that the air staff is already used to thinking this way.

As the video says, VoxPro is all about speed and simplicity, making it ideal to replace the reel-to-reel in the control room. Unlike some digital editors, all recording, playback and editing is done on one screen.

VoxPro edits just like a word processor. To edit words or sentences you highlight them and then press the appropriate button on the control panel to instantly cut, copy or paste the selection anywhere in any recording.

Unlike the multitrack, there is no lag time in the production room that takes valuable seconds to load and unload files. Instead of showing a plain time line, you can see every recorded word on the screen - no guessing where you started or stopped talking. In the stereo mode, which I recommend, the caller is in the right channel and the host is directly under it in the left channel.

Starting a new recording on VoxPro is a one-button process and can be initiated at any time during any process. When finished, VoxPro throws a dialogue box on the screen to name the recording, the default time and date or anything the operator chooses. Once named, VoxPro creates a master and edit recording, adds it to the list of existing masters, edits on the one screen and displays the edit recording on the screen ready to play back or edit.

To separate talkover of the caller and the host. VoxPro's Time-Slip feature is used. It should be named Tape-Slip because it separates the two by slipping the two channels to the left or right, allowing them to air separately.

The Record Insert feature starts a recording anywhere the vertical playback cursor is located in an existing edit. The air staff uses it to redo or add comments. It also allows what the manual calls Serial Recording.

You can record one call and then add other calls to it with the Record Insert. The outcome is a series of calls that can be edited and played back sounding like one call after another. If one caller is not all that great, delete that insert recording and start another. Another feature is that each user has

their own password protected access to

USER REPORT

VoxPro. Here, users can record, play back, edit and save recordings and have their own set of 10 assignable hot keys for sound effects, jingles, etc., which can be instantly played anytime.

I have found VoxPro's technical support to be second to none. First, the manual is amazingly complete. Second, Dale Nelson, VoxPro's technical support guru in Portland, Ore., is available full time during business hours Pacific time and knows the product inside and out.

I currently use VoxPro in all my air studios, and my 1996 budget will definitely include VoxPro to replace the reel-toreels in my news department.

For more information from Audion Labs, contact Sue Rogers in Washington State at 360-673-4762; or circle Reader Service 104.

PR&E Keeps Radio in Mind With ADX Digital Editor

by Steve Scoville **Audio Editor** Blue H₂0 Productions

ENCINITAS, Calif. Computers are making their way into radio and there is nothing we can do about it. The good news is that the folks at Pacific Recorders and Engineering (PR&E) had the typical radio production guru in mind when they designed the ADX digital audio editor. They know their stuff when it comes to operator efficiency and ease-of-use and that is why the ADX is such an intuitive editor. Although my computer's thesaurus came up with a few other options, intuitive is the best word for the ADX because it works exactly the way you would expect it to.

The ADX is efficient when I need something simple, yet expansive when I need to be creative. The ADX features control panel buttons for all the common editing functions, a dedicated scrub wheel, easy-to-use Macintosh software, a big monitor and a trackball instead of a mouse - I hate mice. The best feature by far is the automated mixing.

Touch-sensitive moving faders

PR&E does something unique with its automated mixing in that it uses touchsensitive moving faders, sort of like a player piano. The faders play back the exact moves you did while you were mixing your spot. What good is that?

Let us say I did a mix and I wanted to adjust one fade-out in the middle of the spot. In the analog world, I would have to remix the whole spot to get that fade-out fixed.

In other digital systems, I would likely have to go through a lot of trouble positioning the faders where they are supposed to be at that point in the mix and then I would have to rewrite the fade-out and quickly press Stop before I accidentally recorded over any other automation.

With the ADX, I just play the mix back. While the faders mimic my mixing moves, I grab the appropriate fader just before the bad fade-out, fix the fade and let go of the fader. It is done. When I touched the fader, it automatically entered an Automation Write mode and rewrote the fade as I redid it

with my hand. When I let go of the fader, it automatically went back into Automation Read mode so I did not disturb any of my other automation. That is what I mean when I say it works exactly the way you would expect it to.

I can honestly say that the only thing I worry about failing on the ADX is the hard drive. The drives that come on the ADX are the best money can buy, so I know my drive will likely outlast the guy's down the street; but it will die someday. There is not a whole lot that can be done about it except good drive maintenance and a meticulous back-up plan.

Computers do strange things

The only other concern of mine would be that the ADX is a computer and computers do strange things from time to time. If this is news to you, stick with analog. It took me a few days and a few calls to PR&E to figure out some of the Macintosh quirks that lurked in my system at first. These quirks were not show stoppers by any means. The just left me asking, "Why did it do that?" They are just oddities that need explaining.

The team at PR&E was never at a loss for the elusive Macintosh explanation because they know the computers inside and out. PR&E even offers support on the Internet.

As far as PR&E's support goes, about the only thing it could do to improve it would be to go 24-hour tech support, but I do not think it is necessary with the kind of equipment it makes. When PR&E says its equipment is bulletproof, it means it. Of course I have not shot any of my stuff yet, but I believe they mean what they say.

I have recently ventured back to my roots as a dialog editor into the field of postproduction. Although I am out of radio for now, the ADX is still the tool for me. I cannot imagine doing this kind of work using any other editor. Believe me, I have tried them all and I always come back to the ADX.

For more information from PR&E, contact Mike Dosch in California at 619-438-3911; or circle Reader Service 33.



Uncompromised construction

If you're thinking of upgrading your facility, you can't afford not to call us!

ABG is

Studio Furniture

Our furniture systems offer you the industry's most

extensive list of standard features, including:

Please call today for full color brochure.

SOUTHEASTERN SALES OFFICE MAIN SALES OFFICE 200 Fareway Drive, Suite 2 Smithfield, North Carolina 27577 Phone: 800-369-7623 Fax: 919-934-8120

YOU MAY ALSO REACH US ANYTIME VIA ELECTRONIC MAIL CServe: 75371,144 internet: support@abg.com web site: www.abg.com

WESTERN SALES OFFICE P.O. Box 1638 Palmdate, Catifornia 93550 Phone: 800-858-9008 2342 S. Division Avenue Grand Rapids, Michigan 49507 **Phone: 800-999-9281** Fax: 805-273-3321 For 36 years ABG

Circle (61) On Reader Service Card

Fax: 616-452-1652

[quality]

the best sound



[now shipping]



😨 FIELDFONE

AWARDS

Radio World – "Cool Stuff" Broadcast Engineering – "Pick Hit For Radio" TV Technology – "Mario Award"

The Best Audio Over A Single Phone Line

FieldFone[™] is the first of a new product catagory– a POTS (Plain Old Telephone Service) codec. This field-ready unit is designed for breaking news, sports reporters, on-site promotions and talk shows.

FieldFone[™] is your answer to high quality, bi-directional remote broadcast transmission without ISDN lines! Turn your ordinary remote broadcast into an extraordinary broadcast quality event.



Specifications

Frequency Response: Signal-to-Noise Ratio: Distortion: Data Rates: Line Input:

Mic Input: Line Output Level: Headphone Output:

Power: Dimensions: Weight: 20 Hz to 6.5 kHz, +0/-3 dB 84 dB (ref. +8 dBm) 0.08% THD+N 28.8, 26.4, 24.0, 21.6, 19.2, 16.8 and 14.4 kb/s +21 dBu maximum, 600Ω or >20k Ω , selectable, balanced Gain 26 to 73 dB, balanced, $20k\Omega$ 0 dBu, nominal +15 dBu, 30Ω , separate level controls for Send and Receive audio 90-250 VAC, 50-60 Hz 4.5"H x 11"W x 13" D 12 Pounds

For information and your nearest dealer call: Tel: 908-739-5600 Fax: 908-739-1818 Internet: http://www.musicamwest.com MUSICAM USA, 670 N. Beers Street, Building 4, Holmdel, NJ 07733 USA

World Radio History

Circle (110) On Reader Service Card

USER REPORT

BUYERS GUIDE -

MTU Proves Trustworthy For Muddy Hole Studios

by Jim Smith Owner/Operator Muddy Hole Studios

WASHINGTON A year and a half ago I realized that 1 was beyond the limits of my digital audio workstation (DAW). I needed more speed, efficiency and flexibility for the fluid, layered, "live" production style 1 learned at NPR.

Software integrity and foresight is

everything in workstations and what system to trust presented a perplexing problem. However, 20 minutes after my casual call to **Micro Technology Unlimited** (MTU) for literature, MTU's president (who did not know me from Adam) called me and fielded my questions for 45 minutes. This got my attention.

After an unrestricted demo and two weeks with the manual, I committed to a then top-of-the-line, four-channel, I/O MicroSound system with optional MicroSync card and MicroTools processing software. The system was packaged in a rack-mount 486 DX66 with a 2GB drive.

No regrets

I have no regrets. The system does not crash and I have never lost data. Despite my cynicism about specs, the audio and converter quality was immediately obvious.

The traditional early learning curve was virtually non-existent. Literally two days after opening the box, I put together a half-hour soundtrack to full client satisfaction. Not long after, I was able to master a two-hour NPR performance special in a day and a half.

My continued satisfaction comes from a unique, intuitive and deceptively simple software interface that is constantly getting user-driven tweaks, including three

MARKETPLACE

Recently Introduced Products for the Radio Broadcast Professional

New Mixer from MACKiE

The MS1402-VLZ from MACKiE features 60 mm log-taper faders, threeband EQ at 80 Hz, 2.5 kHz and 12 kHz as well as six studio grade microphone preamps. Also included are PFL and



AFL on each channel for solo and cueing flexibility and mute/ALT 3-4 on every channel, meaning every channel can be muted.

The MS1402-VLZ also features EFXto-Monitor, allowing the user to blend effects back into a monitor mix via Aux Send 1 along with a Control Room/Phones section with its own level control and separate outputs.

For more information from MACKiE, contact the company in Washington State at 800-898-3211; fax: 206-487-4337; or circle Reader Service 212.

FieldFone Audio Codec

Now available from Musicam USA is FieldFone, an audio codec that sends broadcast-quality digital audio over a single audio phone line. FieldFone eliminates the need for frequency extenders and remote pick-up equipment and is ideal for broadcast remotes where ISDN lines are not available or practical.

FieldFone operates at 28.8 kb/s to produce 6.5 kHz frequency response and features better than 85 dB signal-



to-noise. Users can select data rates of 24, 19.2 and 14.4 kb/s where lines are less than optimal and a special Power Mode improves audio at any bit rate.

For more information from Musicam USA, contact the company in New Jersey at 908-739-5600; fax: 908-739-1818; or circle **Reader Service 216**.

Rackmount Keyboard

The Model 6531-KB5 Series from Industrial Computer Source is a rack-mountable, AT interface industrial keyboard. The sealed keypad can withstand direct liquid spills, heavy condensation and other severe occurrences.

The keyboard can be installed in standard 19-inch racks and features a builtin key lock and adjustable drawer slides.



For more information from Industrial Computer Source, contact the company in California at 619-279-1611; fax: 619-279-1613; or circle Reader Service 105.

Microphone/Line Level Mixer

The Intelix 8002MCB is an eightchannel, dual bus microphone mixer that combines balanced inputs and outputs, phantom power and level control in a 1U chassis. Also included are a standard LED bar graph, limiter, front panel headphone output and dual buses.

The audio signal of each channel is independently sent to each bus via front panel selection switches while functions such as mix-minus, zone-specific paging and a variety of monitoring functions can also be performed.

For more information from Intelix, contact the company in Wisconsin at 608-831-0880; fax: 608-831-1833; or circle **Reader Service 122**.

Compact RTS ADAM Matrix

The RTS Advanced Digital Audio Matrix (ADAM) intercom system from Telex Communications is designed around a compact enclosure with



reduced channel capacity and bus clock rate to provide a compact solution for those with system requirements of less than 64 users.

The external bus is 24 bits wide to fully preserve the signal quality of all communications and comes equipped with dual redundant power supplies in the standard configuration. Eight TDM slots are also provided, allowing ADAM CS to be configured for eight to 64 users in groups of eight.

For more information from Telex Communications, contact the company in Minnesota at 612-884-4051; or circle Reader Service 162.

Dual and Quad Bargraph Meters

The Nanoamp Series BGD200 and BGD400 dual and quad bargraph meters can display up to 12 critical audio lines in a single rack space. Remote, shared power supplies allow the three-color VPU or PPM meters to be mounted directly under video monitors or critical audio circuits without the possibility of magnetic interference.

The meters are available in two-channel horizontal and four-channel vertical configurations with either VU or PPM ballistics. Zero reference levels for both models are selectable to -10, +4 or +8dBu with front panel trimmers for fine adjustment.

For more information from Nanoamp, contact the company in Pennsylvania at 215-443-0330; fax: 215-443-0394; or circle **Reader Service 174**. major upgrades and 100 feature additions in the past 18 months — all within Windows. The trick is that there is no attempt to maintain the software analogy of a multitrack recorder.

Audio is designated as segments (like pieces of tape) and placed in mono, stereo or four-channel Projects. Segments can be stacked up to 64 deep at any point, thus providing 128 tracks when using stereo segments.

Segments can be moved, copied, deleted, renamed, shortened, lengthened, split, muted and level adjusted from -100 dB to +48 dB instantly with the mouse — anytime and anywhere. Segments have built-in fade in/out ramps that are instant drag-andchange features, can be up to three minutes long and have eight available slopes.

Non-destructive

Internal segment level changes (Amp Zones) and delete areas (Skip Zones like a razor edit) are also instantly available and deletable with a couple of mouse clicks. Customized normalization and EQ round out the palette. All operations are 100 percent non-destructive. Files are never touched.

Segments can be manipulated individually or in up to 100 user-defined groups. They can be "snapped" to easily designated parts of other segments or markers anywhere in the project. Your view of the project can be zoomed instantly, with totally intelligible results, from a millisecond out to hours — anytime and anywhere.

You can hear your work at normal or double speed forward and at various sub-multiple scrub speeds. Audition of single segment changes is always immediately available, as is your full mix, up to a fairly dense level of segment overlap. Beyond an adjustable density, some fast, controllable pre-mixing is required. This pre-mix is saved and only remixes areas that actually change.

Overdubbing, or "flying-in" new segments in real time during playback is easier than using a multitrack, and you can save an unlimited number of takes. This even works while chasing timecode (this system will chase anything) — a useful function with the proliferation of timecode-driven devices these days.

Raise personal standards

You do not like something you did yesterday? Change it. You do like it but want to try something else? Save it and try something new. The only real problem is that I keep having to raise my personal production standards. The computer is not in the way anymore.

This system may not be for everyone. As a user, I am already getting what I ask for.

Although useful, the scrub is multispeed, not vari-speed. The scrub does not "rock" the way you may be used to. MIDI implementation is currently limited to triggering recording, though there is talk of developing MID1 segments.

Third party software (plug-ins) is limited. As far as multitrack goes, my system has true four-channel record and playback. A true eight-channel version is on the way.

These systems will never, however, behave quite like the current spate of multitrack-on-a-hard drive units. There is a commitment to free-form production capabilities that will always make MicroSound a bit different, and that is obviously just fine with me.

For more information from Micro Technology Unlimited, contact the company in North Carolina at 919-870-0344; or circle **Reader Service 134**.

Listener Liability Insurance



Now there's a cost effective way to insure your station against on-air profanities. The new Symetrix 610 Broadcast Delay

allows talk show hosts to "dump" obnoxious callers and automatically build back 7.5 seconds of delay time.

This true stereo delay features a selectable build-back time and a two-stage dump option that allow you to set dump and catchup rates to match the speed and intensity of your show. There's even a "Cough" button for short duration dumps as well as facilities for remote control. Don't leave your station unprotected! Call today about the very affordable Symetrix 610. ປ່າອຸ່ງອາກ ວັງກອ່ານຂ່ວງບ Broadcast Profanity Delay

せっていってんしんしょうしょうしょう

Selectable build-back times

7.5 Seconds of stereo delay

- Two stage delay dump
- "Cough" button
- Excellent audio quality
- Easy to install
- Very affordable



14926 35th Avenue West Lynnwood, WA 98037 USA Tel: (206) 787-3222 Fax: (206) 787-3211 Email 102102.1126@compuserve.com

Circle (169) On Reader Service Card World Radio History

46 Radio World

USER REPORT

BUYERS GUIDE

Orban Provides the Need for Speed

by Jim Cutler **Creative Director** WEEI(AM)/American Radio Systems

BOSTON I approach the evaluation of any digital audio workstation (DAW) with three questions in mind. I first want to know how fast it can edit. Then I want to know, truthfully, how fast can it really edit? Finally, I inquire about everything else.

If you are in the business of full-time broadcast audio production, you understand exactly where I am coming from. Time is money, daily deadline pressures are intense, and every second counts.

Unfortunately, most digital workstations leave you sitting there, counting seconds as the machine sorts out commands and rewrites files from one sector of the disk to another. Sure, you may sit idle for only a couple seconds each edit, but if you are doing hundreds upon hundreds of edits every day, those seconds add up.

Also, there is the underlying psychological factor that makes you wonder why you are sitting, waiting on the machine when you are ready to move on to the next edit. Those little interruptions sometimes derail my creative flow.

That is why I am hooked on the Orban DSE-7000. It is the only workstation I have found — and believe me. I have tried just about all of them that can stay ahead of my frantic pace. The number of edits I make every day is mind-boggling. With the DSE though, as soon as I push that button, the edit is done literally before I lift my finger off the button.

The secret behind this speed is the fact that the DSE uses real-time, RAM-based editing. All the tracks you are actually using on your current spot or promo are loaded into RAM for instantaneous cuts, copies or moves. The hard disk follows along, automatically backing up everything you do.

Another factor that contributes to the



extender as a bonus.

All of this in a rugged 8 lb. package for only \$1900!



We make great connections

Call us for details 0-237-1776 http://www.comrex.com

COMREX Corporation, 65 Nonset Path, Acton, MA 01720 USA Tel: 508-263-1800 Fax: 508-635-0401 Email: info@comrex.com Fax-on-Demand: 508-264-9973 Toll-free: 800-237-1776 in N.A. or 0-800-96-2093 in the U.K.

Grcle (193) On Reader Service Card

February 7, 1996

Orban's DSE-7000 stays ahead of WEEI's frantic production pace.

DSE's quick editing is the familiar, userfriendly work surface. There are no mice or multilayered menus for basic operations.

I cut my teeth on razor blades and Ampexes and frankly, I never did make the transition to dragging icons around the screen with a mouse. With the DSE, I have immediate and tactile access to all basic controls: transport buttons, channel faders and the scrub wheel. That means I can do a lot more things by ear rather than watching them happen on the computer monitor.

We had our first demo of the DSE-7000 at American Radio Systems (ARS) about eight months ago. We have five radio properties sharing the facility's 12 production rooms, and the room with the DSE was immediately overwhelmed.

Anybody familiar with basic analog production could learn to use the DSE inside an hour, and the speed advantages were immediately apparent. We have bought four additional DSEs since then and currently have three more on order.

A few months before the first DSE arrived at ARS, I had finished a home studio to house my own private enterprise, Jim Cutler Creative Radio. I had already invested a good chunk of change in a popular PC/mouse/sound card workstation combination. But as soon as I started using the DSE at the station, I absolutely had to have one at home. I saved my pennies for a few months and bought my own.

I do production for 90-odd stations as well as national commercial accounts and have projects lined up one after the other. day after day. With the DSE, I have easily been able to double the amount of work I do. In the two months I have had it, it has paid for itself.

So much for basic speed. Now, what about everything else? One nice feature is the DSE's superb time compression/expansion software. If I finish a promo and my read comes out at 31 instead of 29, I press the Shrink To Fit button and it is done with absolutely transparent results to my ears.

Other features on the DSE-7000 include simultaneous manipulation of up to eight audio tracks; bouncing of all eight tracks plus two effects returns to any one or two tracks (for infinite layering); instant Undo; and a whole laundry list of dedicated edit features like Leader, Loop, Swap and Backtime.

The DSE is available with RAM memory of up to 70 track minutes at 32 kHz, DAT backup, digital input/output, full sample rate conversion, up to 2GB of hard disk storage and networking capability for BE AudioVault or Enco on-air systems. All of that is well and good, but for me --- audio quality and overall flexibility taken for granted — it all comes back to the fundamentals.

For more information from Orban, contact Amy Huson in California at 510-351-3500; or circle Reader Service 103.

February 7, 1996

USER REPORT

BUYERS GUIDE –

LISTEN

UP



SENNHEISER HD414 Headphone

• Limited Remake of

the World's Most

Popular Headphone

- 1/4" Connector
- Open Ear Design
- Replaceable Earpads and Cable



Mfr. List \$99.00 Save 39%

Phone: 800.426.8434 Fax: 800.231.7055



*Limited time offer

Circle (1 S6) On Reader Service Card

KCIN/KRPM Gets Decked Out With OSC

by Rick Kemp **Chief Engineer** KRPM(AM)-KCIN(FM)

SEATTLE Imagine a computer-based digital audio workstation (DAW) that offers the most popular features of DAWs being used in radio stations across the country, is intuitive, costs hundreds - not thousands - of dollars and does not require an additional sound card. It exists. It does not do Windows. It is DeckII by Macromedia (who now owns OSC) and it runs on an Apple Power Macintosh.

DeckII is rich with features such as commonplace DAW items like scrubbing; true 16-bit resolution at 44.1 kHz; and variable sample and multitrack recording and editing of up to 999 tracks. Other attributes include snapshot or dynamic mix automation, cut-and-butt-splice, EQ and shuffle edit with a single keystroke. From a simple phone edit to that award-winning promo, DeckII is worth taking a serious look at regardless of how you might personally feel about Macintosh computers.

Once the program has been installed, the user makes a few choices in the menu under Preferences. This is where the

DeckII system defaults for your particular operation are set. These preferences are initially set for you during the installation of the program but, as you get familiar with DeckII, you may want to make changes in order to customize the DAW.

Cut back on tracks

I usually cut back the number of play tracks from 16 to either 10 or eight depending on what programs I am running concurrently. It is also easier for me to mix and edit with eight tracks at a time on my 17-inch monitor.

DeckII has the ability to bounce tracks as well. I can take a complex multitrack mix and consolidate the final mix in one or two tracks. This is also a good way to manage memory

Running DeckII is fairly straightforward.

If anything, it may have too many features for average radio production; but do not let that stop you from considering it for part of your production arsenal.

After enabling the inputs (only two tracks can be recorded at a time --- unless you use Pro Tools or Sound Tools), check the levels and then begin recording. DeckII automatically creates waveforms, allowing you to go directly to the Tracks window and begin editing.

Another nice feature of DeckII is its ability to take other-than-Mac format audio files and convert them. DeckII will seamlessly



Deck II offers the features needed at KCIN/KRPM.

read .way, .snd and SDII files as well as the Apple standard AIFF audio files. Audio files can also be exported to different formats, including several compression schemes that are being used on the Internet.

Most of the mouse/trackball functions on DeckII have keyboard equivalents. I use several of them daily and recommend that operators learn a few. The keyboard equivalents speed up the editing process considerably.

To run DeckII without an audio card, you will need a 16-bit, audio-capable PowerPC. I also recommend 24MB of RAM. DeckII will run well with 16, but trust me, you will use all 24MB.

Another important item you will need is an impedance matching device. While the PowerPC records and plays CD-quality audio, Apple has adopted its own standard

USER REPORT Take a Byte Out of Time

by Jeff Ryan **Director of the Buccaneer Network** WQYK-AM-FM Tampa, Fla. and Charles Nettleman **Chief Engineer** WKHX-FM-WYAY(FM) Atlanta

The Buccaneer Radio Network is in its second year of using The Blue Group's PhoneByte in the broadcast booth and could not be happier.

PhoneByte serves two major purposes for the network. It allows instant, studio-quality replays and highlights during games and it offers the ability to record interviews and features and edit them for broadcast use.

Everything is instantly available. Editing can be done to 1/100 of a second with a touch of a key. As many bits as necessary can be played back to back

with less than 1/10 of a second between them either from the event or stored prior to the event in PhoneByte. Operation is extremely fast, accurate and flexible,

Creative time is one of the most important items in sports broadcasting. Because PhoneByte allows instant recall of stored material almost at the talent's whim, it allows a flexibility previously not available, while at the same time allowing us to have better quality production on the air. At the same time it is making all these things possible, it also reduces the pressure and tension in the booth.

WQYK records every play of every game and simply labels the highlights. The board operator writes a brief setup for each game highlight. This allows the half-time and postgame show host to air a highlight continued on page 48 for input and output levels. Even a normal matchbox does not correct this mismatch. I tried several boxes and was unable to get the output to a nominal level. Fortunately, manufacturers like Henry Engineering have addressed this problem and its new MatchboxII will give you +4 dBm, balanced in and out.

As far as customer support for DeckII is concerned, the service is as good as any of them — better than most, worse than some. Fortunately, the manual for DeckII, Version 2.2 is well-written and complete.

Wish list

I would like to see a dedicated control surface for DeckII --- not a generic MIDI box with buttons that would not last a week in an average control room, but a true, morning zoo-proof, lighted-button, cosmetically appealing, ergonomic control surface.

Also, as much as I like Macintosh, it would be nice to see this program ported over to operate under Windows 95.

DeckII uses a copy-protection scheme that can be a little annoving at times. In order to install the program on a hard drive, one must first use the authorization program during the installation. If you try to install DeckII on more than two drives, you will have to first de-authorize (uninstall) a previously authorized installation.

In all fairness, I should point out that most of the programs I tested use some form of authorization/copy protection. I think the protection scheme can be streamlined, but please, no key-disks or hardware locks. It should be noted that install-based copy protection is being eliminated from Version 2.5.

For more information from Macromedia, call 800-343-DECK (3325); or circle Reader Service 97.

RF ENGINEERING SOFTWARE

"blaoweteb authorized distributor of EDX Engineering Software

- $\begin{array}{l} SIGNAL^{TM} \\ MSITE^{TM} \text{ and } TPATH^{TM} \text{ package} \end{array}$
- **MSITE**TM Wide area coverage prediction
- TPATHTM/RPATHTM Point-to-Point Link Studies
- International Terrain Data New Release:

30 Meter US Terrain Data



800-368-5754 FAX: 301-656-5341 e-mail:info@dataworld.com http://dataworld.com/

Circle (21) On Reader Service Card

BUYERS GUIDE

Company News

WavePhore announced that it has completed the acquisition of Mainstream Data for a total purchase price of \$31 million. The price consists of \$20 million in cash and \$11 million in restricted stock.

Waves announced its new alliances with

Macromedia in order to link the two companies' technologies and deliver audio software to a broad base of multimedia and audio professionals.

February 7, 1996

CCA has provided a high-power DABcompatible FM broadcast transmitter to AT&T. The transmitter is capable of broadcasting IBOC or IBAC DAB signals along with standard analog FM.

furniture for video, tape storage, multimedia and security through Winsted's network of dealers. Lee D. Hemink has been named president and chief operating officer of LBA

Technology. Formerly with Proctor and Gamble. Hemink will now oversee manufacturing, assembly and marketing LBA's products in the United States and

People, Appointments

and Promotions

The Winsted Corp. has announced the

appointment of Wayne Cook to the

position of national director of sales. Cook's responsibilities include the

supervision of the organization of facto-

ry sales representatives and the sale of



Get the total Electro-Voice® package.

The Electro-Voice 7100 amplifier (75 watts per channel), a pair of Sentry 100A monitors, and everybody's favorite studio mic (the Rush mic), the RE20.

All for one low package price.

1-800-622-0022

*Call for your free gift during this limited promotion!



© 1995 Harris Corp

PhoneByte Saves Time

continued from page 47

package or wrap-up almost instantly without ever hearing the highlights.

Individual highlights can be edited for more punch and excitement. A 30-second play can become a 15-second event in the wrap-up package. Post game packages are ready to air as soon as the game is over - edited, compiled, cued and waiting. Additionally, a permanent record of the entire game is stored in memory to keep as long as necessary.

Material is dubbed from cassette, reel or DAT into PhoneByte and can be edited to fit time constraints during the game. The edits can be auditioned any number of ways before deciding what to keep.

Plenty of memory

PhoneByte has enough memory to keep every play of the season with plenty of storage time left over. When it is not on the road doing sports, the station uses PhoneByte for all its recorded phone calls.

WKHX(AM)-WYAY(FM) first saw the PhoneByte three years ago and realized the potential it had to replace its reel-to-reel machine as part of a major rebuilding project to consolidate its properties in one location.

After The Blue Group gave a demo of PhoneByte at the station, it was installed in the old studios and was used on the air briefly. After minimal hookup time, it was up and running and being used by air talent that same day.

PhoneByte was not being used to its full potential, but was recording calls, editing them and playing them back much like it was done on a tape machine. The air staff demonstrated no large problems in accepting PhoneByte and actually displayed more enthusiasm than objections.

The demo highlighted the advantages of the editing speed and the easy Find and Play features that were better than anything that WKHX-WYAY had seen. The auto record feature alone cut down on physical actions the air talent had to do and always ensured that the call was recorded. Finding and playing a call that was recorded an hour prior was a snap.

WKHX-WYAY installed the PhoneByte software package version on a 486 DX with a 1000MB IDE hard drive, 4MB of RAM and a VGA monitor. With proper disk management, this provides all the storage needed.

The PhoneByte software package includes the sound card, remote control card and mini barrier strip, and the custom keyboard. The keyboard is a standard keyboard/trackball combo with color-coded and labeled keys

PhoneByte's Auto Answer feature uses a port on the Telos 1A2. Audio in and out is identical to connecting a reel machine with the exception that the sound card in the computer is unbalanced. The basic remote control to the console is just like a cart or reel machine. PhoneByte turns the channel on and off and has audition features.

There are eight programmable remote functions that allow more than simply Start, Stop and Record, The functions are brought out to a mini barrier strip and can be hooked up easily with no necessary connectors or soldering.

No differences

A user setup screen offers the choice of mono or stereo with selectable sample rates. 4:1 compression or linear PCM. WKHX-WYAY is running stereo PCM with excellent audio quality. It is possible for the air talent to talk up to the recorded phone call without any noticeable difference in quality.

A few glitches were experienced at the beginning that were mostly attributed to operator error or confusion. Brand new studios and a new digital storage system, along with other concerns, made for a steep learning curve.

As soon as the air staff became accustomed to it, PhoneByte was doing its job as advertised and has ever since. The operation is easier and the air talent is not tied up doing mechanical things, which allows more time for creativity.

For more information from The Blue Group, contact John Timm in Florida at 800-554-2088; or circle Reader Service 27.

Walkaway

Turn off the lights; lock the doors; go home. A few short years ago this level of automation at ra-

dio stations was impossible. But thanks to rapid advances in technology it's now an everyday occurrence. Anyone can go home, but to go home legally it takes specialized equipment. If you're contemplating a walkaway, you need to call about our RFC-1 Dial-Up Remote Control and our DAI-1 Dial-

Up Audio Interface. For instant information 24-hours-a-day call our "Fax-On-Demand" from your fax machine and request documents 101 and 110.

SINE SYSTEMS Voice:(615) 228 3500 Fax:(615)2272330 Fax:(615)2272367 HOW FAX - ON-DEMAND

Circle (114) On Reader Service Card

Circle (140) On Reader Service Card

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.



READER SERVICE NO. 109

World Radio History

READER SERVICE NO. 126

USER REPORT

– BUYERS GUIDE –

No Pictures Needed with Akai DR-8

by Val Davis

EMMETSBURG, Iowa When I was asked to review the Akai DR-8, I felt like it was about time. Since I first laid hands on one six months ago. I have been telling everyone that it is the best thing since microphones. Now I get to tell a bunch of people all at once. Simply put, if you want to spend more money on a digital editor, go ahead, but you will not get any more functionality or capability.

I have worked on everything from half-million dollar digital editors to software-only editors and not one of them offers more than you get with the Akai. Sure, some of them give you pretty pictures on a screen, but when it comes down to the cut, you have to use your ears with all of them. In my humble opinion, the Akai DR-8 provides the best bang for the buck in the business today.

After opening the Akai DR-8, the first thing you will notice is that it does not look like all the other digital editors in the world. At first glance, the machine looks like a tape player. It has Play, Rewind, Fast Forward, Record and stop buttons along with a counter that displays either relative time or absolute time.

Best production ever

Looking to your left, you will notice the eight LED meters (one for each of the eight tracks) with Record buttons under each track. To radio people, it looks like a nice tape player.

At first I was upset that it had no screen. All the other editors have screens and I wanted one. But after about 10 minutes of recording, copying and pasting, I realized that I did not need one. I was producing the best stuff I had ever produced.

The on-screen images other systems use give you a quick and easy way to locate, but when it is time to cut, you scrub with your ears. I use markers on the Akai to locate flubs and can instantly go back to them.

With other systems, you highlight the audio you are working with. This is done by pointing a mouse, clicking and then dragging to the end of the cut. With the Akai DR-8, I can do it faster by locating the start and marking it as the In Point and then locating the end of the cut and marking it as the Out Point. Once the section is defined I can copy, move, paste, delete, erase or do anything else I want in just a few seconds.

The great thing about digital editors for radio is that they make you seem perfect. I can record a voice track for a commercial and if I mess up in the middle, I simply go back one sentence, start from there and read through to the end. Then I go back and delete the mistake. I can always cut a 30-second piece in less than a minute — first try.

True multitracking machine

Some of the other digital editors have two inputs and a stereo out or four inputs and two or four outputs. The Akai has eight audio inputs and eight outputs. It is a true multitracking machine.

XLR and RCA digital outputs are included so you can store your work on a DAT machine. The DR-8 also has MIDI in and out and will sync to a SMPTE source so you can control video machines.

Additionally, the DR-8 has Stereo Left and Right out. This is for the internal 16-channel mixer. Some other editors cost as much as \$10,000 and do not have a mixer. The Akai will not only set pan, volume and EQ for the eight recorded channels, it has an additional eight mixer channels to control the volume for eight external mono sources or four stereo sources.

If you use MIDI instruments, you can produce entire jingle packages on the Akai, Recently I started playing with the Akai DR-8 just to see how many tracks I

I DARE YOU!

I dare you to try my FM FlexiMod on your station. I introduced the FM FlexiMod to broadcasters in April and the response has been fantastic! Over 97% of those who tried the FlexiMod added it to their processing chain. They discovered what high-tech composite processing can do for a station's sound.

I will be glad to send you a brochure and white paper that tries to use words to describe what improvements are possible over conventional composite processing, but a demo is the only sure-fire way to make a believer out of you. Join the 97% who sound cleaner and louder than they did with their old processor.

The FM FlexiMod is the best investment you can make in the sound of your station. It is not a re-hash of old processing ideas. It's distortion-cancelling, signal-enhancing circuitry is unique and unavailable in any other processor.



CIRCLE THE BINGO NUMBER OR CALL ME TODAY FOR MORE INFORMATION. You have nothing to lose but flat sound, grunge, and distortion.

BECOME A BELIEVER!

Sincerely, Jim Somich Inventor of the FM FlexiMod (216) 546-0967

Manufactured by MicroCon Systems Ltd. and sold by leading equipment dealers.

Circle (59) On Reader Service Card

could record. I recorded 28 digital audio tracks. This is done by bouncing or merging tracks and there is never any degradation of audio because it never leaves the digital domain.

The Akai DR-8 also has two effects sends and returns for sending your audio to an external effects unit. If you decide you need more tracks, you can link up to eight DR-8s together for a total of 64 digital tracks. There is also an optional external mixer with 16 slide faders to control the internal mixer (this makes the unit feel like a real mixer). Also available is an optional remote control for the recorder.

Cannot go wrong

I still cannot believe that today you can buy a machine for under \$5,000 that outperforms machines that cost a half-million dollars just 10 years ago. There are lots of digital editors to choose from and I have worked on all of them. Take it from me: You cannot go wrong with an Akai DR-8.

For more information from Akai, contact Dave Whittle in Texas at 817-336-5114; or circle **Reader Service 84**.

USER REPORT Dalet Works Like a Pro

by Argie D. Tidmore General Manager WAVT(FM)-WPPA(AM)-WSPI(FM)

POTTSVILLE, Pa. A year and a half ago our cart machines were wearing out to the point where they needed a complete overhaul. As a technology buff, I wanted to learn more about the different digital options that could help integrate and streamline our entire operation and totally replace carts. After a show or two and some research from our contract engineer at Sage Communications, we narrowed down our future choice to the **Dalet** digital automation system.

The Radio Pro package from Dalet offered us a cost-effective solution with an open-architecture system and nonproprietary hardware. Dalet provided the best value and the most flexibility.

Bringing it all together

We are a three-station operation located on two floors of a 19th-century building that used to house a bank. Because Dalet gave us a system that covered everything from programming to production to on-air, I was convinced that the time-saving benefits would ultimately improve how we sound on the air.

The entire operation runs off a central server with 15GB of storage on three 2GB drives and a partitioned 9GB drive. This is where we currently have more than 1,000 songs stored, along with all of our spots, jingles, promos and network feeds. All of our audio is recorded in stereo at 48 kHz.

WAVT(FM) uses the system during the day as a versatile live-assist tool to play all its breaks, liners and drops — some of the music still comes off of CDs. The DJs leave the Dalet recorder and editor on the screen while playing on the air so they can simultaneously record and edit ski reports or contest winners. Instead of searching for the right cart or a sharp razor blade, they now do a database search to find that perfect sound effect or digitally cut and paste changes to phone bits.

Overnights on the FM, we run in what we refer to as "no-assist" mode: full walkaway, live-sounding programming. Our program director enlists her jocks to contribute to the building of the daily playlist templates that Dalet

World Radio History

lets you customize, save, duplicate and edit on-the-fly. This past Christmas weekend we ran for 56 hours straight with nobody on the board.

Another powerful feature of the system is Surfer4, the fully integrated four-track stereo editor. The moment a piece is saved, it is instantly and simultaneously available to anyone on the network. In no time, we had cut production time by over 60 percent.

Enthusiastic clients

The drag and drop ease of Surfer4 has given users the confidence and time to create more elaborate spots and promos using effects they never did before with carts or reel-to-reel. Enthusiastic clients are buying additional commercials that they would not have purchased in the past.

There are always bugs to work out in a system of this size and we got through a few while putting the system to real use. Trying to coordinate three radio stations and the production rooms had a lot to do with it. The 9GB drive I had purchased needed special partitioning to be compatible with the three smaller disks. The problem was resolved quickly so we could get the staff on to the system.

The training went easier than I thought it would, considering many staff members had never used a computer before. We kept the carts in the control rooms while the staff familiarized themselves with Dalet. I had them record their own drops for their shows, then start with simple playback. I even paid extra to those who wanted to stay and work on the system after their shifts.

The tightness of the boards on-air, our live-sounding overnights, and the increased production capabilities are the clear benefits of our new operation — not to mention the reduction in part-time staff.

We had bought licenses to run extra workstations ahead of time, knowing that we would grow into the larger system that Dalet provides for. As we grow and get more stations under our belt, we would gladly install another Dalet system and run it exactly the same way.

For more information from Dalet, contact Matt Appelbaum in New York at 212-226-2424; fax: 800-257-1223; or circle **Reader Service 100**.



Harris Platinum FM Transmitters aren't falling. But their prices <u>are</u>.

If you haven't priced a Harris Platinum FM Transmitter lately, you're in for a pleasant surprise.

Not only has Harris lowered the price on these ultra-redundant all-solid state transmitters, but now **every** PT CD FM Transmitter includes Harris' DIGIT Digital FM Exciter as well!

DIGIT, the world's first and only FM exciter capable of accepting a studio digital signal, is available with either a digital or an analog input module.

The digital input incorporates a DSP* stereo generator for

*Digital Signal Processing

unsurpassed stereo performance and separation and a Digital Composite Limiter with "lookahead" circuitry to predict and eliminate overmodulation peaks before they occur.

Even if you don't have a digital signal to your transmitter, you can get DIGIT's benefits by using the analog input now and upgrading to a digital input when you are ready.

Beyond Harris' Clearly Digital sound, a PT CD Transmitter will give you hot-pluggable RF modules with an MTBF exceeding 240,000 hours; no IPA module; VSWR foldback, and more. Let us surprise you. To learn more about Harris PT CD Transmitters, please contact us:

Harris Corporation Broadcast Division

U.S. and Canada: TEL: 217-222-8200 FAX: 217-224-1439

Elsewhere: TEL: 217-222-8290 FAX: 217-224-2764



DIGIT™ Digital FM Exciter • Transmitters: DAB - DX Digital Solid State AM - Gates® Solid State AM - Quest™ Solid State FM - Platinum Series® PT CD Digital Solid State FM - HT CD Digital Single-Tube FM • Medium Wave Phasing Systems • FM Antennas • Systems: RF - Studio - Turnkey © 1995 Harris Corp.

> Circle (76) On Reader Service Card World Radio History

52 Radio World

BUYERS GUIDE -

USER REPORT **Fairlight Satisfies Paul and Walt**

by Stewart Sloke Senior Producer Paul & Walt Worldwide

HOLLYWOOD, Calif. The question of buying a digital audio workstation (DAW) has evolved from deciding whether or not to buy a workstation into which workstation to buy. With the high audio quality of most systems, the ability to quickly build and revise spots, create multiple versions, reduce or expand the length of a spot or change the pitch of an announcer's voice, all workstations allow more creative production.

Even the most cost-conscious manage-

ment has seen that more product can be cranked out by an engineer at a computer keyboard than a guy cutting a piece of plastic with a sharp piece of steel and taping the results together.

Absolute necessity

Paul & Walt Worldwide currently does about 90 percent of its business in radio advertising production. Paul Fey, the founder and owner of the company, built his first studio about two years ago. Having used outside facilities for many years, he and the chief engineer at the time decided that a digital workstation was an absolute

necessity to handle the workload, as well as the multiple versions and revisions required by the nature of their business.

To many companies, cost often becomes the deciding factor in choosing one editing system over another. However, knowing that speed is one of the key issues in determining a system's overall value, Paul chose to purchase two Fairlight MFX3 digital workstations for his new facility. Though not inexpensive, the speed of the MFX3 made it the clear choice.

I have personally worked with three different workstations from three manu-



TRYING TO MAKE SENSE OUT OF DIGITAL AUDIO SYSTEMS?

There is a better way

It's not easy trying to understand the conflicting claims made by different manufacturers when you're buying a Digital Audio On-Air & Production System, whether a single, multipurpose Workstation or an integrated, multiple studio setup. At one end of the spectrum, you're faced with a wide variety of simple "Cart Machine Replacements," and on the other, products whose complexity confounds even the most seasoned broadcast engineer.

The ENCO DAD486x Digital Audio DAD486) Delivery System solves the problem! DAD is simply the most powerful On-Air & Production system available, yet its uncomplicated approach and inherent ease of operation makes immediate sense to any user.

- · Intuitive On-Screen displays that are immediately familiar to operators. Optional Touchscreen makes operation quick and easy.
- Complete On-Air flexibility with various "Virtual Machines" for Live Assist, Automation, or Satellite Programmed operations. Interface to other equipment plus scheduling and billing packages. Seamless segue and voiceover transitions sound "Live" in all modes. Script capabilities can be included.

• Full production capabilities, including Graphic Cut & Paste Assembly Editing. Includes analog and digital inputs/outputs. Interfaces with most multichannel editing packages.

• Runs on DOS for proven speed, reliability, and compatibility with other equipment; not an operating system originally intended for multimedia applications. This is a professional tool meant to produce efficiency and profits, not entertain the staff!

• Operates on common off the shelf computers and network architecture. You won't be locked into proprietary hardware that may not be available whenever you need service.

• No monthly licensing fees, DAD is an outright purchase. Software upgrades are free for the first year.

DAD is proving itself everyday in radio and TV facilities worldwide.

Call Your DAD486x Dealer or ENCO For Complete Information



24403 Halsted Road, Farmington Hills, MI 48335 USA TEL: 800-362-6797 or 810-476-5711 FAX: 810-476-5712 facturers and found none as fast as the Fairlight. Some other systems may perform a simple edit very quickly, but take an excessive amount of time to move several pieces of audio at the same time. As a result, money saved in the conservative purchase of a less expensive workstation may be quickly wasted in the additional person-hours required to perform each job. In my experience, the MFX3 shines in both its performance and its elegant design.

The proprietary keyboard of the Fairlight shows that this machine was designed from the ground up — it did not come from the idea to record and edit high quality audio on a PC. The keyboard is based in the recording world, not the computer world. Its 24 Track Select buttons leave little doubt as to their use. There are also buttons labeled Fade, Level, EQ, Solo and Mute as well as the familiar Start, Stop, FF, FR and Record deck controls. This all lends a very comfortable, intuitive feel to the system straight from the box.

The MFX3 comes with a hefty 11.5 hours of hard-disk storage, but I feel the optional magneto-optical (MO) drives, with their easy access, are a true asset. At Paul & Walt Worldwide we utilize the MOs like a database for specific audio scenarios.

Substantial cuts in time

If a spot calls for a farm background, we can insert our Farm MO and instantly have a full complement of farm-related special effects. This substantially cuts production time and also enhances the final creative product by making it easy to utilize elements or music that we might not have originally considered if it were necessary to search and pull them all individually.

To its credit, the large monitor layout of the MFX3 cannot be confused with someone's Windows program. The MFX3's main work screen can be selected to show variations of waveforms, from a single track up to 24 tracks simultaneously.

Many other systems require the use of several screens in order to accomplish a single task while the Fairlight is capable of recording, playback, editing, placement, track allocation, equalization, time compression, pitch change and more, all without a screen change.

The Fairlights have also proven to be extremely reliable, and regular software upgrades are provided. We have been so pleased with the Fairlights that we have ordered the first two FAME (Fairlight Automated Mixing Editor) Systems. The FAME System comprises an MFX3 integrated within an AMEK fully-automated digital console.

Fairlight has invited a substantial amount of development input from us and we anticipate delivery in late March or early April of '96.

It may seem as though I am consumed by how fast a workstation can perform, but perhaps it is more a reflection of our clients' need for speed. Clients are becoming increasingly aware of how fast one system may be over another, and often award their business based on both the speed of the facility's equipment and probably most importantly, the speed, creativity and personality of the operator.

For more information from Fairlight, contact Wayne Freeman in California at 310-287-1400: or circle Reader Service 52.

Nobody Does MD Like DENON

MiniDisc is an ideal recording medium for the radio broadcaster. It's reliable, affordable, sounds great and offers all the advantages of digital. No other company is as committed to the MiniDisk format as Denon with a full line of MD products to cover all of your recording/ playback applications. BSW is your premier Denon MD equipment supplier, committed to offering you excellent selection, pricing and customer service.



DN-1100R MD Recorder The rackmount MD with HOT START assignable 10-key instant access



DN-045R MD Replicator Dubs exact MD copies without digital compression up to 3.5 times faster than real time.



DN-80R Portable MD Recorder Denon's robust field recorder with advanced editing features found in the studio units.



MD Cart Series Recorders/Players The DN-995R/990R recorders and DN981/980 players offer a range of features and audio/computer interface options unparalleled anywhere.

Why MiniDisk?

There is no other medium with the **Recordability**, **Portability**, **Instant Access** and **Performance** that the MiniDisc provides!

Recordability: The ability to re-record millions of times with no signal degradation. (Try that with any tape medium, analog or digital).

Portability: The ability to hand carry, mail, or deliver a medium to another facility, edit bay, production room, etc. (Not an option with a hard disk system without the expense of networking).

Instant Access: Access any one of 255 tracks and title information on a MiniDisc within 0.8 seconds. (Can't get that with DAT or analog tape).

Performance: Quality equal to that of Compact Discs. MiniDisk, when compared to analog tape dubs, vastly exceeds all performance specs.

BSW Is Your Premier Denon MD Supplier! Phone: 800/565-2301 Fax: 800/565-8114



BROADCAST SUPPLY WORLDWIDE 7012 27th Street West Tacoma, Washington 98466 Grele (70) On Reader Service (ard









YOU'VE GOT TO HAVE THE RIGHT TOOLS



THE ADX

ENSEMBLE.

REAL MOVING

FADERS.

REAL

PUSHBUTTONS.

REAL

INTUITIVE

SOFTWARE.

THE DIGITAL WORKSTATION FOR

REAL

SERIOUS

PRODUCTION.

YOU DID IT.

Your station managed to hire the hottest production guy in the market from your cross-town competitor. He's got the chops. He's got the pipes. You can't wait 'til your clients hear the hot new image liners and spots he's gonna cut.

OF COURSE, YOU HAD TO PROMISE HIM ANYTHING HE WANTED IN HIS NEW STUDIO. IT TURNS OUT THAT WHAT HE WANTS IS A REAL WORKSTATION BECAUSE HE OUTGREW THE TOYS AT HIS LAST GIG. HE NEEDS ONE THAT MAKES HIS COMPLEX PRODUCTION WORK EFFORTLESS. YOU COULDN'T AGREE MORE. AFTER ALL, THE HOTTEST TALENT SHOULD HAVE THE HOTTEST TOOLS, RIGHT? YOU BOTH DECIDE ON AN ADX. THE ADX WORKSTATION WAS SPECIFICALLY DESIGNED FOR POWERHOUSE ARTISTS WHO CAN'T AFFORD TO WASTE VALUABLE PRODUCTION TIME WITH CREATIVITY-LIMITING TOOLS.

GIVE US A CALL AND WE'LL SHOW YOU HOW THE ADX WORKSTATION MAKES ANYTHING ELSE SEEM LIKE A TOY.



DESIGNS THAT MAKE THE DIFFERENCE

PACIFIC RECORDERS & ENGINEERING 2070 LAS PALMAS DRIVE CARLSBAD, CA 92009 USA 619-438-3911 FAX: 619-438-9277 E-MAIL: SALES@PRE.COM GSA CONTRACT: GS-03F-4064B

Gircle (90) On Reader Service Card

February 7, 1996

USER REPORT

BUYERS GUIDE –

DM800 Reflection of Reel to Reel

by John Glavin Production Director WSB-AM-FM-WCNN(AM)-WJZF(FM)

ATLANTA It is frightening how many companies now have digital audio work-stations (DAW) on the market. Pouring over all the specs, features and prices can be a nightmare for your engineer and production staff. To make it easier, simply have your **Roland** rep bring in a Roland DM800 Multitrack Disk Recorder. For price, short learning curve, reliabil-

ity and technical support, there is no equal.

I was already familiar with Roland and its earlier model, the DM80. WSB-FM had bought a couple of models and we were looking to buy more when we expanded our production facilities to handle additional stations that Cox added in Atlanta. With four radio stations under one roof, we needed at least two more workstations.

Perfect for radio

The Roland DM800 is perfect for radio. It is compact, weighing in at 12 lbs., including the hard drive.

During peak production times when studio space is at a premium, the DM800 can be unplugged, taken to a desk and connected to headphones to continue working.

Roland has taken great pains to design the DM800 to feel like a multitrack reelto-reel. The controls all mirror a reel-toreel, but control time is instant.

The DM800 has four digital and analog

SPECIAL REPORT

inputs and outputs with simple internal controls to determine individual sends/receives. There is just one bank of EQ, but Roland has designed that bank to control EQ for each of the eight tracks.

Analog gains are in the upper left corner of the unit face, making adjustments simple if the unit needs to be moved from studio to studio. The DM800 is also perfect for whatever on-site recordings are needed.

A Computer Mix feature allows the luxury of mixing each track individually to



For Cox's Atlanta operations, there is no equal to the Roland DM800.

memory, then playing back all eight tracks. EQ levels are critical, and with the computer mix, what would normally be a painstaking process can be turned into a relatively simple matter.

MIDI ins and outs are standard. SCSI ports allow for an additional hard drive or DAT backup. Roland has designed the DM800 for backing up to a conventional DAT with a digital in/out, but with a caution that some material can be clipped when loading back into the DM800.

Editing capabilities

What sells me on the DM800 are the editing capabilities that, again, closely mirror an analog eight-track reel-to-reel. By design, recorded material is difficult to completely destroy, making uncorrectable mistakes rare.

I have heard from people who, when they first work with the DM800, say that

its small screen, which shows just four of the eight tracks at a time is a drawback. Within a week though, most users become accustomed to the configuration. A video output is present though, to hook up either a computer monitor or a conventional television screen to see all eight tracks.

In a facility that includes news/talk, a/c, sports/talk and jazz stations, the spot load coming through the studios is astounding. The DM800's Overlap function makes handling multiple tag chores a breeze.

A price cannot be placed on the ease of maintenance and reliability of a service department, but the value that Roland's provides is incredible. No audio machinery is completely immune to the kind of primates that inhabit most radio stations, but the DM800 holds up extremely well. Because Roland designed the DM800 with as few steps needed per function as possible, buttons, slide pots, etc. wear well.

Technical support is superb. When I could not get the DM800 and our DAT machine to agree to back up and load, I called Roland's 800 number and was told that the DM800 support staff was on the floor at a convention. Because the DM800 had plenty of memory remaining, I left my name and number with a request for a call. I was both surprised and impressed when the head of support called from the convention floor 15 minutes later and had my problem solved within another 10 minutes.

Few problems or flaws

There are so few problems or design flaws that it almost appears picky to point them out. The DM800's Group function allows entire portions of a mix to be deleted, copied or moved in a sequence. It is an impressive function in itself, but the time required to perform it is much slower in the DM800 than in the DM80.

The functions that allow time compression seem a bit slow too, although for shortening a :62 spot to :60, the result is quite clear and devoid of that bubbling sound heard so often with other time compression equipment.

In Atlanta, we have been able to expand from two production studios to four for a fraction of the cost of the original eighttrack analog studio built 10 years earlier. The reason is the Roland DM800. Portability, versatility and affordability are the three basic reasons why I would put a Roland DM800 in any production studio in any radio station.

For more information from Roland, contact the company in California at 213-685-5141; or circle **Reader Service 66**.

World Radio History



TASCAM DA20 DAT Recorder

- Great Mastering/
 - **Archiving Deck**
- Economical ,Yet Durable
- 3 Sample Rates
- Long Play Mode
- Wireless Remote



 $\frac{\text{Mfr. List $1,099.00}}{\text{Save 27\%}}$

Phone: 800 . 426 . 8434 Fax: 800 . 231 . 7055



7912 2710 Street West dooma, WA 9840

*Limited to stock on hand

Circle (7) On Reader Service Card

Studioframe Is a Breeze

by Stuart McCrea Regional Manager Computer Concepts Corp.

LENEXA, Kan. Computer Concepts, together with Timeline, has produced a digital audio workstation (DAW) for radio with the sophistication and high-end features favored by post production houses. Studioframe has been in use in high-end applications for over five years.

The Computer Concepts Studioframe is a discreet eight-track version of the 24- and 48-track systems that have simplified editing for film, TV and video post production. Studioframe incorporates the same software and audio cards while eliminating the reels, clutter and endless pieces of tape.

Seamless integration

Designed to integrate seamlessly into the digital station. Studioframe brings computerized multitrack editing into the production studio.

Studioframe's Editor screen looks like a reel-to-reel, but there are a number of things that never could have been done with multitrack tape decks alone. Among its features is the ability to take a voice track and time compress or expand it to precisely fit a music bed or donut. You can also move just two of eight tracks to make audio fit together without having to rerecord any of the tracks.

Because Studioframe was originally created for film and post production studios, it is capable of an extensive amount of complex audio editing. The biggest challenge users often face is replacing original dialogue due to bad microphone placement or incorrect pronunciation or inflection. Studioframe has editing menus for Automatic Dialogue Replacement (ADR), making this task a breeze.

One of the reasons Studioframe is so fast and flexible is that it is not actually editing the audio. Instead, it edits the information that points to the nondestructible audio. Even the editing is virtually non-destructible, with 256 levels of Undo and Redo.

The Studioframe Editor is the recording, playback and editing control area. Each piece of recorded audio is called an event and is placed on a track (or tracks if they are grouped). You can slip an event on a track forward or backward; change the fade in and fade out rates; change the playback level of an event and time expand or compress by up to 50 percent of the time of the

continued on page 56

56 Radio World

USER REPORT

BUYERS GUIDE

February 7, 1996

Susquehanna Installs Six Spectrals

by Brian Wilson **Creative Services** KPLX(FM)-KLIF(AM)

DALLAS In my 18 years of radio 1 had heard and read stories about stations telling their production directors to go and pick out whatever equipment they wanted. I never believed them until it happened to me.

the Prisma Card is that it operates independently of the computer, as the PC is only used to do graphics updates. That means you can operate Prismatica on a 386. 486 or Pentium, depending on what you have laying around the station.

As long as there is voltage to the Prisma card, your work is undamaged even if the computer locks up. My favorite party trick is playing back a promo, then rebooting



Spectral's Prismatica is the editor of choice at KPLX/KLIF.

At the NAB, there were no less than 24 digital workstations on the exhibit hall floor. After days of demos, tire kicking and 14 pounds of brochures in my complimentary totebag, I decided on Spectral's Prismatica digital workstation because of the bang for the buck it offered. Plain and simple. Prismatica had more features for less money than any thing else I saw.

Prismatica is a 12-track. non-linear, PCbased digital recording system. At its heart is a mother/daughterboard called a Prisma Card that plugs into an expansion slot in the PC and an external A/D box that comes in a two-in, two-out or an eight-in, eight-out configuration.

Prismatica can be operated entirely by mouse and keyboard, though I would not recommend it. By installing a MIDI card, you can add on a standard J.L. Cooper CS-10 control station that features faders, scrub wheel, 18 hot key functions and tape deck-like transport keys.

One of the more astonishing aspects of

the computer. The promo continues to play while the computer loads the autoexec.bat file and returns to the C:> prompt.

We are currently running Prismatica on a 486 DX 100 with 16MB of RAM and twin 3GB Micropolis drives. Each of the drives gives us 561 track minutes of recording time and Prismatica will support up to six hard drives. One note however. Prismatica needs at least two drives to operate properly - each drive providing six tracks

Once your audio is in Prismatica, it can be manipulated to no end. You can compress audio up to 60 percent its original length or expand it to 200 percent with virtually no glitching. This works best on mono recordings because of the way Prismatica performs this DSP function.

Stereo recordings will compress unevenly between the tracks, causing a phase problem. You can normalize, pitch shift, reverse, cut, paste. duplicate tracks, vari-speed up or down 200 percent, insert

SUBSCRIPTION/READER SERVICE FORM											
REE Subscription/Renewal Card I would like to receive or continue receiving Radio World FREE each month. Yes No			Reader Service February 7, 1996 Use until May 7, 1996 Please first fill out contact information at left. Then check each advertisement for correspond- ing number and circle below. Purchasing Authority 1. Recommend 2. Specify 3. Approve 001 023 045 067 089 111 133 155 177 199								
Signature Please print and include all information	Date	002	024	046	068	0 9 0	112	134	156	178	200
Name Company/Station	_ Title	004	026	048	070	091 092 093	114	136	158	180	
Address		006	028	050	072	094	116	138	160	182	204
City Business Telephone ()_		008	030	052	074	095 096	118	140	161 162	184	206
Please check only one entry for each category:				053 054		097 098			163 164		207 208
I. Type of Firm D. Combination AM/FM station A. Commercial AM station B. Commercial FM station C. Educational FM station E. Network/group owner II. Job Function A. Ownership B. General management	E. News operations	012 013 014 015 016 017 018 019	035 036 037 038 039 040 041	056 057 058 059 060 061 062 063 064	078 079 080 081 082 083 083 084 085 086	103 104 105 106 107 108	122 123 124 125 126 127 128 129 130	144 145 146 147 148 149 150 151 152	166 167 168 169 170 171 172 173 174	188 189 190 191 192 193 194 195 196	210 211 212 213 214 215 216 217 218
C. Engineering D. Programming/production	F. Other (specify)					109 110					
Copy & Mail to: Radio World, PO Box 1214, Falls Church, VA 22041, or FAX to: 703-998-2966											

tracks or loop between markers

The finished product can be stored library fashion in files for music, sound effects, call letters and sounders and can be retrieved into any project with two mouse clicks. The one danger of having so much control over the audio is you can easily micro-manage a piece to death.

One of the quirky things about Prismatica is that while you are in the scrub mode, only six tracks of audio will play back and any changes you make to the relative position of the audio will not be reflected until you exit scrub mode.

Zooming in on waveform tracks will cause the audio to get out of sync with the drawn waveform. This is easy to fix just by recalculating the waveform once you change your zoom level.

On the mixer window there are two separate parametric EQs. two sends and 12 automated flying faders and pans that are fully-updatable. When mixing, moving the faders on the CS-10 moves the faders on the screen. In playback, only the faders on screen, not those on the CS-10, will move.

If you make a mistake in your mix, back up a few seconds prior, activate the Update Mix mode, adjust your faders and continue your mix. Bouncing tracks is a breeze using the assignable digital patch bay window.

Prismatica also comes with a second recording package called Prisma Music, a graphically stunning Stephen St. Croixdesigned eight-track recording software. Prisma Music runs on the Prisma Card as well and is bundled with the Prismatica software at no extra charge. Prisma Music runs at 1024 x 768 resolution, necessitating at least a 20-inch monitor.

Every system will have its strengths and weaknesses, and the shortcomings of Prismatica are thankfully few. The advantage to software-based recording is that the next version release will make it only better. When I received the latest update on Prisma. Spectral had included two IMB SIMMs needed to operate the upgrade. Now that is product support. And according to Spectral, they are also developing a compatible broadcast dedicated version of Prisma/Prismatica.

If you are ready to chuck your analog decks and dip into the digital domain. Prismatica is a good, inexpensive way to get started. Susquehanna Radio Corp. installed six Spectral Prismatica systems last year and more are planned for this year. Anyone wishing to purchase 20 analog multi-track reel machines, please get in touch with us.

For more information from Spectral, contact the company in Washington State at 206-487-2931; or circle Reader Service 125.

Studioframe Is a Breeze

continued from page 55

original track. You can even overlap events on the same track.

Dedicated buttons

The optional DCS-100 controller makes editing even easier. With the jog wheel, you can shuttle at your desired speed and make your edit points as precise as you want - with or without the waveform display. Dedicated buttons let you zoom in or out for the desired resolution you need and handle other functions.

You can vary the audio level of each event in the editing window, producing hassle-free automated mixdowns. The digital mixer passes audio along at preset levels while you set the level for each event on each track. This way you can mix as you go with the ability to adjust the level of any audio event at any time. Likewise, the fade in and out points of each event can be set and changed at any time with the digital mixer simply passing along the audio just as you set it.

The basic radio configuration uses the stereo in and out of your production room console, so it is easiest to use all of the eight tracks grouped into four pairs of stereo tracks. This gives you the ability to use stereo audio sources such as music and sound effects. You have the same transport functions as a reel-to-reel, plus the perfect way to locate audio.

Separate buttons give you the ability to record, hear the input source, solo and mute each channel on each track. When using the grouped feature, both tracks in the group will do the same thing (record, mute, etc.) so you do not have to work so hard.

The Studioframe from Computer Concepts can be configured to support up to 48 independent channels, but for the basic radio version, eight tracks is all you need. With the ability to overlap two events on the same track, you could actually play up to 16 different audio events simultaneously.

No degradation

Unlike tape, you can copy audio from track to track with no analog degradation. Plus, you can overlap audio events on the same track. Audio can also be recorded from and played back to digital audio sources with the AES input and output. And, with six hours of storage on the hard drives. you can access the same audio for different recording projects.

For playback, you could use eight separate inputs on your console for mixdown in real time. If you are faced with a limited number of inputs and outputs, you could configure Studioframe as a two-track tape recorder by using the Studioframe digital mixer. Analog connections can also be used with Studioframe for a two-channel or eight-channel discreet configuration.

You can back up your masterpieces two ways. You can dub your final recording to any analog source or digital device such as a DAT machine. If you want to save your individual tracks and edit points, you can back up Studioframe using the data tape back-up system.

With its ease of recording and editing and flexible software audio management, Studioframe is bringing the best of multitrack editing to today's digital stations

For more information from Computer Concepts, contact Stuart McRea in Kansas at 800-255-6350; or circle Reader Service 119.

USER REPORT

BUYERS GUIDE

Iaking Music Fit with TuneBuilder

by Randy Hale Editor Hale & Hearty Productions

NASHVILLE, Tenn. Your deadline is yesterday. The final product needs a music track. Needledrop music is what the budget calls for and the client wants it to feel scored. By the way, the running time for this piece is five minutes and 17 seconds. You will have to find a few perfect cut points and backtime the music so it hits just right at the end. And of course, just before air time the client will want to change it.

Enter TuneBuilder, a self-editing music software system from AirWorks Media that lets you quickly and easily produce great music cuts automatically. This is a tool that will cut your music production time by 90 percent, no matter how difficult the musical requirements or the client.

Basic requirements

For me, the slowest part of creating any audio project has always been the music track. It takes time and a good sense of music composition. With TuneBuilder, it is not necessary to have much of either

TuneBuilder is a self-editing music software system.

- just a PC, Macintosh or Amiga computer and the basic system requirements. The program is easy to use. It is laid out

in a work-in-progress style of management. Simply select the music you want to use through TuneBuilder and type in the length you need. The system offers you a cut at the designated length.

If the cut does not feel right, just ask for another version. TuneBuilder offers as many different versions as you have time to listen to. You can also cut and paste segments within these versions to further create exactly what you want. Once you are happy with your cut, apply volume settings and export it to a file format of your choice. The time it takes to accomplish this can be as little as five minutes.

The music library can be searched by many criteria: song name, beats per minute, style of music, tempo, version, less than or more than a certain length, notes you have previously made or disk number.

A cut can be auditioned by choosing a selection and hitting Play. After the necessary tracks have been defined, they are loaded into the project builder where the music is automatically digitized to the hard drive for editing.

Keep things organized

The project builder is designed to help keep projects organized. All the information about selections are available at a glance and future edited versions will be logged here as well. It is a quick way to check versions, lengths and quick notes that have been made.

After a track is picked and entered into the TuneBuilder window, the desired length must be entered and the program is asked to generate a version. I can hit Playback to instantly hear if I like it. Right off the bat, I can keep the first version, save and set it aside, and then generate one or several hundred more versions

Ninety percent of the time I will use one of the first three versions as my final cut. But, if I need to, I can go into the timeline of the piece and edit block by block. I may choose to lock some blocks in place while cutting or moving others. This is the heart of the program: it is a simple cut-and-paste technique. Color-coded markers help you match preferred edits.

After the music track sounds good and is cut to the right length, I will adjust the volume settings throughout the piece. The TuneBuilder Volume Editor is visually oriented and fast. A timeline is presented and you create the waveform shape to increase or decrease the volume over time.

The last task is to export the completed sound file. The choice you need will be available: AIF, AFC (which is the familiar AIFF-C), au, RAW, sd, SMP, snd, VOC or WAV. These can either be 8 bit or 16 bit, 44 mHz, 100 mHz and stereo. TuneBuilder does not require a sound card, but it is nice to have one so you can hear your music at broadcast resolution.

Painstaking analysis

TuneBuilder is designed to work with certain music libraries in which the

music is encoded to work with the software. A group of musicians has painstakingly analyzed each composition for possible edit points. There are currently eight libraries available on the TuneBuilder system and more in the works.

TuneBuilder has been good to me. The software is incredible, and the folks at AirWorks are always available to offer advice, troubleshoot or just dream with me about those things I wish for. They have a Web site and a technical support team that cares. This is a product that will spoil you immediately.

For more information from AirWorks Media, contact the company in Edmonton at 800-525-5962 or 403-424-9922; Compuserve: 75124.3323; Web site: www.snazzy.com/airworks; or circle Reader Service 161.

April 14-18, 1996

Exhibits: April 15-18, 1996

Las Vegas, Nevada USA

A REVOLUTIONARY EXHIBITION

As the communications industries continue to converge, it becomes even more important for you to keep up with the latest technologies

THE ELECTRUNG KEUL and trends. NAB '96 will help you do just that. See, compare and discover revolutionary equipment, products and services for broadcasting, audio/video production, post-production, telecommunications and multimedia from more than 1000 exhibitors!

KEEP UP WITH THE EVOLUTION

In addition to the Exhibition, NAB '96 offers over 250 educational seminars and workshops in 10 concurrent conferences. From management, legal, programming and sales/marketing issues, to more technical issues relating to broadcast engineering, tele-production, telecommunications, and multimedia the NAB '96 conferences will provide you with real-world solutions for all your business needs.

□ YES! Send me information on NAB '96 THIS COMPLETED FORM TO

REVO

中

A

NUNNINNNNNNNNN

Nome	Title
Company	Cal Letters
Address	
City	State Zip
Country	
Phone	
Fox	
E-Moil Address	E-Mail Service

RW You can also receive information from: cox-On-Demand - dial 301/216-1847 from the touch-tone handset of your fax machine and follow the voice instructions World Wide Web http://www.nab.org

For more information on attending, call 800/342-2460 or 202/775-4970 To learn about exhibiting at NAB '96, call he NAB exhibit sales team at 800/NAB-EXPO or 202/775-4988

BUYERS GUIDE

Catching Digital Processing Waves

by Robert Lee **Chief Engineer Brown Bag Productions**

ENGLEWOOD, Colo. The problem with most computer digital signal processors is essentially identical to the problem with early digital audio. The clean, quiet sound you fell in love with came at a cost of cheesiness and paper-thin sound. The analog world of intermodulation and distortion and layer upon layer of noise suddenly did not look quite so bad. But just when you thought you should excise every

LMA/DUOPOLY CONTOUR MAPS

dataworld The LMA/DUOPOLY Contour Analysis is a precise electronic verification of overlapping and intersecting contours.

AM and FM City Grade contours are shown in full color, including transmitter site indicator. The map is supported with a printout showing all of the stations which appear on the map.

Daily updating of dataworld's AM and FM databases ensures the latest information.

OTHER MAPPING OPTIONS

- Shadowing (Terrain Shielding)
- Contour Coverage
- **Population Density**
- Zip Code Boundaries
- **Received Signal Level**
- **Custom Displays**

WHO ARE YOUR LISTENERS ?

Others give you 1990 Census Data. Only **OSISWOPIO** gives you CURRENT year data and *FIVE* year projections!

- Comprehensive Ethnic and Demographic Data
- Ethnic/Demographic Data Available for Each Zip Code Within Coverage Area
- Age Analysis by Ethnic Groups
- Resolution Increased to Block Level
- Percent of County Coverage Shown
- Projections into the next century

ETHNIC/DEMOGRAPHIC INFORMATION DISPLAYED **USING MULTI-COLOR** SHADING



800-368-5754 FAX: 301-656-5341 e-mail: info@dataworld.com WWW: http:\\dataworld.com

piece of computer equipment you own, in comes a couple of DSP programs truly worthy of the space on you hard disk

Waves has several intriguing signal processors, including the Q10 and L1. We use Waves programs as plug-in software for Digidesign's Sound Designer II, running on an 040 Macintosh with NuBus capability. All Waves programs allow the user to save set-ups, compare two modifications of settings, compare wet and dry versions, invert phase, swap channels and view accurate meters.

Fully parametric bands

The Q10 is a 10-band equalizer. Each band is fully parametric and frequency is variable from 16 Hz to 20 kHz. Gain is ± 18 dB and the Q is adjustable from RAM allocation. If you lack sufficient RAM to preview the entire piece, you need to use the SDII main screen to hear the EQ's effects on the entire song or voiceover — a time-consuming, screen-swapping process. In fairness, this problem is endemic to all SDII plug-ins. Also, the Q10 screen is not resizable and looks a little puny on my 20-inch screen.

The L1 Ultramaximizer is a bruteforce, brick-wall peak limiter. For a medium like radio where loud is almost always considered positive, the L1 delivers increased resolution.

The L1 is relatively simple to operate and is available for a variety of platforms and applications. The key to making the L1 do its job is gauging where to set the threshold. This varies depending upon the incoming level of

There was no coloring or masking of the sound and the punchiness of the tracks shined through.

extremely narrow at 100 to gargantuanly wide at 0.5. Filtering for each band is selectable among bell, high or low pass and high or low shelf.

Ease of use is one area where the Q10 excels. Simultaneous adjustments to gain and frequency can be effected by dragging with a mouse on the graphic equalization curve, immediately displaying the results. Both Q changes and band on/off can also be accessed from the graphics screen. All of these functions are also mouse-driven in the numerical display portion of the screen. This makes the Q10 both a quick study and quick to implement.

Gain in any digital device requires constant monitoring. The use of tone control inherently changes gain, but the Q10 shines when dealing with this issue. The color metering is both accurate and quick-responding while input and output levels are adjustable in 1/10 dB increments. The output level includes a display showing how much headroom is available, so normalization is conveniently achieved.

The best test

The best test of any EQ is its sound. In a recent CD mastering project for NFL Films, we extensively employed the O10 to add bottom end to some of the material. The Q10 came through with high marks because of its ability to tailor its clean filters to subtly raise and lower frequencies in the problem range. There was no coloring or masking of the sound and the punchiness of the tracks shined through.

No software is without problems, and there are some items to mention. I have experienced some unexplained crashes when mousing quickly between the Q10 screen and the SDII screen. No data was corrupted, but nothing I was working on was saved either.

One limitation of the SDII plug-in system is that all previewing is based on the material to be limited.

Input levels are separately adjustable left and right in 1/10 dB increments, which is a nice way of evening out improperly balanced original recordings. The out ceiling control allows the final output to be any value up to 0 dB. Release is variable from 0.01 second to 1 second.

The final piece in the Waves L1 puzzle is its advanced dithering scheme called Increased Digital Resolution (IDR). Because all DSPs add bits to represent the signal, those extra bits must somehow be lopped off to get back to 16 bits. Waves' unique IDR allows the user to select the proper dithering — sort of a white noise added back to the signal to smooth the sound — and noise shape to suit the particular application.

The L1 adds punch and bigness to material that lacked it before. Nearly any production or voiceover will sound better through the L1, but better-sounding material requires less L1 processing. The results of L1 processing will exhibit higher levels on analog meters, but the digital level, no matter how large the increase in auditory level, will not go over 0 dB.

Use care

One must use care with the L1. It is not for everyone or everything. Its peak limiting is terrific for rock music. but not so great on soft, non-percussive music. When pushed to the extreme at very low thresholds, the results can sound distorted. The process also adds a soft, low bottom to the production, warming things up a bit. Problems can be caused if it is not accounted for with the EQ.

Also, the L1 is the last processing one can perform — literally. EQing post L1 processing is not a pleasant experience.

Despite these limitations, as a means of blending your work to make it stand out in a finished manner, the L1 has my vote. It is a bona fide mastering tool and delivers a professional result with very little effort on the operator's part. That may be the thing I like best.

For more information from Waves, contact the company in Tennessee at 423-588-9307; Website: www.waves.com/ waves; or circle Reader Service 172.



Reprinted from Radio World March 26, 1932. Editor's note: The RW of old, printed for a time in the 1920s and 1930s and today's RW are unrelated except in name.

\$768,903 NET FOR RCA IN 1931: \$1.95 DIVIDEND

Gross operating income of the Radio Corporation of America for 1931, accord-ing to the annual report just placed in the hands of stockholders, was \$100,124,-847, or about \$32,000,000 less than during the previous year, the net income was \$768,903 as against \$5,526,293 and the Class A preferred shares earned \$1.95, as against \$13.87 for 1931. No dividends have been paid or declared on common stock. stock

stock. It is proposed to reduce the capital and surplus by \$45,258,200, and forms to this effect are in the hands of common and Class A stockholders. Treasury stock is to be retired as follows: 36,100 of Class B preferred and 30,060 of common. The capital representation of common stock is to be reduced from \$4.22 to \$2. The number of stockholders increased in 1931, so it is now over 100,000.

Feels Effect of Depression

Feels Effect of Depression "Radio was no less affected than older or more seasoned industries by the world-wide subnormal business conditions prevailing throughout the year, by the decline in price levels and by unemploy-ment which curtailed the purchasing power of many families," James G. Har-bord, chairman, and David Sarnoff, presi-dent, say in their report. "Although your company entered the year with a compact and efficient organ-ization and with production schedules balanced closely with sales response, ex-panded programs could be undertaken only along limited lines. In export ac-tivities the decline in foreign exchange adversely affected the earnings of your company. Intensive effort was directed toward the further improvement of manufacturing processes and in effecting economies in costs of distribution. **Consolidation Reported**

Consolidation Reported

"RCA Victor Company, Inc., marketed during 1931 a competitive line of radio sets and phonographs embodying many new developments of the research labora-tories and offering the best values in the history of your company. The dealer or-ganization was strengthened throughout the country, and a consolidation was acthe country, and a consolidation was ac-complished on the Radiola and Victor lines of broadcast receivers."

The Next Generation Digital Audio System Satellite • Automation • Live • Studio Assistant





LPB SALSA - \$8,995

NOW 486 POWER 386DX33 PC System with 1 Gigabyte Hard Drive Open-ended architecture, always upgradeable Simultaneous Record and Play of audio Stereo and Mono audio User-controlled variable audio overlap for live-sounding segues Accepts downloads from all standard traffic and music scheduling systems

Provides a 31-Day historical log of everything that aired and when System support available 24 hours a day, 365 days a year

Live Studio Assist (included)

Full color and easy graphics Control completely by mouse Play any hard drive audio immediately or via schedule Search spots and music by up to 6 different categories Identification of bad audio files - before they air

Satellite Automation (included)

Up to 15 stereo satellite networks, unlimited events/hour Record for delayed broadcast - automatically 21 Format clocks - changing automatically as you wish Up to 8 control outputs for other sources or equipment Walkaway operation with full confidence

You Can Rely On LPB.

LPB SALSA Available Worldwide From LPB Audio Products Dealers LPB, Inc. 28 Bacton Hill Road, Frazer, PA 19355 USA. Phone +610- 644-1123, Fax +610-644-8651, E-mail lpbinc@aol.com

> **Gircle (142) On Reader Service Card World Radio History**

Live Assist Screen Pictured

FIELD REPORT ore up Your Defenses Against Disaster

by Thomas G. Osenkowsky

BROOKFIELD, Conn. In September 1995, hurricanes Luis and Marilyn swept through the Caribbean and U.S. Virgin Islands leaving a trail of death and destruction. Luis pounded the friendly island of St. Maarten for 16 continuous hours with sustained winds of 140-plus miles per hour.

One of the many victims of these natural disasters was PJD-2 and PJD-3. the Voice of St. Maarten in the Netherlands Antilles.

Still standing

After the skies cleared, only the recently constructed AM and FM central towers stood. The studios and transmitter sites suffered extensive damage. The roofs on the downtown Philipsburg studios and AM transmitter site were torn off. The FM transmitter blower inhaled airborne salt water, contaminating the PA cavity and tube socket. The AM transmitters and studio equipment were soaked with salt water.

Many natural disasters can be predicted in advance. If your facilities are located in harsh weather prone areas, there are preparations that can be made to shore up your defenses against disaster. Start with the following checklist:

1) All transmitters, racks and ancillary equipment should be placed on pallets to



Exterior of the FM transmitter site

avoid groundwater seepage. Ensure that every transmitter and rack and other gear is bonded to the master ground system by at least a 3-inch copper strap.

2) In hurricane zones, a reinforced concrete building and roof are a must. Check equipment placement relative to windows and ventilation ducts. Can severe winds force rainwater into the equipment? Prior to storm conditions, windows should be boarded up and

adequate ventilation provided by other secure means.

3) Make sure you have a current inventory of all equipment. The inventory should be inclusive of furniture, carpets, air conditioning gear, tools, spare parts, shelves,

satellite dishes, coax cable type and lengths, power generators, auxiliary antennas/masts, ATU boxes and all contents of the building(s) employed. If continued on next page



AM transmitter site

THERE'S A DIGITAL SYSTEM IN YOUR FUTURE. YOU GET TO CHOOSE IT There are systems from software geeks, former PDs, and hardware guys THEY ALL FLASH THEIR SCREENS AND PROMISE MAGIC

But this isn't about hells and whistles, is

THIS IS ABOUT WAKING UP TO YOUR Dager. THIS IS ABOUT YOUR reputation. THIS IS YOUR ITTTLE.

Only AudioVAULT[®] has proven itself in the biggest, most technically demanding radio facilities in the world, and in stations like yours. But, all the computing power in the world is worthless without a long-term commitment to rounahere to fulfill that commitment.



Sample AudioVAULT on the World Wide Web:

http://www.bdcast.com

or e-mail, phone or fax us and we'll send you a demo kit.

future@bdcast.com 217-224-9600 fax 1-217-224-9607

Circle (200) On Reader Service Card World Radio History

disaster strikes, it may be necessary to replace some or all of the equipment.

As the pace of technology quickens and new equipment is purchased, the station's inventory list often is overlooked. It is wise to take photographs of every room in the station's facility on a regular basis. Identify the room on the back of the photo and the date it was taken.

4) Review the station's insurance coverage with an agent on an annual basis. Be sure the policy is a replacement cost type, not a depreciation type. Replacement cost will pay to replace the equipment that is destroyed or unsalvageable. Ascertain whether the station has business interruption insurance for lost commercial revenues.

In most cases, several different underwriters will be involved. The tower may be underwritten by one carrier while the building contents will by handled by another, as will the building proper. This is where the inventory and photographs will play an important role.

Plan ahead

5) Assessment of certain contents is difficult. A compact disc music library often contains promotional singles that are of a limited edition. They contain special versions of songs and are virtually irreplaceable. Vinyl libraries likewise may contain one-of-a-kind pressings. Be sure these are properly identified on the inventory. Any special studio furniture, sound-proofing, electrical service, telephone system, environmental system and other unique items must be carefully documented and photographed.

6) If possible, locate audio processing equipment at the transmitter. If a disaster strikes the studio, it will be possible to hook up a portable mixer at the transmitter site to broadcast from there until the studios are operable. DJ "coffin" units can be rented from a local sound store and fed directly into the processor input. Equip the transmitter site telephone with an audio coupler to allow taping of news feeds, etc. The station's remote van can be an asset here. If severe weather is forecast, load up the remote van and park it near the transmitter site in a secure,



Don't leave us behind!

Mail or fax your current label and new address (with effective date) to: Circulation, RW, PO Box 1214 Falls Church, VA 22041 or FAX 703-998-2966.

Address changes will be processed within four weeks of receipt

Thanks!



weatherproof area. It may be your main 9) If y

studio for awhile.7) If your station does not have a power

generator, a portable unit can be rented and pressed into service. An FM exciter can directly feed the antenna in most cases. If your studio site is closer to the market area, the exciter can be temporarily relocated to the studio and broadcast commenced from there. A Yagi or other high gain antenna can afford best coverage under these conditions, while placing minimal demands on AC power requirements.

8) If your STL becomes inoperable, an RPU can be substituted. It may be worthwhile to invest the time to modify the newsroom's police scanner to produce a high fidelity audio output in the event it needs to be used as an emergency RPU receiver. Most often, only a few components need to be changed.

Moseley

9) If your AM tower is damaged, it may be possible to diplex your transmitter into a neighbor's tower. This is simple for the non-directional case and a bit more tricky for the directional. A temporary AM antenna can be a folded unipole variety suspended by a pole, crane or other vertical structure. The ground system can be of the elevated variety. Excellent signal results under harsh conditions can be achieved.

Invaluable resources

A competent consulting engineer can be an invaluable resource in getting your stations up and going immediately. In one recent case, I used one AM tower of a two-tower DA to broadcast to stations from the same site when one suffered a tower collapse. The signal was far superior to the emergency longwire pressed into service at the original site. 10) Use common sense when evaluating your facility for possible disasters. Keep trees clear from guy wire anchors and buildings. Trim weeds in the entire antenna field. Many brush fires melt transmission lines and even snap guy wires form severe heat. Have a competent, insured tower rigger inspect your towers annually. Use ice shields to protect antennas, the ATU, isocoupler and transmitter site roof. Consider the effects of wind, lightning, ice and flood waters when you evaluate your facility.

A facility that is well planned and well designed is more likely to survive a disaster than one that is not. PJD-2 and PJD-3 are now back on the air with newly constructed, concrete fortified studios and a new 5 kW solid state AM transmitter. While no facility can be 100-percent disaster proof, proper planning can be a valuable asset when faced with the worst.

Looking for the ultimate affordable digital STL solution?

LOOK NO Further!

Moseley

 ∇

Moseley Associates Inc. 111 Castilian Drive Santa Barbara, CA 93117 Voice (805) 968-9621 Fax (805) 685-9638 HEN Moseley introduced the DSP 6000 in 1992 it was immediately acclaimed by the broadcast industry as THE digital STL solution. Here's why. The DSP 6000 virtually eliminates the problems associated with conventional analog transmission such as noise due to signal fades, birdies from intermod interference, and lack of spectrum for multiple audio feeds to LMA and Duopoly transmitter sites. Almost three years later, the DSP 6000 is the de-facto industry standard for sonic clarity and reliability with sales approaching 2,000 installations worldwide. But you probably already knew all of that stuff, right?

What you may not have known, is that the DSP 6000 also works in conjunction with your existing Moseley analog composite STLs! If you've invested in a Moseley PCL 505/C, 600, 606, 606/C or 6000, a few simple modifications convert your entire system to digital! And it won't cost a pot of gold (just under \$6,000). Call us for modification instructions, or better yet, ship us your STL and for a mere hundred bucks, we'll make the modifications and do the setup for you.

Isn't it time you stopped chasing rainbows and started enjoying the sonic clarity of digital? "Digitally clear. Clearly digital. Just the way we planned it." ▼

Gircle (95) On Reader Service Card

Radio World. **Broadcast Equipment Exchange**

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

5671

619-571-5031.

293-5671

AMPLIFIERS

Want To Sell

Harris MSP-90 tri-band AGC amp, \$450 each. D Myers, WQWQ, 6083 Martin Rd, Muskegon MI 49444, 616-798-2245.

Soundcraftsmen 450 x 2 MOS FET prof H class pwr amp, 315 w/chan at 40 ohm, 450 @2 ohm, 1000 @4 ohm bridged, XLR & RCA inputs, gd cond, \$450. RA Cobb, Solid State Rcdg, 1044 Lightfoot Rd, Winauma FL 33598. 813-634-1940.

Want To Buy

McIntosh Mc60 pwr amps (1 or 2), also other vacuum tube preamp, amps, tubes, etc. RA Cobb, Solid State Rcdg, 1044 Lightfoot Rd, Winauma FL 33598. 813-634 1940

ANTENNAS/ TOWERS/CABLES

Want To Sell

ERI 8-bay G5CPM-8C-HW FM antenna, 100.5 MHz, 2.519 power gain, ctr fed rototiller with 3-1/8' interbay & line matching section, input power rated at 20 kW with pop off purge valve & quarterwave grounding stub, leg mount & anti rotation brackets, 37' total length, available on ground in Laredo TX, \$12,000. B Miller Earle, KBDR, 815 Salinas Ave #1140, Laredo TX 78040. 210-725-1000.

3" HELIAX STANDARD COAXIAL CABLE

50-Ohm, unused, cut to length. Priced below market. Shipped instantly Call Basic Wire & Cable (NANCY) 800-227-4292 FAX: 312-539-3500

ERI LPX-2E rototiller low pwr antenna w/1/4 wave shorting stub, mounting brackets, tuned to 90.7 FM, 2 yrs old, \$1800. M York, WKPW, Knightstown IN. 317-345-9070

02:29

Myat 201-060 1-5/8" to Type-N female adapter/reducer, new, \$100/BO. D Michaels, POB 1234, Mt Shasta CA 96067. 916-926-1332

RCA (Dielectric) 6 bay high pwr FM antenna on 104.1, \$7500/BO, you pay shpg. Ken or Steve, 907-586-3630



Shively 6602 4 bay hor on 100.1 MHz, will handle 1 kW input, never used, with cables, \$1900/ Best Offer. D Michaels, POB 1234, Mt Shasta CA 96067. 916-926-1332

Tower phasers 5 kW (2), you pick up, \$2000 ea. 805-237-6111 or 818-446-3468.

PD-4 4 bay FM antenna with radomes tuned to 98.3, just removed from service for power increase, \$700: 350' 1-5/8" air coax with flanges on 8' reel. \$525. Max, KFYZ, POB 551856, Dallas TX 75355, 214-722-0006

Three tower phasers 5kW (2), \$2000/ea, you pick up. 805-237-6111 or 818-446-3468.

AUDIO PRODUCTION

Want To Sell

Symetrix 108 8 line telephone hybrid (2) with 2 control boxes, 50' control cable, \$1100 each or \$2000/both. Gary, 908-938-4217.

Tascam ES-51 synchronizer & (2) ES-50 slaves, creates & syncs SMPTE time code audio to video, digital keyboard & rack mount slaves, with cables & manual, \$1200/BO. D Michaels, POB 1234, Mt Shasta CA 96067. 916-926-1332

ADC PATCH CORDS NEW T.T. sale-\$6.95 NEW 1/4 "sale-\$8.95 patchbays and used equipment too! audio village 619/320-0728

SP 10MK 2A TT w/SH 10B3 base, \$300; Modulation Sciences CP803, Intelligent Pitch Shifter smart shift IPS33, Yamaha digital delay, Orban parametric EQ 622B, JBL stereo 2-way freq divider 5234a (2), Shure 5505 mic, BO. S Whittaker, Event Prod Srvs, POB 36, Athens OH 45701. 614-591-6874

CASSETTES · CARTS · REELS

J & I AUDIO/VIDEO A wholesaler in the Radio and Television market Now running SPECIALS on audio and video: **BASF CASSETTES-AMPEX R-Rs** AUDIOPAK, FIDELIPAC & ITC CARTS DAT & THE NEW R-CD For more information call Kris Elliot at 1-800-942-1711 or write to: J&I Audio/Video 20899 Kelvin Pl. Woodland Hills, CA 91367

Circle (147) On Reader Service Card

TM Century CHR Gold Disk Library, 85 discs, 1416 titles plus 11 recurrents discs, 6 Christmas discs & 1 novelty disc. \$1000/BO. M York, WKPW, Knightstown IN. 317-345-9070.

dbx 166 stereo compressor, \$350. W Gunn, 619-320-0728.

Pultec EQH-2 tube EQ; UREI 535 stereo EQ, \$350; Lexicon PCM-70 classic reverb, \$1350; Roland SRV 2000 classic reverb, \$525; Orban 245-E stereo synthesizer; Altec 1950-B vintage EQs, \$190/ea. T Coffman, 619-571-5031.

Symetrix 104 4 line telephone hybrid w/control box & 25' control cable, \$800/BO. Gary, 908-938-4217



Roland TR-808, TR-909 & TB-303; Cooper Time Cube, MXR rack mount FX, Ensonig DP-4, Roland SDE-3000 & unusual stu-

LISEC ACCURACY dio gear preferably 60's to late 70's era, working or not, e-mail: bugtussle@world.std.com or lv msg 617-

AUTOMATION EQUIPMENT

Want To Sell

Marantz PMD221 cassette

machine, \$235; Digitech Vocalist

II, \$335; Tascam 06 mixer, \$150;

Beyer M500, \$150. P Santo,

Bugtussle Recdg, POB 634,

Bryantville MA 02327. 617-293-

Want To Buy

Neve, API, MXR mic pres, EQs,

effects, compressors. T Coffman,

SMC Carousel (4) 250's, (2) 350's, (2) 450's stereo & mono units, working when removed, Uhaul, manuals & spare parts, BO. J LeSeure, WCMY, 216 W Lafavette St. Ottawa IL 61350, 815-434-6050

Cetec 7000 with (2) 48 tray IGM Instacarts, (4) 770 ITC reels, many spare parts in racks, removed & works great, \$3000 +shpg. Mike or Dwight, KEKB, 315 Kennedy Ave, Grand Junction CO 81501. 970-243-3699.

Format Sentry FS12-C controller with 2 fade modules, precision clock, 286 computer with 2 floppies & mono screen, 2 @ FS CD controller with 18 pack Pioneer upgrade, FS DS-1 storage unit with 8 hours mono storage time, \$8900; Format Sentry FS12-C controller with 2 fade modules, precision clock, 386 computer with 1 floppy 7 color monitor, 3@ 42 tray Go-Carts & 2 SMC carousels, plus parts, cables, etc, \$4900. J King, KBIM, POB 2308, Rosewell NM 88202. 505-623-9100

IGM 500 stereo mainframe w/RAM part, working when removed, manuals & some spare parts, U-haul, Best Offer. J LeSeure, WCMY, 216 W Lafayette St, Ottawa IL 61350. 815-434-6050.



 AFFORDABLE ATOMIC CLOCK STABILITY · SMPTE MASTER CLOCK GEN

CALL FOR BROCHURE OR FAX-BACK \$995 TEL: 800-940-2248 · FAX: 309-833-5175 W CLARK & ASSOCIATES, MACOMB, IL

CART MACHINES

Want To Sell

Audicord DL Series (2) R/P, one play stereo cart unit, (4) wall mount cart racks, BO, Max, KFYZ, POB 551856, Dallas TX 75355. 214-722-0006.

ITC 3D R/P & one 3D play in excellent condition, mono, lot of 500 carts in various lengths; ABCO wire Carousel Best Offer Max. KFYZ, POB 551856, Dallas TX 75355. 214-722-0006



ITC Delta - new pinch rollers: Mono playback (2), record/play (2). stereo record/play (1). **MOTIVATED!** Spotmaster series 2000 record (1). Wes, 818-798-9128.

ITC record amps, 3 tone, stereo \$350 or mono \$250. W Gunn, 619-320-0728.

Want To Buy

ITC, BE, Fidelipac cart machines: single, triple, mono, stereo, play & record/play. Call M O'Drobinak @ 619-758-0888.

COMPUTERS

Want To Sell

Anderson AJ1256 modem, \$20; TEC F10 daisy wheel printer, \$75; Texas Instrument 810 printer, \$75; Dysan 8" disks, cheap. Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68702. 402-371-0780.

Arrakis digital network with (2) Digilinks, one with Trak Star digital prod module & one with Gemini on-air module & cart wall with all interface hardware, less than 6 months old, \$10,500. L Zeve, WHYL, Box WHYL, Carlisle PA 17013, 717-249-1717 or Izev@vcx.net.

Want To Buy

Tandy 6000 HD with at least one floppy drive. Mel Crosby, 408-363-1646

CONSOLES

Want To Sell

Custom hand build opamp discrete with all matched lo-noise transistors, 8 input, 4 output, \$250/BO. T Houston, Custom Audio, 929 California Ave, Bakersfield CA 93304. 805-324-0736.

Sparta Cetec A-15B 6 channel mono console, \$300. T Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68702. 402-371-0780.

E.V. BK-1232 12 channel stereo, \$600. 616-782-9258.

Gates Yard board, new tubes, \$395. W Gunn, 619-320-0728.

DISCO-PRO SOUND EQUIPMENT

Want To Sell

Klipsch KP-3000-C 300 W/pr 2way full range stage loud-speakers, 15" woofer, 1.5" compression driver on tractrix horn & 12" passive bass radiator, carpet covered handles & stand mount, new condition with 5 year warranty, \$600/pr. B Fisher, KPOK, 122 S Main St, Bowman ND 58623. 701-523-3883.

Want To Buy

dbx 4 BX-2 remote, dbx 120XDS. RA Cobb, Solid State Bcdg, 1044 Lightfoot Rd, Winauma FL 33598. 813-634-1940.

FINANCIAL SERVICES



LIMITERS

Want To Sell

CRL 900A AM stereo processor. new; AM stereo package: Motorola 1300 AM stereo exciter. Motorola 1310 AM stereo mod monitor, \$4500. D Myers, WQWQ, 6083 Martin Rd, Muskegon MI 49444, 616-798-2245.

Symetrix CL-150 fast RMS compressor/limiter, \$175. D Kelly, KWPN, Box 84, West Point NE 68788. 402-372-5423.

Circle (128) On Reader Service Card



February 7, 1996

LIMITERS...WTS

CRL audio processing system including mdl SPP 800, mdl SMP 800, mdl SG 800, \$1500. R Fritsch, KBZQ, POB 6888, Lawton OK 73506. 405-357-9950.

dbx 503 compressor/expander, \$350. T Coffman, 619-571-5031

Want To Buy

All types, Gates, RCA, Collins, Altec, dbx, Urei, Fairchild. T Coffman, 619-571-5031.

dbx, Gates, RCA, Collins, Altec, Fairchild, all types. T Coffman, 619-571-5031.

Teletronix LA-2A's, URE! LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 214-271-7625

MICROPHONES

Want To Sell

EV 660 super cardioid mics, good shape. A Wodel, ILCC Telecomm. 1209 N 7th St, Esterville IA 51334. 712-362-4119.

Countryman Isomax II H (2) hypercardioid lays on 50' cable & 48V preamps, \$350/both; AKG CK-9 long shotgun capsule for 451 or 452 mics, \$275. Eric, Audio Etc, 525 W Stratford PI, Chicago IL 60657. 312-975-6598.

Shure green bullet harmonica mic, orig. T Coffman, 619-571-5031.

E.V. - RE-20, \$275; RE-10, \$75; DS-35, \$50. 616-782-9258.

EV PL20 (RE20) mics, good condition, \$325; RCA 77DX mics, reconditioned with new ribbons: Neumann KM84 pair. W Gunn, 619-320-0728

Want To Buy

Vanguard PK20 & SK150 mics & info e-mail: bugtussle@world.std.com or lv msg 617-293-5671.

RCA 77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214-271-7625.

S

MISCELLANEOUS

Want To Sell

Sola CVS constant voltage AC xfmr, \$1500/BO +shpg. A Wodel, ILCC Telecomm, 1209 N 7th St, Estherville IA 51334. 712-362-4119



Lectrosonics Pro 4 quad box for 185/187 series VHF rcvrs, never used, mint cond, \$1100. Eric, Audio Etc. 525 West Stratford PI. Chicago IL 60657. 312-975-6598.

\star ANNOUNCING \star

"Radios by Hallicrafters". the definitive book on The Hallicrafters Company and its products by Chuck Dachis, The Hallicrafter Collector' More than 200 pages, over 600 photographs and 10 years in the making. Available late March 1996 at \$29.95 from Schiffer Publishing Ltd, 77 Lower Valley Road, Atglen, PA 19310

SAE 3200 digital FM tuner, tunes odd/even frequency from 87.5 to 108.5 MHz, rotary tuning knob, 5-1/4" high rack mounting, 600 ohm out stereo/mono, \$125 +shpg. S Lawson, KAK Prod, 928 Hyland Dr, Santa Rosa CA 95404. 707-528-4055

E.V. HR-6040 (2) horns with 2" adapters, \$100. 616-782-9258.

Want To Buy

Jazz record collections, 10' LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose. Program Recdgs, 228 East 10th, NYNY 10003. 212-674-3060.

TEKTRONIX 570, tube testers. record cutters. 612-869-4963

Scully 270 R-R stereo play tape

MONITORS Want To Sell

Auratone 5-C super cube, \$50. S

Bogart, Bogart Productions, 817-467-0158

Panasonic 920ma TTL monitor, \$20; Panasonic 930 TTL monitor, \$20; NEC FVM125A TTL monitor, \$20. T Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68702. 402-371-0780.

RECEIVERS & TRANSCEIVERS

Want To Sell

SCA RECEIVERS-ALL TYPES Reading Service / Ethnic / Data

Professional / Table Will work to meet your receiver needs

DAYTON INDUSTRIAL CORP. (Manufacturer) 2237 Industrial Boulevard Sarasota, FL 34234 Tel: 813 351 4454 FAX: 6081

RECORDERS

Want To Self

Ampex 300-C-4 vintage 1/2" 4 chnl recorder with tube electronics, \$750/BO; various Teac, Sony, AKAI 1/4 track stereo R-R's, excellent analog machines for home/ office, \$75 ea. T Houston, Custom Audio, 929 California Ave. Bakersfield CA 93304, 805-324-0736,

BE Spotmaster 6100R ten spot, mono, rack mount with manual, like new, \$600. KMOG, HCR-44A, Payson AZ 85541. 520-474-5214.

REVOX PARTS/SERVICE Cassette CD Open ree

NOS PR99 repros apstan resurfacing, ALL BRANDS JM TECHNICAL ARTS 30 Music Sq. W. #156 Nashville, TN 37203 (615) 244-6892

Otari 5050-SHD 8 track 1/2' newly rebuilt, heads have full, life left, \$1800. W Gunn 619-320-0728

Nagra 4-S stereo sync machine, \$4500. W Gunn, 619-320-0728.

BE 3000A mono PB/delay rcdr, rk mnt, new, \$500; BE 3000 (2) mono PB with tones, \$450 ea. D Kelly, KWPN, Box 84, West Point NE 68788. 402-372-5423.

> Call Simone Mullins, Classified Ad Manager, to reserve space in the next issue. Use vour credit card to pay, we now accept VISA and MASTERCARD.

345-2006

4514

5827 Columbia Pike, 3rd Floor Falls Church, VA 22041 = PHONE: 703-998-7600 = FAX: 703-998-2966

Select from these categories	for best ad positioning:
Acoustics	Computers
Amplifiers	Consoles
Antennas & Towers & Cables	Disco-Pro Sound Equip.
Audio Production (Other)	Financial Services
Brokers	Leasing

RadieWerld

Amplifiers	Consoles	Recorders
Antennas & Towers & Cables	Disco-Pro Sound Equip	Remote &
Audio Production (Other) Brokers Business Opportunities	Financial Services	Repair Ser
	Leasing	Satellite Ec
	Limiters	Software
	Microphones	Stations
Cart Machines	Miscellaneous	Stereo Ger
CD Players	Monitors	Tapes, Car

Classified Advertising Rates Effective January 1, 1996

	<u>1x</u>	3x	6x	12x
1-9 col inch (per inch)	\$65	62	58	52
10-19 col inch (per inch)	59	56	52	47
Distributor Directory	100	95	90	85
Professional Card	70	64	59	53
Classified Line Ad		\$1.95 p	er word	
Blind Box Ad		\$15 add	litional	

Receivers & Transceivers

Remote & Microwave Equip. Repair Services Satellite Equipment Stereo Generators

> To compute ad costs: Multiply the number of ad inches (columns x inches) by the desired rate schedule for your per unit cost. Example: a 3" ad at the 1x rate is \$195, at the 3x rate \$186, at the 6x rate \$174, at the 12x rate \$156. etc.

Tubes

Turntables



machine, \$200; ITC 750 stereo R-R play, \$400; Ampex 440 R-R stereo play, \$150. T Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68702. 402-371-0780.

CLEAN PATCH BAYS NO DOWN TIME

VERTIGO BURNISHERS AND INJECTORS

RESTORE ORIGINAL PERFORMANCE

VERTIGO RECORDING SERVICES

12115 Magnolia Blvd. #116 816-907-5161 North Hollywood, CA 91607 FAX 818-784-3763

Ampex ATR100 taperecorders for

parts. Circuit cards, heads, motors,

machine parts, or electronic parts.

Scully '100' recorders, record/play

amplifiers, 8, 16, 24 track heads.

Sequoia Electronics, 4646 Hounds-

haven Way, San Jose CA 95111.

Second-hand SONY PCM2000

portable DAT recorder. Fax: offers, service record, total head-wear to

Fernando @IBIS PRODUCTIONS,

NEED

QUALITY

ECONOMIC

TAPE HEADS

ELECTRONICS

-(408) 363-1646

FAX 1-(408) 363-0957

Want To Buy

Magnecord or Telex 1021, needs

amp deck in working condition. J

Greman, KJAM, 1015 S Egan Ave,

Madison SD 57042. 605-256-

REMOTE &

MICROWAVE

EQUIPMENT

Want To Sell

Burk TC-8 remote control, 8

telemetry channels, 8 status chan-

nels, \$900. L. Highby, KNGN, RR3

Box 44A, McCook NE 69001. 308-

Tax Deductable Equipment

Test Equipment

Transmitter/Exciters

Training Services

Positions Wanted

EQUOIA

call

TO YOUR PATCH BAYS

\$34.95 Ea.

Call 818-907-5161.

408-363-1646.

508-486-9652

new, tuned, tested, \$1200; Marti RR UHF receiver (rack mount), new, tuned, tested, \$1200; CA 8, 7-bay broadband Yagi antenna, heavy duty, \$350 ea; 1/2" lo loss coas, 140' length, new, \$350; Will-Burt Hurry-Up expandable mast, new, \$2020. D Myers, WQWQ, 6083 Martin Rd, Muskegon MI 49444.616-798-2245.

COMR

QEI 400 Cat Link STL, TSL digital transmission system for use with T1 telephone circuit, TSL includes (2) 10 kHz & (2) 15 kHz cards, STL includes composite input, 10 kHz & 3 kHz channels; (2) channel service units for use on T1 network, excellent condition, \$9000. L Bryant, WXLK, POB 92, Roanoke VA 24022. 540-774-9200.

Gentner SPH3A telephone hybrid, \$300. D Kelly, KWPN, Box 84, West Point NE 68788. 402-372-5423



SH



DISTRIBUTOR DIRECTORY

RENT IT HERE! Call Steve Kirsch for Details

CCS ODECS

SILVER LAKE AUDIO . 516 763 1776 . FAX 516-763 1750

ELOS

The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

> ...country, top 40, news, urban, talk, jazz, the classics, mixed bag...

RADIO! The beat goes on!

CROUSE-KIMZEY OF ANNAPOLIS

tops in broadcast equipment 1-800-955-6800 ask for Kathleen

DIGITAL STUDIO FURNITURE AND COMPONENTS REAL DIGITAL STUDIOS

ROLLING STARRTM STUDIOS THE BEST REMOTE SETUP IN THE BUSINESS

STUDIO UPS SYSTEMS SHORT OR LONG TERM. COMPUTER MONITORED

SPACEWISE ** "THE BROADCASTERS FURNITURE STORE" 800-775-3660



(619) 438-4420 Fax: (619) 438-4759

63

PACKAGES

REMOTE



New, affordable, frequency-agile receiver, direct channel entry by keyboard, selectabl companding 1:1, 2:1, 3:1, wide/narrow bandwidth, de-emphasis selectable, 950-1450 MHz, line output 600 ohms, muting, transponder agile, LNB power supply, 50-channe memory, full baseband output, high-quality audio, Every needed feature at a sensible price (lowest in the industry). Write or call for full information on this quality receiver-the answer for your station. Networks call for prices. Phone: (614) 866-4605 Fax: (614) 866-1201

UNIVERSAL ELECTRONICS, INC. 4555 Groves Road. Suite 12 Columbus. 0H 43 Communications Specialists Phone: (614) 866-4605 Faz: (614) 866-1201

Orban 454A co-operator, \$400: Orban 424A gated compressor/limiter/de-esser_\$400: Modulation Assoc SCPC freq agile mod, \$2500; Comtech C-band upconverter 250AU, \$995 ea; MCL-TWTA MDL 10657 w/new klystron, \$8000; MCL-TWTA (2) mdl 10657, \$5000 ea; Sector Motor SMM3-4G manual waveguide switch, \$750; Gardiner LNA C-band (19), \$75 ea; (2) Microdyne SCPC analog sat rcvr/demod, \$800 ea; (17) Modulation Assoc BP-73 SCPC analog rcvr/demod, \$400 ea; (22) Micro-Phase SCPC analog sat rcvr/ demod, \$600 ea; (33) Bdct Design Group audio router/controller, \$50 ea. T Young, Bible Bdctg Network, Charlotte NC. 1-800-888-7077.

SOFTWARE/

DATABASES

Want To Sell

RADIR: THE RADIO STATION DATABASE on 11,950+ stations. Many gives phones/faxes/web site addresses/ MS-DOS or MAC (as tab delimited ASCI1)_SINGLE_COPY_PRICE SPECIAL: 559.95 ppd. CIAL: \$59.95 ppd. 1-800-277-8224 <u>act: http://www.acenfo.com</u> z∓ .com/bbh/info

Circle (48) On Reader Service Card

Affordable TRAFFIC & BILLING

PC SOFTWARE for DIGILINK & other popular digital systems. Excellent for non-automated stations, too. Try it for 60 days. No obligation. For demo, call ABA Software (941) 643-3689

STATIONS

Want To Sell

Beautiful gulf coast of Texas, C-1, 100,000 W FM priced right, \$295,000. J Saunders, 713-350-4499

1 kW AM 1530 kHz daytime, 3.6 acres, nice bldg, partial owner financing, \$155,000. L.L. Williams, Collinsville VA. 540-647-1530.

5 kW Day/47W night non-directional Richmond VA area incl latest digital equip & complete production facility, \$375,000. 810-694-0888.

Rocky Mountain Region 10,000 watts daytime AM, low power nighttime. Reply to: Radio World, POB 1214. Falls Church VA 22041, Attn box # 96-02-7-2RW

CONSULTANTS

Want To Buy

Small prod company wants to buy small FM, no combos, dark OK, preferably in Southwest. Write to: R Mickle, CMS, 131 Fairview Ave, Ponca City OK 74601. 405-762-7515.

TAPES/CARTS/REELS & CD's

Et. A&D **Cart Rebuilding** Do Bad Carts Have You Temperature Rising? Let A&D clean, load & pack your carts. They'll be serviced within 10 working days! *Guaranteed!* 3706 Vold Ct. 715-835-7347 Eau Claire WI 54701 Fax: 715-835-1151

Want To Sell

IGM 4216 48 tray Go-Cart (3). \$250 ea; SMC 250 Carousel, \$100; BE 2000 cart machine parts (2), \$25. T Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68702. 402-371-0780.



World Radio History

prompt, accurate service to radio stations and networks. Pre-and post-service technical support along with a 6-month warrranty.

V/SA

Relv on...

equipment as trade-in.

Turn to the leader in repair, upgrades, new equipment and accessories. We can answer all

Want To Sell

SATELLITE SYSTEMS

Go to the source. We acquired the repair division

Upgrade your Fairchild Dart 384 and Scientific

Atlanta 7300/7325 to LNB recievers-use existing

Satellite Systems has the experience to get the job

done right. Satellite Systems has 5-years of

experience and is respected industry-wide for

for Fairchild Dart 384 and are the experts.

of your questions.

February 7, 1996

TAPES/CARTS, etc...WTS

Century 21 Supercarts 1500 A/C rock based oldies '55-'88. A-Ha to the Zombies & more, all stereo, \$3/ea or Best Offer. F Taylor, KMWX, Yakima WA. 509-248-1460

Instant Access Music Library CD Vol#1. 50 Cuts consisting mainly of 60's and 30's. Created for Broadcast Commercial Production. Wide variety of styles with a fresh contemporary sound. Offering a FREE 30 DAY REVIEW. Buyout is \$40.00. If it's not for you, just simply return it. Listen to Phone DEMO at (309) 679-2966. Sound Files at http://www.LTM.com/ Instant_Access_Music/. Request Vol 1 at either place or call direct

(309) 342-6721 Pams Jingles reference tapes from the years of 1951-1976, avail from every radio market in the US, Canada & Europe, call after 3PM CST. 214-271-7625.

MARATHON

PRODUCTS COMPANY

Audio Cartridge Rebuilding

Division

Rebuilding/reloading, like new,

all brands, any length up to & including 3.5 minutes, \$1.95 for

Standard Tape, \$2.15 ea. for HOLN

Tape. FOB out plant, 48 hrs delivery.

(New rate effective 3/1/95)

New NAB Marathon cartridges

prices on request.

35 Years professional experience!

Lifetime member AES R.D. MYERS Sr.

Manufacturers of Audio Devices,

Continuous Tape Mag.

69 Sandersdale Rd. Charlton, MA 01507

1-508-248-3157 or 1-508-853-0988

Empty EIA 7.0 & 10.5" reels, \$35 +shpg. 703-578-3014.

Radio prod facility deleting clas-sic rock library on 7 & 10.5" reels, \$250 +shpg. 703-578-3014.

TAX DEDUCTIBLE

FOR DONATION: The Production Master Album Sound Effects Library, 46 discs with master reference book, you pay shipping. M York, WKPW, Knightstown IN. 317-345-9070.

Non-profit organization seeks LPB AM transmitter or equivalent, Gates M6095 FM exciter or equivalent & audio console, will accept donations or pay very low costs. M Starin, WGOT TV-60, 457 Varney St, Manchester NH 03102. 603-625-1165.

Non-profit Sills Center seeks donations of radio studio equipment in working order. R Roy, MCDI, 140 Wilbraham Ave Springfield MA 01109. 413-781-5640

TEST EQUIPMENT

Want To Sell

RCA clamp on ammeter, \$50; Potomac Instruments FIM-21, \$2800; Sencore mod TR-139 transistor, \$100; Lectrotech mod U-7 vectorscope, \$50; Simpson mod 470 multimeter, \$50; Diehl supertech Mark 5 flyback tester, \$35; B&K mod 3050 auto generator, \$100; Fluke mod 8000A voltmeter, \$50. D Lang, NW Talk Radio, 800-313-5313.

TRANSMITTERS

Want To Sell

Collins 831-G1 on 107.9 currently on air w/many new updated parts, 10-bay Shively antenna & approx 200'. 3" Andrew line, \$20,000 +shpg. Mike or Dwight, KEKB, 315 Kennedy Ave, Grand Junction CO 81501. 970-243-3699

Henry 100D-95 100 W amp, new, tuned to 100.1 MHz, \$950/ BO. D Michaels, POB 1234, Mt Shasta CA 96067. 916-926-1332.

Harris encoder for System 90 model 992-5118-001, \$50. Wortmann, WJAG, 309 Braasch Ave, Norfolk NE 68702. 402-371-0780



CSI EX-20F FM exciter, \$1500; Bird 4210-100 wattmeter w/ Thruline section & 2 line elements, one for 1000 W, one for 100 W, \$405; Henry Radio 1000D-95 FM bdct amp, 1000 W TPO, \$5000 B Fritsch KBZO POB 6888, Lawton OK 73506. 405-357-9950.

QEI amplifiers, exciters and stereo generators. All are reconditioned and are tuned and tested on your frequency, 6 month warranty is included. If you want quality used equipment, call or fax 609-232-1625 and ask for **Bob Brown**

Circle (185) On Reader Service (Card Bob Brown.			
	COM CORP. dcast Industry Since 1978			
and Also For the best dea	M & FM Transmitters New Equipment als on Celwave products, and Shively antennas.			
1 kW FM 1978 Collins 831C-2 2.5 kW FM 1978 Harris FM2.5K 2.5 kW FM 1983 Harris FM2.5K 5 kW FM 1969 RCA BTF 5D 10 kW FM 1982 Harris FM 10K 10 kW FM 1968 RCA BTF 10D 10 kW FM 1971 Collins 830F-1E 20 kW FM 1968 RCA BTF 20E 50 kW AM Harris MW50C3 State State	1 kW AM 1982 Harris SX1 1 kW AM 1981 Harris MW1A 1 kW AM 1966 Gates BC1G 5 kW AM 1977 RCA BTA 5L 5 kW AM 1979 Continental 315-F 5 kW AM 1978 Harris MW5A/B 10 kW AM 1971 CCA AM 10,000D 10 kW AM 1974 CSI T-10-A 50 kW AM Continental 317C 10 kW AM			
1077 Rydal Road #101 Rydal PA 19046 800-441-8454 • 215-884-0888 • FAX No. 215-884-0738				
Circle (15) On Reader Service Card				

PETER DAHL CAN DO JUST ABOUT EVERYTHING A BROADCASTER NEEDS FOR THE BEST PRICE EXCEPT THE MORNING SHOW & 24 Hr service an transmitting tubes call Goodrich Ent Inc at **402-493-1886** or night FAX 402-493-6821 TUBES...WTS **Buy Factory Fresh** ✓ EIMAC, BURLE, Heavy Duty Transformers Custom Rectifier Assemblies SIEMENS, AMPEREX, Transient Suppressors DC Filter Capacitors Three Phase to Single Phase Conversion NATIONAL, and more ✓ Off-the-shelf delivery TV Beam Power Supplies 24-Hour Tech Support ✓ 24-hour emergency service (915) 751-2300 Arichardson Electronics, Ltd. 1-800-348-5580 Write or Fax for an extensive catalog. 5869 Waycross, El Paso, Texas 79924 • Fax (915)751-0768 FAX: (708) 208-2550 Circle (204) On Reader Service Card

ERI Super Power four bay with radomes and shorting stub 92.1 mHz, like new. 816-628-5959. Used equipment for sale: Belar

SCM-1, Belar RFA-1, Belar FMS-1, Belar FMM-1, Moseley MRC 1600 system, TFT EBS receiver/ generator, Gentner patch panel, and Harris racks. Call Transcom Corp 800-441-8454 or 215-884-0888.

Want To Buy

McMartin AM/FM transmitter, any model, exciter or stereo mod-ules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

TUBES Want To Sell

4X150A, 4CX250B, 4-400, 4-1000, 807, 833, 8874, 8877, RCA, Amperex, EIMAC, etc. Westgate 800-213-4563.

Svetlana		800- 909- 676	0
3CX15000A7	\$1,800	4CX400A	140
3CX15000A3	1,800	4CX350A/8321	125
3CX10000H3	1,800	4CX350AC	125
3CX10000A7/8160	1,680	4CX250BT/Y497(a)	105
3CX10000A3/8159	1,560	4CX250BM	105
3CX3000F7/8162	660	4CX250BC/8957	105
3CX3000A7	640	4CX250B/7203	105
3CX2500F3/8251	575	4CX250R/7580W	115
3CX2500A3/8161	560	4X150A/7034	105
3CX2500H3	600	5CX1500A	695
4CX15000A/8281	1,395	5CX1500B	695
4CX15000J/8910	1,600	811A	20
4CX10000D/8171	950	833A	90
4CX5000A/8170	880	833C	110
4CX5000R/8170W	880	8560AS	105
4CX3500A	980	TH6-3	1,560
4CX1600B	375	TH6-3A	1,560
4CX1600U	475	TH5-4	560
4CX1500A	650	TH5-6	560
4CX800A	180	YC130/9019	1,600
4CPX800A	215	WE PAY SHIPPINGI	





New Tubes

WorldMedia Inc

65



To place ads in this section, use the ActionGram form. To respond to box numbers write Radio World, PO Box 1214, Falls Church, VA 22041. Attn:_____

POSITIONS WANTED

Chief Engineer, 20 yrs exper, AM/FM/TV/CATV, RF & digital audio guru, seeks CE/DE position in NJ/PA/NY area. Send replies to: Radio World, POB 1214, Falls Church VA 22041. Attn Box # 96-01-24-1RW.

Sports play-by-play, public address, news position sought by experienced announcer, southeast Arizona preferred, but will consider other opportunities. Todd Carter, 520-318-3586.

Professional announcer for production & on-air, adult formats, southeastern states, 7 yrs w/Voice of America. Alex, 513-777-8423. Assistant Promotions Director w/college degree & 2 yrs exper at Philadelphia top 40 station seeks employment, willing to relocate. Eric, 610-497-1275.

Broadcast Engineer, FCC General, SBE, outstanding transmitter, RF, studio, automation, satellite, management skills. Currently employed in major market. Seeks position, salary commensurate with experience, ability. Reply to: Radio World, POB 1214, Falls Church VA 22041. Attn box #96-02-7-1RW.

R&B DJ w/unique show seeking position, call for demo tape. 1-800-770-7878.

HELP WANTED



in RADIO WORLD's Broadcast Equipment Exchange CALL SIMONE: 703-998-7600

HELP WANTED

ASSISTANT CHIEF: WBZZ/WZPT Pittsburgh seeks experienced assistant with Associate degree. FCC General License, solid electronics background, component level troubleshooting, computer skills necessary. Good salary and benefits. EOE. Resume to: Chief Engineer, WBZZ Radio, 1715 Grandview Ave, Pittsburgh PA 15211.

STATION MANAGER with operations, programming and sales experience and leadership skills to directly manage a growing small market broadcasting operation. Call for information and details. Michael Tracy, GM, KMOR/KOAQ/KOLT, 308-635-8453.

Wanted: Team-oriented player for PM drive and production director. All digital editing, 4 years experience. Send resume, references and tape for this Central PA opportunity to: Radio World, POB, 1214, Falls Church, VA 22041. Attn Box # 96-2-7-3RW.

FM/TV Broadcast Engineer position. T.S.G. Inc. seeking experienced Broadcast Prof. with strong background in AM FM TX & studio equipment to the component level. FCC & SBE Certification desired. Pos. Req. excellent work & Prof. ethic standards. Share FM station maint responsibilities throughout S. LA. Computer Mgmt. VTR experience a plus. Send resume to 12015 Cloverland Court. Baton Rouge, LA 70809. 504-751-9800 ph 504-753-1726 fax.

Advertiser Index

February 7, 1996

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

Page No.	Advertiser	Reader Service No.	Page No.	Advertiser	Reader Service No.
10	360 Systems	69	9	Harris	118
6	ATI	131	39	Harris	170
49	Air Corp.	88	41	Harris	11
34.35	Arrakis	160	48	Harris	114
42	Audio Broadcast Group	61	51	Harris	76
28	Audio Broadcast Group	13	40	Henry Engineering	199
63	Audisar	166	29	Henry Radio	82
67	Auditronics	101	30	ITC	5
30	Autogram Corporation	81	3	Inovonics	102
64	BBH Software, Inc.	48	49	J Squared Technical Service	126
14	BSW	14	62	J&I Audio/Video	147
20	BSW	151	59	LPB	142
47	BSW	156	65	Marathon Products	185
53	BSW	70	19	Micro Technology Unlimited	18
55	BSW	7	50	Microcon Systems	59
12	Belar	127	61	Moseley	95
30	Benchmark Media Systems	24	30	Murphy Studio Furniture	135
28	Broadcast Devices, Inc.	38	43	Musicam USA	110
60	Broadcast Electronics	200	43	NAB	-
4	Burk Technology	77		National Public Radio	144
30	CPI	43	36		51
18	CRL	30	17	Nokia Mobile Phones Ltd	17
49	Cellcast/Artran	31	40	Nott Ltd.	108
49	Circuit Werkes	50	16	Orban	141
30	Coaxial Dynamics	209	33	PR&E	90
40	Comet North America	214	54	PR&E	Sec.
26	Computer Concepts Corp.	99	65	Peter Dahl Co.	204
46	Computer Concepts Corp.	193	28	Phasetek	57
20	Conex Electro-Systems	80	25	OEI	177
	Continental Electronics	86	27	RE America	65
15	Crown Broadcast	165	28	S.C.M.S.	19
38	Cutting Edge	93	25	Satellite Systems	150
11	Dataworld	21	40	Shively Laboratories	195
47		35	8	Shure Brothers	115
58	Dataworld	39	14	Signal One	206
21	Digigram	163	49	Silicon Valley Power	12
24	Dolby	72	48	Sine Systems	140
66	Econco	138	66	Svetlana Electron Devices	53
40	Econco		45	Symetrix	169
52	Enco Systems	26	7	Telos Systems	136
65	Energy-Onix	34	28	The Blue Group	171
30	Excalibur	62	28	The Management	190
40	Factory Direct Sales	176	65	Transcom Corp.	15
23	Gentner	60	40	Universal Electronics	157
39	Gentner	73	40 2	Wheatstone	71
22	Ghostwriters	22		Wheatstone	23
28	Gorman Redlich	152	68		107
62	Hall Electronics	128	49	Z Technology. Inc. Zercom	109
1	Harris	16	49	zercom	107
Associate Productio Publicatio Classified	Publisher	.Carmel King .Lisa Stafford Lisa Lyons Vicky Baron	Produ Ad Co Circul Circul	Iction Assistant	James Corne Simone Multi Eleya Fino even Bowma
U.S.Eas U.S. W	it: Skip Tash est: Dale Tucker	tising Sale	s Repres		3-998-296 6-729-081 7-966-328

	U.S.East: Skip Tash	
L	U.S. West: Dale Tucker	916-721-3410 Eax: 916-729-0810
L	U.S. West: Dale Tucker	710-721-5410104. 710727 0010
L	U.S. Midwest: Sandra Harvey-Coleman	317-966-0669 Fax: 317-966-3289
Т	U.S. Midwest: Sandra Harvey-Coleman	
н	International: Stovan R. Dana	+ / 03-998-/600 Fax. + - / 03-996-2900
Т	Europe: Dario Calabrese	20 2 7020 0210 Eave 129 2 7020 0211
L	Europe: Dario Calabrese	+39-2-7030-0310 Fax. +39-2-7030-0211
н	Ediope. Dano edibiere	$\pm 91_{-}3_{-}3327_{-}2688$ Fax: $\pm 81_{-}3_{-}3327_{-}3010$
L	Japan: Eiji Yoshikawa	
1	Free Subscriptions are available upon request to professional broad	deasting and audiovisual equipment users. For address
	FIGE SUDSCIDUOUS are available upor request to processional order	The second second by the 22041 Developed manufil

changes, send current and new address to RW a month in advance at PO. Box 1214, Falls Church, VA 22041 Unsolicited manu scripts are welcomed for review: send to the attention of the appropriate editor.

ABOUT OUR EMPLOYMENT SECTION

HELP WANTED

Any company or station can run "Help Wanted" ads for \$1.50/word or buy a display box for \$60/column inch. Payment must accompany insert, use your MasterCard or VISA; there will be no invoicing. Blind box numbers will be provided at an extra charge of \$10. Responses will be forwarded to listee, unopened, upon receipt. Call 800-336-3045 for details.

POSITIONS WANTED

Any individual can run a "Position Wanted" ad, FREE of charge (25 words max), and it will appear in the following 2 issues of Radio World. Contact information will be provided, but if a blind box number is required, there is a \$10 fee which must be paid with the listing (there will be no invoicing). Responses will be forwarded to the listee, unopened.

Mail to: BROADCAST EQUIPMENT EXCHANGE, PO Box 1214, Falls Church, VA 22041 Attn: Simone Mullins



The Auditronics 801 Clean Air Policy.

What we surround ourselves with says a lot. The Auditronics 801 series says you won't settle for anything less than pure, seamless audio. More standard features than the others. Tomorrow's technology with the freedom to add options. The 801 says you know that when you own the best, the sky's the limit. Write or call for a free brochure.



The Sound Of Perfection



3750 Old Getwell Road, Memphis, TN 38118 901-362-1350, FAX: 901-365-8629

Gircle (101) On Reader Service Card

We've taken all we know, all you've asked for, and the very best of today's technology to bring you our FINEST AUDIO CONSOLE

> THE A-6000's open architecture frame lets you change module locations with NO restrictions, giving layout top priority and allowing easy reconfiguration as format needs change. And while Wheatstone is well known for superior technical performance, the A-6000 surpasses even our own previous consoles in virtually every measurement category! The WHEATSTONE A-6000 has the appearance, features and power to satisfy the most demanding program and production staff. Its engineering, performance and thoughtful design will help your personnel achieve broadcasting excellence.



7305 Performance Drive, Syracuse, NY, 13212 (tel 315-452-5000 / fax 315-452-0160) Wheatstone Corporation

Circle (23) On Reader Service Cord