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Lots of Remotes ...
 And the FCC
 See Page 22



Radio World®

Vol 21, No 15

Radio's Best Read Newspaper

July 23, 1997

Radio Board Adjusts By-Laws

by Lynn Meadows

WASHINGTON If you were looking for fights and arguments last month, you had to wait until the Tyson/Holyfield debacle.

It was a peaceful Radio Board that convened for the summer board meeting June 21-24 at the National Association of Broadcasters' headquarters. Agreement and two unanimous resolutions were the by-products of the meeting.

The meeting began with elections. Richard Ferguson, running unopposed, was elected as chairman of the joint radio and television board. Ferguson had chaired the Radio Board for the past two years, steering it through the tumultuous debate

over and subsequent passage of the Telecommunications Act of 1996, affectionately known as "job one."

Howard Anderson, also running unopposed, became the new chairman of the Radio Board. Anderson, the president and CEO of KHWY Inc., represents District 24, which includes Southern California and Hawaii. For the past two years, he has served as Radio Board vice-chairman.

William McElveen, president of Radio South Carolina Inc., a subsidiary of Bloomington Broadcasting, was elected to serve as vice-chairman of the current Radio Board. The seat had been contested by Michael McDougald, president and CEO of McDougald Broadcasting Corp.,

and Martha Dudman, president and general manager of Dudman Communications Corp.

Acknowledging the changes that have occurred in radio ownership over the past two years, whereby companies have grown much larger, the Radio Board agreed to two proposed by-law changes at the meeting. The first would allow two members from the same company to serve on the board at the same time, with the stipulation that one of them must be elected. The second by-law change would prohibit representatives employed by the same company.

The meeting was informative if not contentious. After the elections, members

See NAB, page 8 ▶



ESE Clocks



PR&E Integrity



Mager Furniture at KOOL-FM Phoenix



Titus Technical Labs Tally Lights

Arbitron Accuses KYEA of Fraud

by James Careless

WEST MONROE, La. Radio ratings company Arbitron is suing a Louisiana station for allegedly obtaining and submitting falsified radio diaries.

The radio ratings firm said it can prove that KYEA(FM) bought four

Arbitron Radio diaries for the Spring 1997 West Monroe, La., survey. Arbitron also alleged that the diaries were then forged to show substantial listening to KYEA, and then returned to the company for inclusion in the survey.

The suit, filed in the U.S. District Court in the Southern District of New

York, seeks injunctive relief from Phoenix Broadcasting Corp., owner of KYEA, for at least \$100,000 in actual damages, and punitive damages in the amount of \$5 million. The charges are interference with business, violation of federal and state unfair competition laws and conspiracy to commit fraud.

See ARBITRON, page 10 ▶

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Circle (4) On Reader Service Card

UPI CEO Looks to News Horizons

by Matt Spangler

WASHINGTON Englishman James Adams, new chief executive officer of United Press International, developed a distinctly American sense of capitalism in his days as Washington bureau chief for the Sunday Times of London.

"The bottom line is, we're in this business to make money," he told RW in a conversation preceding a National Press Club reception last month celebrating the 90th anniversary of the news service.

His remarks were made in the context of explaining his vision for revamping the organization, which has seen hard times financially — including bankruptcy filings in 1985 and 1991. His approach appears to be two-fold: penetration of new markets, and economizing.

Adams heralded the UPI entry into new arenas as the end of "the days of the

See UPI, page 6 ▶

Check out our new Buyer's Guide. This month we feature consoles, furniture and studio components.

See Page 42

NEWSWATCH

Clear Channel No. 2 With Paxson Purchase

SAN ANTONIO, Texas Last month Clear Channel Communications signed a letter of intent to purchase the radio stations and networks of Paxson Communications. This deal makes Clear Channel the second largest station group in the nation according to number of stations owned (see page 6).

Clear Channel paid \$693 million for the 46 stations, 42 of which are in Florida. If the deal is approved by shareholders, FCC and DOJ, the group will own 166 stations, for an estimated 1996 revenue of \$398 million.

"We have always felt that Florida

represents one of the most desirable areas for expansion," said Clear Channel Chairman and CEO Lowry Mays in a written statement, "and this transaction will allow us to participate in that region's benefits on a comprehensive scale."

In the Miami market, Clear Channel currently owns two FMs, while Paxson has three FMs and three AMs. The Telecommunications Act of 1996 made it possible for a group to own up to eight stations in a market with more than 45 stations total, no more than five of which may be in the same service.

Paxson Chairman and CEO Lowell "Bud" Paxson said that the sale was made so that the company could

concentrate on its TV holdings. His press statement implied that there would be some restructuring within Paxson as a result of the merger: "I am sad to say farewell to the radio management and the hundreds of employees in our radio division."

"I don't think there could've been a better marriage for the employees (of Paxson) and the state of Florida than Clear Channel," said Pat Roberts, president of the Florida Association of Broadcasters.

Bryan Smeathers, president of the recently formed American Community AM Broadcasters Association (see RW, July 9) was concerned about the precedent that this deal sets.

"The one thing I'm really concerned

about," he said, "is how long it's going to be before we start seeing Clear Channel and Jacor, those type mergers ... After all the markets are consolidated like this, we're going to end up with 25 major operators."

CBC Sells AMs in Face of Disney Litigation

MINNEAPOLIS Children's Broadcasting Corp., provider of the Radio Aahs children's network, will sell its owned-and-operated AMs to Global Broadcasting Company Inc.

CBC President and CEO Christopher T. Dahl said in a written statement that the sale was due in large part to the company's suit with ABC over Radio Disney, a competing children's network. The suit alleges that ABC used its former

See NEWSWATCH, page 3 ▶

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To Government, Time Is Money

by Matt Spangler

WASHINGTON With Congress' Fourth of July recess approaching, the House and Senate scrambled to draft legislation that would extend the Federal Communications Commission's ability to auction spectrum beyond Sept. 30, 1998. What an odyssey for the auction portion of the "Omnibus Budget Reconciliation Act of 1997":

First the Telecommunications Subcommittee of the House Commerce Committee narrowly approved (13-12) a draft of spectrum auction legislation. This legislation required the Federal Communications Commission to raise \$26.3 billion in auctions by Sept. 30, 2002.

The House version of the legislation had the commission auctioning 100 MHz of spectrum below 3 GHz, which would include radio spectrum.

"The Electromagnetic Spectrum Policy Act of 1997" that was being considered by the Senate Commerce Committee in May (RW, June 25) was incorporated into the Senate's revision to the reconciliation legislation.

That version also specified that 100 MHz should be sold, but at below 10 GHz, which also included satellite and radar spectrum. At least 40 of those 100 MHz were to be below 3 GHz, however.

The Senate bill also extended the deadline for completion of auctions to 2007.

One bone Committee Chairman Sen.

John McCain, R-Ariz., had to pick with the legislation was its call for spectrum lease fees to compensate for any monies not raised in auctions. "Experience demonstrates that's very difficult to estimate what a given block of spectrum is likely to bring at auction," he said in a written statement. "I am very concerned that the auctions

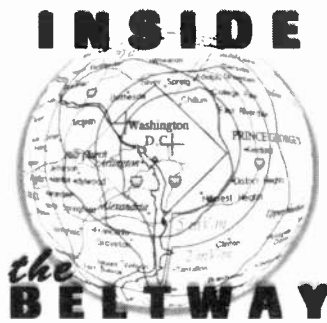
spectrum below 3 GHz by Sept. 30, 2002; 45 MHz of that spectrum is located at the 1,710-1,755 MHz band, and must be sold by Dec. 31, 2001.

Time won't give me time

Money isn't the only thing the federal government wants from broadcasters; time is a hot commodity as well.

By this I mean airtime, as a free

The final version of the legislation has the FCC auctioning 100 MHz of spectrum below 3 GHz; 45 MHz of that spectrum is located at the 1,710-1,755 MHz band.



A Roundup of News and Comment Affecting Radio From the Nation's Capital

NEWSWATCH

► **NEWSWATCH**, continued from page 2 partnership with CBC "to obtain confidential business information ... (in order) to develop and market a competing children's radio network."

"... CBC has been forced to alter its operations because of ABC/Disney's method of entering the children's market," Dahl said.

Global entered into a letter of intent to purchase the 14 stations, which are mostly in major markets, for \$72.5 million — 14.5 times their \$5 million 1996 revenue. The New York-based Global could not be reached for comment on what its plans for the stations were.

Dahl said that CBC will use its profits from the deal "to develop ancillary audio streams for Aahs programming" and to support its existing affiliates. "In the meantime, the company will pursue to its conclusion the ABC/Disney litigation while exploring other options," he said.

CBC Media Relations Manager Joy Plaschko said that the suit should go to trial early in 1998. The Global deal is expected to close this September.

Washington DJ Sentenced In Manslaughter Case

ALEXANDRIA, Va. Last month a judge sentenced WJZW(FM) disk jockey Gregory P. Fitzgerald to five years in prison for unlawful wounding of a Northern Virginia businessman. The sentence was suspended for four of the five years; Fitzgerald is expected to serve less than a year.

The jazz DJ was indicted in February on charges of involuntary manslaughter

for the November death of William F. Deal, president of the National Electric Sign Association (RW, March 19). Fitzgerald struck Deal in an altercation over the former's girlfriend. Deal died six days later after a blood clot was removed from his head.

Fitzgerald remained on the air at WJZW until he was sentenced June 12, according to General Manager Charlie Ochs. He said that the station has begun searching for a replacement. Fitzgerald's attorney, Bob Battle, said that his client will return to radio after he serves his time "if avenues are open."

Changes at Fall NAB Radio Show

WASHINGTON The National Association of Broadcasters is preparing for the Radio Show, which will be held September 17-20 in New Orleans.

The exhibit floor will not be open as long this year as 1996, the last year of the World Media Expo show. Instead of four full days of exhibits, the exhibit floor will be open three hours Wednesday evening, and all day Thursday and Friday. Sessions, which are still in the planning stages, will run for all four days of the show.

Floor space has been expanded for a number of exhibitors, in order to accommodate the needs of exhibitors, according to NAB Media Affairs spokesman Dennis Wharton.

NAB would not comment on expected attendance for this year's show. For more information, see the show Website at www.nab.org/conventions.

won't actually raise the revenue anticipated."

McCain introduced an amendment to eliminate the lease fee provision, which was passed by the committee on June 17. A press statement from him called these fees "a tax on business passed on to and paid by consumers."

The final version of the legislation, passed by the full Senate on June 25, has the FCC auctioning 100 MHz of

soapbox for politicians. The infamous McCain-Feingold campaign finance reform bill is going nowhere and fast, but a Congresswoman has stepped up to the plate with her own legislation.

Rep. Louise Slaughter, D-N.Y., has written "The Fairness in Political

See BELTWAY, page 11 ►

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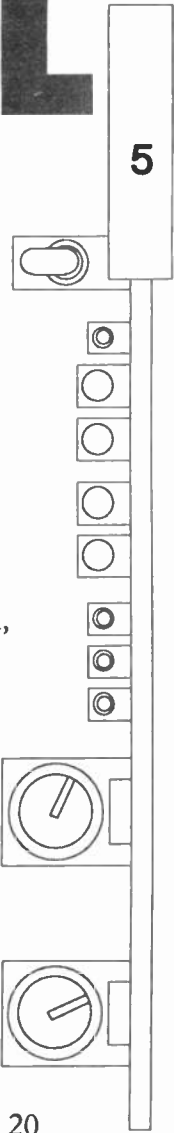
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One Heck of a Remote Site

WASHINGTON Sagan Station and its Sojourner have landed on Mars and single-handedly reinvigorated America's passion for space exploration.

Which did you watch? The photos from Mars or the news reports from the crippled Mir?

In either case, the fragile and tenuous link between our little blue planet and our electronic Captain Kirk exploring the red planet is an electromagnetic wave — yes I know, higher up the frequency table than AM and FM, but a radio wave nonetheless (you knew I'd have to tie it in to broadcasting eventually!).

Data piggybacked on radio to produce humbling pictures. It just hammers home to me what a versatile and valuable thing Marconi, de Forest and Armstrong stumbled upon. And on which all of us depend for a living. Isn't it time to look at how we use radio, what we put on it, and try to find that next plateau of programming? Am I stretching here? Just a thought.

★ ★ ★

In any event, stretching out to the next plateau of context quality is something we strive for here at RW as well. It is a continuing process, and in this issue, we take a different approach to an established section. Our aim: simply to serve you better. Take a look at *Buyer's Guide* in its new format and let me, Paul McLane or Susan Gary know what you think.

One important note: Despite the changes to that section of the newspaper, we still want to hear from station managers and engineers about the equipment they use. Please keep calling, writing and sending e-mail (we all have new e-mail addresses: For example, lcobo@imaspub.com, pmclane@imaspub.com or sgary@imaspub.com). Interesting product applications, station ideas and radio stories are not only welcome, they are encouraged. Stay in touch!

★ ★ ★

Those of you who enjoyed Lee Harris's article of April 16, "Live From

the Space Bedroom," may wonder what Buck and Maude Burdette look like. They sent the enclosed picture along to let me know that our article generated calls and letters for them from as far

of term conversion, and far more to do with what we in Washington call "spin control."

Quello points to the last three years as the "most intensely regulatory of all



Maude and Buck Burdette

away as Rochester, N.Y. They are at KBUX in Quartzsite, Ariz.

In other interesting industry news, FCC Commissioner James Quello proved once again why he deserves our respect and why the Clinton administration would do well to nominate broadcasters, not just political friends of the family, to the FCC.

In an address to the Florida Association of Broadcasters last month, Quello graciously thanked FCC Chairman Hundt for Hundt's nice words about Quello, and politely described all the things that Hundt does wrong. It was a gleeful speech, and I am going to quote from it — in particular, Quello's comments on the chairman's recent podium-pounding about the First Amendment.

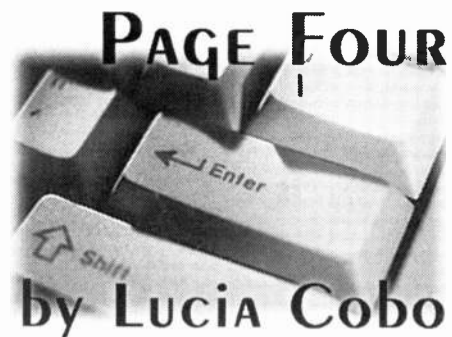
This is an issue that goes to the very heart of the broadcasting business, be it radio or television. And I agree with Quello when he said, "The chairman's recent discovery of the First Amendment has less to do with an end

the 23 years" that he has served at the FCC. (And I'll admit, much of the speech had more to do with television programming than radio, but as one's fortunes go, so too does the other's.)

"The difference in the way the chairman and I view the First Amendment," said Quello, "can be summed up in two sentences: First, I see the Bill of Rights as a limitation upon government action; the chairman apparently sees it as a regulatory mission statement. Second, I consider freedom of expression to be the result of the government's abstention from editorial decision-making; the chairman evidently sees it as a gift to be bestowed by politically appointed bureaucrats."

Hurrah, Mr. Quello. There are not enough broadcasters out there defending the First Amendment rights of broadcasters. He makes a good case.

Chairman Hundt has, in the recent past, promoted using government power to compel free air time for political candidates. Mr. Quello responds: "There is



a vast difference under the First Amendment between being permitted to speak and being forced by government to do so."

It is, continued Quello, "A basic flaw in the chairman's theories ... that they add up to the notion that for free speech to exist, the government must regulate."

A notion, said Quello, that is beautifully contradicted in history. "It is worth remembering," he said, "that it was the existence of broadcast regulation that forced the networks to ask the FCC for permission to provide extra campaign coverage in the first place."

Quello ended his speech with a compelling plea to the administration: "We have entered a new multichannel, multifaceted media age in which abundance and diversity — not scarcity — are the rule. Now in this intensely competitive communications marketplace, is the time for the FCC to consider imposing fewer regulations on speech content, not more as the chairman advocates."

"The administration and Congress must have had the massive communications explosion of the past three years in mind when they repeatedly proclaimed that the era of big government is over. Is it over for everyone but the FCC?"

Now before you think I've run off and jumped on my high horse again, consider this. Yes, writing about the First Amendment is always fun for a journalist because as a print journalist, I have the First Amendment right to do so. My writings have the full advantage and protection of the First Amendment. It is more than you, as broadcasters, have.

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Radio: Helping Its Own

Dear RW,

As chairman of the board of the Broadcasters' Foundation, I am so very grateful, as is our total membership, for the editorial in RW ("Dig a Little Deeper," April 30).

We are doing all we can to help indigent broadcasters, and the added dollars that have been forthcoming for this purpose so far in 1997 are most encouraging. Needless to say, our efforts are enhanced greatly with such a positive message as that set forth in your fine publication.

Thanks a million!

Ward L. Quaal
Chicago, Ill.

Ward Quaal is retired president of Tribune Broadcasting. He is an international management consultant to the

broadcast industry and allied arts. To contribute to the Broadcasters' Foundation benevolence fund, call (203) 862-8577.

Garbage in ...

Dear RW,

I agree with Scott Seeburger's letter ("Stern: Dumbing Down," Readers Forum, June 11). Women live in fear, because people like Mr. Stern lower the moral standards of society.

When the male population consumes demoralizing programming offered by "shock jocks," respect for women decreases, and sex crimes increase. When will people wake up and realize what computer programmers have known for years: "garbage in, garbage out"?

Thank you, Mr. Seeburger, for expressing your opinion, and thank you, RW, for printing his letter.

Steve Tizzen
Operations Manager
WVNE(AM)
Worcester, Mass.

'Low Rider Oldies'

Dear RW,

We enjoyed reading John Montone's article ("Hispanic Radio: Stories to Tell," April 2), since we do an English program on our local Hispanic station. Missing from his list of formats, however, is oldies. Not Beach Boy-type oldies, but a format we call Low Rider Oldies. The format was originated by Wolfman Jack on XPRS and refined by Art Laboe on KRLA(AM) Los Angeles. We have refined it a little bit more, to include '70s small-label soul. And old Paul Anka songs are very popular this year.

The term "Low Rider" originates from Hispanics who modified antique automobiles. They also seem to like antique music. Anything romantic that you can cuddle up to has been popular

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since we started this program two years ago.

Our Hispanic audience runs the gamut from teenagers who speak English quite well, to adults, many of whom tell us that they're expanding their comprehension of English by listening to our program. We also get quite a few calls from other groups of people who say that they're just tired of hearing the same old "number one" oldies over and over again.

In short, it's a lucrative market. We must be doing something right, since we

RDS: Now What?

The Radio Data System technology is at a critical juncture, after much debate over whether the chicken (encoding equipment) or the egg (consumer demand) had to come first.

For radio managers, the time to make a decision about RDS is at hand.

RDS promised FM broadcasters a new way to promote themselves. It would let listeners see call letters, song titles and advertiser names on their radios.

Receivers would let the listener print coupons. Drivers could "tune by format" from city to city, or follow a network of stations tied together. Receivers could activate for emergency information.

A year has passed since the Consumer Electronics Manufacturers Association ended its 15-month campaign to break the chicken cycle by giving stations RDS hardware, software and test receivers. In all, about 700 stations are now RDS-equipped.

The promise of RDS remains, but its momentum has slowed. Many stations simply put up their call letters and forget about it. Equipment dealers tell RW that stations aren't demanding the equipment, because of the cost and because other promotional outlets, such as billboards, are more effective. Not surprisingly, stations are reluctant to spring for another box, coming on the heels of EAS.

"It has taken off so slowly," one dealer said, "and frankly I think it's going to die."

CEMA, according to a spokeswoman, spent about a half-million dollars promoting RDS to stations. Now, she said, the association is focusing on digital radio and HDTV, although it still supports RDS. Meanwhile, Access Global, which had hoped to establish a national RDS paging network, reportedly has lost its backing from Panasonic. (Repeated calls for comment were not returned.)

RE America, which made the encoders used in the CEMA campaign, is putting its emphasis on video. RDS is "a really small segment of our product offerings now," a spokeswoman told RW.

The New York Times stated that RDS "seems destined to join the eight-track tape and the Betamax videocassette recorder as a flop in the United States." Experts in the article blame poor promotion, the exclusion of AM stations and "the reluctance of broadcasters to try anything that might remotely threaten the loss of their audience."

But don't sing the dirge for RDS yet. Car receivers are coming into the market this year, as we reported June 25. Prominent names include Kenwood, Denon and Pioneer. Seven hundred stations is not a bad start, considering the paucity of receivers. The structure for success — and the opportunity for profit — are still there.

Now, if RDS is to succeed, broadcasters must use it inventively. Radio stations should talk with the folks who sell radios and cars, to learn how the receivers will be promoted and find ways to work together. The station that takes the lead in a given market will have a substantial jump on its competition. Also, if a big radio group makes a commitment to RDS, it will carry more weight.

Radio has a chance to prove the naysayers wrong, and make RDS a success. The time is now.

— RW

just expanded our station. Now you can hear our entire lineup on two stations.

Duke and Banner
KMXN(AM), Santa Rosa, Calif.
KTOB(AM), Petahuma, Calif.

Buddy, can you spare some space?

Dear RW,

I found the response of B. Strange concerning tower space for amateur repeaters to be extremely narrow and, in my opinion, off the target ("Worth Paying For," Readers Forum, May 28).

I too obtained my first ham ticket in 1954 (WN4GWG) and now hold an extra class along with a GROL and a 2nd Telegraph with a radar endorsement. Over the years I have participated in dozens of disaster situations, the most recent of which involved massive flooding here in the Lower Columbia River Basin.

In that situation the hams who operate a repeater on our FM tower in Ilwaco, Wash., went right into the middle of the flooded area, not only providing communications, but also transporting clothing, drinking water and other emergency supplies into the worst area of the disaster.

They also gave us on-the-scene reports of the disaster. In other moments, they have checked and reported on our tower equipment when they were servicing their own outfit.

We have hosted these dedicated amateurs on our tower since it was erected. They have been excellent tenants and have brought much favorable PR to our company. After all, how much tower space is consumed by a 2-meter antenna? Nothing at all like the other tenants (a paging company, a common carrier repeater and AT&T Wireless).

Perhaps Mr. Strange would have us stop running PSAs as well.

James Keightley, K7NPS
Director of Engineering
KVAS(AM), Astoria, Ore.
KKEE(FM), Long Beach, Wash.

Correction

The phone number for CBSI that appeared in our July 9 issue was incorrect. The correct number for sales information is (800) 547-3930.

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Next Issue of Radio World
August 6, 1997

UPI's Adams Finds News Markets

UPI, continued from page 1
arrogant mass media," which indiscriminately spoon fed "one-size-fits-all" copy over the wire. In today's world of the Information Revolution, he declared that news must be tailored to specific markets.

"There is such a proliferation of data, that you have to distinguish yourself, either by being particularly good in certain areas — having a core business, which is what we have — or by identifying niche markets," he said.

The first step is a multi-million-dollar joint venture with Meridian Emerging Markets Ltd., announced at the Press Club event. With this partnership UPI will assemble "UPI MEMO," a database of financial information on more than 13,000 companies in emerging markets of 54 countries. Adams said the service should be introduced in 1998.

Techno-centric

"I think technology is central to revolution," Adams said. This shows in the other ventures that UPI is exploring, including digitizing and selling its vast archives of photos, many of which are Pulitzer Prize winners; making its compendium of sports statistics — every stat since 1945 — available electronically; distributing of UPI news to a major newspaper network and audio distribution over the Internet.

Part and parcel of the organization's technological upheaval is its internal entry into the digital age. Adams said that the company's outdated e-mail system will soon be replaced, and that it was expecting to have a website up by the end of June.

Adams' background suggests that he is well-equipped for the tasks he has set out for himself. From 1989 to 1991, he was

director of the Analysis Corp., the first company in Britain to provide financial data on-line. He balanced this with his duties as managing editor of The Sunday Times, where he helped oversee a \$40 million budget and 400 personnel.

What it comes down to is, you have to cut your cloth according to what the market requires.

— James Adams, CEO
UPI

Perhaps as a result of this experience, he doesn't appear to be shy about wielding the cost-cutting ax. He pledged to continue the scaling-back of UPI Photos, which until recently was a loss-making operation.

The organization's new "focus" style of writing more 350-word, radio-friendly news reports, as opposed to the more traditional longform style, is another example of downsizing. This new style comes as a response to the demand of most newspaper markets, which call for more user-friendly, "USA Today-style" journalism, according to Adams.

Don't say goodbye forever to the 2,500-word-long stories, however, Adams said that if a particular piece warrants greater length, then so be it.

"What it comes down to is, you have to cut your cloth according to what the market requires," he said.

And, perhaps most importantly of all to the cost-conscious Adams, UPI is on the road to a full-fledged financial recovery. He said that the company was "on track" towards reducing its operating deficit by 70 percent within six months, and that next year it would see its first profit for the first time in his memory.

But what about radio?

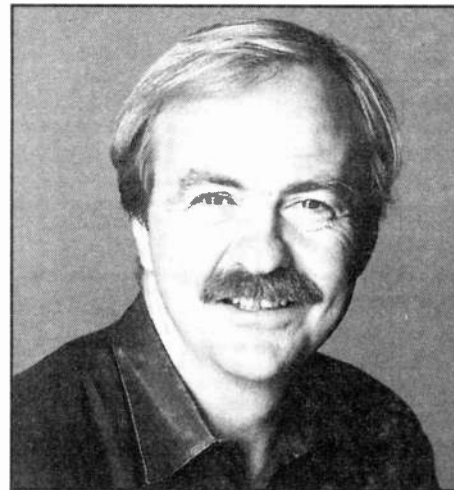
Adams sees dollar signs in that medium as well. "Radio is a huge growth area," he said. UPI news is currently heard on approximately 1,000 stations, and Adams said that it will aggressively pursue more, especially in this time of rapidly consolidating station groups.

Audio progression

And though the company may be looking at expanding into new markets, he stressed it would continue to serve its three principal areas, which he identified as audio, print and the Internet. But the company will constantly be looking at ways to retool those media for today's markets.

For example, he pointed out that UPI is "state-of-the-art" in audio transmission, but that it would also look at transmitting video through the 'net, "making (Internet transmission) both a push and pull technology so that we make that again a very custom service."

The abridged style of writing is



UPI CEO James Adams

another means by which UPI will serve one of its traditional customers in a new fashion. "(W)e are putting a new emphasis on generating and distributing news products for radio broadcast," Adams said.

The upshot is that UPI must successfully blend its time-honored focuses with emerging technologies and markets. "I think we're in step with the times," Adams said.

See our interview with Helen Thomas on page 16.

Top 10 Station Groups by Number of Stations Owned

Rank	Station Group	# Stations Owned	Est. 1996 Revenue
1	Capstar Broadcasting Partners	176	215,925,000
2	Clear Channel Communications*	162	398,050,000
3	Jacor Communications Inc.	142	423,775,000
4	Chancellor Media Corp.	98	788,500,000
5	American Radio Systems License Corp.	97	388,050,000
6	CBS Corp.	76	1,010,250,000
7	SFX Broadcasting Inc.	71	279,250,000
8	Citadel Communications Corp.	62	88,000,000
9	Cox Radio Inc.	49	218,025,000
10	Salem Communications Corp.	44	22,000,000

Source: BIA's MasterAccess Radio Analyzer

*After purchase of Paxson Communications' 46 stations

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September is **Remote** Month and Comrex is Celebrating
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Globo Radio Network uses the
HotLine™ to cover the Tour de France



J. Claudio Barbedo, Operations Director for the Globo Radio Network in Brazil, used HotLines™ to cover the Tour de France bike race from Lyon, France, back to Globo studios in Rio de Janeiro. "I have never had a remote sound so good," he reported. "They sound gorgeous!" Barbedo said that people from other stations were swarming around his broadcast booth to find out how Globo was achieving their great sound.

WLW and Reds' Network broadcast
game on the HotLine™

Doug Walker, engineer for Jacor Cincinnati, wasn't planning to broadcast this important game on a plain telephone line. But when the telephone company let him down and didn't get his ISDN line installed in time, he sure was glad to have the HotLine™. "The HotLine™ enabled us to save our tails when the phone company didn't complete the ISDN order," said Walker.



the phone company didn't complete the ISDN order," said Walker.

Princess Cruise's newest
"Love Boat" introduced
via the HotLine™

When multiple radio stations converged in Florida, there were not enough ISDN lines to go around. However, listeners of WFNX in Boston and WRQX in Washington, DC, could not have known that the program had been relegated to a plain phone line. Marc Gordon, Chief Engineer of WFNX, remarked: "It was hard to believe audio this good was coming over a dial-up line." WRQX Engineer Dave Sproul agreed: "It was supremely easy! We just dialed (the HotLine™) and we were connected. There was no fiddling to be done."



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The HotLine™ has been to some pretty interesting sites around the world. We want to let it help your station "get around" too.

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Will Boycott Hurt ABC Radio?

by Lisa Romanello

DALLAS The Southern Baptist Convention boycott of Disney products may only have a limited effect on ABC Radio listenership.

Southern Baptist Convention delegates passed a resolution calling on the nation's 15 million Baptists to refrain from patronizing any company that promotes immoral ideologies and practices. The resolution does note that Disney is not the only such provider of material that many find offensive, but the company is identified in the resolution as a "major offender." That means Disney and any of its related entities, including the ABC Radio Network.

Dwayne Hastings, director of communications for the Ethics and Religious Liberties Commission, an agency charged with dealing with moral, ethical and public policy issues for the Southern Baptists, said the true intention of the resolution is to "present a sense of the convention meeting at that particular moment."

Hastings said the resolution is non-binding, and each church or churchgoer can decide whether or not to participate in the boycott.

He admitted that boycotting radio was more difficult. "(C)learly it's easier to forego a trip to the Magic Kingdom than it is to turn off the ABC Radio News when it comes on on the top of the hour," he said. "So, it will present somewhat of a challenge to Southern Baptists." Ideally, he said, the boycott would target any ABC Radio programming: news, sports events and sponsors, which is where the Southern Baptists would expect to see the most bang for their boycott.

But it's just a cartoon

Disney has been angering people on all sides of the social spectrum, according to Hastings, who pointed to American Indians who took issue with history

rewritten in "Pocahontas," Arabians disenchanted with "Aladdin" and Roman Catholics angered by "Priest."

The Southern Baptists were angered

continue our leadership role and in fact we will increase production of family entertainment."

ABC had no independent statement,



At the Southern Baptist Convention in Dallas, delegates voted to boycott Disney.

when Disney refused to engage in any sort of dialogue on issues of its gay-friendly employment standards, raised more than one year ago.

"What it said about the corporate culture in America is a rather foreboding thing, if you have a corporation as large as Disney that is oblivious to what the common consumers are concerned about," Hastings said.

Hastings was aware of how difficult it would be to stage a media boycott.

"We have no idea how this will play out when it comes down to individual pieces, businesses, entities that are owned by Disney," he said.

Disney's official response to the convention resolution was a written statement that reads: "We are proud that the Disney brand creates more family entertainment of every kind than anyone else in the world. We plan to

and representatives would not comment.

Moral stewards

The National Religious Broadcasters' official statement on the boycott was non-specific: "In the past, National Religious Broadcasters has not been directly involved in non-broadcast-related boycotts. However, many religious organizations, including Christian broadcasters, have actively pursued this form of policy statement."

Whether millions of followers will heed the call to exercise "moral stewardship," Hastings admitted only time will tell. He noted that "driving across the country, it's hard to know what you're listening to." But he said people seemed to make a difference, for instance, in the sponsorship of ABC's now-famous "Ellen" episode. The episode still aired, but presumably someone got hit in the wallet.

New NAB By-Laws

► NAB, continued from page 1

heard legislative updates on a range of topics relating to broadcasters, including spectrum auctions, spectrum fees, campaign finance reform, ownership rules, copyright rules, ad tax deductibility and public broadcasting financing. The possibility of spectrum fees in the budget was a major concern.

The future of digital radio was also discussed. Bernee Strom, president and CEO of USA Digital Radio, reported to board members on the status of the in-band, on channel (IBOC) digital radio system her company is working on.



NAB Radio Board Chairman
Howard Anderson

"The information we got was encouraging," said District Four representative William Poole of the presentation.

Legal update


More topics were addressed during a regulatory update. These included DARS (digital audio radio service), regulatory fees, pirate radio and broadcast/newspaper cross-ownership. Members unanimously agreed to two resolutions.



Richard A. Ferguson

One urged the Federal Communications Commission to prosecute pirate radio violators to the fullest extent of the law. The other urged the FCC to repeal all prohibitions against newspaper/broadcaster cross-ownership. Both resolutions were unanimously supported, and the cross-ownership resolution was also passed by the television board.

Finally, members were briefed on the fall NAB Radio Show in New Orleans. It was announced that Robert W. Pittman, president and CEO of America Online Networks, will be the keynote speaker at the show, which will be held Sept. 17-20.



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World Radio History

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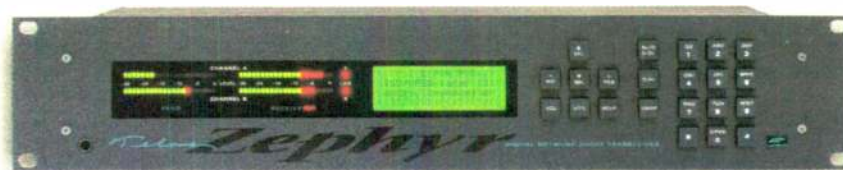
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World Radio History

Station Accused of Diary Fraud

► ARBITRON, continued from page 1

These charges came as a result of a sting operation mounted against KYEA, said Thomas Mocarsky, Arbitron vice president of communications. It all started in early 1997, when Arbitron received

to an individual at KYEA that he was in possession of four blank diaries for the Spring 1997 book. These diaries were then purchased from him by an executive at KYEA in exchange for \$100.

"These diaries later showed up at our

news release from Zachary Taylor, attorney for Phoenix Broadcasting. In it, he stated, "KYEA denies accusations of claims of Arbitron that someone at this station tampered with Arbitron Radio diaries. Phoenix Broadcasting, owner of KYEA, states our position is, clearly, that no executive officers of Phoenix were involved in any manner in activities relating to affecting the survey results of Arbitron.

"Arbitron is not following its own method for checking out ... distortion," he stated. "The contract the broadcasting

KYEA. Arbitron actions are, under the circumstances, improper and without justification."

The ratings company said it has all the evidence it needs to nail KYEA, and that it is preparing to delist the station from the Spring 1997 book. (This is due to be mailed Aug. 7, 1997.)

"The most we can do for the Spring survey is to delist them," said Mocarsky. "One of the actions we can take, when a station engages in ratings distortion, is to alert the users of the market report by not listing that station." If this should happen, all of KYEA's listenership will be lumped into the 'unidentified listening' column. Trying to use this information to entice advertisers could prove to be a real headache for KYEA's sales staff.

To date, Arbitron won't specify who initially blew the whistle on KYEA. All Mocarsky would say is that "the best source we have is other stations in the marketplace. They tend to find out."

When asked whether the \$5 million-plus damages Arbitron is seeking from Phoenix and the delisting of the station is excessive, Mocarsky replied: "All of this is necessary to protect the integrity of the survey. If the users of our market reports think people buy diaries all the time, they won't be able to trust our ratings. That's not good for us and that's not good for the industry."

The last station delisted by Arbitron for ratings fraud was KWAC(AM) in Bakersfield, Calif., for the Winter 1993 book. According to Mocarsky, ratings distortion is a rare occurrence.



a tip that KYEA was rumored to have purchased diaries.

"Our tip referred to five diaries for the Fall 1996 survey as being tampered with. We went back into the Fall 1996 diaries, and we did find five that had extensive listening for KYEA, all from one household."

Ironically, these ratings "had not been included in the Fall 1996 summary, because of our 'heavy listening threshold.' It's aimed at taking care of respondents who get overly enthusiastic about their favorite station, and who thus write in that they're listening to it all day and night."

"Anyway, when we found those diaries and found that they corresponded to the tip we'd got, we realized we had to dig further," said Mocarsky. "So we hired an investigator. He let it be known

The ratings company said it has all the evidence it needs to 'nail KYEA,' and that it is preparing to delist the station from the Spring 1997 book.

Columbia, Md. production facility with extensive listening to KYEA marked in them. We know these were the four diaries because every one of our diaries has a bar code on it." In police parlance, it was a pretty straightforward sting.

Survey says ... bzzzt!

To date, the official KYEA response to the charges came in the form of a

company has with Arbitron spells out procedures for (handling) situations like this one, such as going to the company with problems before filing suit. Arbitron is not following those procedures and we don't know why they haven't.

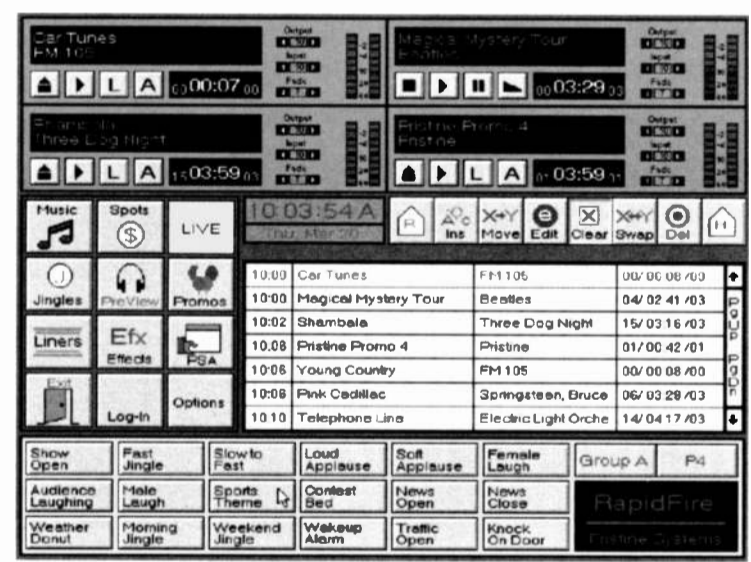
"Arbitron has filed legal proceedings (without notice to Phoenix Broadcasting) and issued a press release attacking

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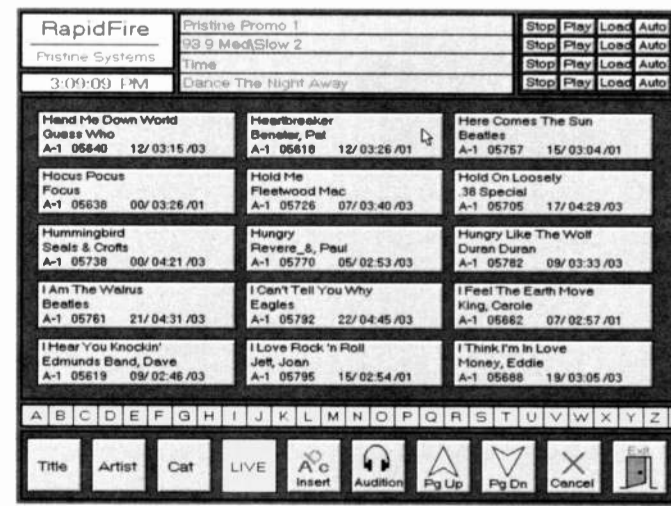
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Liquor Battle Rages On in Washington

► BELTWAY, continued from page 3

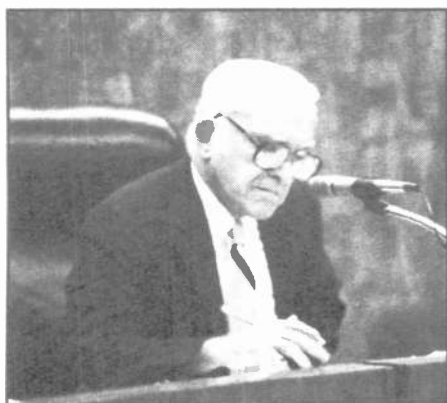
Advertising Act." which would condition broadcast license renewal on the provision of free airtime to candidates running for state or federal office. At this point, the bill only applies to TV stations; Slaughter said that the TV industry owes airtime to the American public in exchange for the free licenses it was given for digital TV.

Slaughter and Sen. Dick Durbin, D-Ill., also wrote FCC Chairman Reed Hundt last month asking the commission to issue a notice of inquiry on free airtime. The commission had not responded to them at press time.

In response to the letter, National Association of Broadcasters President Edward O. Fritts reiterated his anti-free airtime mantra: "Broadcasters have an enviable record of providing free airtime for public discourse of political issues." He also said that the FCC doesn't have the authority to mandate free airtime; that is instead within the jurisdiction of Congress.

Voice of reason

Hundt refuses to let the alcohol advertising issue die before he leaves, as evinced by his scheduling it as part



Commissioner James H. Quello

think that looking into the impact of broadcast liquor ads on kids is a waste of time," said CSPI Alcohol Director George A. Hacker in a written statement.

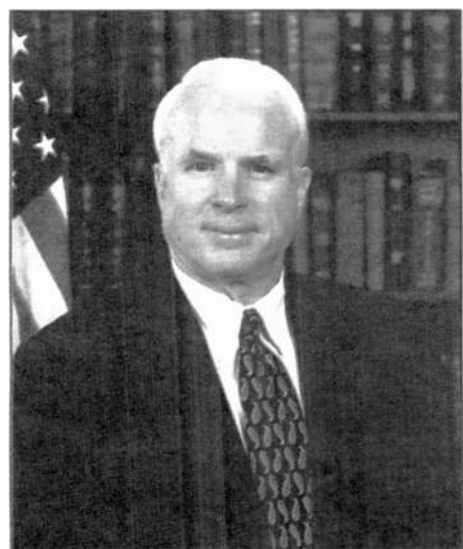
Meister responded to CSPI by again calling upon Hundt and President Clinton to assemble the beer, wine and spirits industries to develop a common code for advertising.

In late June, an organization called the Coalition for Prevention of Alcohol Problems jumped into the fray, writing a letter to members of the House asking that they endorse H.R. 171. This bill, introduced last month by — you guessed it — Rep. Joseph Kennedy,

D-Mass., would push an FCC inquiry into the effects of alcohol advertising on children and teens.

Meanwhile, Sen. Robert Byrd, D-W.Va., tried to sneak a provision into the Taxpayer Relief Act of 1997 that would eliminate advertising as a tax deduction for liquor companies — he was voted down on the Senate floor. This measure, however, is part and parcel of Kennedy's sweeping alcohol legislation.

Despite Chong's request, liquor is hardly a dead issue for the commission. An FCC spokesman said that it could take up the matter in its July agenda meeting.



Sen. John McCain

of the commission agenda for its June 19 meeting.

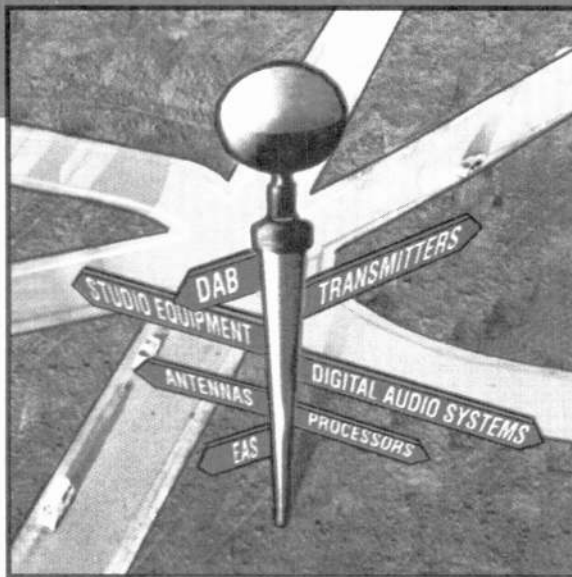
However, Commissioner Rachele Chong lifted the notice of inquiry from the agenda. In a written statement she said that any such inquiry was in the jurisdiction of the Federal Trade Commission, which was conducting investigations into the matter, not the FCC. Commissioner James H. Quello issued a separate statement supporting her move, also questioning FCC jurisdiction.

Chong also stated that it was unfair to single out distilled spirits while allowing the beer and wine industries to continue to advertise.

Fred Meister, president and CEO of the Distilled Spirits Council of the United States, was, of course, quick to praise Chong's action. "Since the beginning, Commissioner Chong has been the voice of reason, choosing to regulate by statutory authority, not by intimidation," he stated.

On the other hand, Chong and Quello were attacked by the Center for Science in the Public Interest. "They

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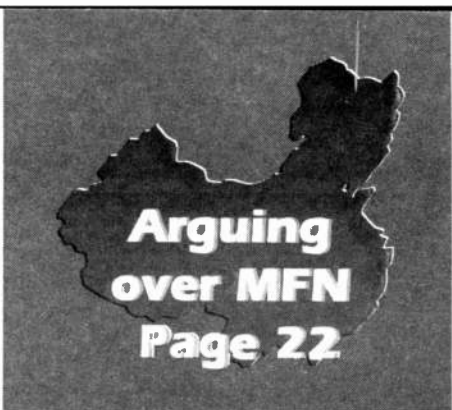
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July 23, 1997

RADIO ADVERTISER

Lizards, Frogs and Anheuser-Busch

John Montone

There's more to beer than meets the eye. Consider beer advertising. What do you picture? Amber liquid pouring into a tall glass, as a frothy, foamy head forms on top? Sure, but what about the sound of the beer as it fills the glass? The pop of the tab on the top of a can. The ring of the

bottle cap against the bar top. Beer advertising works on an aural level arguably as much as it does on a visual level.

And that's where radio advertising comes in.

Anheuser-Busch Inc., a subsidiary of Anheuser-Busch Companies, spends between \$60 million and \$75 million a year on radio advertising.

"It's our second-largest spending medium behind television," said Tony Ponturo, vice president of corporate media and sports marketing for the beer maker. The money is used to advertise Budweiser and Bud Light, which Ponturo estimated account for approximately 80 percent of the budget, and to promote Michelob, Busch, the malt liquors and some microbrews.

Basic ingredients

The company does all of its media planning and buying in house. Ponturo said it's more cost-efficient that way, but, "We were more driven by the control factor, the integration factor within the company to have our media people, our

brand people and our sales people all ... understanding where a brand's business plan needed to go." Ponturo believes the in-house set-up allows the company to make decisions across all media.



Tony Ponturo

Anheuser-Busch consistently has incorporated radio into its advertising plan. How, why and where are those dollars spent?

The company has five regional offices around the country, in or near Los Angeles, Chicago, Houston, Atlanta and New York. "We put the media people who buy radio in our sales offices so there is a synergy of understanding where the business is going," Ponturo said. "Plus, our radio (advertising) involves our wholesalers in a big way because we

See BEER, page 14 ▶

PERSONALITY PROFILE

'Handyman' Builds on Sales Success

Gary Hart

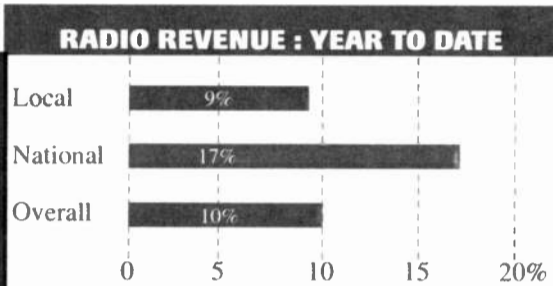
Rob David is coming off a successful year. First, the Sales and Marketing Executives of Detroit presented him with its 1996 Sales Success Award, the first time the group has so honored someone in radio sales. The organization noted that national sales at WXYT(AM) Detroit had increased 10-fold in the eight years David was in charge of that division.

Then, not long after receiving the award, David quit the radio station.

Prior to his departure from WXYT, David had been director of marketing for specialty programs. One of those shows, "Ask the Handyman," was created by David 14 years ago. The program airs for eight hours each weekend on WXYT, and Westwood One syndicates two hours to stations around the country. David handles the show's marketing; he has signed up nearly 130 stations in five months.

"I'm still selling," David said. "I help place (the 'Handyman' show)

See DAVID, page 19 ▶



57 Months and Counting

Combined local and national radio revenue is growing at a double-digit pace.

Helped by 10-percent growth in the month of May, all markets have registered a 10-percent increase through the first 21 weeks of 1997. May marks the 57th consecutive month of increases in radio revenue.

Radio Advertising Bureau President Gary Fries said, "This consistent growth can be attributed to the ever-increasing number of advertisers who are discovering radio's power to deliver exceptional results."

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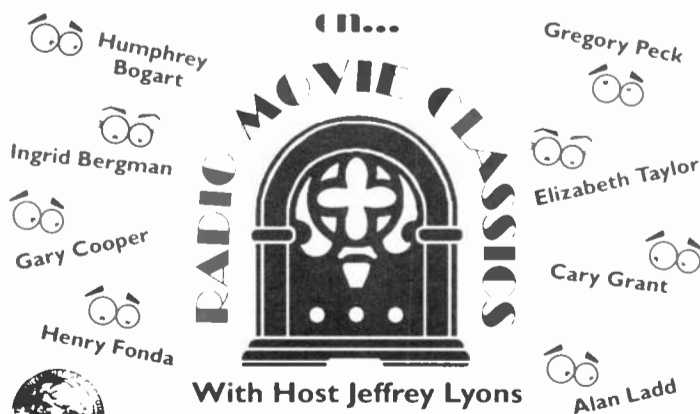
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Feb. 5, 1997

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— Radio World
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April, 1997

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— Pro Audio Review
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World Radio History

Anheuser-Busch: Local Emphasis

► BEER, continued from page 12 like to tie in with promotions."

Ponturo calls this "the localization of what's going on in a market," using the wholesaler to extend the buy beyond the commercial that ends up on the air. During an interview with *RW*, he returned to the localization theme several times.

Anheuser-Busch clearly has a radio strategy that is thought out. "There are four spokes of radio for us," Ponturo said. "One is what we call the contemporary adult appeal." This is intended to reach 21-to-30-year-old adults who frequently listen to radio, are active and don't watch much television.

"We can use creative and merchandising

extensions which are skewed to that kind of consumer," Ponturo said. Thus, the commercials might be more irreverent and "cutting edge." To that end there are five new "lizard spots," similar to the television commercials in which two lizards bemoan Budweiser's use of frogs to sell beer. Ponturo capitalizes on the 60-second length, which he said allows for extra set-up time and thus funnier commercials. "There is also a nice synergy with the TV spots," he said.

Different spokes

On the merchandising side, Ponturo said, "We can take the radio station and do a live broadcast at a retail establishment."

For example, he said, "Come to Joe's

Bar and Grill and WXYZ is broadcasting live here tonight. ... Budweiser is handing out T-shirts or hats."

The second and third spokes of the radio campaign relate to different demographic and ethnic groups, with special attention paid to the African-American and Hispanic markets. "Certainly with the Hispanic," Ponturo said, "it allows us to do specific Spanish-language commercials and use a whole different level of radio stations."

The same holds true with spots aimed at the African-American audience. "We can go into markets and select stations which have a format that allows us to target narrower and use different commercials."

Spoke four is the various sports spon-

Anheuser-Busch Inc.



■ **Annual Radio Ad Budget:** \$60 million to \$75 million

■ **Headquarters:** St. Louis, Mo.

■ **Business:** Anheuser-Busch Inc. is the brewing subsidiary of Anheuser-Busch Companies, a diversified entity with \$12.6 billion annual gross sales.

■ **Ad contact:** Busch Media Group Inc. (314) 622-0800

sorships. These include Major League Baseball, the NHL, the NFL and the NBA, and they consist mostly of live broadcasts of local teams.

The last point is especially important because Anheuser-Busch buys local. Ponturo said, "We're first of all looking at key markets, and from there we're sort of breaking down what's the target that we're trying to reach in that particular market for that particular brand, and then what (are) the station or stations that make sense."

Once they decide on a market, they go all out. "We tend to go fairly deep in a market," he said. "I guess we have the luxury of some resources to do that."

Best guess

Having revealed the thought process and the implementation of the beer giant's radio advertising strategy, Ponturo was asked if Anheuser-Busch thinks radio advertising generates good results.

"I guess we do or we wouldn't continue to do it. That's the bottom line," he said. "It's always so difficult to take the dot all the way through your programs and see the real results at the end of the day, but I think we can judge things by the awareness of our programs, the enthusiasm of our distribution system, and so we think it does work for us."

As for the advantages radio has over other media, Ponturo said, "I think (radio) allows us to localize our involvement in a market. There is a local sort of appeal." Again, these include local tie-ins, concerts and festivals.

"It's got a touch and feel to it relative to the local market. We don't just want to buy a spot on a network and run a commercial, we want to tie it in to local activity and promotions, and it's ... more difficult to do that on a national basis," he said. "It just doesn't have as much friendliness to it."

"It gives us a way to get our wholesalers and our distribution system involved in the process of media and get them behind it and let them help," he said. "If you're tied in with a concert series and it's on the radio and there are tickets and there's cross-promotion and consumer giveaways, it's all got this synergy going on between company headquarters, local market, wholesalers, sales team and consumer that's pretty unique."

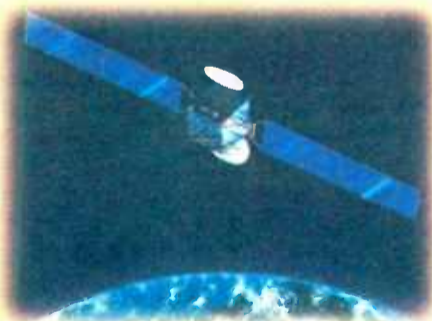
Although there are many more places to advertise today, Ponturo believes radio has remained a great outlet in large part because of its reasonable cost. "People are trying to use their dollars wisely," he said.

He recalled when cable TV seemed ready to give radio a run for its money, but, he said, "I think (radio) has clearly survived that by staying contemporary and seems to be a very viable business in today's marketplace."

Radio and Anheuser-Busch seem to make a happy couple. Now if we could just cheer up those poor lizards.

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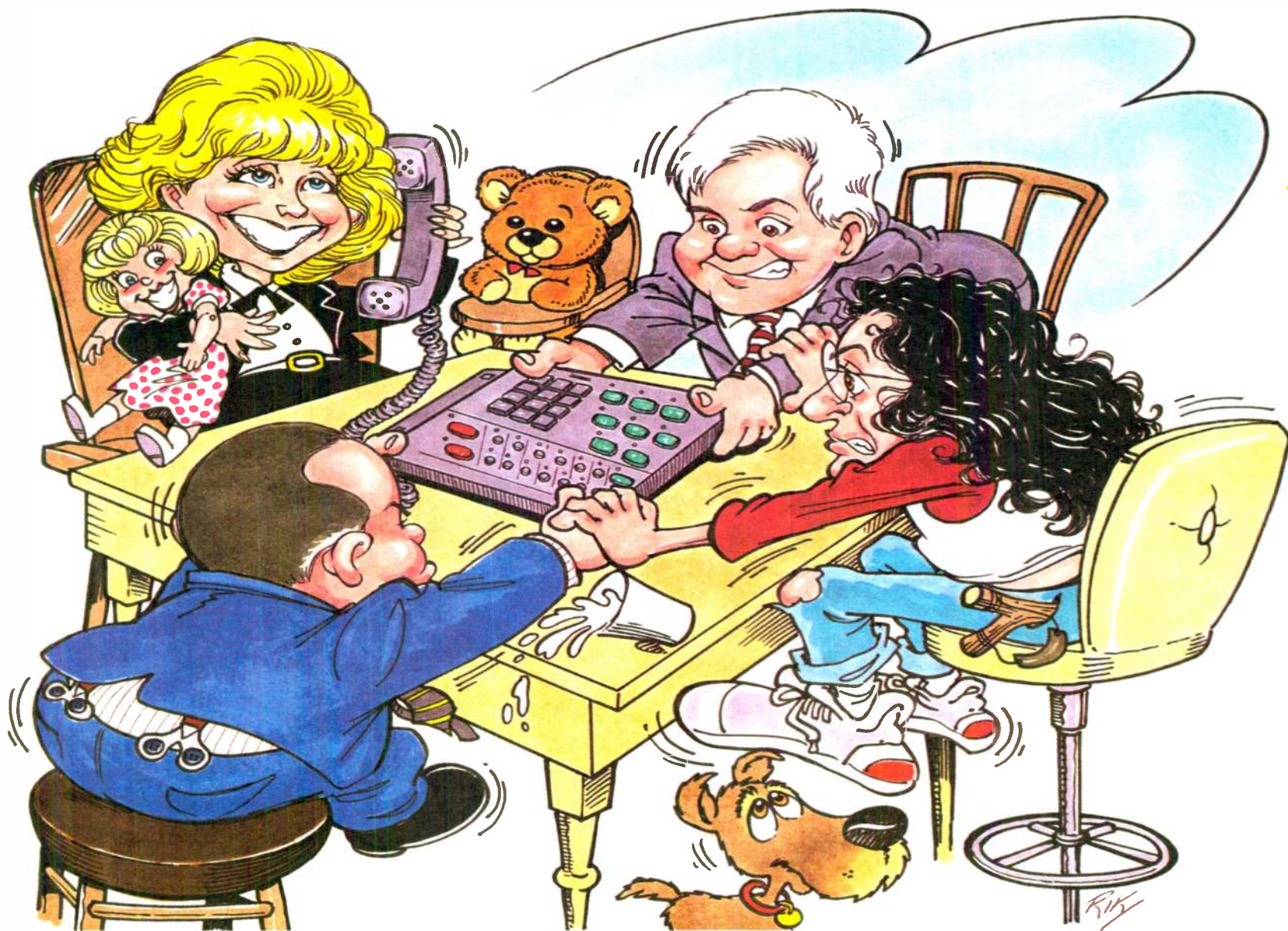


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 **HARRIS**

Helen Thomas: The First Lady of UPI

Helen Thomas has covered every president — from Kennedy through Clinton — as White House correspondent for UPI. As the senior member of the White House press corps, she is the one who always gets the first and last words at Oval Office press conferences.

She came to the news service in 1943, called to duty in a man's profession experiencing a shortage of men. She wrote news for 12 years, then covered the federal government beat for UPI until 1960, when she began following around a young presidential candidate named John F. Kennedy.

RW Associate Editor for News Matt Spangler met with her at the National

Press Club, of which she became the first female officer and served as president from 1959 to 1960. She was asked to reflect on the enormous amount of change broadcast and print journalism have undergone in the more than half-century that she has been in the business.

RW: When did you begin writing radio news for UPI?

THOMAS: 1943. I came to UP in World War II. They were drafting every young man who could breathe. Slots



Helen Thomas has been the UPI White House correspondent for 37 years.

opened up for women. So we were editing a wire that would cut down the major news for newspaper bureaus in town who wanted it very quickly.

RW: What do you think is the most significant way that broadcast news journalism has changed over those years?

THOMAS: I think the whole advent of television transformed us. If we were going to do a bulletin, we wouldn't feel the immediacy ... With bulletins, it's already been on television, especially if they're there, with the cameras. So we're covering everything with the cameras.

I think the whole electronic revolution in journalism has had a tremendous impact on how we operate.

RW: Tell me how it created a change in how you covered the news when television came around.

THOMAS: Before you would run to a telephone. Now you know your office is watching it too on live TV. So you don't have this sense of "Oh my God, I've got to run and file a bulletin." People in the office have already put the bulletins out, because of the instancy, the fact that CNN can go live anywhere in the world in five minutes.

It's the electronic world: cell phones, tape recorders, etc.

RW: Who was, over those 37 years, the most media-savvy or media-friendly president that you have covered?

THOMAS: Well, those are two different questions. None were friendly ... I don't think any of the presidents like the press, once they get into the White House — they love us on the campaign trail.

Certainly Kennedy knew the importance of live television ... I think Kennedy was the most savvy about what TV would mean. FDR for radio. His "Fireside Chats" — people really waited for those.

RW: Today, in the face of more media-savvy White House press offices, who are increasingly more adept at getting their own spin out on stories, how can a journalist create behind-the-scenes sources?

THOMAS: You have to get to know the people who are involved, and just work on it. You know darn well that when Mike McCurry comes out there he's going to put the best foot forward for the president.

It became state-of-the-art for managing the news under the Reagan era, because you had real image makers there. They would decide the story of the day and just have you really focused on that, and not even allow the coverage of anything else.

"McCurry and Inc." are now sort of moving in that direction ... They're very controlling.

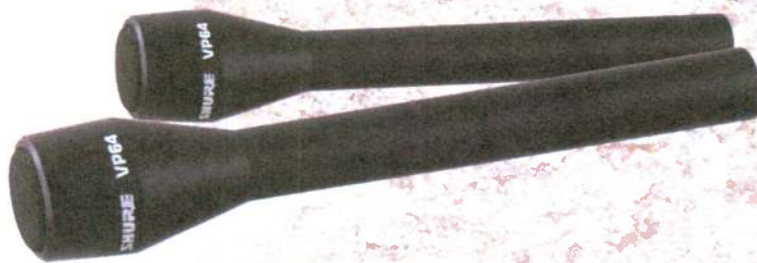
RW: Did you feel that there was a change when the Reagan Administration came in in the way that the White House was treating the press corps? Were you given the silent treatment?

THOMAS: Not silent. We were massaged and stroked. We just had this feeling that we'd been had.

See THOMAS, page 19 ►

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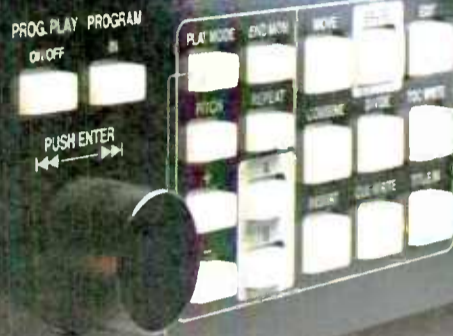
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Sales Wisdom Wins Affiliates

► DAVID, continued from page 12 and also sell advertising on the show."

Summing up his philosophy with one sentence, David said, "I've got to show clients I'm interested in their business as much as they are."

Rob David has built his success in radio on solid fundamentals.

Study, study, study

David said a radio salesperson can no longer be "just a peddler coming around selling spots." Clients are more sophisticated, so the salesperson must adapt.

"You've got (to have) a reason to go in and talk to somebody, more than just trying to sell them a bunch of spots," he said.

Radio salespeople can never know too much about the things their clients care about. Rob David advises salespeople to read publications relevant to their clients.

"In the jewelry business, (there's a trade publication called) Jeweler's Keystone. In the grocery business, there's Supermarket News."

David said some of his clients have taken him under their wings. Recently, he was promoting "Ask the Handyman" at the National Hardware Show. A client, the chairman of a large chain of hardware stores, said, "Rob, come walk with me. I'll show you what's going on" and we walked the aisles. How do you lose in that deal?"

As you study, you become fluent in the language of business. "There are some key terms retailers know that you'd better know. If you don't know those words, (the retailer) knows you don't know his business, and (will) respond accordingly.

"For example, if you're selling retail, you better know the term GMROY,"

The First Lady of UPI News

► THOMAS, continued from page 16

We've been had by all of them. When they get in the White House, they think they're going to put in their thumb and pull out a plumb on their own terms.

The way you get news at the White House is leaks. I believe in leaks, because they are news that they want you to have in a different way.

RW: How do you assess the new broadcast and print journalists that are coming into the business these days? What advice would you give to them?

THOMAS: I think they're better educated. I wish they would have a little more compassion ... Sometimes you do feel the cynicism. The president's always complaining about it. I have to admit it, that sometimes there is a pessimism that you don't really want to prevail ... But still we try to call them as we see them, no matter what our feelings are.

pronounced "GIM-roy," for Gross Margin of Return on Inventory.

"That's how a good businessman looks at his business. Or, if you're talking to airlines, there's RPMs (Revenue Passenger Miles), a measure they use to see how they're growing."

Even the best preparation can't break all the ice. Every salesperson has run up against the businessman who won't have anything to do with radio. David's not concerned.

"They'll all die off eventually," he said.

Be more than a salesman

David said clients respond when "you show them how you can be their marketing adviser, take it off their hands. The biggest compliment I ever got was when an agency person asked one of my clients, 'Who's your agency?' My client pointed to me and said, 'You're talking to him right there.'"

David has earned a "Diamond status" Certified Radio Marketing Consultant (CRMC) designation from the Radio Advertising Bureau.

"You've not only got to know radio backwards and forwards (to earn CRMC), but also print, outdoor, and television," David said.

David experienced the dramatic changes in the radio management environment during his 16 years at WXYT. When he started, WXYT was owned and operated by ABC. Then, WXYT passed to a local owner, then to Infinity Group. Finally it became a CBS O&O.

David said, "I liked it best when it was run by the guy who owned the joint, because you could go in there and make your case for something you needed, and the decision-maker was sitting right there. You didn't have to go to New York for approval."

In fact, the new radio ownership rules have David a bit nostalgic. "Financial people got involved. They aren't looking to have a station to serve the public

interest, but instead to turn a profit.

"The point has always been to make money, and not be a charity. But when you get to (corporation) size and money, they want a return on their investment, (to the point where) the individuals get left out."

Yet David said the new radio environment is loaded with opportunity. "If you work for a corporation or a group, you can network with other people within your company. Before, if you worked for one station in one town, nobody else knew what you were doing. Now, you can move from market to market, or move up (locally) within the group."

The little guy

Rob David, salesman, said the current radio atmosphere is producing an "overemphasis on sales."

"The little guy, the small retailer who has been radio's bread and butter, is being left out of the equation," he said. Corporations that own many stations "are looking at bigger advertisers. They want to put the industry on par with television."

David said little guys find a home with specialty shows like "Ask the Handyman."

"We run spots for Universal Plumbing and Supply in Detroit," David said. "My office is bigger than this guy's showroom, but if you go in there with any part or question, he can get it for you."

"These clients find their investment comes back many times over because they are niched into the market the listener is interested in. What the stations are telling me is that the show is giving them access to advertisers that wouldn't be there otherwise. You get (these businesses) on long-term opportunities and ownership in the

show. They can be very successful."

"Ask the Handyman" is pretty successful, too. David entered into the venture with WXYT talk show host Glenn Haege, who nominated David for the Sales Success Award. When Haege's contract was up at WXYT last year, he asked David to help him with the negotiations.

"We discussed a business venture. We ended up working a deal which kept the show on WXYT and took it to syndication. Glenn said, 'Why don't you do this



Rob David (left) in the Studio With Glenn Haege, at Flagship Station WXYT in Detroit

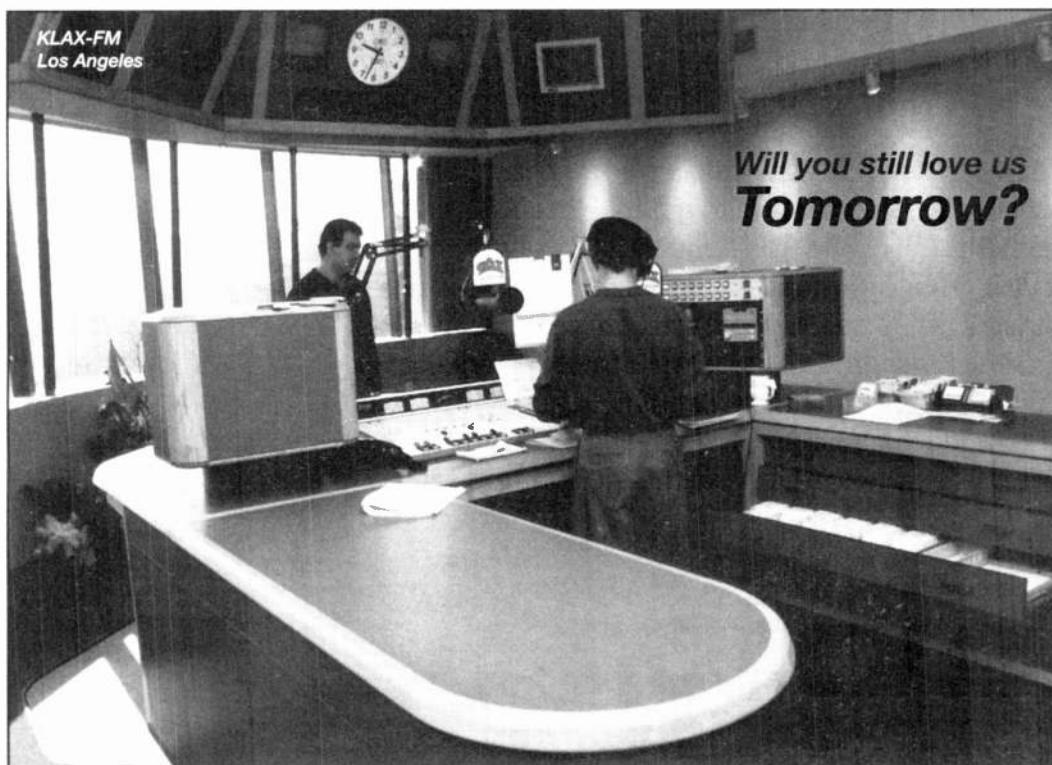
out of your own company, and I'll let you handle all my affiliates and marketing?" And I did."

"I try to make our affiliates partners. We send out a newsletter to the sales managers and general managers to help them try to make money on the show. We treat them as if they're an extension of ourselves. We know the show won't be successful if they're not making money at their end."

David claims it's the fastest-growing weekend show Westwood One has ever had. He still does some work for WXYT, but he said he's working harder than ever with his new company, "The David Group."

■ ■ ■

Gary Hart is a freelance writer based in Murphysboro, Ill. Reach him through RW.



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Powter's new talk show from NetStar Entertainment aims to cultivate fans who appreciate her insight and who won't be distracted by her unique appearance. "The Susan Powter Show" deals with wide-ranging issues beyond health and wellness, the area where Powter established her reputation and spread her "Stop the Insanity" philosophy.



Susan Powter

"Unlike other talk show hosts, Susan is unpredictable," said NetStar Chairman and Chief Executive Officer Alan Fuller.

"She cannot, and will not, be categorized or pigeonholed. I am absolutely confident that Susan Powter is talk radio's next superstar."

Powter is a well-known author of five books.

"The Susan Powter Show" airs Monday through Friday.

For information contact Phyllis Chotin at public relations firm RPR & Associates in California, (310) 914-5259; or circle Reader Service 192.

ABA Award to NPR

The verdict is in: NPR's "Murder, Punishment and Parole in Alabama," a two-part series airing on "All Things Considered," is the winner of the American Bar Association's 1997 Gavel Award in the radio category.

The award will be presented during an Aug. 5 ceremony in San Francisco.



NATIONAL PUBLIC RADIO®

For information contact Siroil Jane Evans at NPR in Washington, DC, (202) 414-2313; or circle Reader Service 218.

You Can 'askMartha' Later This Summer

Spruce up your radio entertainment lineup with "askMartha." Westwood One Entertainment's daily dose of advice expert Martha Stewart.

Four live call-in specials will offer "advice and suggestions on cooking, decorating, gardening, entertaining, weddings, crafts, the holidays and



Westwood One President and CEO Mel Karmazin (left) and Martha Stewart

much more."

The radio venture comes courtesy of Stewart's new company Martha Stewart Living Omnimedia.

The program "allows Martha to pioneer the 'lifestyle' category on radio," said Sharon Patrick, president of Martha Stewart Living Omnimedia. "It extends the CBS relationship across radio and television."

The program launches later this summer.

For information contact Ted Kelley at Westwood One in New York, (212) 641-2052; or circle Reader Service 11.

Racial Violence

A recent film recreating the injustice carried out in Rosewood, Florida, didn't generate excessive praise or box office receipts, but a radio documentary on the incident won two major awards last month.

"Rosewood Reborn," distributed by Pacifica Radio and sponsored by WMNF-FM, Tampa, Fla., took two awards at the New York Festivals: the "Grand Award," and the "Gold Medal for History" International Radio Programming and Promotion Award.

In a separate ceremony, the Radio and Television News Directors Association recognized "Rosewood Reborn" with its National Edward R. Murrow Award in the category of "News Documentary in Radio, Large Market."

For information contact Burt Glass at Pacifica in California, (510) 843-0130 (x253); or circle Reader Service 144.

Computers Made Easy

The dry world of computer technology programs is about to receive a much-needed injection of energy.

Gina Smith, familiar to ABC television viewers for her computer reporting, has joined the ABC Radio Networks lineup with "Connected With Gina Smith."

"I love radio!" Smith said. "It's tremendously exciting to be on a network the size of ABC Radio." Her weekly three-hour program will feature listener call-ins. It debuts October 4, 1997. Smith writes a nationally syndicated newspaper column and has authored the book "101 Computer Answers You need to Know." She contributes to the ABC programs "Good Morning America," "Nightline," "World News Tonight With Peter Jennings" and "This Week."

For information contact Kelley Chapman at ABC Radio Networks in Texas, (972) 776-4644; or circle Reader Service 170.

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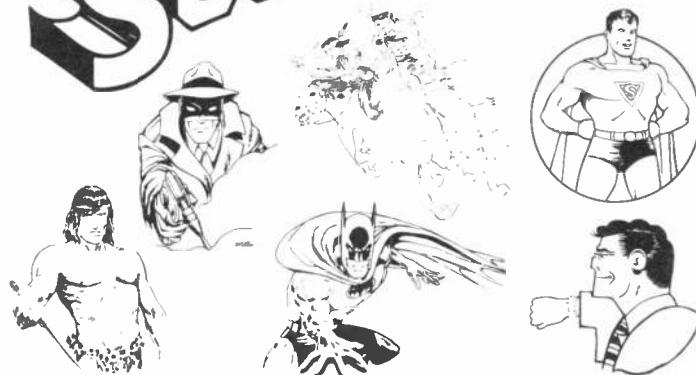
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Another Fine Radio Program From Dick Brescia Associates

Circle (84) On Reader Service Card

Small- and Medium-Market Money

Bob Rusk

The money to start a radio station is out there, but finding it can be a challenge. Not only do you need to know where to look, but you need to know what's required of you before seeking out a lender. Just ask those who have been through the process.

Mark Jorgenson, of Jorgenson Broadcast Brokerage, said that, as a result of the Telecommunications Act, between 25 and 30 percent of all radio stations in the United States changed hands in the last 12 to 18 months. This has fueled the demand for money, which Jorgenson called a "fundamental change in the structure of our business."

He said, "There is a tremendous demand for radio stations — and a limited supply." This is excellent news for sellers, but a major drawback for first-time buyers who may have limited resources.

Lean on lending

Samuel D. Bush, vice president, AT&T Capital Corp., said that a solid relationship with a lending institution is critical. This is particularly important in smaller markets, where loan amounts typically fall in the \$1 million to \$5 million range.

"You have to do a lot of groundwork in preparation to go to a lender," he said, "showing them what you're doing and why you're doing it."

Some of the elements to include in a loan request are an executive summary,

briefly describing the transaction and purchase price; borrower information, such as personal financial statements, prior loan relationships, and credit references; specific use of the funds; and management background of the loan applicants.

Bush, who like the other experts quoted here participated in a recent NAB session on small- and medium-market financing, said that anyone seeking less than \$5 million is going to have "a very difficult time." Because of the economies of scale, lenders prefer to handle amounts much larger so they can get a bigger financial return.

One option is to deal with a local bank that has an interest in the community served by a radio or television station. But Lee Shubert, of the law firm Haley, Bader & Potts, said there are drawbacks to that approach.

"When you're dealing with a local bank, be prepared for a learning curve," Shubert said. "You will have to teach that banker about the broadcasting industry. They're used to dealing with hardware stores, where they can walk in and take the inventory off the shelf."

"We have inventory, but you can't see it. You can hear it." This makes bankers nervous, according to Shubert, and they will begin to wonder how to secure the debt.

"It's going to be more time-consuming and more expensive to (work) with a lender who has never done a broadcast deal," said Shubert. Finding a banker who understands

the radio and TV business can make the loan process much easier.

"They know what they're dealing with and go right to the bottom line," Shubert said. "The transaction happens very quickly. With a local bank, sometimes it takes a very long time."

Another option is to go to the Small Business Administration, which offers federally guaranteed loans. Katherine C. Marien, president of Allied Capital Lending Corp., which provides loans to small businesses, said some broadcasters may have misconceptions about SBA loans.

She said the SBA is not a lender of last

resort, does not loan strictly to minorities, and does not make it more difficult than a bank to qualify for a loan.

Marien, who handles loans up to \$1 million and deals mainly with radio, also put to rest the notion that it "takes forever" to obtain an SBA loan. "It depends on who you go to," she said.

"If you go to a bank that has never made one before, that is probably an accurate statement. By the time a radio borrower comes into my office, I can get an approval and be ready to close the deal before you can get through the FCC approval process."

'Girls Just Wanna Have Fun'

Jacor's top-rated KKRZ(FM) in Portland, Ore., invited drag queens to adorn its float in the recent Starlite Parade, part of the city's annual Rose Festival Celebration.

Parade-goers greeted these guys dressed as gals with wild applause, but the reception wasn't as warm over at religious formatted KPDQ-FM. Lew Davies, afternoon talk host at the Salem Communications station, called the drag queens "disgusting and vulgar."

— Bob Rusk



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Starguide Digital Networks previously acquired the Broadcast audio satellite distribution system products from Scientific-Atlanta, Inc. And has recently discontinued servicing the SCPC analog line of product. These components are in very limited supply and each order will be supplied subject to availability. Orders of five (5) or more items will be considered for additional discounts. All orders will be shipped C.O.D.

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Circle (136) On Reader Service Card

Dozens of Remotes, Plus the FCC

Dave Mance

It was Wednesday, May 14, 1997. The start of 38 remotes on five stations within five days. The stations include WTOJ(FM), WLKC(FM), WWLF(FM), WBDR(FM) and WATN(AM), based in Watertown, N.Y.

High stakes

May is the best month of the year in radio in the North Country, mainly due to the "Car Wars." The 38 remotes were built around two major car dealerships, Fuccillo vs. F.X. Caprara, going head-to-head, plus a few other remotes thrown in for good measure.

Fuccillo is a great advertiser for all mediums in the area. Its May advertising budget alone is in excess of \$250,000. With 17 franchises in Adams, N.Y., Fuccillo has really put this little community on the map.

Consider the hype: \$50 million dollars in inventory with 5,000 vehicles. Fifty radio stations from Watertown, Syracuse, Utica and all the markets in between on hand for the four-day event. During the promotion last year, Evel Knievel's son Robb attempted and completed a world-record motorcycle jump of 20 cars without touching the handlebars. It's a great broadcast event.

Obviously, our four FMs were bought for the Fuccillo 500 Supersale. Four days, four stations, 16 remotes.

F.X. Caprara has five locations and is the top seller of pre-owned cars. Additionally, it has 10 to 12 new car franchises.

Caprara's purchased 14 remotes on our four stations. Two of our stations already had conflicting remotes at other businesses or else Caprara's would have bought 16 remotes. Add in remotes at the YMCA, a third car dealer, a fishing derby, a huge car junkyard, local computer

store, lawn and garden center, power equipment dealer, and oh yeah, a live Sunday-morning broadcast on the AM from the First Presbyterian Church — and it adds up to 38 remotes.

One for starters

Wednesday we had just one remote at the junk yard, celebrating its anniversary. Thursday, we were in full force with four broadcasts from each of the two big car

dealerships; eight remotes altogether.

The panic begins days in advance. Operations Director Todd Dalessandro has to line up board ops in addition to air talent. Our traffic director, Kim Bisig, prepares logs for all five stations. It's the busiest week of the year.

Announcers need to know who gets the Marti unit for which remote, who has to use cellphones and who uses regular phones with the Shure mixers tapped in with microphones. Even the need to decide who takes which radios to their remotes and who gets the extension

See REMOTE, page 26 ►

China and MFN, on the Radio

The recent vote in Congress to retain Most Favored Nation (MFN) trading status with China was preceded by a radio advertising blitz from supporters and opponents.

Radio played an important part in getting the word out, as it often does when hotly debated issues come before Congress for a vote.

The MFN ads offer a case study in how political opponents seek to influence public policy. RW offers the text of two radio ads on this issue. The first, from American Renewal, presents the view-

point opposing MFN renewal. The second, from the National Retail Federation, speaks out in favor of existing U.S. trade policy with China.



American Renewal

"This is Gary Bauer with American Renewal.

"The House of Representatives will soon vote on whether to extend Most Favored Nation trading status to communist China. Religious persecution is getting worse in China.

Pastors and priests are being tortured and killed. Millions of people are being held in slave labor camps.

"Our State Department reports that every pro-democracy dissident has been either jailed, exiled or killed. Every one.

"China threatens the United States. They sold poison gas to Iran and rockets to terrorists. They've tried to smuggle guns into our country. U.S. companies have sold China supercomputers which will help their military develop missiles capable of striking the United States.

"I urge you to call your member of Congress now at (202) 224-3121. Tell

your member to put our founding principles back in U.S. foreign policy. Vote no on China MFN. (202) 224-3121."

National Retail Federation

"I own a variety store with my husband — it's a good business. Partly because of our business, we've been following the debate about changing our normal trade status with China.

"Lots of the items we sell are made in China. If our prices go up it'll hurt our customers and business. And then we started looking at products we use at work and around the house. A lot of them come from China. Clocks, lamps, the kids' toys — we were amazed. China's trade status affects all these things. We're worried. Maybe everyone should be.

"Most Favored Nation status is nothing unusual. It's the same normal trade status we have with nearly every country.

"Human rights issues are important. And China needs to treat its people better. But changing our normal trade status won't accomplish that. It will only hurt consumers, workers, and U.S. businesses.

"Call your senator or congressman now. Call (202) 224-3121. Let's keep trade with China."



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KBGO is ready for the future. Brian White, Program Director states, "Broadcast Electronics is very consistent when on Auto Seg. . . no more dead air. It's state of the art for programming and a must for the 21st century." Chief Engineer George Thomas also declares, "Reliability means my pager doesn't keep going off with emergency calls, and that's what AudioVAULT and AvAir deliver."



KLUC, another top station, depends entirely upon Marti Electronics for all of their remote broadcasting needs. "I have used Marti RPU's, STL's and TRL's my entire career. They have always provided consistent quality," declares Chief Engineer, Tracy Teagarden.

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Why your worst day in radio is

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user interfaces to tap the system's real time power: Live Assist touch screens that actually make on-air tasks easier and more productive. Sound Cube looks and feels like an analog cart machine, which means fully digital on-air delivery without all that staff training time. Sound Slate goes even further, putting a complete range of sound effects and audio at your talent's fingertips.

For commercial scheduling, AirTime's touch screens and easy schedule builder lets you

create a commercial once, then access and reschedule it from one powerful database. The same huge, flexible database lets a program director store, organize, and play on-air resources at will. Best of all, AirTime's UNIX-based operating system gives your station complete multi-tasking in real time. So if running one station isn't challenging enough, now you handle even more stations from a single location with AirTime. Just to make your life easier.

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Circle (7) On Reader Service Card
World Radio History

'Car Wars' Remotes Rev Up Sales, Staff

► REMOTE, continued from page 22
cords, multiple plugs, etc. It's a real planning communication nightmare.

Everyone pitches in

Even I, as general manager and president of Clancy-Mance Communications, owner of the five stations, have to do four straight days from the Fuccillo festivities. It's actually like a high school reunion. With 50 stations present, you run into some of the old guys you used to work with.

There's Phil Markert, the guy I worked

with 20 years ago at WHEN(AM) in Syracuse.

Fuccillo does it up right when it comes to remotes. Phone lines have been installed, along with the telephones. Everyone has a tent. Every tent has electric plugs powered by a huge generator. It all works well. The dealership will sell almost 2,000 vehicles during the month. You can't turn on any radio station without hearing about this "HUGE" sale.

While at the remote Thursday, my operations director back at the station



The Fuccillo Auto Mall

phones me on a backup line to tell me the FCC inspector is at the door. Can this be possible — the busiest week of the year and the FCC shows up? The ops guy says

the inspector is nice enough, but wants to know why our AM tower does not have a tower light. The license states it must be lit and painted.

Serious questions

I tell him to put the inspector on the phone. He identifies himself and seriously questions the AM tower. I tell him to ask the operations director to look for the Western Union-gram sent from the FAA years ago that says we don't need to light the tower because it's under 200 feet.

The FCC inspector wants to know if we run unattended overnight. Using the Broadcast Electronics AudioVault does allow us to walk away from our stations. He wants to know how we react to EAS if the station is unattended. My ops director tells him the truth. The county's emergency management office has the names and phone numbers of three key management people, including myself, who can be reached and who can get to the station within five minutes in case of an emergency.

The inspector has spent the two previous days doing directional array measurements. After 15 minutes at my stations he announces that he hasn't enough time to do a full inspection and must get back to Buffalo. Our AM is a non-directional station (or is that a station without direction?) and the need to check those nulls is not necessary. A sigh of relief!

Friday, Saturday, and Sunday the remotes and the "Car Wars" continue. Everything runs smoothly: timing by the announcers, a traffic department that has done an excellent job, an operations manager who has done all the scheduling and handled some of the board duties himself, and the board ops who really care.

There's just one major problem — the weather is terrible. One day the wind chill is in the upper 20s. It rains three of the four days, and although the remotes are under tents, they're still outside, and downright cold.

Call and response

It's now Monday, the day after. I'm really happy at how well things have gone. We did it. A team effort that paid off. The anxiety is over. We've survived until next year.

At 5:10 p.m. the phone rings. It's the agency representing Fuccillo. The sale was good, but the weather played havoc, and Fuccillo wants to buy another 16 remotes this coming weekend.

It's Memorial Day weekend. What are we going to do?

Please don't tell my operations director, my traffic director ... or my wife!

■ ■ ■

Dave Mance is general manager and president of Clancy-Mance Communications.

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D30



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Studio Sessions

Meet a 'Titan'
of the audio
industry.
See page 29

Radio World

Resource for Radio Production and Recording

July 23, 1997

PRODUCT EVALUATION

The 03D: Get Your Nails Dirty

Part II of II

Ty Ford

Back to our look-see at the new 03D digital console from Yamaha, which we began in our July 9 issue.

Last time at the board, I explained the channel assignments and the 03D's ability to look for the house clock to sync up to

sends and onboard effects returns. Each EQ module also has a variable pad with up to 96 dB reduction after the A/D conversion to compensate for boosts you might come up with in the EQ section. The library holds 40 preset programs and 40 user programs.

The EQ of the 03D seems much like that of the 02R. A graphic display shows the curve of any EQ changes. My only problem with the display is that the curves do not really sound like I would expect them to.

Part of the reason is the lack of distortion most of us have become used to when employing analog equalizers.

Dynamics control on the earlier ProMix 01 was titular, but nasty. The compression and expansion of the 03D work well. You get compressor, noise gate, ducker, expander, hard or soft compander.

The dynamics can be self-triggering (pre or post EQ), cross-triggered from another channel or from the Aux 1 or 2 send, pre-EQ.

As with the 02R there is a graphic display of the gain reduction curve. Adjustments include threshold, attack, release, knee, ratio and output gain.

A few tweaks to one of their compander programs gave me more than acceptable results for compressing two open mics in a small studio and gating them to keep the other instrument out.

The manual gives an excellent dynamics tutorial as well as a full description of the presets.

The dynamics section may fall slightly short of world class, but is usable.

All aboard the effects bus

There are two built-in 32-bit stereo digital effects buses providing 64 presets and room for 32 user programs. Effects include reverbs, delays, amp simulators,

gated reverb, echo, chorus, symphonic, phase, autopan, tremolo, pitch (Effect 2 only), and a whole string of reverb+ effects.

All effects have plenty of adjustable parameters.

The second built-in effects bus has a 2.7 second sampler for "freeze recording" that can be triggered from the effects page manually, by MIDI note or by an audio level in excess of a set trigger level.

The only things I could get to work were the number of playback loops (I

See YAMAHA, page 31 ▶



'Cool Stuff'-winning Yamaha 03D Console

all other digital components in the studio. Now let's really get our nails dirty.

Due compensation

Input delays are something new. The manual suggests that they can be used to compensate for individual mic or speaker phase errors due to placement.

Each input has its own four-band, 44-bit parametric EQ and 32-bit dynamics processor. Four-band EQ also is provided for the stereo input, stereo output, aux

Mackie vs. Behringer: Mega-Money Mixer Suit

Lauren Rooney

A new mixing board made by Behringer GmbH of Germany has hit a sour note with Mackie Designs, the U.S. manufacturer and marketer of professional audio equipment.

Mackie alleges the Behringer Eurodesk MX8000 is a blatant copy of the Mackie 8-Bus mixer line and has filed suit against Behringer, Sam Ash Music Corp. and Samson Technologies of N.Y., for \$327 million.

According to details of the suit, Sam Ash has been an authorized Mackie dealer since the early 1990s. The company signed an agreement to sell the Mackie line only in approved locations and could not transfer products to, nor respond to information requests from outside

the dealer territory.

The suit goes on to claim that Behringer, a maker of products for the music and recording industries, decided in 1993 to begin manufacturing a line of mixers and that Ash and Samson gave Behringer the Mackie 8-Bus line of mixers to copy, along with money to get the job done. The alleged result: the Behringer Eurodesk MX8000.

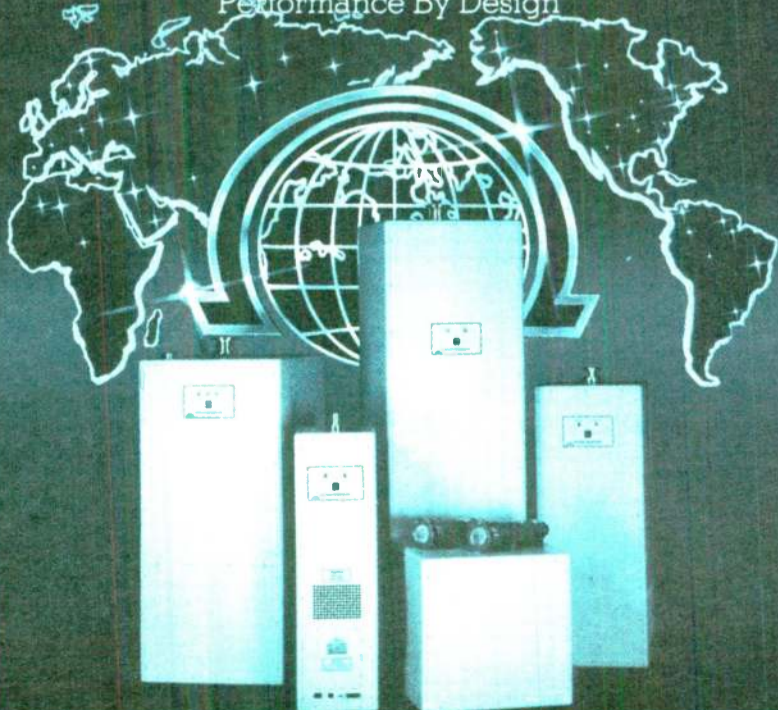
Familiar look?

Mackie Chief Operating Officer Roy Wemyss said the Eurodesk has an uncanny similarity to the Mackie line.

"One could say the similarities are coincidental, but we had a third party evaluate the two, both internally and externally," he said. "The conclusion

See MACKIE, page 34 ▶

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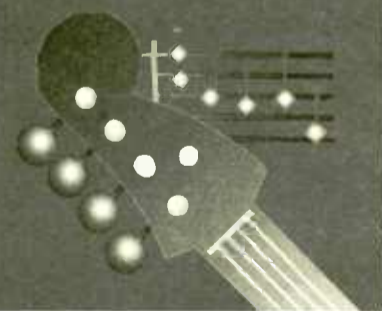
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DIGITAL DOMAIN

Titan Does the Time Warp Again

Mel Lambert

A little more than a year ago, I described a new Mac-based utility from the English firm Synchro Arts that allows one audio track to serve as a template for another.

As you may recall, VocAlign lets you take a good — but not perfect — voice-over and use its modulation envelope to alter a second take that perhaps lacks the pacing and general “feel” of the first.

Intended as an adjunct to the powerful Digidesign ProTools editing software family and related products, the VocAlign utility can also be used on a conventional music track to create a version that utilizes a palette of electronic and related effects.

Once having analyzed the content of the master track and built an amplitude profile, the user is free to select another track, over which to place the modulation envelope.

This just in

Word now reaches me of a new program from Synchro Arts, designed to simplify the sometimes tedious and time-consuming process of synchronizing sound elements to an edited set of tracks. The new application, named Titan, is designed to be used as a standalone application on Apple Power PCs and compatibles.

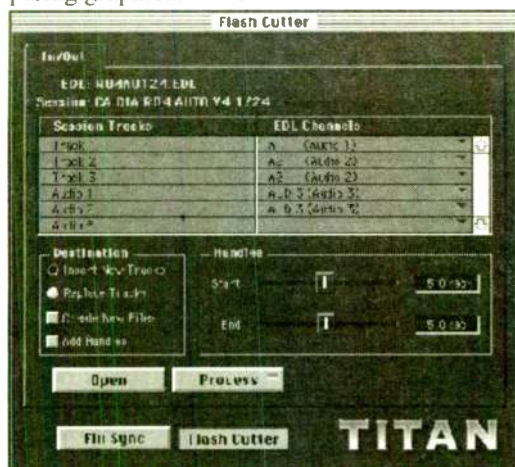
Titan fills two complementary functions on ProTools session files. First, the program's Fix Sync function automatically adjusts the position of manually or auto-conformed audio regions so that they are in perfect sync with the work track.

Second, Titan's Flash Cutter eliminates the need to manually recut and rename edits when tape is used to transfer audio from one type of system to ProTools, and for which Open Media Format (OMF) transfer does not provide a practical option.

For example, once the original audio elements have been transferred from tape

into part of a Pro Tools session, Flash Cutter uses standard edit decision list (EDL) markers from the initial editing system to automatically recut the tracks and rename the audio regions.

This is pure simplicity: A process that virtually eliminates the need to adjust sync points manually while visually comparing graphical waveforms.



A Screenshot of Synchro Arts Titan

And yes, Fix Sync can also be used to correct the synchronization reference of audio that has passed through various external processing devices. This audio can often be delayed as much as 1,000 milliseconds.

In use

Typical radio production applications might include the refitting of background music tracks to an already completed work track; perhaps replacing a generic commercial CD music track with a similar, more appropriate library music track and still having everything fit.

Maybe a complex project started on a non-ProTools system must be reassembled and finished on a more familiar platform. In either case, access to the previously determined edit locators dramatically streamlines the tagging of new materials to the master timecode reference track.

Titan can be set to correct the audio sync of hundreds of regions in just a few minutes and will display the number and size of sync errors. Optional reports indicate the magnitude of timing differences, presence of signal inversion (180 degree phaseshifts) and the amount of time shifting.

In terms of offering solutions to that age-old problem of re-synchronizing music and voice tracks, Synchro Arts Titan might be just what the doctor ordered. The company's address is given below.

Mel's Meanderings

Again, I seem to have a few lines left in this month's column, so here are details of another interesting PowerPC utility targeted at the broadcast community.

Arboretum Systems' "Ionizer" is a real-time noise reduction, dynamic EQ and multi-band dynamics audio processing software package for Mac PowerPC systems.

Offering up to 512 bands of high/low pass, shelving, notch, band-pass, parametric or brickwall EQ — with simultaneous multiband compression, expansion, limiting, and side-chain processing — Ionizer offers the broadcaster a large palette of applications. These include broadband noise reduction to clean up production audio tracks as well as audio restoration and sound design.

Ionizer is designed to function as an Adobe Premiere-compatible plug-in within such programs a BIAS Peak, Macromedia Deck and Opcode Vision/Studio Vision or as a stand-alone program using Arboretum's HyperEngine DSP environment.

As well as being able to audition a complete file, the powerful HyperEngine supports real-time play-thru processing of a live audio feed, essentially turning a PowerPC into a standalone processor.

Depending on a particular Mac's processor speed, HyperEngine can run multiple simultaneous copies of Ionizer; typically, one Ionizer window per 50 MHz of processing speed. This allows the cascading of DSP algorithms.

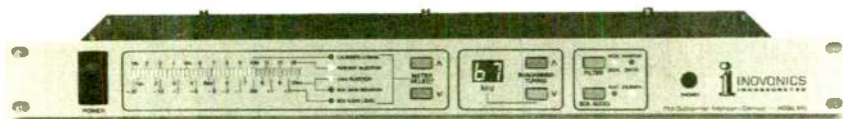
A typical multi-Ionizer application would begin with broadband noise reduction followed by multi-band compression/expansion, then parametric equalization.

Then there is "Hyperprism-PPC" from Arboretum Systems, described as an affordable Power Mac-native DSP utility providing real-time control of processing parameters, rather than a traditional set-and-forget operation. More information is available from the Arboretum website, <http://www.arboretum.com>

Data on the Titan is available from Synchro Arts Limited in Surrey, U.K.; telephone (44) 1372-811934, fax: (44) 1372-817976; or e-mail info@SynchroArts.co.uk

Mel Lambert has been involved in production and broadcast for several decades. Now principal of Media&Marketing in Los Angeles, he can be reached at mediapr@earthlink.net or at (818) 753-9510.

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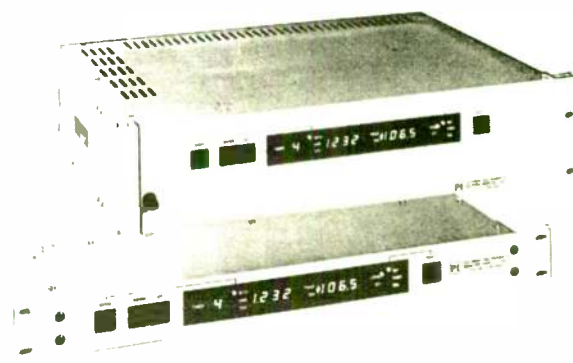
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World Radio History

O3D: Yamaha Does It Digitally

► YAMAHA, continued from page 27

only got one per hit regardless of where I set the number) and I found out the samples do not like to be started anywhere other than the beginning. Trying otherwise gave each sample a rather unpleasant digital buzz on its leading edge.

There are no direct outputs on the main chassis. Instead, direct signals can be assigned to the eight YGDAI ports via the Pan/Routing screen. These ports can

There are two built-in 32-bit stereo digital effects busses with room for 32 user programs.

have some — but not all — of the internal busses, auxes, direct outs and stereo L/R signals routed to them.

While the routing is somewhat restricted, they get their signal in front of the D/A converters and are affected by the stereo bus, aux and master faders, EQ changes and dynamics processing.

So that makes 26 inputs (the 8 YGDAI which also has 8 digital outputs), analog or digital stereo outs, 4 busses, four Aux sends and the two well-designed internal digital effects systems.

Envision the O3D as a digital mixer/signal router with four-band digital EQ and compression/limiting/gating and cross gating on each input and a bunch of the outs. It replaces more technology than most radio production facilities would dream of having in an entire studio.

Surround this!

Ready to try your hand at surround sound analog mixing? The O3D uses its four busses and master stereo outs to provide 2+2, 3+1 and 3+2+1 mixes.

A special surround pan page lets you place the output of each of the 24 inputs, the stereo in and both internal stereo effects systems. You can even shape trajectory of pans for each of the inputs. Stereo linking and center:side ratio are also supported.

Okay, so there are a few minor problems. There are sometimes unexpected glitches when you change from one effects program to another. Getting into "16 stage phase" happened only after a series of four piercing shots of high frequencies came out of the right monitor speaker.

You cannot get to the faders for inputs 17-24 unless you hit the Layer button. When you do, a small but persistent red light on the left side of the console blinks to remind you where you are.

Real live faders

Unlike the "virtual" effects controls of the O2R, the O3D design uses the main faders. You hit either of the internal effects buttons and the channel faders become sends for those channels.

The O3D does snapshot and dynamic automation when provided with external

MTC or MIDI clock with the MTC-to-SMPTE box as an option. Automix, as the feature is called, records fader moves, channel mutes, EQ changes, pan, mix scene, EQ, channels effects and dynamic library recalls. Recorded events can be edited offline with trim functions, or on the fly.

The Undo function can revert to a previous mix and channels can be "safe" to exclude them from the mix.

The problem with the automation is that you need an MTC or MIDI clock generating sync source so the console can communicate with the tape transport. That means at least a sync card or an extra piece of gear for the transport. Sure,

you could dump MTC on one channel of tape, making it the source, but that is an inelegant fix.

Not enough inputs? The CD8-CS Cascade Kit lets you hook two O3Ds together for a total of 32 inputs, with both consoles sharing the same bus system. To do this, inputs 17-24 are sacrificed.

Still have an old O2R? You can use the same Cascade Kit to link an O3D with an O2R.

What am I leaving out? Some of the fine points, but this should give you more than enough to get you started on your own search. As it has done in the past with the ProMix 01 and O2R, Yamaha has

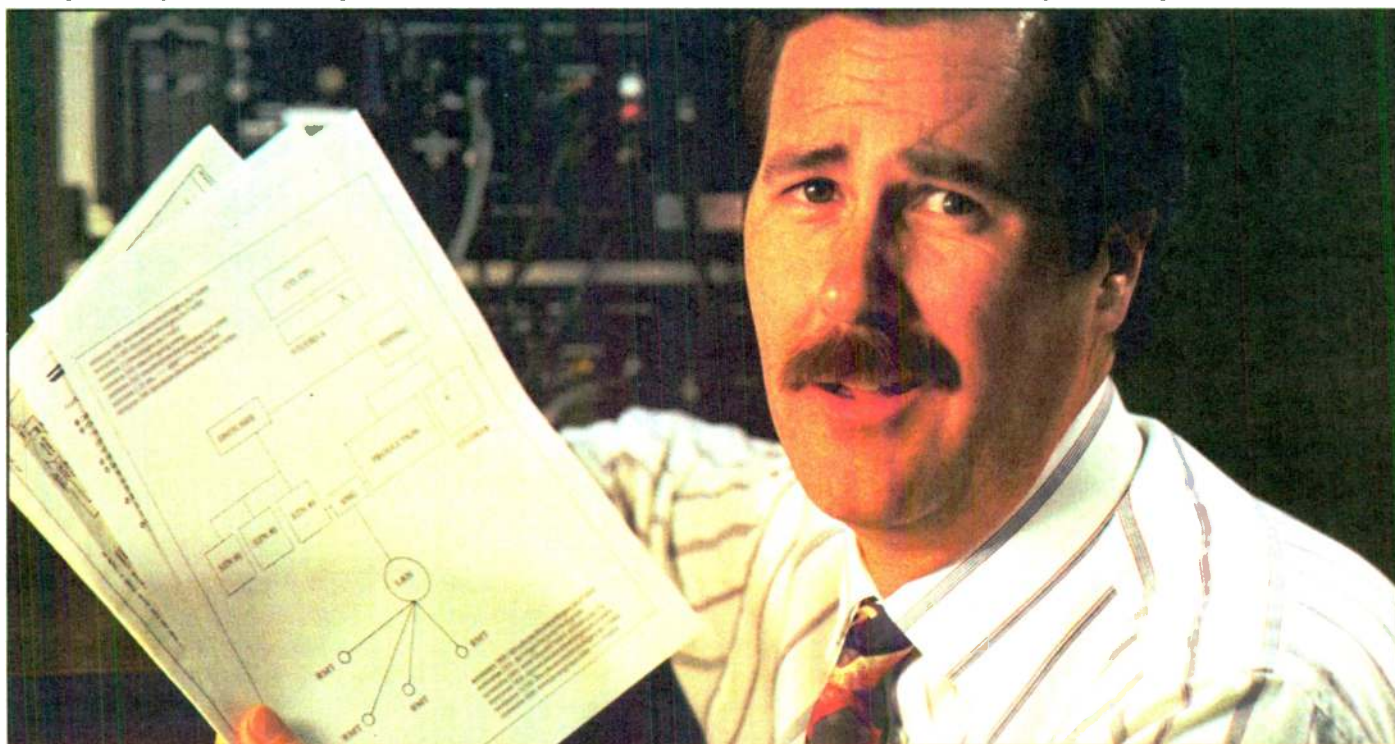
configured an impressive console.

Any objections to features left out or not fully developed can be answered with the phrase, "Whaddaya want for \$3,699?", or you can wait until the Mackie 8 Bus board hits the street.

As I posed last issue at the beginning of this review, "A console with a mouse?" To answer myself, I suggest getting a rollerball mouse to keep hand movement to a minimum.

■ ■ ■

After this story was filed, Ty locked himself in the studio to test-drive the Neumann 149 mic. Attempts to e-mail him at tford@jagunet.com may prove futile. "Advanced Audio Production Techniques" is available from Focal Press (800-366-2665) and his voice demos can be downloaded from FTP.Jagunet.com/pub/users/tford



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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.

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Sony Worldwide Networks
Manhattan, New York



Console Makers Mix It Up in \$327M Lawsuit

► MACKIE, continued from page 27
was that the products are inordinately similar, more so than anything else that is readily available."

Wemyss said the screw holes for the Eurodesk back plate match those of the Mackie product perfectly, the inner workings are the same, Mackie add-on features and accessories fit the Eurodesk and the two look identical on the store shelf, right down to the color.

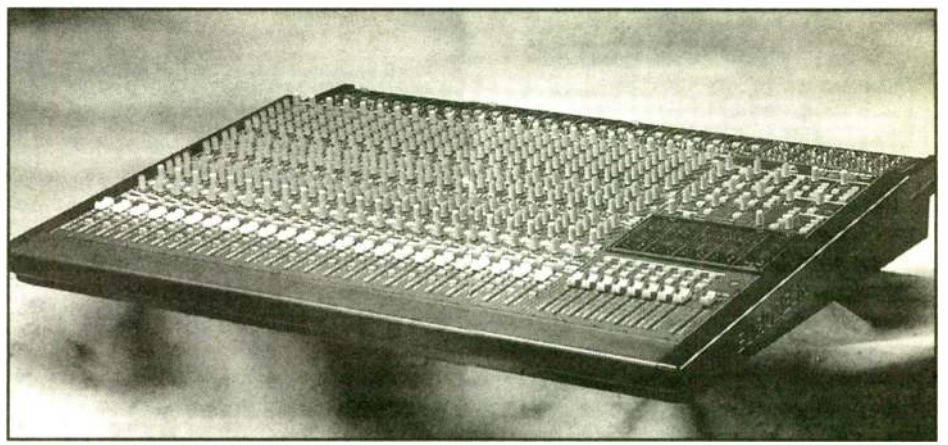
"Even when you look at the advertising, for instance," said Wemyss, "you'll see the similarity, which is most

noticeable. The allegations here are that Behringer out-and-out copied the Mackie products."

Except the Behringer product is less expensive.

"When you don't have the cost of developing and marketing a product," said Wemyss, "and you make it in China where labor is cheaper, you have a lower price."

He said the lower price is hurting Mackie's business, especially where the two products are sold side-by-side. "When a customer comes in to see the



Mackie alleges the Behringer Eurodesk, above, copies its 8-Bus line.

Mackie product, the salesman can say, 'Here it is, but here's another at a much lower price.' That would impair our sales."

Wemyss is outraged that a product Mackie spent money developing and marketing has been copied. "Someone just comes along and says, 'Oh, that's a good one. Let's copy it.'"

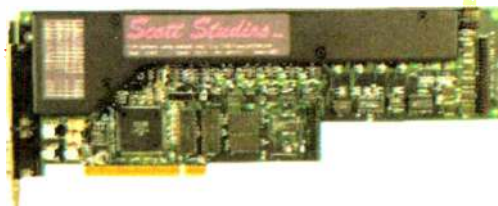
Samson fired back at the allegations. Chief Executive Officer Scott Goodman would not comment on the suit or Behringer products, but called the lawsuit malicious. "We intend to fight the suit vigorously," he said.

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Rebuttal

In a printed statement, Samson said the Behringer mixers are high-quality original designs that are even better than the Mackie product. According to the Samson statement, Mackie has a higher markup on its mixers and is upset that Behringer is willing to accept lower profit margins to gain higher sales.

Samson also claimed that the suit is an effort on the part of Mackie to get trade secrets that have made Behringer one of its toughest competitors.

This is not the first time Behringer has been sued for infringement. According to Mackie lawyers, the Behringer Exciter Type F, made in the 1980s, was judged by a German court to be a direct copy of a product made by Apex Systems, Ltd.

Apex Systems has since settled with Behringer.

It will be months before the lawsuit actually hits the courts. Mackie still is securing the final copyrights on some of the 8-Bus products and filed the suit to cover all markets where Mackie products are sold, both domestically and overseas.

Lauren Rooney is a television news producer in Harrisburg, Pa. She writes for *RW* and *TV Technology*.

Good Spot Box



Scott's new digital Spot Box triple-deck "cart" replacement delivers awesome *linear* CD quality sound.

Spot Box is the *easiest* digital system to use! There's only one screen, so your jocks always know what's happening. At the left, three players give you legible labels, countdowns and End-of-Spot signals, with big well-lit buttons that show what's playing. Even though it uses Windows 95 or NT, Spot Box works like carts, *not* a computer. At right, there's a "rotary cart rack" that lets you pick and play any recording by number or name. Or, number keys at the bottom load your cut quickly.

As options, Spot Box can automatically load logs from traffic by diskette or LAN. You can record spots and edit phone calls at the right of the screen. Starting at \$5,000, Scott's Spot Box is so affordable many stations can even put two in an air studio for redundancy.

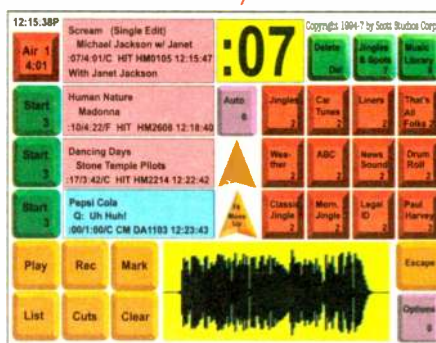
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AXS (pronounced ax'-cess) is radio's premier digital audio system for satellite or news/talk formats, CD automation and cart replacement for live jocks. AXS gives you instant play Hot Keys, log editing, music on hard drive, Power Fill, satellite jock substitution, link to NPR's SOSS, an easy-to-use Real Time Scheduler, the industry's simplest and best net catcher, and an optional production or phone recorder and editor in the air studio.

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USER REPORT

Auditronics Console Rocks WEGR

Gary Condrey

On Feb. 9, 1997, WEGR(FM), "Rock 103" in Memphis, Tenn., became the first station to go on the air with the new NuStar 3000 Series digital audio console from Auditronics.

WEGR was considering replacing a 15-year-old Auditronics 200 Series console when Steve Sage, CEO of Auditronics, approached us about becoming the test site for the company's new digital on-air console.

Because we were familiar with the Auditronics product line, we eagerly signed on to move another step closer to

digital broadcasting. Our station had already converted to a digital STL link and digital audio processing. The path is not digital all the way through, however; both STL and processor have analog input and output cards.

During the final stages of the development of the console, we provided broadcast-specific feedback to the Auditronics engineering team. The installation of the final product, the NuStar, was straightforward and flawless.

Two-part design

The console has two primary parts: a control surface similar to a conventional

Auditronics console and a rack unit that houses the majority of the electronics.

All external I/O connections — analog, digital and logic — are on the rear panel of the rack electronics. This allows easy access to wiring during installation and when inevitable source changes come along later. The only cables back to the console surface are an RS-422 connection, monitor, metering, cue and headphone feeds.

Input cards can be ordered for either analog or digital inputs. Currently, our Denon CD players feed AES/EBU digital inputs. The digital input cards can convert sample rates, supporting the standard

32, 44.1 and 48 kHz rates.

The WEGR console uses analog input cards for carts and other sources. When we do convert from analog tape to a digital storage system, we will merely swap out the appropriate input cards for direct digital connections.

All NuStar analog input modules are line-level cards; there are no cards specifically for mic-level connections. Therefore, a mic input requires either an external Auditronics microphone preamp or a preamp/processor of the user's choice.

Four, three, two, one NuStar

The NuStar has four stereo output buses, all available as AES/EBU digital and conventional analog outputs. The console has a full complement of logic

See AUDITRONICS, page 37 ▶

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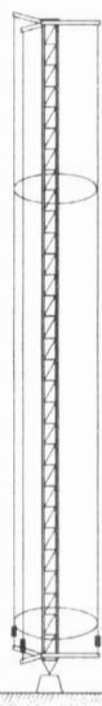
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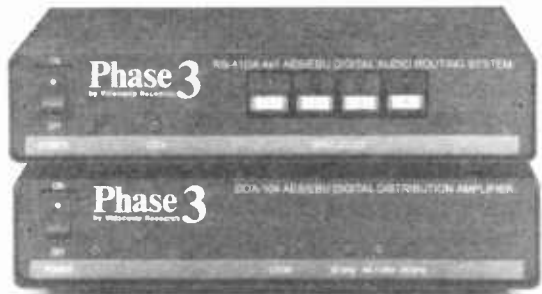
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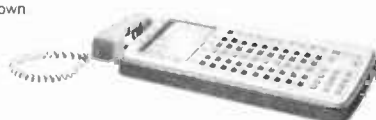
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READER SERVICE NO. 102

Rocking Memphis, Digital Style

► **AUDITRONICS**, continued from page 35 and muting for inputs and outputs. Our three-person morning show works frequently with telephone callers. The NuStar we ordered provides two phone interface modules, giving us a lot of flexi-

Our staff did not even need training to use the NuStar. They came in and used the console as though it had always been there. The proof of all the new technology, though, is in the console's sound quality. Although we changed nothing else in our

ed comments about the improvement in our air sound. From an engineering standpoint, the all-digital design should provide a stable console whose performance should remain constant over time while providing a long mean time between failures (MTBF). The versatility and functionality of the NuStar are products of its hardware and software, both of which can be upgraded or reconfigured as technology progresses.

We have already seen an early demonstration of one future enhancement: the ability to run the console remotely from anywhere in the world. Some pretty sophisticated remotes may be on the horizon. Imagine: With an

ISDN program line and a computer for console control ... where would you like to run your show from today? Another enhancement that should soon be possible is remote diagnostics of the console from the factory or from home. It is clear to us that Auditronics has done its homework in moving to the digital arena. The company has built a console with the look and feel of a traditional console, while providing the sonic benefits that only digital can deliver. We expect the NuStar to be a leader in the next wave of radio's digital transformation.

■ ■ ■
Gary Condrey is chief engineer of WEGR(FM).
For information, contact Auditronics in Tennessee at (901) 362-1350 or circle Reader Service 37.



Auditronics NUSTAR Digital Console

bility in conferencing and controlling the audio that gets fed back down to the callers. Interfacing with phone systems, mix-minus and all the associated issues often leads to console telephone modules being complicated and confusing for operators. The TEL modules on the NuStar, while offering a high degree of functionality, have a clean layout that is immediately understandable and user-friendly.

air chain at the time of installation, our staff and listeners immediately heard an enriched on-air product. We noticed a substantial improvement in clarity and detail with the NuStar. On the air, we now hear nuances of recordings — especially with newer digital masters — CDs — that we never could hear before. Even our listeners caught the difference. We have had a number of unsolicit-

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Workbench

Radio World, July 23, 1997

More Than Just a Lot of Air

John Bisset

Here's a neat tip from Frank Folsom, a contract engineer out of Knoxville. Its application initially would be for contract engineers; however, with all the consolidation going on, most engineers are taking care of multiple stations whether they like it or not. The consolidation angle usually means supplies are consolidated, too. You know, one VOM for all four sites!

If you have trouble finding an outlet and an extension cord long enough to permit your vacuum to reach inside your equipment rack or transmitter, Frank's solution is ideal. Frank uses a diver's air tank and regulator connected to a hose for delivering clean compressed air. You can usually pick this stuff up second-hand, if you aren't a diver, and the tank is portable enough to take into the field to clean out your ATUs. When he's not diving, Frank's fixing radio stations. He can be reached at (423) 573-6171.

The price of air compressors has dropped to within most engineers' budgets, but here's a word of caution: Some compressors do not filter the air, and will blow a microscopic spray of oil along with the compressed air. Not the greatest for transmitters.

A few years ago, at Delta, one of the secretaries watched as the machine shop workers sprayed compressed air onto newly milled parts to clean off any metal shavings. She had gotten some dust or dirt on her white dress, and before anyone could warn her, squeezed the nozzle. The dirt was removed from the dress, and replaced with an oily sheen! That was my introduction to air compressors.

Frank also told me about a little book that's a lifesaver if you maintain transmitters. It's available from Harris Corp., is about a quarter-inch thick, and is titled "Service Information Supplement." In its 31 pages are all those

little service tips that will come in handy at 3 a.m.! Contact Harris Corp., or **circle Reader Service 14** for more information.

★★★

Working more efficiently is the name of the game in today's broadcast arena, so here's another *Workbench* contact.

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These folks distribute multi-chip LED incandescent lamp replacements. Rather than spending 30 minutes replacing burned-out console lamps every week,

slip in these LED equivalents for up to 11 years of shock-proof life. The bulbs come in a variety of "incandescent style" bases, voltages and colors. These are direct replacements for incandescent bulbs, providing cool operation, even light dispersion, and a wide viewing angle.

If you've got multi-button key sets in your control rooms, Lamp Technology even has several configurations of telephone slide base LED lamps. For a complete catalog, **circle Reader Service 40**.

Share your contacts with your fellow engineers. Fax the cards of companies you couldn't live without to (703) 764-0751.

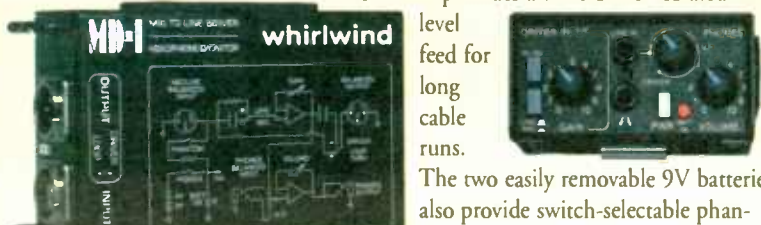
★★★

While we're on the subject of transmitters, I'd like to invite you to a transmitter workshop at September's NAB Radio Show in New Orleans. I'm moderating an all-day session that will combine tips from the manufacturers, as well as horror stories and solutions from a blue-ribbon panel of chief engineers and
 See WORKBENCH, page 40 ▶

Great Tools.

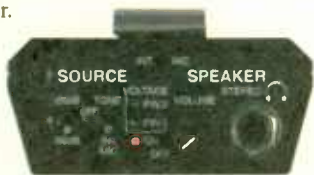
When we can't find the right tools for the job, we build them. Here are two of our newest. The **MD-1** combines a high-quality mic preamp with a clean headphone amp, and adds a line input and mix control. It's ideal for parabolic and news mics.

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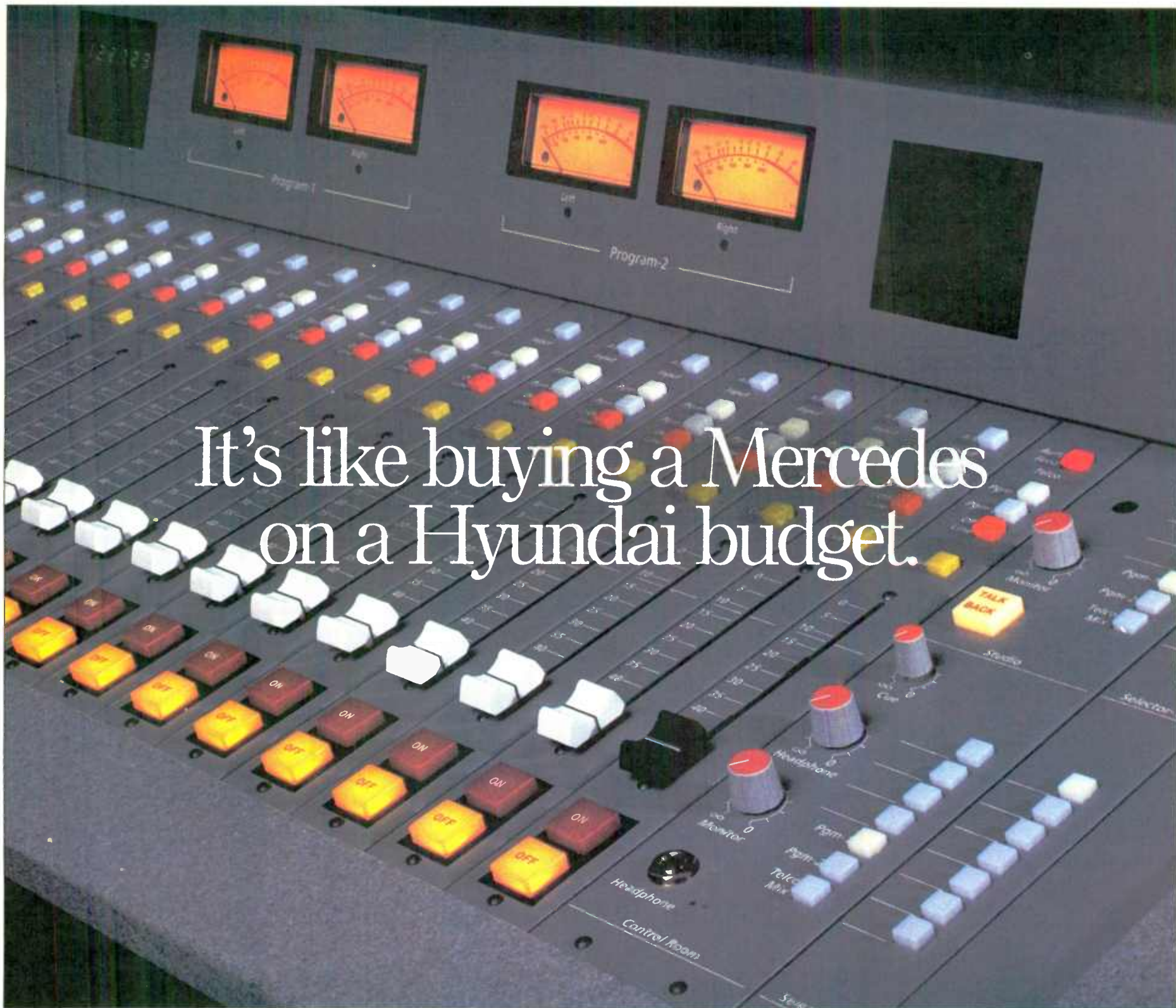


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World Radio History

ROOTS OF RADIO

Noise Reduction, Before Dolby

Ronald Pesha

Death, taxes and noise. All are inevitable, and increasing the signal-to-noise ratio has been part of electrical life since electronic communications began.

"Noise" is a word like "weed." It's whatever you don't want. Noise might be a station on an adjacent frequency, the surface scratches of 78 rpm records or atmospheric irregularities.

Edwin Armstrong set out to develop frequency modulation for radio specifically to avoid the static caused by lightning on the then-universal amplitude modulation form of broadcasting. Fidelity was secondary, and Armstrong probably never thought of stereo or subcarrier paging!

Meanwhile, others sought to reduce the perception of noise on AM reception, and on reproduction from the abrasive shellac surfaces of those phonograph records. By the 1930s, psychoacoustics recognized that the ear's frequency acceptance range decreases at low levels. When the level of the music increases, especially in the highs, the high-frequency rolloff should decrease. More noise gets through, but the desired signal masks that hiss. In other words, turn down the treble control at low levels, then turn it up when the signal's level increases.

Wouldn't it be nice to do that automatically, and in milliseconds?

Better S/N

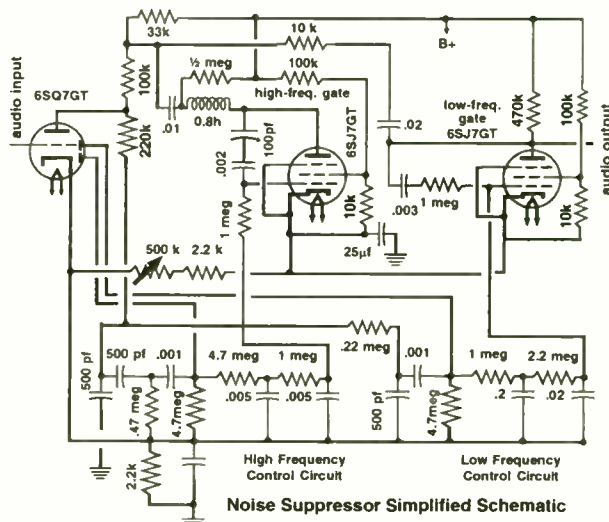
H.H. Scott, whose company made those top-of-the-line multiband receivers with chrome-plated chassis, set out to do just that. Scott added a low-frequency gate as well, decreasing bass when at low level. A portion of a basic circuit, reproduced from RCA's Radiotron Designer's Handbook (Fourth Edition, 1952), is shown here.

A triode-double diode amplifies the incoming signal and supplies rectified audio to the low- and the high-frequency control circuits. These circuits, in turn, control the two 6SJ7 pentodes, functioning as low- and high-frequency gates. That first 6SJ7 operates as a variable reactance in parallel with the fixed capacitance and the 0.8 henry inductor, forming a series L-C circuit. In vacuum tube days, tubes in oscillators connected

as voltage-controlled reactances commonly were used for frequency modulation as well, but it does seem a bit clumsy in hindsight, viewed from these solid-state phase-locked-loop days.

The H.H. Scott Co., by the way, sold the proprietary inductors for those who wanted to fabricate their own noise suppression circuits. All the other components were available off the shelf.

The half-megohm pot controlled the degree of noise suppression, interacting with the incoming signal. The complete circuit included a level control before the first grid, and proper operation required judicious use of both



controls. The system main level control came after the suppression circuitry. A

two-pole switch (not shown) turned off the suppression, one pole shorting the control filter and the other pole opening the cathode of the low-frequency gate, the second 6SJ7.

Also included for AM reception was a whistle filter, a 10 kHz trap to eliminate the beat between two stations on adjacent frequencies. A steady 10 kHz tone would confuse the high-frequency gate no end.

The Dynamic Noise Suppressor was available as an outboard device, and included within the Scott Co.'s complete radios.

A competing circuit was developed and marketed by J.D. Goodell and included in that company's radio-phonographs.

Obsolete now, these circuits were a big step half a century ago toward increasing the perceived signal-to-noise ratio.

■ ■ ■

Ronald Pesha is associate professor of broadcasting at Adirondack Community College, Queensbury, N.Y.

The Loss-of-Separation Problem

► WORKBENCH, continued from page 38

contract folks, as well as some basic theory. The seminar will be ideal as a refresher for the seasoned engineer, as well as providing useful information for newcomers to radio engineering.

You can circle Reader Service 66 for more information, or call NAB. There are actually three days of seminars, and the focus is to improve the engineer's grasp of RF. Who knows, maybe we can get one of the transmitter manufacturers to sponsor a graduation "party" after the seminar conclusion. We're in the right town for that! Hope to see you there. In fact, now that your GM has "assigned" you to engineer for five radio stations, you need the break ... uhhh ... I mean training!

★★★

Speaking of increasing responsibilities, I got a call from a general manager the other day telling me how hard a time he's having finding an engineer for a great opportunity. "Be the chief of eight radio stations, three of which are directional AM's."

I asked if there was money in the budget for an assistant. You know the answer to that! Anyway, he kept insist-

ing that this was such a great opportunity, and couldn't figure out why no one responded. It's almost comical, isn't it?

★★★

Received a couple of replies to the "loss of separation" problem that I'd like to share with you. John Lackness (john@broadcast.net) had a couple of stations that were using both the 67 and 92 kHz SCAs for delivery of MUZAK. John found it was imperative that the incidental AM noise be kept to a minimum. Any time the noise crept up, he'd see bleed-over from both the main-to-sub and sub-to-main carriers. John initially was using an older Marti SCA generator. He upgraded to a Modulation Sciences Sidekick, which, in his opinion, was the best "fix" of all.

In another situation, John had a problem with a station using only their 67 kHz SCA. The trouble was traced to loose components in the PA cavity, which were not only affecting the SCA, but also causing spurts within several frequencies above and below the main carrier.

Scott Paxson of WHTQ in Orlando, Fla., writes that if the separation problem

isn't due to transmitter bandwidth, it may be an isolation issue. Scott had a situation where switching on the subcarrier actually reduced the total modulation by a visible percent. It turned out that active devices in the output of the subcarrier generator presented a low impedance while enabled, but a high impedance while "blanked" or disabled. Apparently the exciter had little isolation between the composite and SCA inputs, and there was mutual loading of the subcarrier generator and the stereo generator. The level control on the subcarrier generator had no bearing on this. Just switching on its power was enough to reduce the modulation, whether or not there was any 67 kHz energy squirting out. Scott suggests the separation problem may be the same sort of thing, but with a twist — inter-generator isolation that is frequency sensitive.

■ ■ ■

John Bisset is a principal with Multiphase, a technical services company. Reach him at (703) 323-7180. Printed submissions qualify for SBE recertification credit. Fax submissions to (703) 764-0751, or send them via e-mail to wrwbench@aol.com

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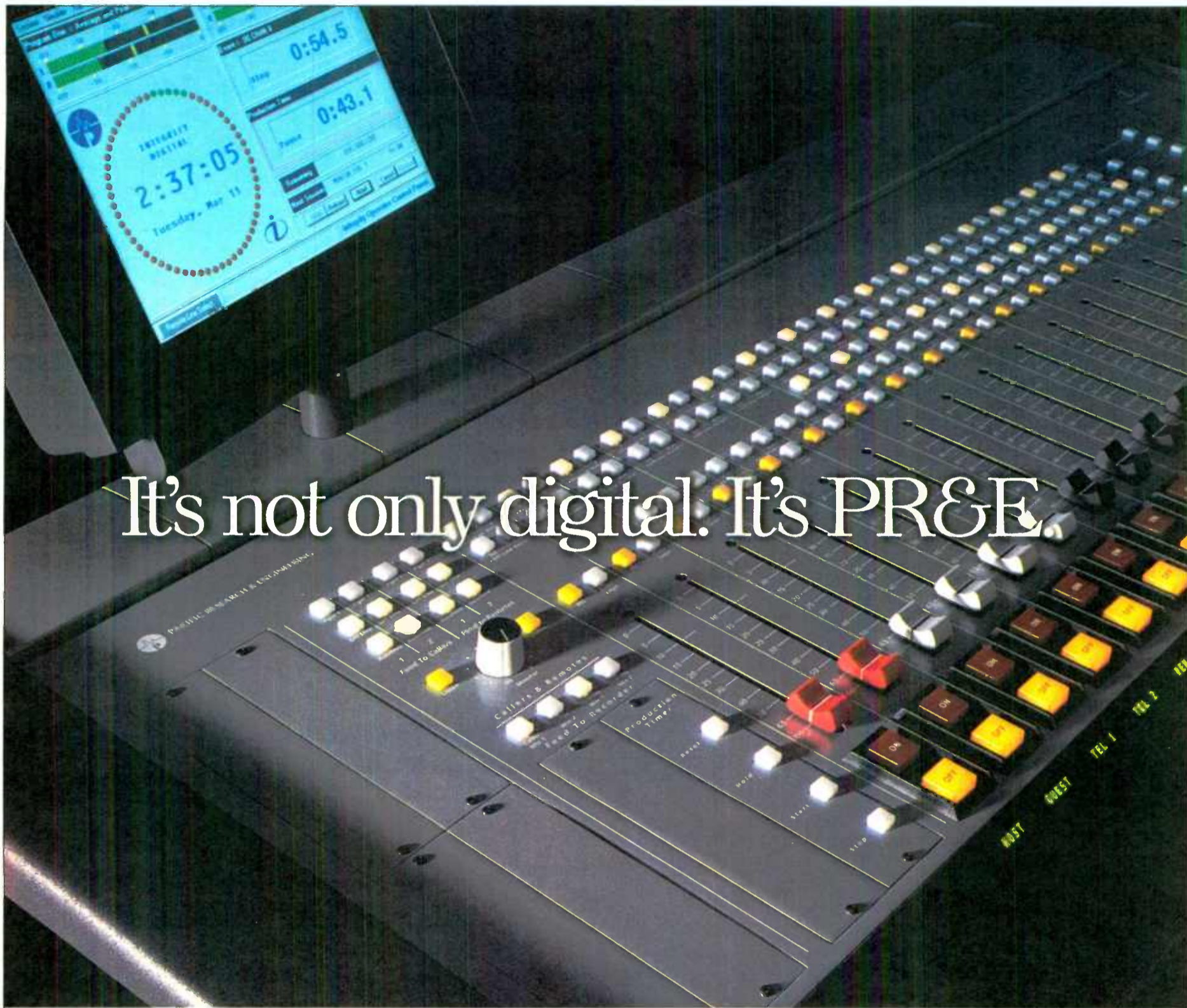
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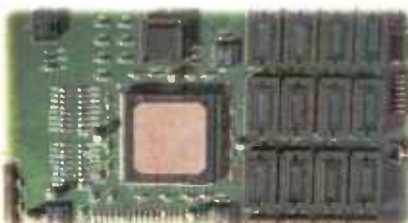
For a brochure, call us at 760-438-3911, visit www.pre.com or e-mail sales@pre.com



The LCD displays audio levels, time-of-day clocks, session status and event timers with a Windows[®] interface to powerful configuration management and session-based features.



Integrity's difference is more than just digital. It also offers four special-purpose buses to provide automated mix-minus for telephone and remote feeds, each with IFB.



Integrity uses an array of state-of-the-art floating-point digital signal processors to perform its mixing, routing and other functions.



Each fader has a 10-character alphanumeric display. The display changes when another audio source is assigned, which can happen either manually or at a preassigned time.



PACIFIC RESEARCH & ENGINEERING

Grade (138) On Reader Service Card
World Radio History

Buyer's Guide

Sound Diffusion
or Acoustical
Foam?
Page 52

Radio World

On-Air Consoles, Furniture, Studio Components

July 23, 1997

The Buyer's Buyer's Guide

Welcome to the new *buyer's* Buyer's Guide.

No, you're not seeing double. Based on comments from our readers and advertisers, we've made several changes to improve the Buyer's Guide section of *RW*, to make it just that: a tool for buyers. In upcoming issues, expect to see a different approach. We hope you will find it more objective and more helpful as you make your buying decisions.

Look for spotlight articles written by frequent contributors, who will examine new and interesting equipment.

These will include closer looks at the products that earned our *Cool Stuff Awards* at this year's NAB convention. Industry round-up articles will discuss a slice of the industry each month, as seen through the eyes of the manufacturers and users of the featured products.

You'll also find more technology updates, accompanied by larger photographs, so that you can see the newest products at a glance. And elsewhere in the newspaper, we will expand our Marketplace product listings and Sound Waves personnel columns, so that you

can keep current with the shakers and movers of the radio industry.

Some things, however, have not changed. If you are an equipment user, we'd love to hear from you about your experiences and ideas. If you make or sell new products, we want to know about them, to share them with our readers.

We hope that you will benefit from these changes and that you will celebrate with us as we debut our new *buyer's* Buyer's Guide.

Mixers, Tables And Other Studio Stuff

This month in Buyer's Guide, we look at Consoles, Furniture and Studio Components. Alan R. Peterson and Edwin Bukont examine digital and analog console news since NAB '97.

Discussing possibilities of new studio furniture? Check out our furniture chart for easy reference to find exactly what you want.

What is the future of acoustical foam? Manufacturers speak their minds in this issue. Also look for technology updates that include Wire/Cable, Clocks, Line Matching Amps, Alarm Systems and On Air Lights.

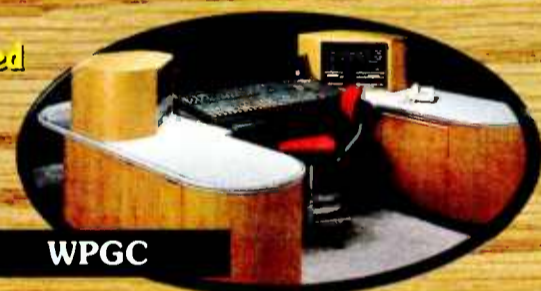


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Consoles Digitize for the Future

Alan R. Peterson

The move toward the all-digital on-air broadcast console has been a steadfast one. Given the number of digital components in the modern broadcast studio, a fully digital on-air console is the next logical step in the evolutionary process.

Today's broadcast audio devices output AES/EBU digital signals, so it is sensible that signals remain in digital form throughout the chain. With a digital console, the only D/A conversion is for in-studio monitoring and headphones.

Digital control means the audio "engine" can be located away from the console surface. The operator position remains uncluttered by cables and unaffected by power supply heat.

Digital audio also remains relatively uncolored by component tolerances as it passes from unit to unit. Resistive loading and impedance mismatch do not affect digital audio as they do analog.

A number of notable digital consoles exist for audio production from Mackie, Yamaha, SSL, Euphonix and many others. Consoles such as the AEV Excalibur, use 16-bit digital signals to manipulate an analog audio path.

This issue of *Buyer's Guide*, however, examines purely digital consoles designed for on-air radio use by live talent.

Weekend in Vegas

Many well-known broadcast equipment manufacturers came to the NAB convention in April with bold visions of how a digital console should look and behave. Today, many of those ideas are reality.

Among the companies delivering on the promise is Auditronics in Tennessee. Sales Manager Bob Greenwald noted six of the company's NuStar consoles are on the air in three states.

The NuStar console and audio engine are linked through a serial line, allowing the system to operate by means other than the main console surface.

"A laptop PC with a version of Visual Basic can run the station," Greenwald pointed out. "Emergency overrides and remote broadcasts can be dialed in on a PC."

This technology finally gives air talent at live remotes total control over the on-air product, although it could mean the end of "board-ops" as we know them.

"Instead of waiting for the guy back at the station to play the wrong sound or forget something, the talent can control everything by computer," Greenwald said.

The DRC1000 digital radio console from Harris has been available for nearly two years. Six SHARC DSPs provide the brain power for five-band EQ and real-time dynamics control, all requiring a healthy degree of computational ability.

"We already have a couple of units working at the BBC," said Jim Hauptstueck, digital products manager for Harris. "and WQHT(FM) and WRKS (FM) in New York are using them."

Also having a couple years under its

belt, the VADIS DC digital board, imported from Klotz Digital of Germany and distributed by Radio Computing Systems (RCS). Just as much a powerful computer as it is a mixer, this flexible console has proven itself in real-world operation at a New York City jazz radio station.

The ROC-10 console from Logitek should be available right around now, according to Tag Borland, president and prime engineer on the project. Three stations in Houston have expressed an interest in being beta sites for the latest software version.

Like the NuStar, the Logitek ROC-10 operates as two separate units. The console operates via a single cable. This philosophy will extend to the company's NuMix digital console which should be available after the Fall NAB Radio Show.

Shape of things to come

According to Borland, individual elements of the futuristic wedge-shaped NuMix can be split and placed around the studio and still function as an entire console via the single cable. For instance, a "Fader

See DIGITAL, page 47 ▶

Analog Consoles Still a Force

Ed Bukont

For many broadcasters, analog on-air consoles have an overall edge in function, size and/or cost over their digital brethren. Many venerable manufacturers offer established and new analog products.

Tim Bealor of Broadcast Electronics cites user-friendliness for the success of the BE Air Trak 90. "It has a simple control panel," said Bealor. "It gives a very good audio performance."

Samuel Wenzel, president of Audio Technologies Inc. (ATI), echoed the simplicity factor. "Stations still want a simple console," he said. "If your station gets hit by lightning, change a fuse and your console is back on."

Ease of service is a big issue. John Devecka, LPB sales manager, said, "We defend ourselves competing with more expensive boards at NAB because of our serviceability. Test equipment? You can fix our boards with alligator clips and an ear-piece."

Other console makers echo the themes of service ease and reliability.

"Three stereo busses and two built-in hybrids contribute to making our consoles successful," said Bob Groome of Arrakis. "The biggest reason is the lack of failures. We get more calls for application support than maintenance."

Arrakis engineers realize the industry is moving steadily toward digital. "We build consoles that can connect to digital modules so the radio guys can eventually go digital using the same console," said Groome.

Trusted names

The names of analog console makers are familiar to radio managers.

Audio Technologies Inc. (ATI) provides the Vanguard series of low-profile desktop console packages. ATI offers several options and standard features such as 6-12 rotary or linear faders, and dual program and mono outputs.

In September, Radio Systems will ship a replacement for its RS Series console line, tentatively named the RS Supra, offering lighted VU meters and microprocessor-

based extended logic, machine control and audio switching.

The Autogram console line features rotary or linear pots and balanced inputs and outputs. A versatile compact MiniMix package for ENG or remote broadcast is available.

The Fidelipac Dynamax MX series handles different A&B sources with various level, patch point and machine control configurations available. The signal-only motherboard has no active components, preventing extended downtime for repair.

For extensive I/O and service configurations, large formal "drop-in" consoles are available. Some manufacturers offer desktop versions incorporating features found in the more expensive products.

Arrakis Systems offers the 1200, 12,000,

22,000 and Gemini console series. All offer support for digital integration with the Arrakis DL4 system. VCA level control and input, output, control, mix-minus, cue, talk-back, timing and monitoring functions are additional features.

Broadcast Electronics offers 6-24 channels in the Air Trak 90 series. With the features of a large mainframe, these consoles provide many jumper-configurable options to access audio and control busses.

Many offerings

Three lines of modular on-air consoles by Auditronics offer solutions for broadcasters. The robust, basic 210 series comes in four mainframe sizes with uncluttered operating surfaces.

For everything-in-a-box, the 801 series

offers combination on-air/production applications. There are essentially 10 output busses, including stereo auxiliary, stereo program (split speech/music), mono and mix-minus.

The 2500 series puts the basics into four mainframe sizes with features emphasizing telephone conferencing and monitoring capabilities.

Wheatstone and its Audioarts division each offer three on-air consoles in the 'A' and 'R' series. All 'A' series consoles are modular and available in multiple mainframe sizes.

The big A-6000 console presents extensive bussing and metering options. The A-500 offers source sequencing and separate processing busses for speech and music. The A-300 features multiple stereo, mono and mix-minus busses.

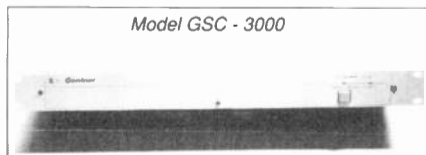
Audioarts recently introduced the R-5, a low-cost, low-maintenance console for use

See ANALOG, page 45 ▶



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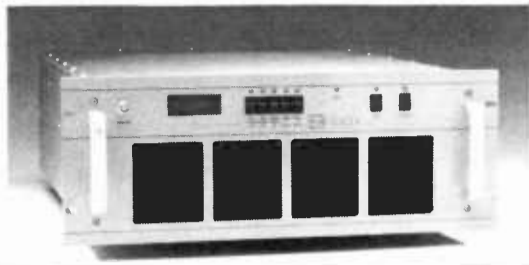
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A Broadcast Industry

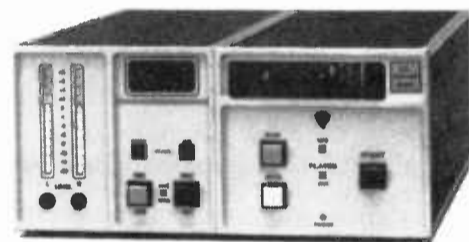
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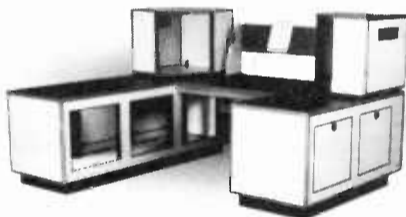
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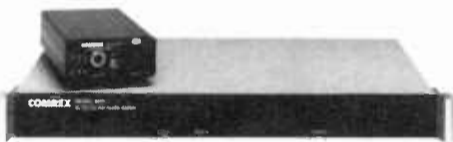
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Analog Keeps Up

▶ ANALOG, continued from page 43 in smaller stations and talk formats.

The R-16, available in six- or 10-module versions in a 10-input mainframe, features DIP-switch selectable on/off logic, conductive plastic pots and gold-contact connectors.

The R-60 is designed around open-bus architecture for complex placement of input and auxiliary modules different from traditional layouts.

For newsrooms, talk booths, tech centers or other snug locations, the Pacific Research & Engineering (PR&E) Newsmixer (mono) and Stereomixer are complete rack-mount

consoles.

The AirWave is a sturdy basic console with clock/timer and flexible monitoring, logic and telephone interfaces. A preamp package is included for up to five mic inputs.

The Radiomixer is the basic modular product with additional logic, telephone and mix-minus support. It accommodates various input, output and accessory modules. It features L/R/Sum/Stereo selection on the input modules.

For demanding applications, the BMXIII provides multiple stereo and mono busses,

extensive monitoring and telephone interfacing and different input and accessory modules.

Harrison By GLW has the functional AIR 790 and microprocessor-controlled AP100 on-air consoles. The drop-in 790 features a built-in sequencer, input stereo mode selection, selectable insert point locations, and multiple busses.

Creative sequencing and channel logic control can be mapped between modules on the desktop AP100. All control is via a central microprocessor.

The Neotek-spec of MartinSound offers the built-to-spec Esprit line, often used in remote vehicles where the design can accommodate size restrictions.

Eight subs, two mix-minus and two stereo program busses, plus EQ, and sepa-

rate mic/line trims are offered on each module. The group modules can be used as line inputs as well.

LPB offers the rotary Signature III series with 6-12 channel positions and the slider 7000 series with 12 or 18 channel positions. The Signature series offers traditional controls and features found in high-profile desktop consoles.

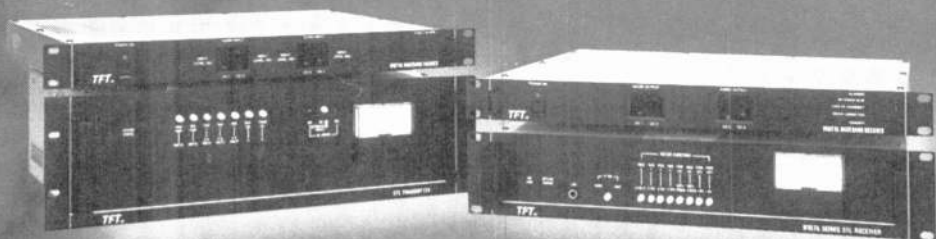
Each channel has three inputs, routing to two outputs which can be reconfigured from front-panel switches. Three stereo output and mono output busses, plus additional stereo and mono tape outputs, are standard.

The Sony MXP-700 console series can be configured to user needs and features talkback functions, multiple mix-minus, two stereo master output modules and electronically balanced differential outputs.

FURNITURE SUPPLIER GUIDE								
Company	Reader Service No.	Sales Telephone No.	Shipping Location	Shipping Method	Installation	Dealers or Direct?	Primary Construction	Brief Description
Audioarts/Wheatstone	1	(315) 452-5000	New York	Commercial Vanline	NO	Dealers and Direct	Hardwood, Laminates	New line offered: The Refined Furniture Line
ABG Inc.	27	(800) 999-9281	Michigan	Commercial Vanline	YES*	Direct	Composition Board, Laminates, Wood Trim	Maker of Custom Gold, Executive Plus, Pro Studio Series
ACT	53	(408) 370-7710	California	Commercial Vanline	YES	Direct	Laminate, Formica	Offers furniture built specifically for broadcast industry
Anthro	79	(503) 691-2409	Oregon	Fed-Ex, UPS, Commercial Vanline	NO †	Direct	Steel Tubing, Particle Board	Computer workstations, printer stands, VideoCarts, consoles, 19-inch rack equipment, furniture
Arrakis Systems Inc.	105	(970) 224-2248	Colorado	Air Freight, Freight Truck, UPS, Fed-Ex	YES	Dealers and Direct	Polyboard, Hardwood, Plywood	New line: Radius
Harris Corp. Broadcast Division	131	(317) 962-8596	Colorado	Air Freight, Freight Truck, UPS, Fed-Ex	YES	Direct	Metal, Laminate, Wood Trim	Offers Modulux, modular, expandable broadcast furniture
Mager Systems	157	(602) 780-0045	Arizona	Commercial Padded Van	YES	Direct	Avonite solid surface, Wood, Plywood, Laminates	New materials for furniture construction available
Murphy Studio Furniture	183	(619) 698-4658	California	Padded Van, Freight	YES	Dealers and Direct	Plywood	Modular furniture designs and complete custom layout available
Nigel B. Furniture	209	(818) 769-9824	California	Vanline, UPS	NO	Dealers	Steel	Full color catalog available
Pacific Research & Engineering	2	(760) 438-3911	California	UPS	YES	Direct	Laminate, Melamine, Hardwood Trim	Three types of furniture available: Custom, PrimeLine, QuikBilt
Ruslang	28	(203) 384-1266	Connecticut	UPS, Motor Freight	YES±	Direct	Laminate, Hardwood Trim	Several series of modular furniture and disc storage
Studio Technology	54	(800) 676-0216	Pennsylvania	Vanline & Delivery	YES	Direct	Plywood, Melamine, Laminate	Full Service: custom design/construction, delivery and installation
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For more information, contact Anthro in Oregon at (503) 691-2556, fax (503) 691-2409, e-mail: sales@anthro.com or circle Reader Service 219.

WRIGHT LINE

Modular customization, such as the LAN Management System (LMS II) from Wright Line Technical Environment Solutions provide versatility and strength.

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A dual tubular leg stabilizer provides support to the worksurface and a solid foundation for frames. The LMS II line also provides a cable management system.

For more information, contact Wright Line in Massachusetts at (800) 225-7348, visit the website: www.wrightline.com or circle Reader Service 89.

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Targeted for high-end, major-market level applications, the Radius Line of furniture from Arrakis is built from heavy aluminum and features solid oak trim. The aluminum post and panel construction enables tighter tolerance and provides strength. Metal edging prevents laminates from splitting.

Ergonomic furniture features optional slide-out racks, keyboard drawers and



tabletop racks which can be customized. The modular rack system allows the user to add or subtract from any pedestal.

For more information, contact Arrakis in Colorado at (970) 224-2248; fax: (970) 493-1076 or circle Reader Service 115.

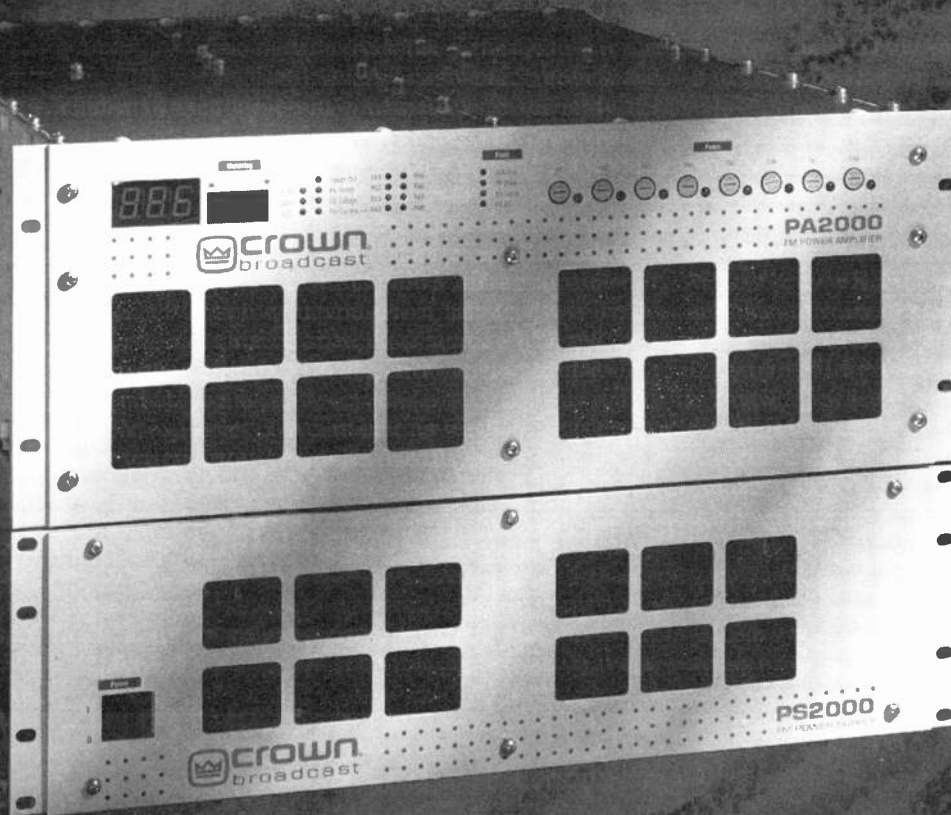
RUSLANG

For modular furniture that presents a custom built look, Ruslang provides the W Series Studio Furniture. Ruslang offers 11 components to the W Series line, some with several sizes available.

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See FURNITURE, page 47 ▶

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Digital Consoles: Here And Now

► **DIGITAL**, continued from page 43
Wedge" can be located at a newscaster position and retain the functionality of the same fader cluster on the main console.

Not as flashy but every bit as capable a console, the Wheatstone D-500 maintains the classic look and feel of its analog elders.

Sales Director Ray Esparolini said, "You have two schools. One that asks 'How cool can we make this,' and the other more-grounded group that is more application-oriented. They are the ones

that know a normal operator will run the console and an engineer will have to work on it."

The D-500 is self-contained with all digital electronics inside the console, rather than mounted in an outboard rack unit. The philosophy is to complete the digital stream with as familiar a console as possible without a steep learning curve.

"I love 'cool,'" explained Esparolini, "but I would want a console that is straightforward and easy to use."

Fidelipac is addressing the problem of

single-output soundcards with a computer-controlled four-in/one-out router called the DMR, designed by Graham-Patten.

According to Sales Manager David Strode, "You have two or three cards all going into the DMR for two composite AES/EBU output. It only takes up one slot in the console."

Fidelipac also makes and distributes the MX/D digital console with 16 analog and digital I/Os for under \$10,000.

The Integrity digital console from

PR&E drew interest at the NAB show, as well as winning an RW "Cool Stuff" award. The high-end console is computer-configurable and features a flat-screen panel display in place of a meter bridge.

A notable feature of the Integrity console is its redundancy. Should the digital portion of the console fail, a backup analog bus delivers audio to the rest of the air chain.

Stations moving towards an all-digital future from CD right to the tower — and beyond, given the future potential offered by DAB — would be wise to begin thinking about digital audio broadcast consoles. Here now, they will be a necessity tomorrow.

► **FURNITURE**, continued from page 46

access cutouts and cable races on all pedestals, the W Series bolts together for a one-piece appearance. The W Series also features adjustable feet for proper alignment.

For more information, contact Ruslang in Connecticut at (203) 384-1266; fax: (203) 384-1267 or circle Reader Service 141.

WHEATSTONE

Wheatstone Corporation offers the broadcast industry a line of radio console furniture. The U-shaped control room counter features a curve toward the interview area with a kidney-shaped studio interview/host table.

Wheatstone has provided storage space, wire raceways and hinged wire termination panels.

Made from a combination of hardwoods and laminates, the cabinets have hardwood rounded corners.

For more information, contact Wheatstone in New York at (315) 452-5000 or circle Reader Service 167.

PACIFIC RESEARCH & ENGINEERING

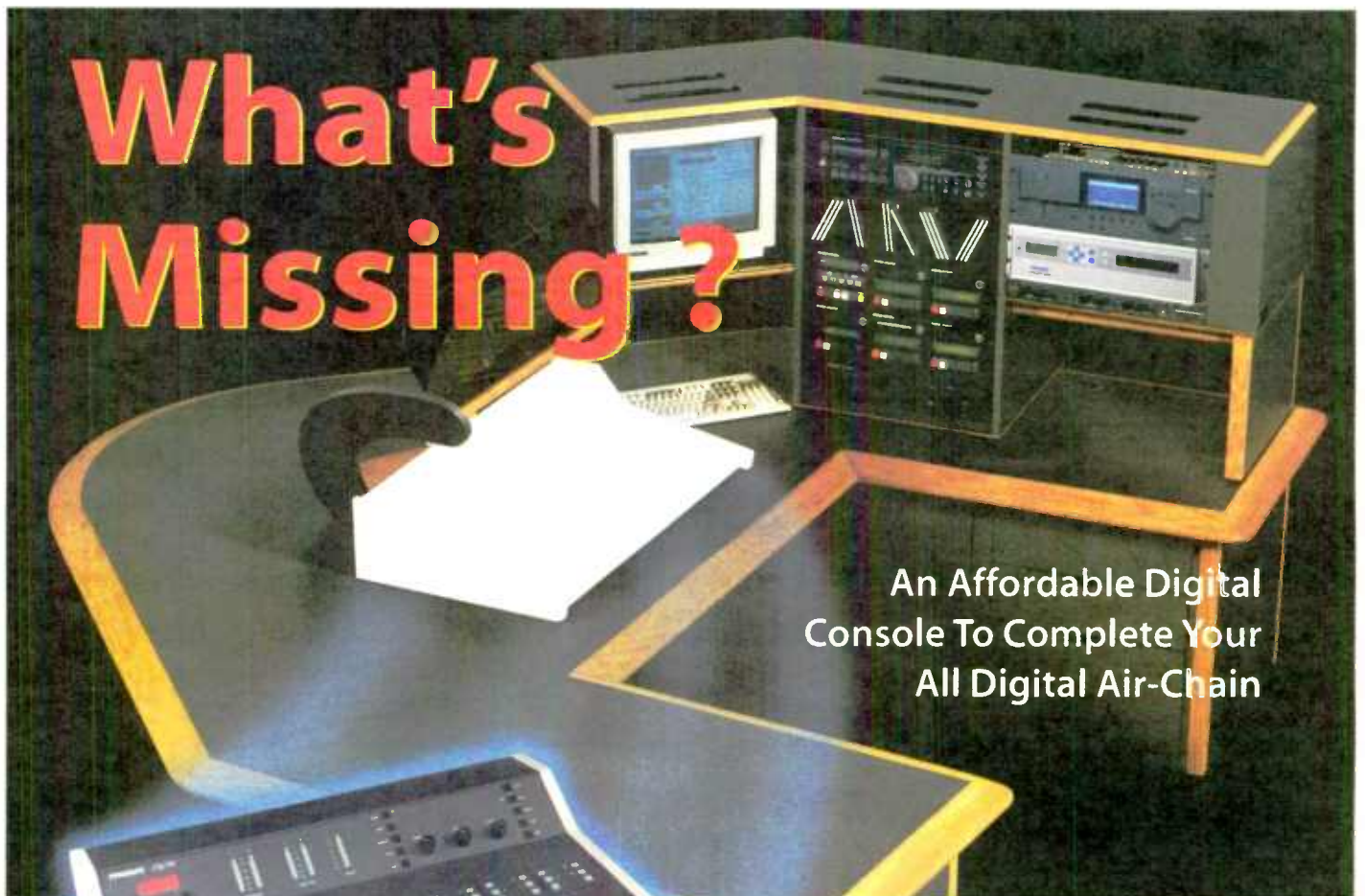
Quikbuilt by Pacific Research & Engineering features high-pressure laminates on all working surfaces and thermal-fused melamine on all lower surfaces. The furniture is trimmed with oak hardwood and all rack units include air vents.

PR&E uses a patented Mod-eez fastening system that assures wiggle-free joints and the rack rails are pre-installed. The work surface is ergonomic; the arc-shaped design creates a comfortable work arrangement.

The furniture is flat-packed for shipping and can be shipped through UPS.



For more information, contact Pacific Research & Engineering in California at (619) 438-3911; fax: (619) 438-9277, via e-mail: sales@pre.com or circle Reader Service 193.



An Affordable Digital Console To Complete Your All Digital Air-Chain

DYNAMAX MX/D

Digital Audio Console

So your old on-air console needs to be replaced.

Most of your air chain is digital and you know digital broadcasting is just around the corner. What do you do? The Dynamax MX/D

Digital Console makes perfect sense. It offers pristine 24 bit internal processing to handle both digital and analog inputs and outputs with the familiarity and straight forward operation of analog consoles. A perfect blend of digital sonic quality, performance features and legendary

Dynamax reliability, the MX/D is the right console to meet your current needs and take you well into the 21st Century!

Complete
Digital On-Air Console
Under \$10,000

- 8 faders controlling 16 total inputs
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- 3 digital plus 3 analog outputs (stereo PROG and AUD plus mono)
- AES/EBU and S/PDIF digital inputs with sample rate conversion
- Independent A/B channel remote start and stop
- Solid steel construction with excellent RF immunity
- Built-in cue amp/speaker, headphone amp and count up timer



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Broadcast Studio Equipment
Fidelipac Corporation Division of Amplifonix
2707 Black Lake Place, Philadelphia PA 19154, USA
TEL: 215-464-2000, FAX: 215-464-1234

TARGET: CLOCKS

Don't Overlook Clock Watching

Even in this age of advanced technology and digital everything, we still have the need to accurately measure time. Manufacturers have improved the way it can be measured and the accuracy of the device used to measure it, but we will always have the need to "check our schedules."

Often overlooked but absolutely essential to broadcasters, clocks and timers prevent disasters from occurring, help us hit the network every single hour and keep the station running smoothly, not to mention "on time." Here are several recent product introductions from the on-time folks.

ESE

These may bring back memories of those big, round-faced elementary school clocks; eager classmates sneaking peeks as they count down the seconds to begin their summer holiday. However, the new additions to the ESE LX-5100 series are much more sophisticated.

The LX-5105 with its 5-inch dial and the LX-5116 featuring a larger 16-inch dial, offer sweep or step-silent modes and user-set time zone offsets via rear-mounted DIP switches. Alternate modes of operation allow the clocks to synchronize with an alternating 12 or 24 volt impulse signal,

or to act as a stand-alone clock.

Both clocks incorporate standard features of the line; they are capable of automatically setting themselves to the correct time received through any one of three time code inputs (SMPTE/EBU, ASCII or the optional ESE-IRIG-B).

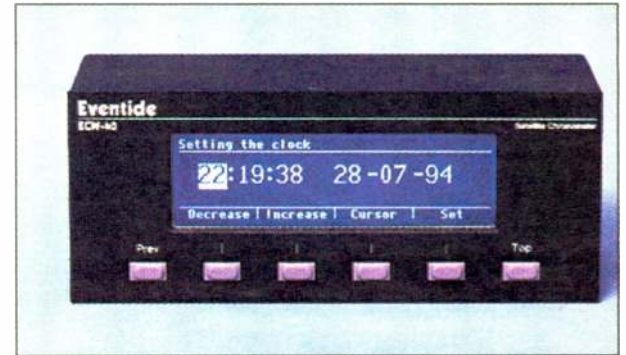
Other options include a lighted dial with brightness control and rack mounting possibilities.

For more information contact Brian Way in California at (310) 322-

2136; via fax: (310) 322-8127 or circle Reader Service 12.

EVENTIDE

A built-in GPS (Global Positioning Satellite) receiver enables the new



Eventide ECW-40 master satellite chronometer to simultaneously receive time signals from multiple orbiting satellites and maintain accuracy to within plus or minus one microsecond.

The ECW-40 can provide single or redundant operation; multiple devices can receive time reference from a single ECW-40. One unit can also serve as a master reference clock for a group of recorders and a time and date source.

Two linked ECW-40 units can provide 100 percent redundancy through software that designates one unit the master, one the dependent. In case of failure, the master automatically switches to the output of the dependent, providing full backup.

A large fluorescent backlit LCD displays the time and date; the user can choose from among 20 different display formats or create a custom format.

For more information, contact Eventide in New Jersey at (201) 641-1200; via fax: (201) 641-1640, visit the website at www.eventide.com or circle Reader Service 38.

Fill Your Rack With Switchcraft®



Introducing the Front Access Patchbay Series... an exciting new reason to make Switchcraft your source for audio panels.

Our innovative front access patchbay gives you space where you've never had it before and convenience you've never dreamed of, in a quality package you've come to expect from Switchcraft. Our heavy duty slide-out tray gives you access to the 96 nickel-plated steel frame jacks **from the front** of the unit.

But that's only the beginning! See the photo above for all of the features and benefits, which make this panel

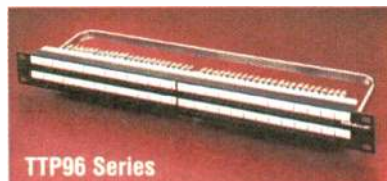
ideal for use in studios, tape editing rooms, mobile facilities and anywhere space is limited.

While you're at it, check out the patching products below. Don't forget our high quality patchcords, and industry-standard Q-G® microphone connectors.

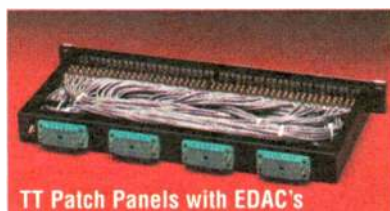
Switchcraft is your one-stop shop for all of your broadcast interconnect needs. Call (773) 631-1234 ext. 243 today for a copy of our Audio Video Products catalog.



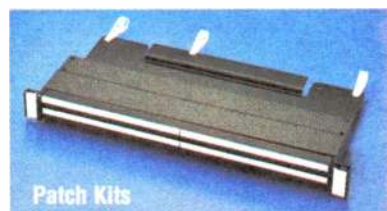
- 1/4" Nickel-plated steel frame jacks
- Rugged cable tie bar
- 3 1/2" or 1 3/4" panel height



- TT Nickel-plated steel frame jacks
- Rugged cable tie bar
- Extra wide labeling strips
- 1 3/4" panel height



- Extra wide labeling strips
- Fully-wired with EDAC connectors



- Choose from a variety of normalizing configurations
- 3 1/2" or 1 3/4" panel height (1/4" or TT)

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Circle (87) On Reader Service Card

World Radio History

RADIO SYSTEMS

The new CT-6 line of clock/timers from Radio Systems feature an internal crystal timebase and accepts an external RS-485 synchronizing input from the master unit. Should the master drive signal get lost, the clock automatically reverts to local operation and the "sync" LED extinguishes.

Available in three sizes, the CT-6 models provide mode buttons that will switch the function between operation

RADIO SYSTEMS INC.

as a clock or timer. All front panel switches can be operated via full remote control.

The CT-6 Thin is 1 inch thick and can fit on a console overbridge, rack panel or any studio surface. Despite its size, it contains all of the functions of the larger CT-6 models.

The CT-6 Desktop offers an optional master driver board that outputs the RS-485 serial time data to synchronize any CT-6 connected elsewhere.

The CT-6 Large is a bright 2-inch display that can be seen from 35 feet away and it can be mounted to a wall or rack panel.

For more information, contact Radio Systems in New Jersey at (609) 467-8000; via fax: (609) 467-3044, visit the website: www.radiosystems.com or circle Reader Service 64.

TARGET: FOAM

Foam: Absorb the Echo

NETWELL NOISE CONTROL

Pyramid panel acoustic foam from **NetWell Noise Control** is available in several colors and thicknesses.

Targeted toward the do-it-yourself installer, the panels are offered in 2-foot x 2-foot squares and present a seamless and professional look.

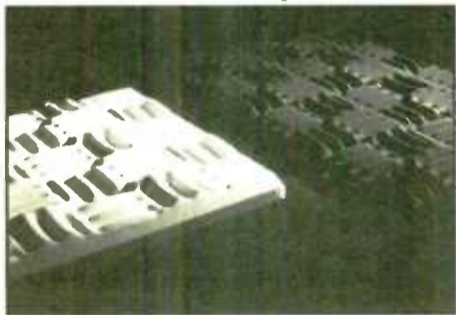
Standard 3-inch thick panel has an NRC absorption value of 90 percent.

For more information, contact **NetWell Noise Control** in Minnesota at (800) 638-9355 or (612) 939-9945, via fax: (612) 939-9836 or circle Reader Service 220.

ILLBRUK

Made from wiltec, a fiber-free melamine foam **SONEXone** from **illbruk**, controls reverberation and unwanted noise and meets the ASTM E 84 Class I standard for low flammability smoke density.

The 24-inch x 48-inch panels are avail-



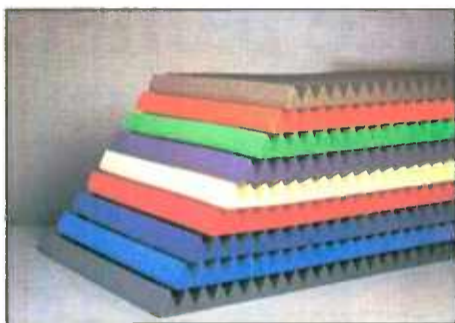
able in natural (white), painted colors and colortec, a special process that changes the color of the foam without affecting the Class I status.

Two measurements of thickness are available, 2-inch and 3-inch, and sound absorption characteristics vary with thickness.

For more information contact **illbruk** in Minnesota at (612) 521-3555, via fax: (612) 588-8396 or circle Reader Service 13.

AURALEX ACOUSTICS

Auralex Acoustics offers many lines of foam for studio corrective needs. The product lines are available in 10 colors as



well.

Studiofoam Wedges, precision-cut with specialized German tooling, yield clean installations and present a uniform appearance.

VENUS Bass Traps are designed to perform at 125 Hz (NRC 1.63) but also

work for broadband with an overall NRC of 1.30.

For more information, contact **Auralex** in Indiana at (317) 842-2600; fax: (317) 842-2760; e-mail: auralex@auralex.com or circle Reader Service 92.

ACOUSTICAL SOLUTIONS

Featuring an NRC .70-1.0, **Alpha Pyramid** from **Acoustical Solutions** absorbs sound to reduce standing waves, echo and reverberant noise.

Constructed of open-cell Polyurethane foam, **Alpha Pyramid** is UPS shippable and available in four colors:

charcoal, blue, beige and brown. **Acoustical Solutions** offers the foam in thicknesses of two, three and four inches in 2-foot x 2-foot sheets.

For more information, contact **Acoustical Solutions** in Virginia at (800) 782-5742 or (804) 346-8350; via fax: (804) 346-8808, e-mail: acoustic@richmond.infi.net visit the website: www.acousticalsolutions.com or circle Reader Service 65.

See ACOUSTICS, page 56 ▶

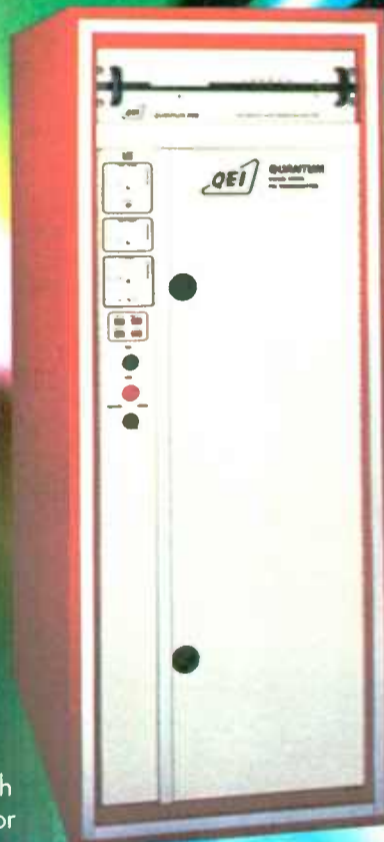


Quantum FM

Solid State

Solid Reliability

from



- Proven reliability
- Maintenance-free FET technology
- Self-contained modules with own power supply regulator
- Compact size reduces shipping 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.

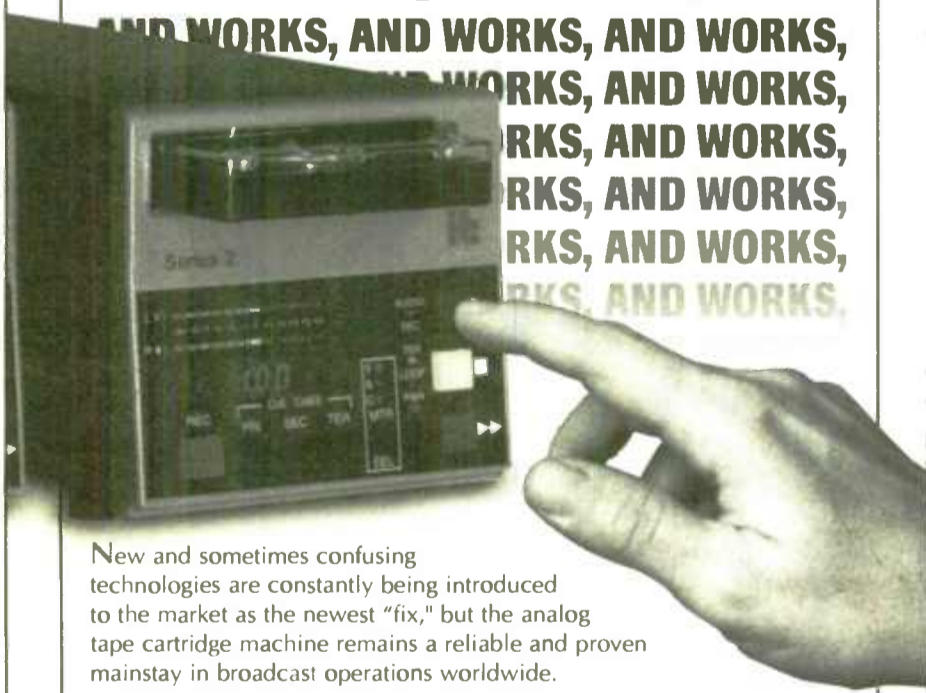
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Fax (609) 629-1751

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IT WORKS...

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New and sometimes confusing technologies are constantly being introduced to the market as the newest "fix," but the analog tape cartridge machine remains a reliable and proven mainstay in broadcast operations worldwide.

We are proud to continue production and technical support of the tape cartridge recording and playback products that have made the name **ITC** synonymous with quality and reliability:

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DRS AHEAD TECHNOLOGY, INC.



TARGET: WIRE & CABLE

All Systems Wired Up and Ready

Now that you have bought your nice new console and set your studio up on all that nice new furniture, you certainly don't want to connect your on-air, editing and production equipment together with inferior wire or cable. After all, the days of zip-cord are long over.

Even equipment that came over on the Mayflower can benefit from a rewire job. Cable designed specifically for broadcast can improve the entire process; from the loading on the equipment to how the air-ready product sounds.

Several manufacturers have developed digital and analog cable that provides a

tight fit as well as proper shielding to reduce buzz and hum. Appropriate load capacitance keeps the sound bright and solid, flexible manufacturing methods prevent shorts.

BELDEN

The Belden line of AudioFLEX analog audio snakes and harnesses feature a patented French Braid shield within each individually jacketed pair of cables. Designed for flexibility and long life, the cable maintains low levels of microphonic and triboelectric noise.

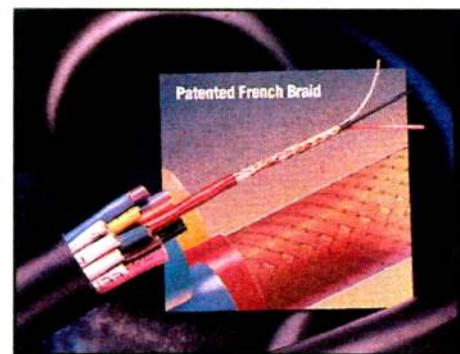
AudioFLEX Snake Cable is wrapped in pairs and is available in increments from two to 12 pairs and in 16, 24 and 32 pair configurations. The cable lays flat and will not kink.

The AudioFLEX 16 pair 24 AWG snake fits Elco/EDAC connectors, leaving the jacket intact for easy and secure termination.

For digital audio, Belden has a new flexible version of the 1800A cable — the 1800F — that meets all AES/EBU requirements. Maintaining the performance of the 1800A, the new, low-capacitance 1800F cable can also be used in

long line-level runs, as an analog patch cable or in microphone applications.

Also featuring the French Braid shield, the 1800F contains a highly stranded bare copper drain wire. The combination of



the French Braid shield and flexibility makes the 1800F suitable for use even with a digital microphone. The presence of the drain wire eliminates the need for pigtailing the shield, making terminations faster and easier.

For information, contact Belden in Indiana at (800) BELDEN-4. Ask for bulletin NP125 (AudioFLEX) or NP127 (1800F digital cable). View both at www.belden.com/products/newproducts/ and select either np125.htm or np127.htm

Circle Reader Service 91 for additional information.

CLARK WIRE & CABLE

Clark Wire & Cable has engineered the 800 Series of cable for digital audio in several versions, all meeting requirements for AES/EBU digital audio signal carriage.

The 24-gauge, shielded twisted-pair cable is available as a single pair, two pair, and in four, eight, 12, and 16 chan-



nel snakes. Each pair is color-coded and the cable offers low capacitance, while maintaining 110-ohm impedance.

The two-pair cable, #802, is for bidirectional dubbing hookups between individual pieces of equipment. The multipair snakes, #804, 808, 812 and 816, were designed for digital duplication and digital production suites incorporating AES/EBU routing switchers, minimizing cable runs between rooms and racks.

The Clark Wire & Cable custom cable shop uses the 800 Series to build digital audio assemblies to customer specifications.

For more information from Clark Wire & Cable in Illinois, call (800) CABLE IT; fax (847) 949-9595; e-mail sales@clark-wc.com or circle Reader Service 117.

COMMSCOPE

Marketed exclusively through Gepco, CommScope digital audio cables meet or exceed specifications for AES/EBU 110-ohm cable.

Foam polyethylene insulates each cable, while 221° F (105°C) flame retardant polyvinylchloride jackets each pair and surrounds each multipair cable,

See WIRE, page 51 ▶

RoadRunner Breaks the Price Barrier..



The easiest, best sounding, most compatible ISDN codec. PERIOD!

TECHNICAL FEATURES

Mode: Mono, full duplex, bi-directional

Algorithms: CCS MUSICAM®, ISO/MPEG Layer II, Layer III and G.722

Frequency Response:
15 kHz on one ISDN "B" channel
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Mixer inputs: 2 - Mic and 1 Mic/Line

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Now you can have a complete ISDN codec, mixer, headphone distribution amp and ISDN terminal adaptor in a single box. Introducing the new RoadRunner from MUSICAM USA. RoadRunner gives you all the best algorithms, not just one, for compatibility with the codecs you already have. With MUSICAM, Layer II, Layer III and G.722 you can have CD-quality 20kHz mono over one ISDN line, 15 kHz on a single ISDN "B" channel, or the shortest delay with any G.722 codec.

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E-mail: sales@musicamusa.com
Internet: <http://www.musicamusa.com>



TARGET: CABLE MANAGEMENT

Good News: No Spaghetti Here!

The bad news: You are brand new to a broadcast facility and you want to do a few maintenance tasks. Behind the rack, there is a jumble of wires and cables; snarled, tangled, a total disaster.

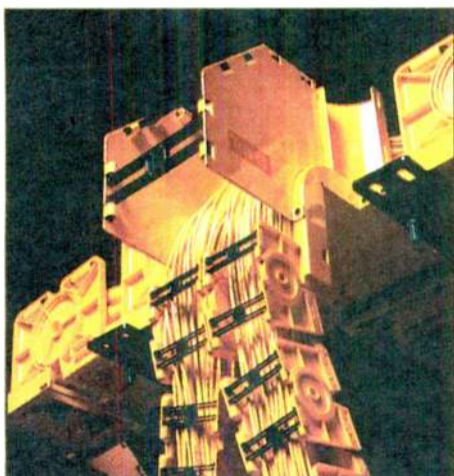
You sigh heavily, knowing it will be a long day.

The good news: Manufacturers have created special equipment that manage all those cables and wires.

Cable management systems provide an arrangement of wire/cable placement that speeds up maintenance time and the familiarity process.

TELECT

A fully modular cable management system, the CableLinks System by Telect



► WIRE, continued from page 50 meeting NEC requirements.

The 24 AWG cables are available in one, two, four, eight and 12 pairs. In addition to the jacketing, each pair is covered by a foil shield to eliminate crosstalk. All multipair cables contain a 20 AWG drain wire and 100 percent overall coverage by an aluminum/polyester shield.

For more information about the ComnScope AES/EBU 110 ohm Digital Audio Cables, contact Gepco in Illinois at (800) 966-0069; via fax (312) 733-6416 or circle Reader Service 143.

WHIRLWIND

New to the Whirlwind multipair cable series is the 56 FLEX, a "super-flexible" version of the 56 pair cable. The 56 FLEX cable easily coils and uncoils; it is not, however, NEC rated.

All other Whirlwind multipair cable does meet new NEC code requirements for fire retardancy and are available in configurations of six, nine, 12, 16, 20, 32, 49 and 56 shielded pairs.

Each pair is foil-shielded and features 24-gauge stranded conductors, plus a 24-gauge drain wire.

The polyvinylchloride compound that jackets each cable is designed to be flexible and to maintain resistance to abrasion.

For more information contact Whirlwind in New York at (716) 663-8820; via fax: (716) 865-8930; visit the Whirlwind website: www.whirlwindusa.com or circle Reader Service 221.

focuses around a series of flexible "links" that snap together and configure to the needs of the customer.

Tilting and pivoting both horizontally and vertically, the CableLinks work to protect wires and fibers from bending, kinking and crushing. The routing channels, made from plastic, rotate while maintaining a minimum bend radius for the cable.

Individual links snap together to form a path of any desired length; a push tab provides disconnection.

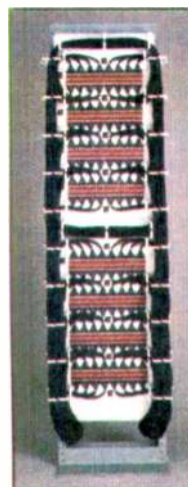
Telect provides a system planner within the Telect website to aid customers in deciding which system they want.

For more information, contact Telect in Washington at (800) 551-4567 or (509) 926-6000; visit the website, www.telect.com or circle Reader Service 90.

ADC TELECOMMUNICATIONS

Designed to provide a central distribution point for copper twisted pair and coaxial cables, the integrated cable organization network (I.C.O.N.) is available in wall or rackmount systems.

I.C.O.N. eliminates the need for new pulls in the event of system changes, reducing cable trough wear



and tear and decreasing failures.

ADC uses the patented QCP split-cylinder punchdown contact technology for a fast "gas tight" connection; QCP to AMP 50-pin and QCP to EDAC 90-pin connectors are available.

Cross-connect blocks are also available in panels with 12 to 192 circuits.

For more information, contact ADC Telecommunications in Minnesota at (800) 366-3891, via fax: (612) 946-3292 or circle Reader Service 116.

UHF For How Much?

The new 900 Series from Audio-Technica and Bradley gives you UHF wireless starting at only \$399!



\$399!?



Admit it—you saw the price and figured we meant VHF wireless. After all, UHF and a price tag of less than \$400 don't even belong on the same page, right? Or at least they never did . . . until now.

Operating on UHF bands—792–806 and 944–952 MHz, well above TV, cellular, and paging frequencies—the 900 Series offers exceptional interference resistance. And the system's receiver offers True Diversity reception (using two antennas to feed two completely independent RF sections on the same frequency) and two innovative circuitry designs: the Automatic Logic circuit selects the best incoming signal to provide excellent sound quality while reducing the possibility of interference, and the InvisibleLink

circuit provides noise reduction and optimizes sound quality. Of course, the 900 Series offers a host of other notable features, such as 20 selectable frequencies, simultaneous usage of up to 10 separate systems, switchable long-range and "low" (for battery conservation) transmitter settings, and more.

But perhaps the most compelling reason to buy a 900 Series system is the most obvious one: never before have you been able to find UHF wireless quality (not to mention Audio-Technica quality) at a price even remotely close to this. With the new 900 Series in stock and shipping now, and with Bradley pricing starting at just \$399, it doesn't take much thought to realize what a truly great deal this is.



Our Service Makes The Difference

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SPECIAL REPORT

Sound Absorbed by Diffusion?

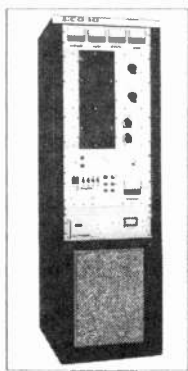
Manufacturers Speak Out Regarding the Future of Acoustical Foam and Sound Diffusion

Susan Gary

The average studio is not acoustically perfect. Construction materials tend to be reflective, intensifying noise, flutter echo, excessive reverberation and resonant standing waves. The resulting sound is unpleasant and unprofessional.

Studio components such as foam absorbers and solid diffusors improve a room's acoustic qualities. A properly tamed room means high-quality audio for broadcast or recording.

Problem:



I need a new FM transmitter but prices are so high I may have to settle for a used one.

Solution:

The ECO Series!

Rugged, Feature Packed & Reliable the ECO series was built with you in mind.

We've kept the cost low - so low in fact the ECO series competes favorably with the total cost of a used transmitter.

ECO quality - unsurpassed!

Plus you will experience the benefit of lower operating cost with extra long tube life and lower power consumption.

The most **ECONOMICAL** new transmitter on the market is available in powers from 2KW to 50KW.

Over 150 **ECOs** are already in the field!

**Great Products
Great Solutions!**

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Valatie, NY 12184

Phone 518-758-1690

Fax 518-758-1476

energy-onix @ energy-onix.com

"Diffusion and absorption actually complement each other. A properly designed studio will include a balance of both," said Mark Rustad of NetWell Noise Control.

Broadcasters universally try to keep "room sound" out of open mics. Eric Smith, founder and president of Auralex Acoustics, said, "Virtually all rooms in which high sound integrity is desired exhibit the need for low-frequency absorption to combat their inherent room modal responses, which are based on physics and can't be totally avoided regardless of what room design is used."

Eric Johnson of illbruk, inc., agrees. "Acoustical design of a room will always be theoretical to some extent, and retrofit acoustic alterations are common."

But how do broadcasters determine which sound adjustment product they will use?

Money talks

"The truth is that it depends on the client's budget," said Skip Warrington, vice president of Systems Development Group (SDG). "The client on a tight budget is going to be limited to absorption using Cutting Wedge Acoustic Foam or similar products."

Though the cost of wide bandwidth diffusion products has dropped, Warrington said, "diffusion is still limited to the larger budget."

RPG owner/founder Dr. Peter D'Antonio disagrees. The broadcast studio designer his company works with does not limit itself to the use of foam exclusively.

"Studio designers select appropriate amounts of absorption, reflection and diffusion to create a facility suitable to the needs of the client," said D'Antonio. "There are some clients where foam is suitable and we are happy to help with their needs. Voice-over booths traditionally

have been foamed to death. Today, with our new low-cost diffusion products, these rooms can take on some ambiance."

Despite D'Antonio's "death" observation, broadcasters have generally held the philosophy that "deader is better" when planning acoustics. In response, manufacturers have produced economical and aesthetic products, paying attention to customer requests for variety in colors and patterns. Auralex offers 10 colors and NetWell Noise Control recently introduced a line of pyramid-shaped foam.

Terri King of Acoustical Solutions said, "An important part of Acoustical Solutions' commitment to its customers is to offer as many choices as possible in terms of performance levels, patterns, colors and price."

Safety awareness

More importantly, acoustical foam manufacturers have addressed the need for safety. Fire, smoke and toxic fumes produced by acoustical foam have raised concerns among broadcasters, fire safety officials and health officials (RW, Oct. 30, 1996).

Most manufacturers have improved the foundation material and some have developed new bases for acoustical foam. For instance, illbruk, maker of Sonex products, created wiltec acoustic material. "Sonex products made in wiltec carry a Class I rating for low flame spread and smoke production."

RPG introduced a melamine foam, which carries a Class A rating, meaning it has a flame spread of no more than 25. Subsequently, RPG developed a new approach to foam that, according to D'Antonio, "can maximize the absorption and minimize the amount of foam."

"There is only one ultimate authority: the local Fire Marshal," said Warrington, whose company (SDG) employs a fire safety consulting firm. "If in doubt, request test information and a sample from the manufacturer and send it to your local Fire Marshal for his opinion or approval."

Foam has also come under attack by those who say that better room design or more use of diffusion will produce even better sound quality.

"State-of-the-art broadcast studios will certainly not be treated exclusively with foam," said D'Antonio. "The exclusive use of foam can never provide a balanced architectural acoustic design. The music lacks in brilliance."

D'Antonio considers the deader-is-better approach "a throwback to the past," and claims absorption, diffusion and reflection are "the three ingredients in the acoustical alphabet. Eliminating one of them limits the acoustical palette."

If a balanced sound is the goal, manufacturers agree that a combination of all three solutions is necessary. The "proper" sound for broadcasters becomes, in part, a subjective decision.

NetWell's Rustad noted most broadcast and voice-over studios put less emphasis on balance and "more towards the clarity of the output at the microphone. Clarity is provided through echo reduction, and thus increases the need for absorbing panels."

Rustad continued, "Diffusion does not replace absorption."

Smith agrees, "While more facilities need absorption than need diffusion, neither is the 'preferred' sonic treatment." By example, there are facilities that require broadband absorption to tame overly reverberant space, while studios designed for recording large ensembles should not be deadened.

Some manufacturers watch the market and simply let the numbers speak for themselves.

Foam is no 'Band-Aid'

King said, "The popularity of our foams is testimony to the fact that they are not a substitute or a 'Band-Aid' for other treatments. Even in rooms with the best acoustical design, sound absorbing foams are necessary to facilitate and 'fine tune' the room's acoustics."

Some amount of absorption is necessary; not just for the comfort of listeners, but for the labor involved in producing the sound as well.

"By absorbing low, flat frequencies, this will allow mid/high range vocals and instrumentation to have to work less loud to blend professionally," said Rustad.

See FOAM, page 55 ▶

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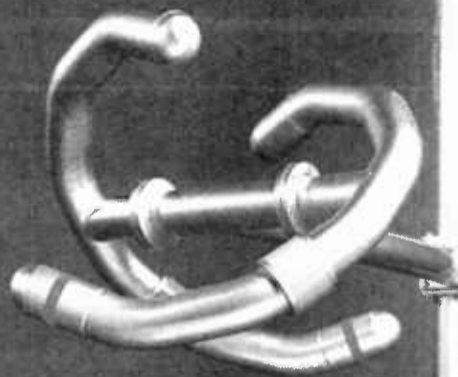
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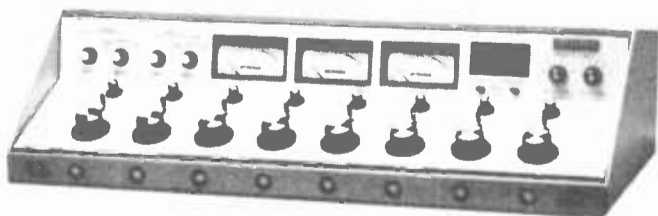
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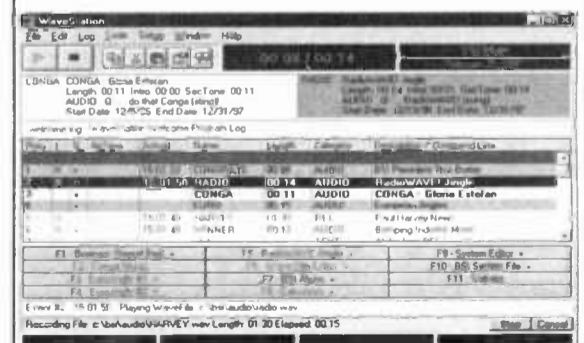
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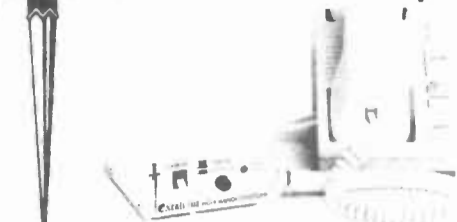


READER SERVICE NO. 18

Products & Services Showcase

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Excilibur Electronics HC-1 Handi-Coupler



Here is the simplest, quickest, most convenient way to connect audio to a telephone. The HC-1 connects in series with the handset of any phone using modular connectors. No connection to the phone line is needed. Press the front panel button and external audio is available on separate send and receive 1/4" TRS jacks on the rear panel. Release the button and the handset is once more connected for normal use of the phone. Nothing could be simpler!

You can find many uses for the HC-1 around your station: on-air studio, production room, newsroom, sales office, field news kits, sports remotes, etc.

EXCALIBUR ELECTRONICS, INC., CHANTILLY, VIRGINIA
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- The Audio World Interface™ - Recorder Interface/Line Amp
- The Junior Audio Director™ - Stereo Mode Controller
- The Junior Audio Director™ Plus - 8 Channel Mode Controller

The Audio World Interface™ is a two-way recorder interface that is switchable to a line amp or a mono mix amp. The balanced inputs and electronic transformer outputs both have front panel recessed gain controls. The rack mountable chassis includes LEDs to indicate signal overload, switch position, and power presence.

Use it to mate R-DAT and analog recorders, to generate Mono from Stereo, or as a balanced line amplifier to compensate for level mismatches. Superlative performance, versatile operation, and an incredibly low price, make choosing the Audio World Interface™ a no-brainer!

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READER SERVICE NO. 97

TARGET: INTERFACES

Get Your Semi-Pro Gear Balanced

We have all done it at one time or another: traded out a piece of semi-pro or consumer-grade gear to hook up to the console.

Then we have had to live with the compromises: Hot to Pin 2, Shield to Pins 1 and 3, then ride the fader wide open just to get a readable level out of the thing.

There is a better way. Read on to find out about a number of products available to pull that unbalanced -10 dB level up to a healthy balanced +4.

HENRY ENGINEERING

A new bi-directional interface unit from **Henry Engineering**, the Matchbox II, balances the levels from IHF to Pro or Pro to IHF. All four outputs can be adjusted for a range of operating levels.

A special Hi Gain mode properly matches the low-level unbalanced outputs of computer sound cards. The Matchbox II also works with digital



editors, DAT recorders and other digital audio sources.

Requiring 115/230VAC and consuming only 3W, the Matchbox II converts unbalanced levels to 600 ohms or higher of balanced output.

The Matchbox II is constructed of an aluminum panel and enclosure and weighs 2 pounds.

For more information, contact Henry Engineering in California at (818) 355-

3656, via fax: (818) 355-0077 or circle Reader Service 142.

RADIO DESIGN LABS

From the RDL "Rack-Up" line of products comes the RU-LA2D IHF-PRO Interface. The IHF-PRO provides 24 VDC and provides bi-directional connectorized conversion between balanced and unbalanced stereo equipment.

The RU-LA2D offers two channels with gain trim and gain adjustments for both directions.

When converting from unbalanced

to balanced, the adjustment moves from 6 dB to 18 dB; when converting from balanced to unbalanced, the



adjustment moves from -3 dB to -20 dB.

For more information, contact RDL in California at (800) 281-2683, or fax: (805) 684-9316; visit the website at

www.rdl.net.com or circle Reader Service 168.

BENCHMARK

The AudioWorld Interface from **Benchmark** can operate as a line amplifier or a mono mix amplifier.

Featuring right and left gain controls and a balanced input and output, the AudioWorld Interface offers illuminated controls indicating signal presence, peak over and LED.

The AudioWorld Interface can mate DAT and analog recorders as well as generate Mono from Stereo.

For more information, contact Benchmark in New York at (800) 262-4675 or (315) 437-6300, or fax: (315) 437-8119 or circle Reader Service 194.

Foam Holds Its Own

► FOAM, continued from page 52

Consolidation of the radio industry has left broadcasters and manufacturers alike wondering about their futures. Most manufacturers, however, remain optimistic about the future of foam. NetWell anticipates growth because of consolidation and SDG realizes customers will be replacing existing foam with newer material because of degradation.

As for innovations on the horizon, NetWell has been working to increase the life expectancy of foam. Auralex will soon introduce the WedgeHog, a multi-faceted device combining diffusion and absorption to create a variable acoustical response.

However, as Warrington said, "Innovations in this industry are only slightly less guarded than the recipe for Coca-Cola or weapons grade plutonium."

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Circle (62) On Reader Service Card

World Radio History

TARGET: TALLY LIGHTS

Check the Light and C'mon In

Back in the days before consolidation, station engineers sometimes devised their own homemade tally light system to alert those outside the studios as to whether or not they may enter.

Sometimes the code was as simple as a red light meaning "on the air" and a green light meaning "recording." In either case, you did not enter until the light went out.

Consolidation, however, has changed the way broadcast facilities operate. With several stations under one roof, studios may be shared among the stations and pull double-duty as recording rooms or live on-air studios.



Manufacturers have always had studio components such as on-air lights available, and now they are needed more than ever. Tally lights deliver a specific message or warning to eliminate any confu-

sion over which light color means what, and leave no doubt as to whether entry into a studio is appropriate.

TITUS TECHNOLOGICAL LABORATORIES

It looks almost like a small loud-speaker, but it is the On Air Light from Titus Technological Laboratories. Fashioned from an oak base, the On Air Light features a "black-out" face when not in use and sports a silver or gold frame around the smoked glass window.

Horizontal and vertical lettering are available, while "ON AIR" and "RECORDING" are the two messages displayed. Four 24 VDC bulbs illuminate the letters and bulb replacement is quick and easy. Special interface boxes are not needed; the lights require Class 2 wiring using 18 to 24 gauge wiring directly into the console relays.

The 8 11/16-inch wide, 4 3/4-inch high, 2 1/2-inch deep lights clearly warn others that you are on air or recording.

For more information, contact Titus Technical Laboratories at (203) 633-5472 or circle Reader Service 169.

BROADCAST ELECTRONICS

Broadcast Electronics offers the Studio Warning Light in several languages — including English, Spanish and Portuguese — in horizontal or vertical formats. Designed to mount flush against a wall or ceiling, the silk-screened globe housing fastens to a steel mounting plate.

The Studio Warning Light package contains a 25-watt bulb and "Attention-Getter" flasher.

Warnings include "On Air," "Audition," "Rehearsal," "Recording" and others. BE also offers custom lettering in horizontal or vertical formats.

For more information, please contact Broadcast Electronics in Illinois at (217) 224-9600, via fax: (217) 224-9607, e-mail: bdcast@bdcast.com or circle Reader Service 195.

FIDELIPAC

Warning lights from Fidelipac feature back-illuminated red letters on a black background, screened on thick unbreakable acrylic. The lights come with two 7C7 6S6 lamps and mounting hardware. Several languages and customization are available.

For more information, contact Fidelipac in New Jersey at (609) 235-3900; fax: (609) 235-779 or circle Reader Service 118.

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Circle (88) On Reader Service Card

World Radio History

Foam: Sound Minus Echo

► ACOUSTICS, continued from page 49

SDG

Systems Development Group offers Cutting Wedge acoustical foam tiles. Constructed from 2-pound density polyester material, the foam is shaped in a saw-tooth pattern, while the number and size of each tooth or wedge varies according to the thickness of the tile.

Available in five sizes, four depths, and four colors, Cutting Wedge is durable. It offers tear resistant material and shape memory; large sized sheets can be shipped via UPS.

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For more information, contact Systems Development Group in Maryland at (800) 221-8975 or (301) 846-7900; via fax: (301) 698-4683 or circle Reader Service 39.

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Pioneer stereo amp w/tuner, rt chnl weak, other wise works gd, \$30. Will or Lisa, WLD Rcdg St, Music Valley, Rt 1, Mill Spring MO 63952. 573-998-2681.

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Harris/ERI 5 bay hor antenna w/deicers, 102.3 FM, \$1800; Mark parabolic antenna 5' dish on 950 MHz, \$1000. B Larson, WNGN, Box 36 The Kings Rd, Buskirk NY 12028. 518-686-0975.

Scala HDCA-10 receive antenna cut to 105.7 MHz, \$180. G Manfroi, WMAY, 502 S Allen, Spaulding IL 62561. 217-629-7077.

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Circle (17) On Reader Service Card

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Akai MG1214 12 trk rcd, 12 trk mixer, rebuilt transport, new heads, etc, excellent condition, \$2500. T Santorelli, SPEC, 684 Sunrise Hwy, W Babylon NY 11704. 516-661-2454.

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Yamaha 2050 power amp, 50 W/chnl in good condition, BO; Shure MC 68 mic mixer, good condition, \$100/Best Offer. A Wudel, ILCC Telecomm, Esterville IA 51334. 712-362-7939.

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Tannoy 15" speaker pair, newly recond, \$1450; vintage recond tube mic pre's & mixers, \$300-\$700; new ADC patch bays " 52 points, \$169; ADC TT bays, \$129 up; new ADC TT or " TRS cords, \$9; Furman " to " patchbays, \$95 ea; like new tape, "x2500' 456, \$15 ea; 1" 456, 226, 250, \$25 ea; Digitec 3.6 sec delay, \$150; new pwr dist/filter rack mt, \$75. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

Want to Buy

Gates MO-2996A limit amp service info wanted & need to purchase another unit. CK Bucy, Cisco Sound, POB 16583, Lubbock TX 79490. 806-792-1662.

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Tapecaster 700 play only (1), R/P (1), (1) x700 R/P, all run, as is, \$50 ea; BE 3000 stereo PB, gd cond, \$150 +shpg; ITC SP (2), mono play, OK cond, \$125 ea +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

ITC upgrade PB to record, amps only-no deck, 3 tone, stereo, \$175. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

ITC 3D cart repro (11); (4) Scully 270 14" r-r, spare motors & parts for both; Yamaha 1500 W pwr amp; JBL dual 18" sub-woofer; Sony 5600 3/4" VCR. All to be blown out cheap. For more info, call Pro Audio Repair Service, 609-926-2206.

CD PLAYERS

Want to Sell

Denon 970FA, top of line prod CD player, like new, digital out/analog out, \$1100; Denon DN-C650F, rack mount, with S/P D/F, pitch, like new, original box, \$450. K Thomas, Rebel Recording, 5555 Radio Ln, Jacksonville FL 32205. 904-388-7711.

COMPUTERS

Want to Sell

ADC Fibermux 78 port 10BaseT Ethernet hub, \$475. G Wachter, KFYI, 631 N 1st Ave, Phoenix AZ 85003. 602-817-1030.

CONSOLES

Want to Sell

Mackie 1202 VLZ 12 chnl mixer, \$275. B Landry, WLMG, 1450 Poydras St, New Orleans LA 70112. 504-593-2107.

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 1-(408) 363-1646
 FAX 1-(408) 363-0957

Collins 8 pot board, \$300. W Osenga, Pace Bdctg, POB 1369, Canton NC 28716. 704-648-3588.

Gates Producer, 4 chnl, \$250. M Vanhooser, KSKY, 4144 N Central Expy #266, Dallas TX 75204. 214-827-7983.

McCurdy stereo consoles (2), Penny & Giles slide pots, excellent condition, \$2500 ea or \$4500/both; Gates Executive 10 channel consoles (3), \$1250 ea or \$3000/all. B Larson, WNGN, Box 36, The Kings Rd, Buskirk NY 12028. 518-686-0975.

BE 5S150A & 8S250A, dual stereo, like new cond, \$4500/BO for pair. R Carr, Remote Possibilities, 702-454-3920.

Soundcraft 600 32x16 w/patchbay, mint, \$4950; Tascam 512 12x8 mixer, \$750; Tascam 520 20x8x16 mixer, \$1750; Tascam 30 8x4, \$450; Allen & Heath Syncon 28x24, great sounding, \$5000. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-9728.

Want to Buy

Gates Gateway service info for mixer, outboard supply & monitor amp. CK Bucy, Cisco Sound, POB 16583, Lubbock TX 79490. 806-792-1662.

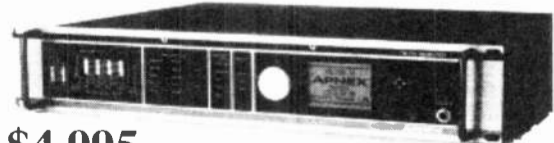
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RECORDERS continued...

Marantz PMD-220 portable 2 speed cassette system, mono, 3 heads, \$175. S Lawson, KAK Prod, 928 Hyland Dr, Santa Rosa CA 95404. 707-528-4055.

Otari MX5050 (2) 2 trk stereo r-r w/remote box in great cond, \$2000 ea. C Rutherford, Tower Comm Group, 250 W Main #3100, Lexington KY 40507. 606-389-8900.

Panasonic Pro SV-3700 DAT, \$825; Tascam 32 r-r, \$595. G Wachter, KFYI, 631 N 1st Ave, Phoenix AZ 85003. 602-817-1030.

MX70 video playback system, \$900; Gd used "x2500" 456 tape, \$20, 1"x2500" 996 & 250, \$35; new MRL short test tapes, \$229 for 2", save \$400. Save on all other formats too. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

Sanyo RDS40 stereo cassette deck w/digital counter, bias adj, metal tape capability, AMSS & manual, 10 yrs old; Teac V-417C stereo cassette deck, metal case, low hrs, counter, digital meters, right chnl not working, \$25 ea/\$40 both. Will or Lisa, WLD Rcdg Std, Music Valley, Rt 1, Mill Spring MO 63952. 573-998-2681.

ITC 770 rack mount mono R/P, 7.5-15 ips w/25 Hz detector, \$375 +shpg; Ampex 440 rack mount, mono, R/P, 7.5-15 ips, OK cond, \$400 +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Scully 284B 8 trk, sell or trade for Neumann cutter or \$3500; Technics M85 Mk2 cassette deck for parts, \$7500. HL Sewell, Oakridge Music, 2001 Elton Rd, Haltom City TX 76117. 817-838-8001.

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MCI JVC110B and JVC110 (servo) 4 tracks, \$1500/both. 616-782-9258.

New & used Ampex 350 style tape transports, motors & parts, various prices. M Crosby, 408-363-1646.

Ampex A121 7" r-r, 3.75-7.5 ips tube type w/new belts & schematic, \$25 +shpg. E Lightman, WEDL, 550 Merchant St, Ambridge PA 15003. 412-266-2802.

Tascam ATR60-2, in stand, \$1200; Tascam 58, 8 trk, \$1950; Tascam 38 8 trk, \$1650; Otari 5050-8 Mk III, \$1900; Ampex 1200 PURC cards (5), \$125 ea; Custom locator for any deck, \$495; Sony 2 trks, \$195 ea. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-9728.

Want to Buy

Ampex 354, working or not, electr & heads must be in OK cond. D Mackenzie, WVUD, Perkins Student Ctr, Newark DE 19716. 304-831-2701.

Revox/Tascam 10.5" reel NAB hub adapters. A Sandoval, El Sotano, 500 N Columbus, W Liberty IA 52776. 319-627-2470.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

Ampex machines, recorder electronics, mixers. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

REMOTE & MICROWAVE

Want to Sell

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TFT 7610 digital remote control system with 7610-R, 7610-C, 7615-R & 7615-C status & control units, \$495; INC Switched 56 CSU/DSU for Zephyr & other codecs, new, \$95. G Wachter, KFYI, 631 N 1st Ave, Phoenix AZ 85003. 602-817-1030.

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QEI Catlink, BO. JJ Larsen, K92, POB 92, Roanoke VA 24022. 540-774-9200.

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Want to Buy

Comrex single-line encoder. B Boogalu, KSOS, 4455 S 5500 W, Ogden UT 84315. 801-731-9000.

Gates RCD-10 remote. R Wilkerson, WLIL Inc, 406 E Broadway, Lenoir City TN 37771. 423-986-2536.

REPAIR SERVICES

PIKE'S PEAK SATCOM Dart 384 SA7300 (Dat32) SCPC Receivers

Circle (41) On Reader Service Card

Want to Buy

NOS prof blank rcdg discs, such as Allied, Audiodisc or Transco, any 7" w/large hole for rcdg 45 rpm dubs, no cardboard or home rcdg types. B Leslie, Pro Recording Service, 13709 Mapleleaf Dr, Cleveland OH 44125. 216-662-1435.

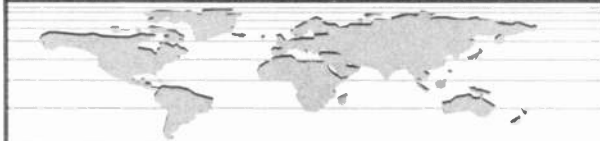
TEST EQUIPMENT

Want to Sell

CRL Systems PMC 450 peak mod controller, \$400. W Osenga, Pace Bdctg, POB 1369, Canton NC 28716. 704-648-3588.

Fluke 8520A 5-1/2 digit precision bench digital voltmeter, \$150; Tektronix 7903 rack mount scope w/7A26 dual trace & 7B92 timebase plug in, \$595. G Wachter, KFYI, 631 N 1st Ave, Phoenix AZ 85003. 602-817-1030.

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Circle (68) On Reader Service Card

Microdyne 1100-FFC(X1)R(DC)L 70 MHz down converter with T21 crystal, \$150; Wegener 1601 mainframe with all cards for Oldies channel/CNN package, Best Offer. G Manfroi, WMAV, 502 S Allen, Spaulding IL 62561. 217-629-7077.

Audio production company selling never used 39 CD killer production music library, \$1700 & superb SFX collection on 31 CD's, \$495 or both for \$1990. Free shipping anywhere! Tel: 331-4694-0684 FAX: 331-4694-0688. Email: radiods@club-internet.fr

Microtran table top tape degausser, handles 1"-2" tapes, \$150/Best Offer; mechanical tape timers, Lyrec & Seike/Spotmaster, new & used. M Crosby, 408-363-1646.

Motorola R-2008C/HS comm system analyzer, new CRT, \$4400. A Fromm, Jalco Comm, POB 3334, Bartlesville OK 74006. 918-335-5093.

Potomac AT51 audio gen & distortion analyzer, \$2850. JJ Larsen, K92, POB 92, Roanoke VA 24022. 540-774-9200.

Hickok 6000A tube tester, mint cosmetics, works perfect, extra roll chart, \$325/BO. A Sandoval, El Sotano, 500 N Columbus, W Liberty IA 52776. 319-627-2470.

Want to Buy

OIB-3 RF impedance bridge or OIB-1 w/extended range modification. G.F. Haertig, Haertig & Assoc., 820 North River St #100, Portland OR 97227. 503-282-2989.

Heathkit IO-10 small portable tube type oscilloscope from late 1960s. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

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10K AM in North Central AZ. 520-774-0864.

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Yes it's possible & legal. Part 15 of FCC rules allows low power AM radio stations to operate without a license!! Cover an entire town & bill \$1500 a month!! It has been done!! Order the newsletter booklet that tells you all you need to know to get started for just \$29.99. Send check or money order payable to: WCTD AM 1620, 4 Canal St, Westerly RI 02891 or call 401-348-9222 for more info. FCC Inspected.

6 kW Oklahoma FM, excellent market with Computer Concepts system & near new transmitter. Galen Gilbert 903-885-6122.

C3 25,000 Watt FM radio station license, Corpus Christi, Texas area. E-mail: kztxfm@juno.com or PO Box 337, Yorba Linda CA 92885. Agents welcome.

South Central Georgia AM/FM. Call owner, 912-868-4959.

Want to Buy

Looking for first acquisition, small market combo or single station. Prefer Iowa, Wisconsin, Missouri, Colorado or Wyoming. R Pierson, 1366 C 19-1/2 St, Cameron WI 54822. 715-458-2177 (evenings).

TUBES

Want to Sell

KT-88 GEC (2 pr) matched, \$860/pr; WE-350B (2), \$125/ea; over 100 other tubes, send for list. K Hardman, Hardman Eastman Studios, 1400 E Carson St, Pittsburgh PA 15203. 412-481-4450.

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3CX3000F7	4CX1600B	8560AS
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3CX10,000A3	4CX5000A	EL34
3CX10,000A7	4CX5000R	EL509
3CX10,000H3	4CX7500A	SV572-3
3CX15,000A3	4CX10,000D	SV572-10
3CX15,000A7	4CX15,000A	SV572-30
3CX15,000H3	4CX15,000J	SV572-160
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3CW30,000H3	5CX1500A	SV811-10
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Business Opportunities	& Transceivers	Training Services
Cart Machines	Recorders	Tubes
CD Players	Remote & Microwave Equip.	Turntables
Computers	Repair Services	Positions Wanted
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Distributor Directory	\$105	100	95	90
Professional Card	\$74	68	62	56
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 Make: _____ Model: _____
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Harris MS-15 exciter	\$1,000
CCA FM25kW	\$11,500
CCA FM10DS exciter	\$500
CCA FM20000D	\$12,500
AEL FM12KD	\$5,300

Call Jim or Steve
770-964-3530

Collins 831-D 2 kW FM with Wilkinson exciter, working when removed, decent condition, as is, \$2100. P Figge, WYMG, 1030 Durkin Dr, Springfield IL 62704. 217-546-9000.

Gates FM-1H on the air, runs great, \$5000; Gates BC-1G 1 kW AM just off air, \$5000; QEI 500T w/Harris MX-15, less than 5 yrs old, \$6900. B Larson, WNGN, Box 36 The Kings Rd, Buskirk NY 12028. 518-686-0975.

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QEI Quantum 2.4 kW solid state w/built in 300 W exciter, 2 yrs old, BO; BE FM1C 1 kW solid state, 4 yrs old, BO. D Magnum, WBOG, 1021 N Superior Ave, Tomah WI 54660. 608-372-9600.

USI TA-100 outdoor transmitter, new, FCC approved, no FCC license needed, range up to 2 miles, \$1500, for more info send self-addressed envelope. J Arthur, WRRP, POB 2233, Pensacola FL 32513. 904-494-0945.

Kahn Comm AM stereo pwr side exciter, exciter & monitor with switch, completely tuned to 1570 kHz, \$5000.

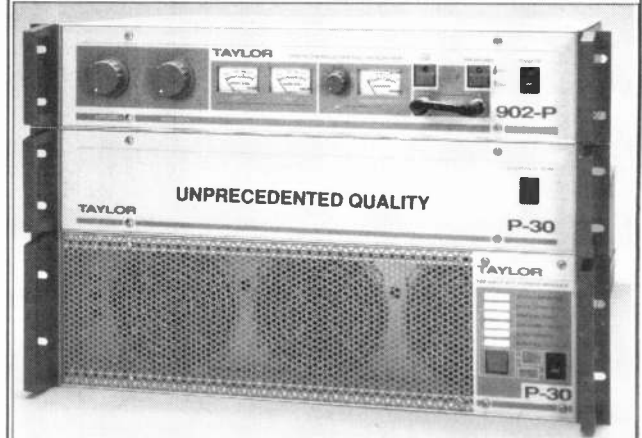
CCA FM12000G3 transmitter including new 60 W exciter, current model, used less than 2 years, \$24,000; Marti RPU-30 transmitter & model DR 10 receiver, 166.25 MHz, \$1850. B Walters or R Bell, WASE, POB 2087, Elizabethtown KY 42702. 502-766-1035.

QEI 675 FM EXCITERS, \$1550; QEI 675T600 FM AMPLIFIERS, \$3550, units are reconditioned and tuned on your frequency. Purchase includes manual and 6 month warranty. Contact Bob Brown at (609) 232-1625.

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40 Watt	\$5,046	1KWatt	\$8,716
100 Watt	\$6,206	2KWatt	\$11,905
200 Watt	\$9,874	4KWatt	\$20,741
400 Watt	\$13,171		
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Taylor Bros. (Oldham) Limited, Lee St, Oldham England. Tel: 0161 652 3221, Fax: 0161 626 1736

CSI T-1-F 1 kW FM. D Davis, KMIN, 1217 Valencia NE, Albuquerque NM 87110. 505-255-2431.

McMartin AM/FM xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

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20 KW FM 1973 Collins 831G	5 KW AM 1984 Continental 315R-1
20 KW FM 1974 Harris FM20H/K	50 KW AM 1973 Continental 317C
20 KW FM 1972 CCA FM20,000DS	50 KW AM 1978 Continental 317C-1
20 KW FM 1982 Harris FM25K	50 KW AM 1981 Continental 317C-1
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Gates CB1200 TT with Grey Research pick-up arm, Stanton cartridge with Opamp Labs preamp (2), \$100 each; Gates CB77 TT with Grey Research pick-up arm, Stanton cartridge, no preamp (2), \$100 each; Gates CB1200 TT, no pick-up arm, \$75; EMT 928 TT, \$150. D Vernier/S Schoon, KUNL, Comm Arts Ctr, Univ of Northern Iowa, Cedar Falls IA 50614. 319-273-6400 ext 0.

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CHIEF ENGINEER: 5 stations, FM and AM, experience in all areas. Studio (including computers and hard drives) transmitter, STL and digital. Resume to: General Manager, East Carolina Radio, Inc., PO Box 1418, Nags Head NC 27959.

OFFICE MANAGER for established Adult Station in desirable North Carolina mountain resort. In charge, creative person, production voice a big plus, computer knowledge a must. Excellent salary and benefits. Send resume to: Charisma Radio Corp, POB 1899, Highlands NC 28741. EOE.

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Burk Technology, a leading manufacturer of transmitter remote control systems, associated products and EAS equipment, seeks a Customer Support Technician. Responsibilities include problem solving with customers, system test and repair, order configuration, and documentation of procedures. The preferred candidate will have a broadcast engineering background, strong troubleshooting technique and possess excellent communication skills, written and verbal. This is an excellent opportunity for the engineer wishing to move into technical support in broadcast related industry. Burk Technology offers a complete benefits package, 401K and very competitive salaries. We are conveniently located west of Boston, off Rte. 495 near Rte. 2. Burk Technology is an equal opportunity employer.

Resume to: Bill Gould, Burk Technology, 7 Beaver Brook Road, Littleton, MA 01460. FAX (508) 486-0081.

Engineer to join current staff maintaining 3 non-directional AM and 2 FM stations in Central Florida with Hall Communications. Minimum 5 years experience desired. FCC General Class License or SBE Certification a plus. Requires fluent background in the repair and maintenance of: Studios, AM and FM transmitters, STLs, digital audio, PC's, satellite links. Work at remotes included. Send resume to: Edd Monskie, PO Box 4368, Lancaster, PA 17604-4368. Can be faxed to 717-653-0122. Hall Commu-nications is an EOE and women and minorities are encouraged to apply.

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Fax (503)497-2316, email (ken@kupl.com) or mail resume immediately to: Ken Broeffle, 222 SW Columbia, Suite 350, Portland, OR 97201 **Equal Opportunity Employer**

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Webpage builder & air talent seeks position with forward moving company, call or e-mail for tape & resume. Dan, 812-385-4273 or jhancock@comsource.net.

Just want a chance to show off the skills I've learned, whatever I can do, Oklahoma preferred. 405-991-5840 (pager).

Mature news-anchor/producer, AT, production announcer available. Alex, 513-777-8423.

Morning AT, 10+ yrs experience, phones/fun, any shift, most formats, MD. Kevin, 517-739-0328.

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News anchor/producer, commercial production, air talent for adult formats avail now, VOA downsizing casualty. A Kuhn, 513-777-8423.

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