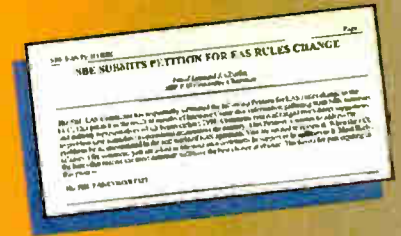


Radio World



SBE Pushes EAS Revisions
See Page 17

Vol 21, No 20

Radio's Best Read Newspaper

October 1, 1997

NEWSMAKER

New SBE Chief Miller On Radio

RW News Editor/Washington Bureau Chief Leslie Stimson recently interviewed newly elected SBE President Edward Miller, CPBE and engineering manager at Cleveland station WEWS-TV. Miller, 55, began his career in radio in 1960 at what is now WCLV(FM).

RW: You began your career as a radio board operator and maintenance engineer. What led you to that?

MILLER: I went to John Carroll University, where I majored in speech radio communications, before they had radio and TV courses. I minored in physics, math,

SBE Election Results Page 16

philosophy and English. I would lecture classes on a regular basis — a professor wouldn't be available, so he would ask if I would come in and share some of the more recent experiences, because I was the only one (in class) working at a radio station.

RW: You had practical experience.

MILLER: I would leave school and go to work, and then leave work and go to school. It took me five years to get through college because I did more things than I needed to.

Then from that spawned original research in how to use a subcarrier of an FM station. Muzak, the elevator-type music, is carried over a subcarrier of an existing FM station. That is a money-making venture, using the commercial radio station to convey the signal. I put together a proposal on how to offer that commercial subcarrier to a non-commercial educational entity, the Board of Catholic education in Cleveland.

We said (WCOV) could reach
See MILLER, page 16 ▶

BE Changes Hands in Buyout

by W.C. Alexander

QUINCY, Ill. Studio and transmission systems firm Broadcast Electronics Inc. changed hands in August in a management buyout led by former Heritage Media owner Jim Hoak. Former majority shareholders Cirrus Technologies sold its shares in BEI to Hoak Communications Partners, L.P.

Included in the sale are the two BE subsidiaries, Broadcast Programming of Seattle and Marti Electronics of Cleburne, Texas. BP is a music and radio format supplier that has aggressively acquired several competitors in the past few years; Marti makes remote



pickup, studio-to-transmitter and codec equipment.

Hoak sold his radio group, Heritage Media, to Rupert Murdoch's News Corp. for \$1.35 billion in mid-August. The acquisition gives BE a pool of capital that managers say will

allow them to set a more aggressive business course.

More backing

Jack Nevin, long-time president of BE, said that the buyout by Hoak Communications Partners is, in essence, a change in financial backing, similar to changing bankers.

"In the recent past, stockholders had lost interest in trying to grow the company and stagnation was the result," said Nevin. Hoak, Nevin said, has a track record for pursuing aggressive growth and he brings this drive along with his extensive media and broadcast experience to BE with the goal of growth and internal



See SALE, page 7 ▶

RFR Deadline Approaches; Impact Varies by Station

by Lynn Meadows

WASHINGTON The deadline to certify compliance with the Radiofrequency Radiation rules has been extended to Oct. 15. As of that date, all applications to the FCC for construction permits, license renewals and requests for station modifications are subject to the new RF exposure guidelines.

Hardest hit will be radio stations whose transmitters are accessible to the general public. The allowable RF levels in these "uncontrolled" environments are five times more strict than those for controlled environments.

However, as long as no one complains, existing broadcasters who do not have to file any paperwork with the commission have until Sept. 1, 2000, to comply with the new standards.

What it means

What has not changed is the RFR limits established by the commission last year. Many who commented in the RF rulemaking, including the NAB, wanted the FCC to use the levels established in the ANSI/IEEE standard. The commission received other comments arguing that the limits were not strong enough. On that, the FCC did not budge.

But there was some good news. Many commenters argued that the FCC rules on evaluation at sites with multiple transmitters are burdensome.

According to the old rules, when the RF exposure limits are exceeded due to the RF fields of multiple fixed transmitters, all licensees whose transmitters produce power densities in excess of 1 percent of the exposure

See RFR, page 8 ▶

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NEWSWATCH

Stockholders Vote to Approve New Chancellor Media

DALLAS Stockholders on Sept. 3 approved the \$5 billion deal merging Evergreen Media Corp. (Nasdaq: EVGM) and Chancellor Broadcasting Co. (Nasdaq: CBCA). The FCC followed suit late Friday, Sept. 5. Shares of the nation's largest radio-only company, to be called Chancellor Media Corp., began trading on Nasdaq on Sept. 8 under the symbol "AMFM."

When other related deals close, the new Chancellor would acquire properties from Viacom, Gannett, Bonneville and others, for a total of 99 radio stations in

21 of the top markets.

The new management team was in place on the 8th. Officers of the new Chancellor Media Corp. include former Viacom President William Figenshu; former Executive Vice President, Polygram Group Distribution, John Madison; and former Chancellor Senior Executive Vice President/Regional Manager George Toulas. All will be senior vice presidents/regional operations. Steve Rivers was named chief programming officer. COO James de Castro said the new executives will work directly with him and Ken O'Keefe, executive vice president/operations.

"The creation of Chancellor Media Corporation represents a tremendous

commitment to the radio industry and our plan to build the world's leading radio enterprise," said Thomas Hicks, chairman and CEO, Hicks, Muse, Tate & Furst, and chairman of the board of Chancellor Media Corp. "With an emphasis on quality programming, this organization is poised for further growth from both operations and acquisitions."

"We are ready to manage Chancellor Media's new opportunities for growth, having assembled a proven management (team) culled from the Evergreen, Chancellor, Viacom and Gannett organizations as well as from industries other than radio," said Scott Ginsburg, CEO, Chancellor Media. He said the new company formats and cash flow are

diversified. "On a pro forma basis, the 1996 net radio broadcasting revenues of the combined entity were approximately \$728 million with pro forma 1996 broadcast cash flow of about \$310 million," he said.

Minor Mod Paperwork Cut

WASHINGTON Broadcasters soon will no longer need CPs for certain minor modifications to AM, FM and TV stations. The change means stations will no longer have to go through a two-step process to make minor facilities changes. The paperwork will be done once.

In the past, a minor change required stations to file and wait for a CP before construction, and then they had to file and wait for a license application to be

See NEWSWATCH, page 3 ►

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DIM	
Mic & Line, +16dBu	.005%
DYNAMIC RANGE	
Line	114dB
Mic	98dB
HEADROOM	
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AUDIOARTS ENGINEERING

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► NEWSWATCH, continued from page 2 granted after project completion. Under the new process, stations can file a simpler "modification-of-license application" after they make a change. The FCC changed the rules on Aug. 22 (Report & Order MM 97-13), and they were to become effective 60 days after publication in the "Federal Register."

NAB Urges Easing Studio Rules

WASHINGTON NAB has filed comments with the FCC urging more flexibility in the commission main studio and public file rules. Reply comments (MM Docket 97-138) were due Sept. 8.

NAB suggested that a main studio be located either within the city grade contour of any station licensed to the same or within a 40-mile radius of the community center. This would allow group-owned stations to consolidate studios.

On the rules concerning the public file, NAB suggested they be changed to allow the public file to be at a station's main studio, wherever located. The association also urged the commission to allow licensees to remove certain applications from the public file once those applications are no longer pending before the FCC and to reduce to four years (from eight) the amount of time that ownership reports must be retained in the public file.

NAB Broadens First Amendment Armor

WASHINGTON Expecting continuing battles with regulators and public opinion on issues like the V-chip, broadcast liquor ads and free time proposals, the NAB Executive Committee believes the association needs to bulk up its efforts to protect broadcasters' First Amendment rights.

The committee has directed the NAB to develop a plan to accomplish that goal.

The NAB staff is to explore a series of First Amendment initiatives, including outreach efforts to legal scholars, think tanks and other groups that support pro-First Amendment policies.

At the Executive Committee meeting in Washington on Sept. 3, members stopped short of advocating the creation of a task force on First Amendment issues that had been proposed by radio board member Bill O'Shaughnessy, president, Whitney Radio.

"The timing tactics and strategy remain to be determined. But the wagons are definitely being drawn up," said O'Shaughnessy. He added that is especially important now, "when you have elected officials and bureaucrats ready to trample the First Amendment for the sake of 'family values.'"

The NAB Education Foundation, headed by Chuck Sherman, foundation president and NAB SVP/Television, will play a central role in the expanded First Amendment protection efforts.

Questions Linger After WDCU Deal

by Lynn Meadows

WASHINGTON In a last-minute switch, non-commercial WDCU(FM) here was sold to C-SPAN, after a subsidiary of religious broadcaster Salem Network backed out of the deal.

The fate of WDCU has been watched widely in the radio industry by different observers with different agendas: public and religious broadcasters interested in the precedent it might set; jazz fans who lost a format; and managers of public institutions who wonder whether their own radio stations might bring in some cash. Now add another angle: the entry into radio of a nationally-known cable TV provider of political coverage.

The Salem subsidiary, Creative Resource Educational Educational Association, had offered \$13 million for the 6.8 kW station this spring after the licensee, the University of the District of Columbia, put it up for sale to help erase a \$10 million budget deficit.

The potential sale of a non-commercial station to a commercial entity caused an uproar within the public radio community (RW, Aug. 6). Though CREA/Salem could not be reached for comment, by August it apparently had had enough. The company approached C-SPAN, which had originally bid \$10.5 million for WDCU, and asked if it would like to assume the \$13 million bid.

C-SPAN agreed and was set to take over the frequency at the beginning of October. Richard Fahle, media relations manager for C-SPAN, said the station would be upgraded to 50 kW.

A spokeswoman said CPB is "still look-

ing at the situation" now that there is a new buyer. The goal has always been for this to remain a non-commercial service, she said. Robert Coonrod, executive vice president of CPB, had written that the CPB would like to see the jazz format preserved because WDCU had one of the 10 largest African-American audiences in the country.

The CPB spokeswoman acknowledged

Now add another angle: the entry into radio of C-SPAN.

the loss of the format in Washington. The upside, she said, is that C-SPAN will maintain non-commercial, educational programming — something nobody knew for certain about CREA.

C-SPAN is a not-for-profit public service of the cable industry. Fahle called the radio station "a perfect complement" to what is done on television.

At first, he said, the station would probably simply simulcast the audio of C-SPAN programs and events. After the first few weeks, he said, the radio station would begin to diversify and build up its own product. The format will not be a straight simulcast of televised programming, said Fahle, although some broadcasts will adapt easily to radio.

Instead, its goal is to create radio content that can be launched nationwide once Satellite Digital Radio Services (DARS) is

available.

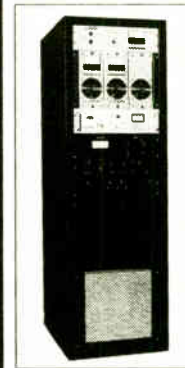
C-SPAN already carries two audio programs on its second audio program (SAP) channels. The SAP on C-SPAN carries 24 hours of the Voice of America and the SAP on C-SPAN II carries a mix of international programming.

For its part, NPR has two concerns, said Judy Reese, acting communications director for NPR: first, that the license for 90.1 MHz be in the hands of a not-for-profit; second, that it be used for non-commercial educational programming.

Reese said NPR officials were reviewing the C-SPAN application to determine if they wanted to pursue the matter. As for future radio station sales by other universities, Reese said NPR would study them on a case by case basis.

"We don't have a blanket policy right now," she said.

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IBOC 'Dream Team' Closes On Goal

WASHINGTON The USA Digital Radio mission to "develop a high-quality digital radio transmission technology that could be broadcast over the same bandwidth already being used for existing analog stations," is one step closer to reality.

An engineer's "dream team," the 30 or so members of the Westinghouse and Gannett Co. partnership that recently expanded to include Lucent Technologies/Bell Labs as a joint development partner, are working out of three "virtually tele-conferenced locations" to bring the U.S. broadcasting market in-band, on-channel DAB in the near future.

Bob Struble was recently named acting president for USA Digital Radio. Struble was appointed president and general manager of Westinghouse Communications, the company long-distance supplier, in November 1996 (a position he still holds, and he also serves as president and general manager of Westinghouse Wireless Solutions, a role he assumed in March 1996).

Struble joined Westinghouse in 1994 as director of strategic management, Westinghouse Wireless Solutions, focusing on "business unit strategy, performance improvement and mergers and acquisitions."

Struble received a bachelor's in chemical engineering from the Massachusetts Institute of Technology and a master's in business administration from Harvard University.

Jeffrey Jury, vice president, digital broadcasting applications, Westinghouse Wireless Solutions, is leading the commercialization of emerging digital technologies in television and radio broadcasting. Jury is coordinating the effort to develop high power TV transmitter modules for the coming conversion from analog to digital High Definition TV (HDTV). Also, Jury is responsible for overall development and implementation of the IBOC DAB systems for USA Digital Radio.

Prior to his current position, Jury was director of strategic management for Westinghouse Wireless Solutions.

Jury received a bachelor's in information systems and industrial management from Carnegie Mellon University and a master's in business administration from the University of Virginia.

The group is in phase two of a four-phase development of DAB systems and



were to demonstrate IBOC AM and FM sound quality compared to a CD and to today's typical AM and FM radios at their booth at the NAB Radio Show.

Word I'm hearing is that the "dream

Schwab on the "byline" roster at RW. Don and Ann (a husband-and-wife team) recently received a Gold Medallion Award from Promax International for "KFI Diddley Squat," a promo piece they wrote for KFI in Los Angeles.

As many of you know, the Gold Medallion Awards are presented to companies and individuals whose work is judged by a panel of international promotion and marketing professionals to be of exceptional quality and to have accomplished specific marketing objectives.

One of the amazing things about radio, of course, has always been the enormous pool of talent it attracts. A relatively small industry, by some monetary standards, radio appeals to creative and entrepreneurial types alike. So it is interesting to me to see what consolidation is going to mean for some of these folks. I think the ones that are radio people through

**I've said it before and I'll say it again:
If any one company can deliver in-band,
on-channel digital audio broadcasting,
that company is Westinghouse.**

team" is so convinced they have a viable solution that they are working full steam ahead to deliver to market. I've said it before and I'll say it again: If any one company can deliver in-band, on-channel digital audio broadcasting, that company is Westinghouse. They have the money, the brain power and the investment in analog to prove they are in this game for the long haul.

Stay tuned. I guarantee we'll be hearing good news from their camp soon.

Astute readers will have noticed the names of Don Elliot and Ann Schneiders-

and through will continue to succeed in this business, once they define a new role for themselves, and others could be lured away.

And of course, there are some companies that serve radio that already are seizing the moment, the opportunity and the entrepreneur! Case in point, Pacific Research and Engineering Corp. just appointed Herb McCord to its board of directors.

PR&E President/CEO Jack Williams stated, in announcing the appointment, "We are very excited to have Mr. McCord join our board of directors. Throughout his career he has grown each

of the businesses with which he has been involved and has become one of the most admired leaders in radio. Mr. McCord brings PR&E a wealth of industry insights and a unique vision about the future of radio that will assist us as we expand into broadcast markets worldwide."

Herb McCord is president of the New York-based radio consulting group, Granum Communications Corp. and a very successful and "savvy" leader in radio group ownership in the United States. After founding Granum in 1991, he quickly grew the start-up company into one of the 25 largest and most prominent radio groups in the United States. In June of 1996, Infinity Broadcasting purchased the stock of Granum's subsidiaries for \$410 million. Prior to Granum, McCord served as group vice president for Greater Media, and prior to that he was the first general manager of WCBS-FM in New York as well as CKLW-AM-FM Detroit.

McCord's curriculum vitae includes a current stint on the board of directors of the Radio Advertising Bureau, and he is chairman and founding member of the Radio Operator's Caucus.

"I have enormous respect for Jack Williams and the PR&E management team. I look forward to working with them," McCord stated. "They have been providing broadcasters with the best new studios and equipment for as long as I have been in the industry."

I think it is a smart move for PR&E and Herb McCord. The next stage of radio — continued consolidation, ownership compression, combination of facilities, digital audio radio — is going to be driven by the technology side of the business. But the needs to be satisfied are all bottom-line needs driven by debt, multiples, efficiencies of scale, etc., etc., etc. This seems like a great strategic move on the part of PR&E. And Herb McCord is, like most radio folks, a truly nice man that really cares about the business.

On that note, I think I'll sign off for now.

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Radio evolution

Dear RW,

I read Mike Dorrough's Guest Commentary, "Tesla, Marconi ... and Darwin," (RW, Aug. 6) with interest. Two things caught my eye: the headline mentioning Tesla, and the guest commentator's name, Mike Dorrough.

I first met Mike back in the early '70s, when I was chief engineer at The Custom Fidelity Co. Inc., which was located in Hollywood. I have been using his company's products ever since.

I can generally understand why you chose that particular title for his article. However, I wish he had taken the time and space to more clearly phrase the analogy between what has been happening in the radio industry, and what had happened to the early pioneers with their J. Pierpoint

Morgans and John Jacob Astors.

Please tell Mike that I say "Hello Radio," and that I am (still) "tuning for maximum smoke!" T.M.F.S.

*Bill Wysock, N6UXW
Remote Engineer, KRLA(AM)-KLSX(FM)
Monrovia, Calif.*

Article 'pandered' to GMs

Dear RW,

I am not familiar with Lauren Rooney; however, when I read her article ("Association Nabs Radio Pirates," Aug. 20), it came across as "pandering" to the GM's Association in referring to "pirates".

Were these "pirates" actually interfering with, or were they irritating, the licensed broadcasters? No specific examples were given, which hints that I should ignore the article as lip service for GMs and a waste of my reading time.

This transparent usage of "pirate" and "unlicensed low-power or micro broadcasters" parallels the popular press political manipulation of "immigrant" and "illegal alien," wherein the inference is they are the same. Both instances are an obvious effort to blur distinct lines and distort issues. Such tactics are, and indeed should be, embarrassing to "legitimate professional journalists." I expect better from authors published in **Radio World!**

*John J. Gray Jr.
Colorado Springs, Colo.*

Station ad was an affront

Dear RW,

I simply must comment on Ed Sackley's comments regarding his station's "innocent" billboard for WRKR(FM) ("Billboard Wakes Up Kalamazoo," Aug. 20). I had to laugh when I read his comments, "We never thought people would be so prudish." His statement proves he was not oblivious to the obvious.

Three (seemingly) naked people in bed, two men with a woman in the middle, certainly does little other than conjure up images of a sexual nature. Either Ed is a

(a three way), and it works for us! Screw community values!" At least Jacor is that honest! So drop the "We never meant it to be suggestive!"

We seem to forget that our industry is charged with a responsibility to serve the community. That includes promoting positive values.

Be glad people are praying for you. It demonstrates some people are more compassionate than you are able to comprehend.

*Richard David
Guardian Communications Inc.
Cincinnati*

Neumann follows up

Dear RW,

Thank you for printing the article about our M 149 Tube microphone (Aug. 20). Ty Ford certainly spent time getting to know our flagship tube mic.

I would like to provide more specific information on three points he makes. First, the new "vintage-style" power supply to be released this fall will be offered at the approximately \$350 price only as an upgrade from the existing supply to this new vintage style.

Second, Ty states "there is no 'off' for the filter, so if you are after anything below 20 Hz, you may be disappointed." This is a little misleading. Although there is little useful musical information below 20 Hz, the 20 Hz filter refers to a 3 dB down point. Thus, the M 149 Tube can reproduce signals lower, but at gradually reduced levels corresponding to lower frequencies.

Alphabet Soup

Among the beneficiaries of consolidation are the folks who make business cards. In fact, the traditional business card no longer is large enough to identify the radio engineer of 1997 and all the stations for which he or she is responsible.

One day you're sailing along, using business cards that list two FM's and an AM ... then — bang! — your owner buys the competition. Bang! Your group changes its name. Bang! You suddenly are part of an eight-station "cluster." Bang! Your 20-station group is bought out by an investment firm with 170 stations already on its tally.

Now, not only is your business card too small to list all of the stations you serve, but it has also gone out-of-date, twice, in the time it took to get a box printed up.

Bang. Bang. Bang.

Now imagine how it feels to be a young person, just coming into the business.

These are frustrating times for radio engineers, but they are also exciting times. The initial fear that super-consolidation would result in massive job losses for engineers has evolved into a realization of just how important the engineer is for today's radio station or group.

RW readers who are engineers tell us they are busier than ever — designing multi-station studio suites, upgrading RF plants, creating wide-area networks, and consulting. It is a new era for engineers, one marked with possibilities. But who will be the engineers of tomorrow? With all of their responsibilities, it's hard for engineers to find the time to help train their successors, especially outside of the office, after hours.

It's time for us to renew our commitment to mentoring, to developing a new pool of technically qualified, radio-oriented engineers. We owe it to our industry to do so.

Ed Miller, the incoming president of the Society of Broadcast Engineers, knows both sides of the radio/TV fence. One of his goals should be to increase the visibility of mentoring by people in our business, to help engineers understand the importance of training new leaders. Local chapters and individuals should do the same, to help young potential engineers prepare for the sophisticated digital technologies of tomorrow.

Maybe they can also design a bigger business card.

— RW

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Photo by Kris Warren

neuter, asexual or brain-dead, to not see some "backlash" on the community horizon (often read as "free publicity").

His comments to the people of the community demonstrate all the sensitivity of Jacor's Randy Michaels: "Ma'am, you have a very sick mind ... you should talk to your priest."

Hey Ed, why not simply say, "That's what our target audience is dreaming about

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GUEST COMMENTARY

Bring Back Class D FM Service

The President of a New AM Association Proposes Recreating the Former FM Class

by **Bryan Smeathers,**
President, ACAMBA

CENTRAL CITY, Ky. In the 20 months since the enactment of the Telecom Act of '96, we have witnessed the benefactors of vast deregulation. They have not been the small-market radio operators. The rampant consolidation has increased with a fury, to the point that nearly 20 percent or more of total radio revenue is controlled by approximately five companies. Is this to the advantage of the communities served?

Creation of such a class will ensure the independent broadcaster's place in history.

Because it is now apparent that the Telecom Act of '96 chiefly benefits the major-money broadcasters, the smaller, independent broadcasters likewise need some regulation (or deregulation) that will benefit them and ensure their ability to compete profitably while continuing to provide high-quality service to their community.

To seek diversity

As RW has reported, on Aug. 13 the American Community AM Broadcasters Association filed with the FCC its first petition for rulemaking, proposing changes to the FM translator rules to allow the rebroadcast of AM stations on FM translators, as has been practiced in Alaska since 1988 and in Nashville since 1990.

ACAMBA has begun work on a second rule-making petition, which proposes the creation (or recreation) of the former Class D FM service, which we have titled "Low Power FM Service

Proposal." ACAMBA believes that the time has come for the creation of such a class of radio service, to ensure diversity of voices in our communities in the wake of recent and continuing consolidations.

We further believe that creation of such a class will ensure the independent broadcaster's place in the radio industry. As has often been discussed, ACAMBA suggests that the recreation of Class D FM service would substan-

tially reduce the number of pirate broadcasters.

As for any arbitrary claims that the creation of such a service would clog the FCC system and burden the FCC staff, we would suggest that is not sufficient reason to deny this service, as the FCC could increase staff to handle properly any additional work created by the addition of this service. After all, they are making plenty of money from the various spectrum auctions, filing fees and regulatory fees, aren't they?

Anyone interested in assisting ACAMBA in the development of this

petition for rule-making are encouraged to contact us by e-mail at amradio@usa.net or via our website, www.broadcast.net/acamba or by writing ACAMBA, P.O. Box 785, Central City, KY, 42330.

We think now is the time for this needed and long overdue change after seeing what types of change the deregulation offered by the Telecom Act of '96 has brought us. Our fear is what the final results will bring, not only to us, the broadcasters, but to the citizens.

■ ■ ■

Bryan Smeathers is president and general manager of WMTA(AM), and is president and a founding member of the American Community AM Broadcasters Association.

RW welcomes other points of view.

Chuck Kunze Remembered

by **Leslie Stimson**

MINNEAPOLIS "He was a gentle man." That is how former WCCO(AM) colleague Jerry Miller remembered Elmer C. "Chuck" Kunze recently. Kunze retired as chief engineer in the early 1980s after 35 years with the station. He died on March 16 of this year at age 77.

After serving in the Navy during World War II, Kunze joined the WCCO engineering staff in 1944. He worked his way up to chief engineer, and headed up a 16-person department.

Kunze' technical accomplishments included helping to build a system to broadcast telephone calls over the air, with improved sound quality in the mid-'50s. He also supervised the modernization of the WCCO broadcast studios in 1974.

Satellite listener

Away from the station, Kunze enjoyed being a ham radio operator (WØWVM). Using a rooftop helical antenna, he monitored signals from the early space satellites and published articles about his results. Here's an excerpt from an article Kunze wrote for the November 1958 issue of Radio & TV News, titled "Listening to the Satellites."

"Monitoring of signals from the extremely low power transmitters aboard the U.S. Satellites in orbit has generally been regarded as a project better left to the minitrack stations, the major radio observatories, and other elaborate and expensive receiving stations. It is however, entirely possible for any ham or SWL to build and equip his own shack with simple gear for satellite reception and to get good results with little expense.

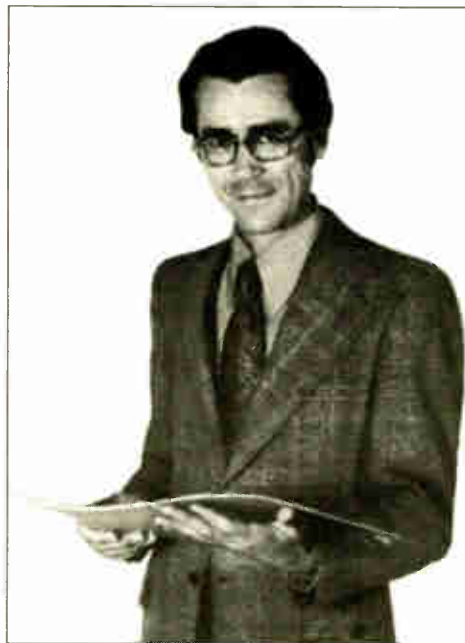
"It is definitely not necessary for the receiving station to be located under, or even near, the orbits. The signals can be picked up from surprisingly good distances at usable intensities."

The necessary equipment, Kunze wrote, included: "A 'good' antenna for this purpose is one that has at least 10 db forward gain, is adjustable in both azimuth and elevation, and has a low-loss, matched transmission line. A well-built, carefully adjusted 108 mc. crystal-controlled converter is an advantage, but satisfactory results can be obtained with simpler types, if care is taken to stabilize the oscillator and to reduce the R.F. stage and mixer noise to a minimum."

Kunze added that hams also needed "a receiver with 'good selectivity,'" and "a world globe, a caliper, and plenty of pencils, paper and patience."

Kunze shared such patience with the people he worked with. Miller worked with Kunze for 18 years and succeeded him as WCCO chief engineer. "He took the time to explain things. He had a lot of class," said Miller.

Kunze was a member of the Society of Broadcast Engineers, the American Radio Relay League and the St. Paul Radio Club. He is survived by his wife Ruth, two daughters and three grandchildren.



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Broadcast Electronics Sold

► SALE, continued from page 1

development. "Capital," Nevin said, "came looking for BE."

Nevin said the management team still holds substantial ownership shares and that the focus of the company will remain where it has always been: on radio. Over the past few years, Nevin has led BE through the acquisitions of Broadcast Programming and Marti, both radio-only suppliers. Nevin vowed to renew and continue BE acquisitions of radio equipment and service suppliers.

Customers, Nevin said, will not see any detrimental changes at BE. He said the company will be much stronger

and we look forward to BE's renewed competition."

Broadcast Electronics was founded by a group of broadcasters in 1959, and first made a name for itself with its line of Spotmaster tape cartridge machines. In the 1960s and 1970s, very few radio station control rooms were without a rack of Spotmaster machines, which were used for playback of commercials, announcements and music.

Since the early days, BE has branched out and developed a full line of radio station equipment. Included in the lineup are audio consoles, program automation equipment, AM and FM

transmitters, STL/RPU gear and digital audio storage equipment. Some of the significant developments in its history



are the FX-30 FM exciter (1979), the FM-30B 30 kW single-tube transmitter

(1980), a line of solid-state AM transmitters (1990), and the Alpha Line of solid state FM transmitters (1992). The BE AudioVAULT networked digital audio storage and playback system has become an industry mainstay since its introduction in 1991.

In 1990, BE was acquired by Cirrus Technologies, which provided the backing for the 1993 acquisition of

Broadcast Programming and the 1994 acquisition of Marti.



Jack Nevin, President of BE



James M. Hoak

financially as a result of the strong capital backing that Hoak has brought in. Both BP and Marti Electronics will remain in their current locations. Marti recently opened a new plant in Cleburne.

Harris Sales Manager Scott Beeler said that the acquisition of BE by Hoak will make that company a more formidable competitor, but will otherwise have little effect on Harris sales.

Another industry observer is rooting for BE. "I hope this change will help BE come back to what it was several years ago," said Mark Bradford, manager of equipment dealer Crouse-Kimzey Co., referring to what he termed BE's former position at the cutting edge of broadcast technology.

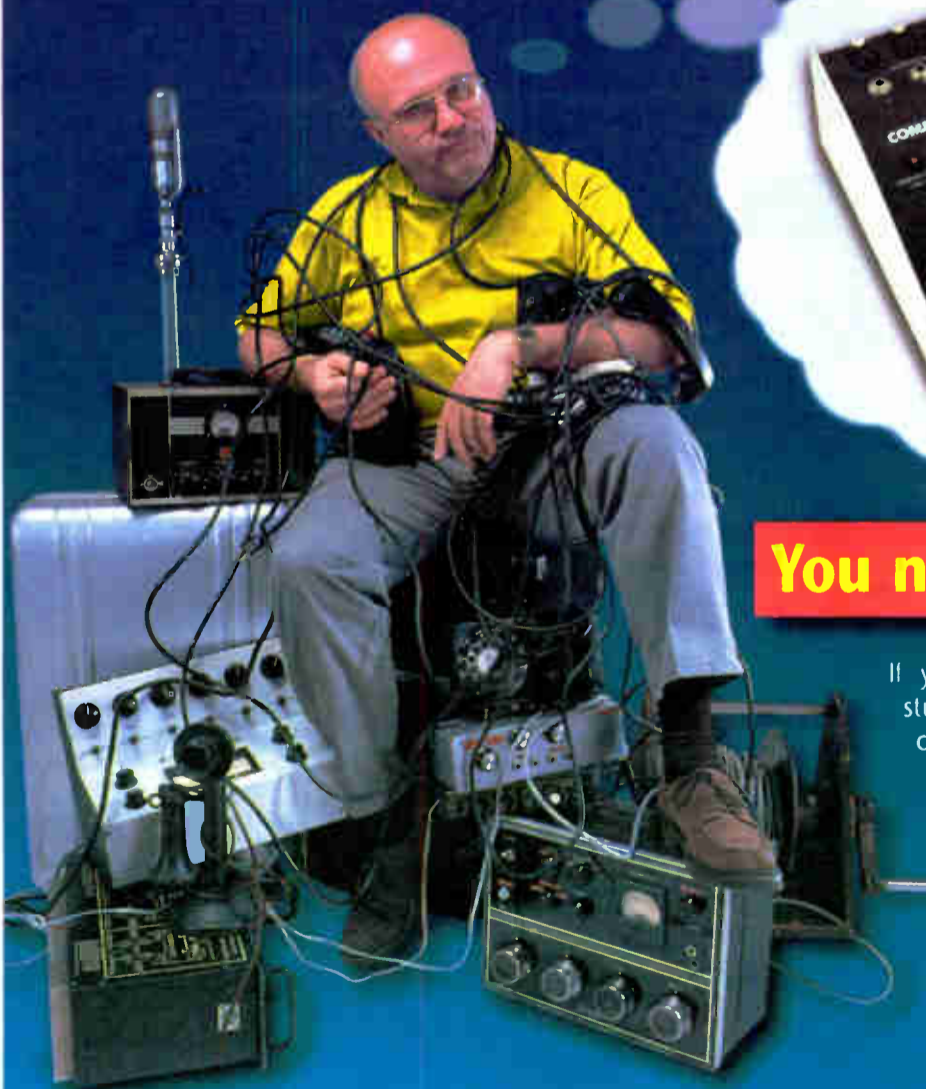
Coming full circle?

Bernie Giesler of Giesler Broadcasting Supply sounded a positive note about the acquisition. Giesler did not anticipate any immediate effect on GBS customers. His company sells the BE line of RF products.

Steve White of the RF Specialties group said, "I believe the (broadcast equipment) industry is beginning to return to what it was 15 or 20 years ago, where the manufacturers supply the stations with everything. This is just another step in that direction."

Jeff Detweiler of QEI, who competes directly with BE in the area of transmitters, said, "We wish Mr. Hoak great success with Broadcast Electronics. Competition certainly fosters the best product for the customer

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New RFR Guidelines in Place

► RFR, continued from page 1

limits applicable to their transmitter are responsible for bringing the area into compliance.

Petitioners said that the 1 percent level is difficult to measure or calculate. In response the FCC upped the level to 5 percent.

"We believe that a 5 percent threshold represents a more reasonable and supportable compromise, by offering relief to relatively low-powered site occupants who do not contribute significantly to areas of non-compliance and, at the same time, by providing for the appropriate allocation of responsi-

bility among major site emitters," the commission wrote.

Similarly, the FCC raised the filing threshold from 1 percent to 5 percent for determining whether an applicant must file an Environmental Assessment if the applicant contributes to field levels at an area of non-compliance.

"We ... see merit in the arguments that a threshold of 1 percent is too encompassing, particularly in light of the potential that an applicant or licensee could be required to undergo an unnecessary and expensive evaluation and that such a requirement could

actually discourage co-location. However, we believe that changing the threshold to 10 percent goes too far in the other direction, and could lead to the creation of areas of non-compliance. It could also result in some transmitter operators escaping their responsibilities for compliance at multiple transmitter sites," the commission wrote.

The long road to here ...

The Telecommunications Act of 1996 mandated that the FCC update its RFR rules by August 1996. The FCC had begun a rulemaking in 1993

to find out whether it should adopt the limits established in the newly revised ANSI standard (ANSI C95.1-1992).

After receiving nearly 3,000 pages of comments, the FCC adopted a Report and Order on Aug. 1, 1996, full of new RFR guidelines. It turned out to be an assortment of pieces from both the American National Standards Institute/Institute of Electrical and Electronics Engineers, Inc. (ANSI/IEEE) standard and the National Council on Radiation Protection and Measurements (NCRP) standard.

The R&O established Jan. 1, 1997, as the effective date for the rules. In December 1996, that date was pushed to Sept. 1, 1997, as the FCC worked to address issues raised in 17 petitions for reconsideration/clarification.

Finding the guidelines

A Second Memorandum Opinion and Order released on Aug. 25 answered the petitions while extending the deadline to Oct. 15. The updated OET Bulletin No. 65, intended to

Broadcasters who do not have to file any paperwork with the commission have until Sept. 1, 2000, to comply.

assist engineers in complying with the new guidelines, was released at the same time. The bulletin can be downloaded from the FCC website at <http://www.fcc.gov>

Given the "Not In My Back Yard" attitude towards towers and transmitters in many localities, the NAB had asked that the FCC right to "preempt" state and local governments when it comes to tower placement, construction or modification be extended to cover broadcasters. The Telecommunications Act gave the FCC that right for "personal wireless services."

The FCC declined, but noted the issue would be addressed again thanks to a Petition for Further Notice of Proposed Rulemaking filed in May by the NAB and the Association of Maximum Service Television.

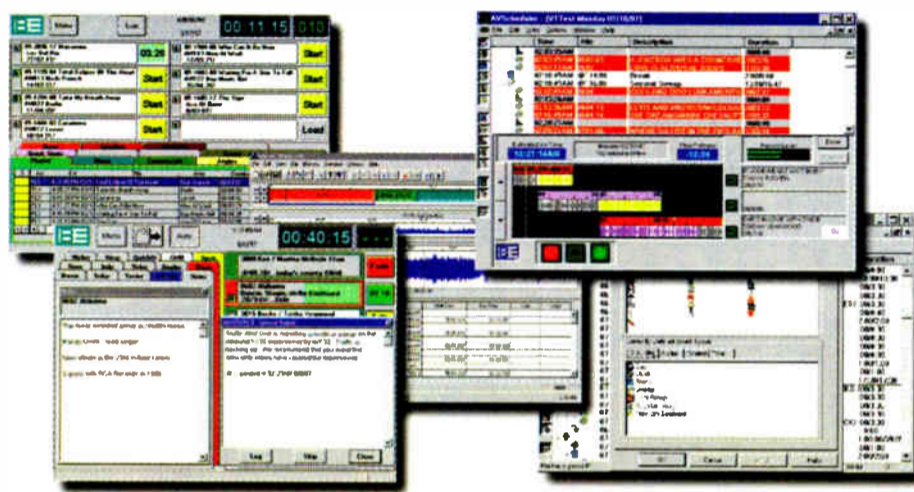
In that petition, the NAB/MSTV state that unreasonable state and local regulations have frustrated the siting of broadcast facilities and could impede the scheduled commission conversion to the new digital television service.

The FCC will likely have its hands full reviewing requests for preemption from personal wireless services. In its NPRM issued within the MO&O, the FCC seeks comment on proposed procedures for filing and reviewing requests for relief from state or local regulation on the placement, construction and modification of personal wireless service facilities.

Comments on the NPRM (WT Docket No. 97-197) are due by Oct. 9. Reply comments are due by Oct. 24.



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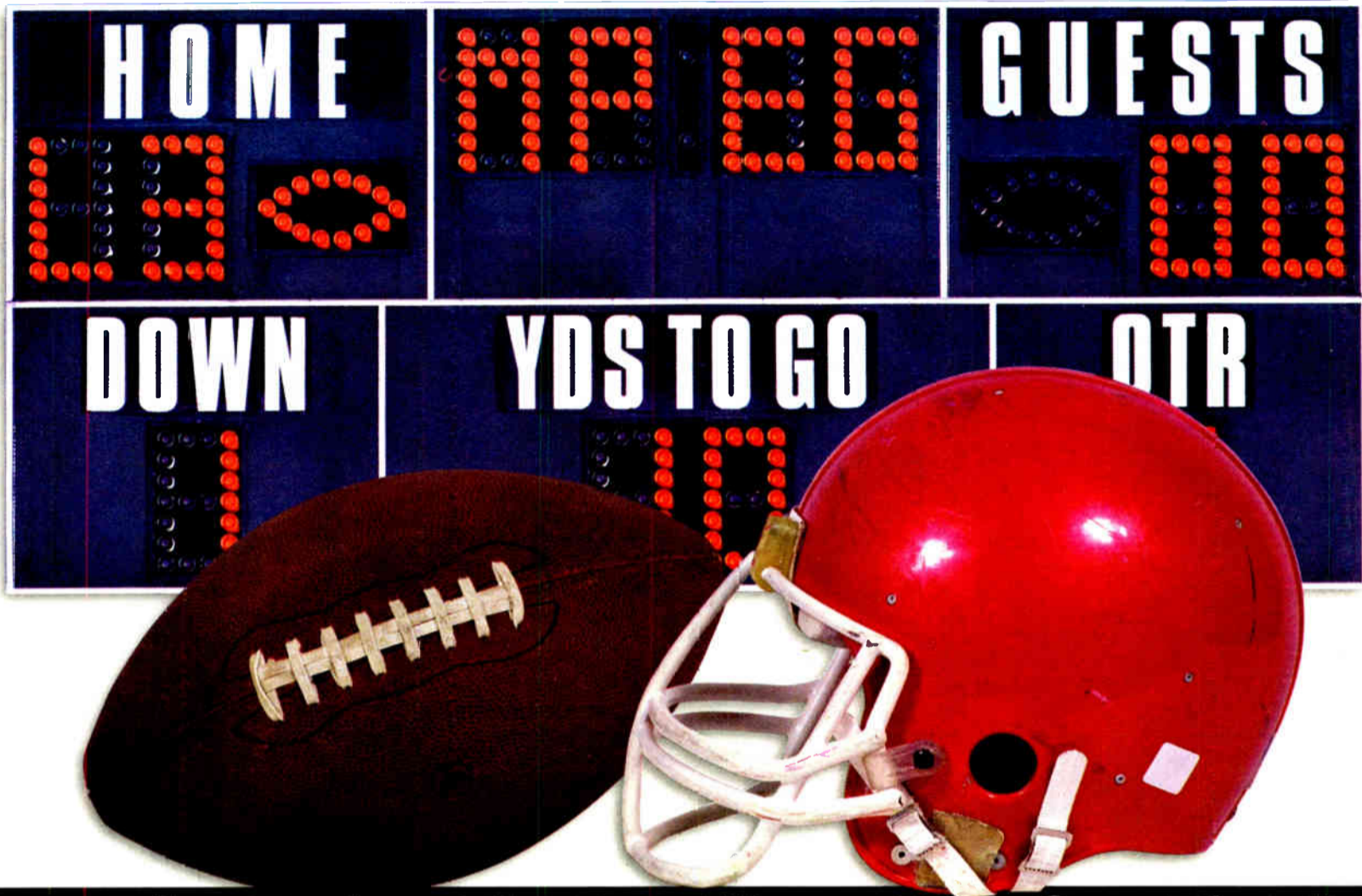
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Tower Industry Debates Safety

by Bob Rusk

WATERTOWN, S.D. The federal government and those who work on towers for a living are paying a lot of attention to safety standards for tower workers these days, as more companies come into the business thanks to telecommunications deregulation, PCS and other trends.

The tower industry has created a set of voluntary guidelines, to help tower crews operate safely. But it is unclear how radio station owners and tower crews would be affected. Meanwhile, the attention and threat of federal fines have angered some tower crews who find such rules overly burdensome.

Members of the National Association of Tower Erectors (NATE) approved their

When we become comfortable with that, then we can issue a statement to everybody, including our own people, outlining changes in enforcement," said Gurnham.

RW columnist Troy Conner, owner of Tower Maintenance Specialists, said OSHA regulations sometimes are excessive for veteran tower climbers.

"If you need really need these rules, you probably have no business being up on a tower," he said. "They have rules when they don't understand (the profession). We are inherently very careful in doing this work; it's your fanny up there and you recognize that as soon as you step off the ground."

With the passage of the Telecommunications Act last year, however, NATE believes certain standards are needed to guide start-up companies that are expected to enter the tower industry.

Ideas by NATE

"What we're doing is saying, 'If you're going to access towers by riding the line and free climbing, then let's do it in the safest manner possible and agree on how it needs to be done,'" said Brotzman. He said the procedures should not affect radio station owners; they are intended for tower construction companies. But radio stations, he said, are

encouraged to hire companies that follow the procedures.

The four pages of NATE procedures require that:

- the employer determine that all employees who climb the tower are qualified to do so;
- the employer determine that all hoist operators are properly qualified;
- that the hoist be rated for the work intended;
- that the hoist be serviced and maintained per the manufacturer's suggestion;
- the use of an anti-two-block device on all hoists;

See TOWER, page 12 ▶



Photo by Al Peterson

own set of safety standards in August, marking the first time such voluntary procedures have been put into place. Proponents say the guidelines give tower owners, and those hiring tower crews, a standard by which to measure safe tower conduct.

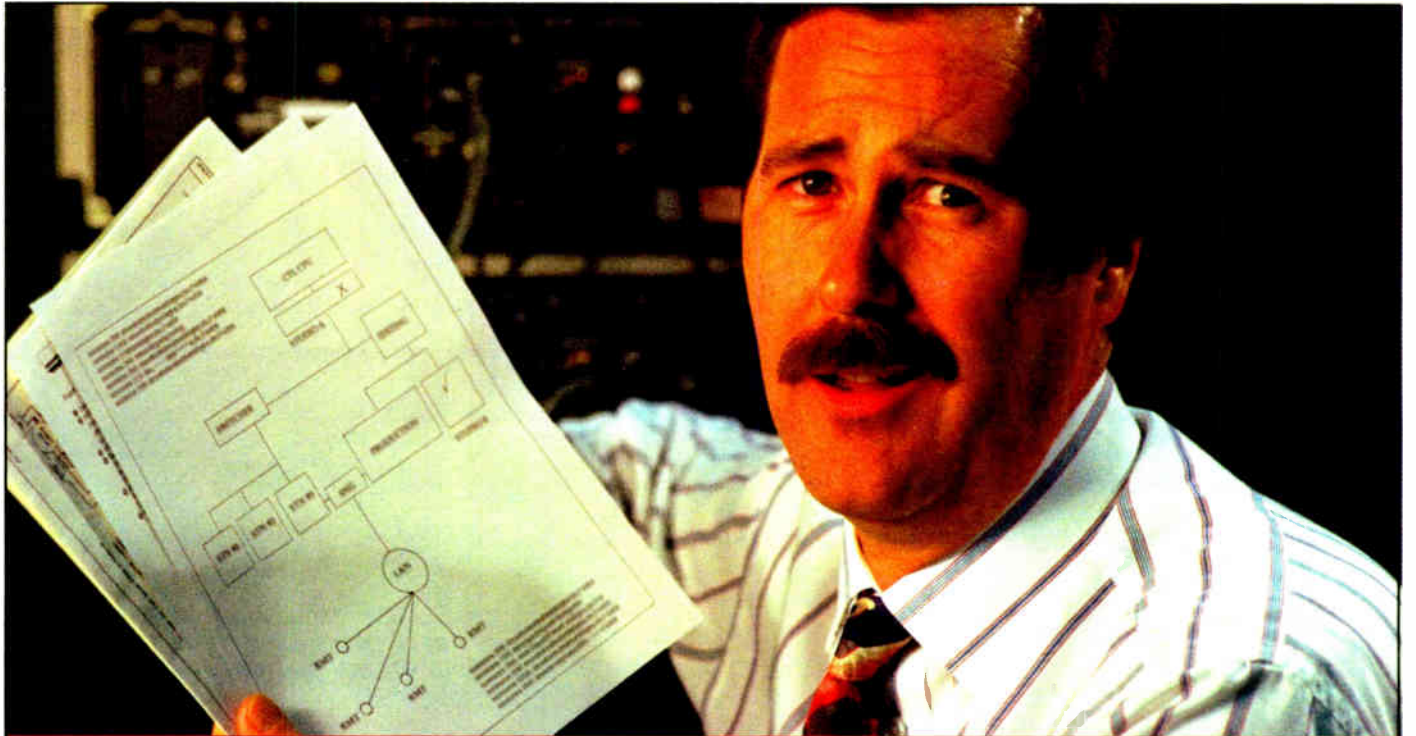
NATE also is lobbying the Occupational Safety and Health Administration to implement what it considers safer federal regulations for three kinds of tower activities: "riding the line," free climbing and 100 percent fall protection. (See end of story for definitions of these terms.) NATE Administrator David Brotzman said his organization has been negotiating with OSHA for more than three years on these issues.

NATE has forwarded a copy of its guidelines to OSHA, where they are "under advisement," said Roy Gurnham, director of the OSHA Office of Construction Standards and Compliance Assistance.

To save lives, money

While it could take three or four years to implement new rules, Gurnham said the agency is "looking to produce a directive" on tower access by January, which would change the way existing rules are applied.

"We want to see what procedures (the industry) is using to eliminate problems.



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Safety Standards Questioned

► TOWER, continued from page 11

- a 10:1 safety factor on all tower rigging, load line and chokers;
- when hoisting personnel (rather than material), the hoist capacity load rating be derated by a factor of two;
- all employees be provided with and required to use proper safety equipment.

Conner said existing and proposed regulations and procedures have created a confusing situation for tower crews and the companies that hire them. For exam-

ple, he said, the NATE guideline about qualifications of climbers does not specify what constitutes proper training. Meanwhile, he said, people in the industry continues to hear about large fines assessed by OSHA against crews that operated in an unsafe manner.

Regarding fall protection, NATE contends that OSHA's current restrictive regulations have actually "resulted in (placing tower climbers) at greater risk for accident and injury ... in an industry where construction hazards are obvious."

OSHA officials defended their practices, saying they do make exceptions when a crew cannot comply with its rules

or would create a more dangerous situation by doing so.



"If that's ever the case," said Gurnham, "that is a recognized defense

to the implementation of our rules. If it's just not feasible, or you can show that it would actually create a greater hazard, then you do not have to follow the rules."

Information about NATE's standards and membership in the organization is available from its office in South Dakota. Call (605) 882-5865.

OSHA, meanwhile, has received a consensus proposal for a revised steel erection safety standard "that could save 26 lives and \$125 million a year." While the proposal, presented by the labor and industry Steel Erection Negotiated Rulemaking Advisory Committee, would "protect all workers engaged in steel erection activity," it would not cover broadcast, communication or electric transmission towers.

Tower terms:

"Riding the Line" — Riding up the tower in a basket, such as those used by crane operators, or on top of a counterweight, rather than climbing or using an elevator.

"Free Climbing" — Climbing the tower while not continuously connected to fall protection. Workers often wear safety gear, but free-climb from point to point over short distances.

"100 Percent Fall Protection or Tie-Off" — Protection given by a body harness system connected to the tower, to prevent falls, so that the worker is connected at all times. Critics say such restrictions fail to recognize that tower work is impractical if the worker cannot move around quickly.

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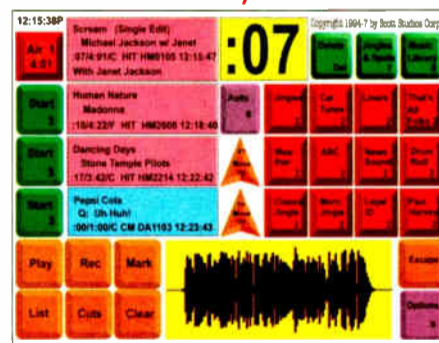
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NEWS WATCH

Radio a Hit With Working Moms

NEW YORK Of the 56 million working women in America, nearly half, 48 percent, are mothers. And just about half of those mothers are heavy radio users, according to a report by Interep Research.

"We know that working women are often responsible for the majority of household purchasing decisions. Working mothers are of special importance to advertisers, since they are often buying for larger households and a more diverse range of products. Motherhood opens up a different set of consumer needs," said Marla Pirner, Interep vice president/director of research.

Radio fits into the lifestyle of working mothers, said Pirner, "one who's busy and buying."

Report highlights include:

- Radio formats most listened to by working mothers: Hot AC, CHR, Urban, AC, '70s Oldies, Adult Alternative and New AC.
- Working mothers are 31 percent more likely than the average adult to be the household's principle shopper. They are 38 percent more likely than the average adult to spend over \$150 on groceries each week.
- Working mothers are likely to be the decision-maker on major household purchases.
- The majority of working moms are age 25-44: 34 percent are 25-34, and 37 percent are 35-44. Single working mothers, however, tend to be slightly younger: 34 percent are 18-24 and 29 percent are 25-34.

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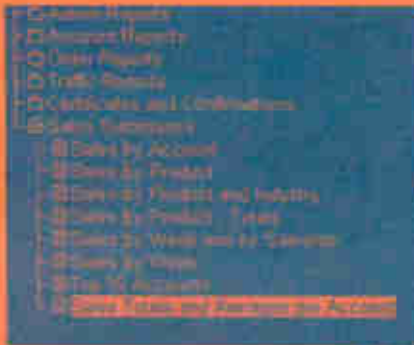
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The World Standard

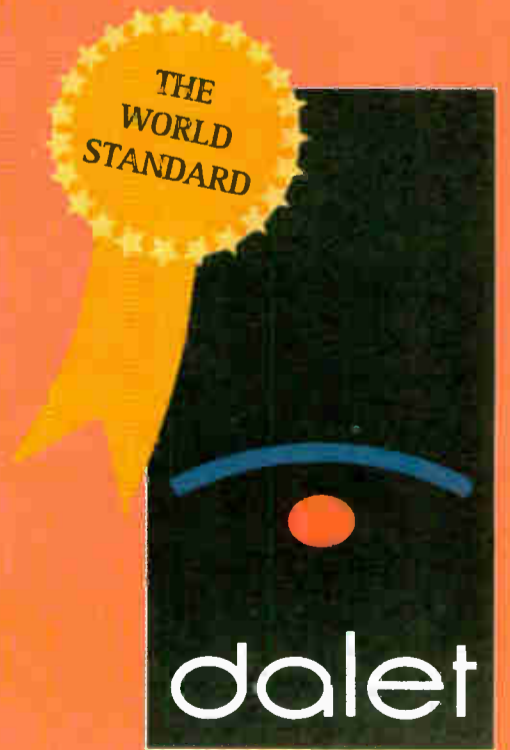
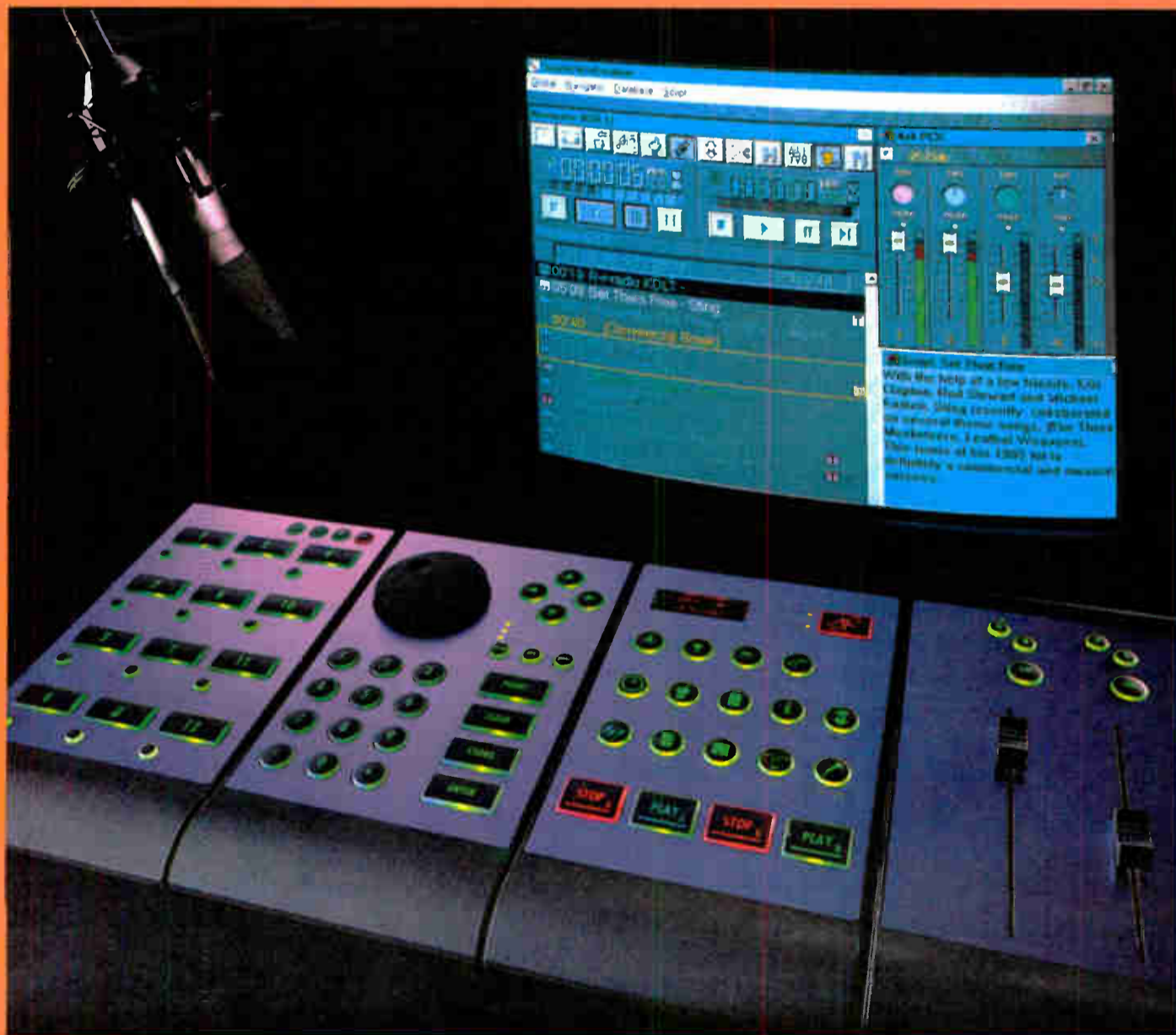
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SBE's Miller on Jobs, Mergers

► MILLER, continued from page 1
into every one of the schools, teachers could use it to conduct classes, exchange messages, have guest lectures. It was picked up at the school, piped through the PA system so that you could involve the entire building, or however you wanted to. I became the GM of this entity and before I left some five years later, about 180,000 students were hooked up.

RW: How does the typical broadcast engineer start today? How is it different from your day?

MILLER: You have to be able to digest the technical matter and make it your own. My advice is to do whatever you need to do to get in to get the hands on (experience). Young folks just coming out of school still need to rub shoulders with the veterans.

RW: What about people who build studios vs. people who maintain equipment, those different kind of engineers? Is one of those now more in demand than the other?

MILLER: You want to build a facility so that you can have something that you can put (your) hands on and then hire your people that keep it up and running.

Someone who has enough savvy to put together a radio or TV station ... has enough savvy to keep it running, but not necessarily. You can have day hires, who are very good at electrical installation, but they are not dyed-in-the-wool radio and/or TV maintenance people.

RW: Has consolidation changed the typical station engineer's duties?

MILLER: What happens is that you suddenly have a lot more real estate to be responsible for. You've got a lot more master controls, studios, everything. So you've grown your database of material and equipment you have to keep up and running. That doesn't mean

you have as many people to do it. In most cases consolidation means that you do more.

RW: How will the transition to digital affect engineers?

MILLER: The rollout of digital is probably the most ambitious and all-encompassing new technology to hit broadcasting since it started. It is such a new uncharted course to most engineers and technicians that all you have learned before, you may not be able to build on too much of that.

Compatibility was the key word that has followed all of these previous technologies through their evolution. The impact on the marketplace for the viewer or listener was not nearly as traumatic as it will be with this next digital step, because this is not compatible with anything.

RW: With the 2006 digital TV rollout target date, some FMs that lease tower space on TV towers are going to have to find other tower space as the towers they're on will either be moved or have to be rebuilt. Is this a big problem for those FMs?

MILLER: An existing tower structure is capable, by design, to support a wind load of whatever that wind load number is. If by having to add an additional antenna, which we in the TV business are forced to do because of the digital rollout, we have to add a 2,000-pound device to lay at the top of the existing tower to handle that, it could bring the tower crashing down.

Your options: You can build a brand-new tower that is stronger, you can try to beef up the existing tower to make it strong enough, or you can say to the people who have been renting space here that we can't afford to build another tower, we can't even afford to beef ours up, but if you took your antennas

off we could put ours on and it won't take the tower down. Some people are going to be upset with it because they are going to be tossed out and have to look for another tower to go to. So it is a very real problem for both sides.

RW: Is SBE going to address this in some way?

MILLER: No organization can guarantee that all the antennas can be added and it won't fall down. The SBE is totally aware of this and has disseminated this information through publications and through lectures, and workshops.

RW: The recent NAB and MSTV petition to the FCC asks the agency to preempt state and local tower zoning rules so that stations can meet that 2006 date. They're saying that there aren't that many specialized crews that can put up these towers, and given the time that TV has, they need help to clear out red tape. What is the SBE view?

MILLER: The FCC will need to act on that request because it is sheer mathematics. You have to put up about 2,000 towers across the country for

TV, and you may displace another 2,000 stations that have to have someplace else to go. You have got a handful of qualified steeple jack construction folks out there. If you get near the 1,000-foot or 1,500-foot level you have reduced the number of qualified tower crews dramatically. How are these limited resources spread over an entire country in a very time-challenged deadline?

RW: January was the deadline to have EAS equipment installed. The FCC has a relaxed enforcement view as people get the bugs out of their systems. Do you think the FCC will continue to look the other way or will SBE recommend some sort of extension?

MILLER: I think that the FCC establishes a drop-dead deadline on rolling out of anything with the purpose in mind that if they don't set a definite date when things have to happen, people would probably never get it done. The important thing is that a date was established. They said they will give you 365 days to get your act together. We realize this is difficult but believe that a year to shake it out is enough. It is a work in progress. The codes that are being introduced and reintroduced, the whole technology of how it reacts on the local level is being addressed by the SBE.

We are filing recommendations with the FCC, outlining what we believe will make the system work.

RW: Is AM dead?

MILLER: Radio will not escape digital. AM is going to be here in the future. People in AM should not panic, but they have to get together to improve the quality. The way to do this is to go digital, and deliver the product to the consumer that is comparable to what FM can do, because it is a different technology. I believe they have almost an equal challenge to go digital as the TV industry.



Edward Miller

Ed Miller Elected SBE President

by Leslie Stimson

INDIANAPOLIS WEWS-TV Engineering Manager Edward Miller is the new SBE president. He was elected by 1,000 SBE members who cast ballots for national office. Miller had been SBE vice president for two years. He beat Jim Bernier, of WTVH-TV, Syracuse, N.Y., for the slot. Results were tabulated on Aug. 28.

Troy Pennington, chief engineer at WZZK-AM-FM/WODL(FM) in Birmingham, Ala., was elected vice president. Pennington moved up from treasurer. The new treasurer is James "Andy" Butler, director of engineering for the Public Broadcasting Service.

Thomas Weber was elected secretary for the society. Weber is engineering maintenance supervisor at WISH-TV, Indianapolis.

SBE national officers serve one-year terms.

Nine candidates ran for six seats on the Board of Directors. Elected to serve two-year terms were the following:

- Richard Edwards, Tower America, Coral Gables, Fla.
- Dane Ericksen, Hammet & Edison,

San Francisco

- Ralph Hogan, Boise State University, Boise, Idaho

- Keith Kintner, KLCS-TV, Los Angeles

- Larry Wilkins, Colonial Broadcasting, Montgomery, Ala.

They will join five other board members who are in the middle of their two-year terms:

- Raymond Benedict, CBS, Washington
- Leonard Charles, Television Wisconsin, Madison, Wis.

- Robert Hess, WBZ-AM-TV and WODS(FM) in Boston

- Christopher Hudgins, Dallas RF Engineering, Dallas

- Jerry Nichols, KEZI-TV, Eugene, Ore.

Outgoing president Terrence Baun, Criterion Broadcast Services, Milwaukee, will continue to serve on the board as immediate past president. The new officers and board members were expected to be inducted and begin serving their terms on Sept. 26 during the SBE national meeting in Syracuse.

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SBE Asks FCC to Fine-Tune EAS

by Leslie Stimson

WASHINGTON The Society of Broadcast Engineers has asked the Federal Communications Commission to refine EAS rules, to help stations comply with the new Emergency Alert System. In a petition for rule making filed on Aug. 14, the SBE outlined 11 changes to fine-tune the rules.

The FCC is reviewing the request. Comments on the petition (FCC Report #2219) were due Sept. 22; reply comments are due Oct. 7. The full filing is available at the SBE website, www.sbe.org/eas_pet.html

Bigger window

Among the more notable changes, SBE asked for an extension of the relay window from the current 15 minutes to 60 minutes.

"Enlarging the test relay window should be promoted as an exchange for a broadcaster's promise to air real local alerts on an soon-as-possible basis," the SBE stated in its filing.

Leonard Charles, chairman of the SBE EAS Committee, said, "It's inconvenient for some stations to try and turn around a test within 15 minutes. By asking for a 60-minute window to relay the test, if the next break is in 20 minutes, they can wait and run it in the break, rather than disrupt programming. Stations with long-form formats, like classical and stations that run live sporting events, are especially concerned about the test turnaround time," Charles said.

The SBE also has suggested reducing the required modulation level of the EAS audio tones from 80 percent to 50 percent. "Broadcasters have had problems attaining the 80 percent modulation level required in the old EBS and continue to have those problems with the new EAS," the SBE stated.

Radio stations, of course, process their sound before transmitting their air signal. "When you feed a tone through processing," Charles said, "it doesn't come out at the right level. It will work at 50 percent modulation and be less intrusive. The main point is to have a parameter we

could reach."

SBE also has requested a protocol for text transmission. While the EAS system is well-designed to originate, relay and transmit voice messages, the SBE argues, it doesn't do as well with text information. The SBE pointed to three groups that appear to be concerned about the issue: the hearing impaired, emergency management officials and stations that want to air detailed disaster information in the next programming break or newscast, rather than right after they receive the information.

Codes

The current "disaster codes" are not detailed enough, according to the SBE, for emergencies like an evacuation due to flood or chemical release. "There is simply no way to specifically describe the boundaries of a two-block area with the existing" text codes, the SBE stated.

Suggestions from the industry boiled down to two ways to fix the problem: Include the text within the existing EAS message, or send the text right after the

message. The SBE prefers the second method.

Sending the text after the existing message won't "destroy the credibility" of receivers that are not capable of receiving text, said Charles.

The SBE invited comments from its members and others in the industry before submitting its proposal. "This petition is the result of months of intensive committee information gathering from SBE members and industry representatives, which began early in 1997," Charles wrote in the petition.

Jan. 1, 1997 was the deadline for stations to have EAS equipment installed and systems up and running. This first year is considered a "shake-out" period to make sure the systems are running properly.

During this so-called "shake out," while stations work the bugs out of their EAS systems, the FCC seems to be lenient on stations whose systems are not working yet. SBE attorney Christopher Imlay, of Booth, Freret & Imlay, said small-market stations he represents have had FCC field inspectors visit and check EAS equipment.

"They've been diligent with random inspections," said Imlay. Inspectors have issued notices of violation to stations without EAS equipment, he said, to give them a chance to explain their case.

A list of changes

Other EAS changes requested by SBE:

- *Institute quarterly testing*, instead of monthly required tests, "in an effort to keep the annoyance of testing EAS from detracting from its acceptance."

- *Make the two-tone attention signal optional*. The SBE recognizes that the two-tone attention signal is essential until old consumer EBS receivers, such as those near nuclear power plants, are replaced, but the SBE suggested that the FCC not *mandate* it. Stations without those receivers in their coverage could then remove that signal from their messages. The result: a shorter, more palatable message format.

- *Enforce EAN location code verification*. The SBE argues for location code verification, to reduce the chances of accidental activation. The SBE feels that the false EAN activation at stations in Ohio, Florida and Louisiana by FEMA in April would have been prevented. Another purpose of location code verification on all test and activations is to allow selective, regional alerting in the case of verified pending terrorist activity.

- *Create a cancellation code*. When EAS is used in areas affected by (severe) weather situations, the SBE argues, there is no appropriate cancellation code if stations want to cancel a warning code before the warning was due to end.

- *Local concerns*. EAS will be used mostly at the local level and therefore, the SBE said, the FCC should not treat that level as "secondary." It said the FCC should coax local participation through "careful additions to (EAS) rules and through incentives in the licensing and public file areas."

NEWS ANALYSIS

FCC Sinks New Jersey, Florida Pirates

by Lee Harris

NEW YORK Your standard pirate radio operator sets up shop in his bedroom and sticks an antenna on the roof or in a nearby tree.

An operation shut down in Florida recently fits that profile exactly. But a New Jersey pirate strayed far from the norm. Sal DeRogatis, alias Sal Anthony of Sayreville, N.J., rented office and studio space on a major highway, assembled an air staff, rented tower space from the local fire department, and set about selling advertising to local merchants for what was by all accounts a Class A FM commercial pirate.

Most operators without a license would want to keep a low profile. Not DeRogatis, a former doo-wop singer with 10 years of broadcasting experience. He even rented a billboard on U.S. Route 9 in Howell, N.J., asking drivers to tune into his 24-hour-a-day "Oldies 104.7." And tuning in wasn't much of a problem in about a 20-mile radius because DeRogatis was pumping out an estimated 1.3 kW, perhaps a modern-day record for a pirate not located on a boat offshore. For a little icing on the cake, DeRogatis even had an apparently illegal studio-transmitter link operating at 161.76 MHz.

Precedent-setting

DeRogatis said the recent Free Radio Berkeley micro-power broadcasting case, being reviewed in federal court, established his right to operate without a license.

Of course, some folks won't take "no license" for an answer. When DeRogatis wanted to rent tower space from the fire department, he showed them another station's license with the call-letters whited out, according to a source with the fire department.

It was fun while it lasted. On Sept. 4, federal marshals, accompanied by an FCC field engineer, pulled the plug on "Oldies 104.7." DeRogatis also sometimes called his station WZVU, call letters that once belonged to an oldies station in the central New Jersey market.

The action was prompted by complaints from Beth Colon, president and CEO of New Jersey Broadcasting Inc., owner of adult standards WRDR(FM) in Egg Harbor.

Her station at 104.9 MHz was being stepped on by the DeRogatis signal. Colon said she was amazed by

DeRogatis' audacity.

"I never heard of such a thing. I even sent one of my salespeople into his studios to get his rate card."

In shambles

DeRogatis' studios were in shambles in September. The marshals not only confiscated his transmitting equipment — ripping it out without bothering to disconnect the wires, according to one witness — they also took most of the audio equipment.

DeRogatis and his supporters said they would be back on the air soon, and that their right to broadcast without a license would be upheld by the courts.

In Florida, the FCC swooped down on a more typical pirate operation.

It took engineer Brian Marengo about seven hours to drive his detection van to Fort Walton Beach, from the FCC field office in Tampa. It took him considerably less time to locate the radio station he had come to shut down, 89.9 FM, "The Bomb."

Photos by Lee Harris



A pirate with an outdoor budget? Billboard on U.S. 9 in Howell, N.J.

"I had a pretty strong signal as soon as I got into town, and it only took me a few minutes to find them," Marengo said.

Marengo was acting on a complaint from a licensed broadcaster, WTJT(FM) in Baker, Fla., operating at 90.1 MHz. The chief engineer of WTJT found that the pirate was blocking its signal in most of the city.

Tell-tale cable

As he listened to the thumping beat of the pirate's urban contemporary format, Marengo's signal strength equipment directed him to an apartment building with a tell-tale sign: a cable running out a second-floor window leading to a

dipole antenna lodged in a pine tree. With local police officers at his side, Marengo knocked on the door of the apartment and presented himself to the occupant, James Pierrilus.

"I told him who I was and that we had determined that he was operating in violation of rules and regulations. He cooperated and lead us to his transmitter, which we then confiscated." Marengo wouldn't divulge specifics of the transmitter other

See PIRATE, page 18 ►

FCC Acts Against Low Powers

► PIRATE, continued from page 17
than to say that it operated at less than 100 W.

Because the transmitter was surrendered voluntarily, and Pierrilus is considered a first-time offender, the FCC opted not to take further enforcement action. Under the law, Pierrilus could have been threatened with a year in jail and an \$11,000 fine.

Deputy Rick Horde of the Okaloosa County Sheriff's Department is a former broadcaster who went along on the raid. He identified the confiscated transmitter as an Armstrong FMX-100 exciter, with a November 1996 date of manufacture. Horde said he did not know how Pierrilus



'Oldies 104.7' used a studio, right, next to a convenience store.

obtained the exciter.

A call to the now-quiet studios of "The Bomb" netted a young staffer who wished to remain anonymous. He said that the operators were applying for a commercial license, but he had a very limited understanding of the process.

"We got a lawyer to file the application, and we figure setting up the whole thing will cost about

\$13,000 to do it legal and all." What about finding an available frequency?

"We're going to let the FCC do that because we don't want none of those hearings. They cost like \$8,000, right?"

Pirate radio in Florida is "a fairly large problem," according to Marengo, who said his office is investigating about 20 pirates of various stripes, broadcasting programs ranging from rap music to religion to political talk.

However, Marengo was quick to say that enforcement actions are based strictly on technical criteria and never on programming content. All of these unlicensed operations, he said, are on FM and most have been brought to the commission's attention by licensed broadcasters suffering interference or unwilling to suffer unlicensed competition.

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Hicks, Muse To Fund Tower Firm

WEST PALM BEACH, Fla. Hicks, Muse, Tate & Furst tapped long-time radio executive and entrepreneur Carl Hirsch to head its newly launched tower business.

Hicks, Muse has formed a new company to acquire, build and manage transmission towers for radio and TV, as well as paging, cellular, personal communications services (PCS) and other existing and developing technologies.

Hicks, Muse joins Clear Channel Communications and a subsidiary of ARS in the tower business (see RW, Aug. 20).

Hicks, Muse committed \$100 million in capital from its Hicks, Muse, Tate & Furst Equity Fund III to launch the business. Hicks, Muse plans to own and operate a diversified portfolio of towers with an aggregate value of up to \$1 billion.

The venture, called OmniAmerica Wireless, L.P., is based in West Palm Beach, Fla. Hirsch heads the company as president/CEO and Anthony Ocepek is SVP/COO. Hirsch and Ocepek most recently built OmniAmerica Group, which was sold in several transactions totaling more than \$250 million. Hirsch and Ocepek are investors in the venture and each hold an ownership stake.

OmniAmerica will focus on towers and platforms serving the PCS, paging, SMR and emerging wireless technologies as well as broadcast towers serving FM stations and TV transmission towers. For TV, the groups services will include construction, ownership and conversion to digital broadcasting.

OmniAmerica aims to grow through acquisition, construction and alliances. It intends to create new revenue streams on acquired towers and by building towers on acquired sites and new sites. It has signed letters of intent to acquire five companies.

— Leslie Stinson

NEWS COMMENTARY

Mergers Affect Engineering Field

by Lynn Meadows

DALLAS Hicks, Muse, Tate and Furst Inc. just got bigger. In fact, the \$2.1 billion purchase of SFX Broadcasting Inc. makes Hicks, Muse the largest radio group according to a BIA Research estimate of gross revenues.

Hooray for Big Radio. Hooray for Wall Street. Hooray for Capitalism.

But what about the people whose careers balance on ever-shifting sand as their stations are repeatedly bought and sold? As consolidation continues and outside observers ask "Can these groups get any bigger?," engineers caught in the frenzy face ever-changing rules about their chain of command and priorities.

Musical chairs

Russell Taylor, staff engineer for WVCL(FM) in Norfolk, Va., tells an interesting story about consolidation. Landmark Communications sold WVCL (formerly WLTY(FM)) to Benchmark Communications in 1993. Last year, the station was bought by Susquehanna Radio Corp. A few months later it was bought by Heritage Media. Heritage was closing its corporate headquarters when **RW** called in September because it had been sold to News Corp., the company that owns the Fox Broadcasting Network.

News Corp. is holding WVCL(FM) in a trust until it can be sold to Sinclair Broadcasting. And the rumor is that Sinclair will spin off its holdings in Norfolk and Milwaukee.

"We're right in the middle of doing a station move," said Taylor. With the station being in a trust, he said, money was frozen and they had to work with the money they had. Susquehanna had employed one corporate engineer and then hired engineering managers for each market who oversaw the work of staff engineers. Taylor said Heritage Media had a corporate engineer, but did not use engineering managers.

Terrence M. Baun, president of Criterion Broadcast Services and outgoing president of the Society of Broadcast Engineers, said he is concerned by what is happening to engineers in some groups. In some cases, one full-time engineer has gone from running two or three stations to caring for four or five.

What groups are doing in these cases,

said Baun, is turning the engineers into "employed contract engineers" minus the freedom to choose clients and set prices. Many groups believe one engineer can take care of six stations, said Baun. Even with six reliable stations, he said, there are potentially still six points of failure.

It is one thing to be responsible for 10 stations on a contract basis, said Baun. But it is another matter to be responsible for five on a full-time basis. The expectations are much different.

"The thing that really is problematic is you can keep balls up in the air just so long," he said. An engineer can run six stations for a while, but when he burns out, there may not be anybody around to replace him, Baun explained.

"As you shrink the talent pool, you get people leaving the industry," he suggested. When a group needs engineers, they will not be able to find them working in a smaller market or anywhere. And the idea of being on call 24-hours a day for six stations isn't likely to appeal to college kids studying engineering.

Baun, who has spoken in the past about engineers contributing to the bottom line, is no stranger to the importance of economics and economies in broadcasting. He is quick to say he does not paint all groups with the same brush. But, he said, there are groups that have taken over stations and made the engineer's job tougher with longer hours and less money for the work.

Taylor of WVCL(FM), Norfolk, said he thinks one engineer for every two radio stations is the ideal situation. With three or four, he said, it gets to be too hard to keep up with the computers, the equipment and the paperwork.

Detailed, focused

Tom McGinley is the chief engineer of CBS Washington stations WPGC-AM-FM and WARW(FM). He has a full-time assistant and the station has a full-time vehicle manager who does most of the remotes.

"You've really got to stay focused and organized," said McGinley. He said it is important to have a priorities list and stick to it. As for how many stations one engineer can handle, McGinley said, "It depends entirely on how the stations operate."

Before the CBS buyout, WPGC was

an Infinity station. There was no real bureaucracy when he worked for Infinity, said McGinley.

If there was a project, it was discussed at the local level and submitted to the general manager. If he or she approved, the idea was sent to corporate headquarters in New York for approval. Whether the project was funded, said McGinley, depended on the amount of pressure for capital company wide and how successful your station was.

WPGC General Manager Ben Hill is now kind of a "super manager" who is responsible for overseeing 13 other CBS radio stations. When he gets capital expenditure requests from engineers at other stations, he often asks McGinley to look at them.

Terrence Baun said he is concerned by what is happening to engineers in some groups.

"There are fewer and fewer people doing more and more work," McGinley said. "The major market mega groups are trying to draw from the resources that they have around." Groups are getting their engineers involved across stations.

"There are no new good people coming into the industry," McGinley said. Groups figure the older engineers have too much radio in their blood so they will stick with it, he said, but "there's a dwindling number of those people."

Specializing

The new guys will be specialists, he said, focusing on one area, like sound engineering or computers. Today, the demands are so much broader: "A guy has got to be a generalist at everything and be good at all of it."

Bob Hawkins, chief engineer of Emmis Broadcasting stations WENS(FM) and WNAP(FM) in Indianapolis, is an anomaly in these chaotic times. Hawkins was the first

employee hired by Emmis 16 years ago. He has a 20-hour per week engineering assistant who helps him. The Emmis-owned AM in Indianapolis employs another chief engineer who recently got approval to hire a full-time assistant.

Emmis employed a corporate engineer until five or six years ago, said Hawkins. Now, he said, once each year, his stations submit a list of their capital expense requests. About three weeks later, they get a list back of what is approved and what is not.

As for the future of SFX, Steve Hicks, who will be president and CEO of the Hicks, Muse/Capstar offspring that is buying SFX, began his career in radio at age 15 as a first-class engineer and part-time disc jockey.

Capstar is in the process of connecting its stations with an intranet starting with GulfStar Communications, a group it purchased in July. In an interview with **RW** last month, Hicks said the goal was to move programming between markets.

Engineering is a real key to how that is going to work," he said. "Digital automation technology combined with computers and wide area networks is the whole basis of our strategy."

With the addition of SFX Broadcasting, Hicks, Muse, Tate & Furst will have 413 stations to its name according to BIA. That total includes Capstar, SFX and Chancellor Media.

One East Coast SFX engineer who preferred not to be named said engineers in his group have "pretty much run our operations" except when it comes to capital expenditures. **RW** asked how he would run an operation with 200 or more radio stations like the one he'll be working for before the third quarter of next year.

"I would probably have it regionalized because of the fact that it's awfully difficult for one person to cover that many stations. It would be like the president trying to run all 50 states. That's why we have governors," he said.

In fact, that is exactly what Hicks said Capstar is doing. Frank McCoy, originally hired by GulfStar before it was bought by Capstar Broadcasting, was recently promoted to director of engineering for the whole group.

McCoy will oversee regional engineers for the five divisions: GulfStar, Atlantic Star, Central Star, Pacific Star and Southern Star. Chief engineers at stations will have to make their requests to regional engineering directors who will report to McCoy.

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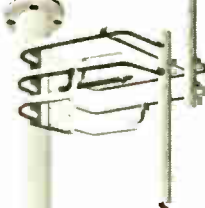


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ON THE JOB

What to Bring, What to Ask For

Sue Jones

This is the third in a four-part series to help you prepare for your next job interview. The previous part appeared Sept. 3.

In the first part of this series, we dealt with the mechanics of the interviewing process. The second part considered typical interviewing questions. Today we will cover what you should bring to the interview, and compensation.

Sometimes a potential employer will ask you to fill out an application form. You may think this is redundant; most of the information requested is on your résumé. There are many reasons you may be asked to complete an application form. The station may like to have each candidate complete the same information for ease of comparison.

The application form may request your voluntary disclosure of ethnic background. Major-market stations and large ownership groups must comply with federal equal opportunity statutes. It is always a good idea to comply with the request; the information assists the station in its applicant record-keeping.



Some employers ask you to complete applications so they can obtain the information they consider important about your background whether or not you have included it on your résumé. For example, you may be applying for a jock position but have experience with traffic management that you did not include in your résumé. Multiple skills could put you ahead of other candidates.

Some employers use application forms to see how complete and thorough you are and how well you follow written directions. If legible writing is important, the written application will display your penmanship.

If you are given an application form to complete, do so with a smile. There probably is a good reason for it.

One thing to keep in mind before you go to the interview: The best person for the job is not necessarily the person who is hired. The person hired is most often the one who is best prepared.

Step 1: Be prepared

Come to the interview with samples of your work. If you are an engineer, have photos of studios or facilities you have built, work plans and budgets. Bone up on the latest trends in technology, especially if you are trying to move to a larger market. Stations want engineers who are current with technology and have demonstrated keeping their skill level

up. Think through and be prepared to discuss some examples of how you handled tough technical or interpersonal situations.

If you are the controller or business manager, have current examples of significant cost savings, budget development and adherence. If you are in sales, have copies of creative proposals you have developed for advertisers. Bring sample work that demonstrates how you sold a potential advertiser the advantages of radio over another medium. Also bring a sample of how you assisted a client in improving his business through the advertising on your station. If you have

copies of success letters from clients, bring those.

Managers should bring samples of leadership and management skills that would be evident in memorandums or annual plans and budgets. A manager should be prepared to describe how she handled difficult business and personnel problems.

Bring the names of three professional references. These should be word-processed and ready to hand to the interviewer. If possible, use the names of former supervisors. Include the person's title, business address, telephone and fax number. Adding your relationship (such

as former supervisor or colleague) is helpful to the person who will be checking your references. This type of detail demonstrates your understanding of the hiring process.

Step 2: The money issue

Leave the discussion about compensation for the end of the interview. Remember, you first must convince the interviewer that you are the best-qualified candidate. When you feel you have done your best at presenting your credentials, move on to compensation. Many positions in radio offer other types of compensation, bonuses and perks in addition to salary. Consider the entire package.

A typical question you might hear: "What are your salary requirements?"

See JOB, page 23 ▶



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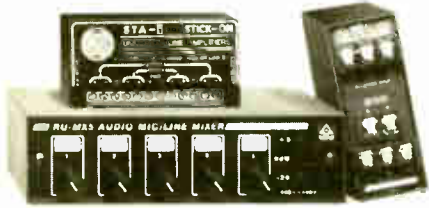
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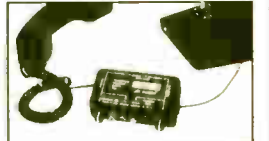
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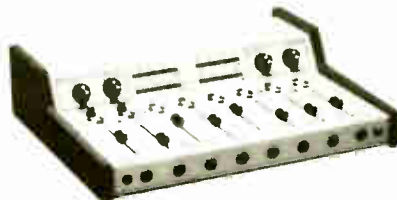
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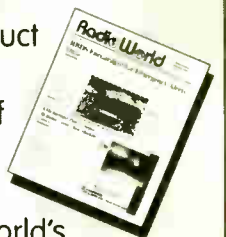
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Who was that?

As the wireless industry moved into the early teens, enthusiasts tuned in to hear voices from locations close and distant. They heard scientists, hobbyists, students, even assistants set in front of microphones to practice counting from one to four, hoping the power tubes wouldn't fail.

As the transmitters became more reliable, content improved. From San Jose, listeners could hear Charles "Doc" Herrold's "Little Ham Program" every Wednesday evening at 9 o'clock. In Detroit, Frank Edwards at 8MK (later WWJ) played music and called out "How do you get it?" Similar "programs" were run by Frank Conrad in Pittsburgh, Earle Terry in Madison, Eunice Randall and Bob Emery in Boston, among many others.

Of course, even the strongest voice would get tired after a while. At first, in those days without tapes, CDs or satellite networks, the broadcasts would conclude as soon as the announcer got tired or a tube died. Soon, the pioneers devised methods of aligning a phonograph horn to the microphone so they could play records. As the popularity of radio grew, singers and orchestras would fill much of the broadcast day. Arrangements were made with newspapers to have the day's news and sports scores read out.

But it was the announcer's voice that

tyed the program elements together.

Broadcasting was propelled initially by voices whose owners essentially were anonymous. Few of the announcers used their names, and with most of the performers making brief, irregular appearances, the listening public didn't get to know many of them well.



Edythe Meserand is considered the first network newswoman. She died this summer.

As radio stations began to attract listeners, management at RCA worried that their announcers could become celebrities like some newspaper folks, presenting potential problems in setting salaries, as well as in controlling them as employees. RCA set up a policy for the announcers to use a set of initials to identify themselves.

For example, Tommy Cowan adopted the practice at WJZ, identifying himself as ACN, standing for Announcer Cowan Newark. Milton Cross became AJN, Bertha Brainard was ABN and Norman Brokenshire was AON.

Nevertheless, the announcers' voices became a constant in the minds of the listeners. The more familiar the voice became, the more the public wanted to know about the person behind the initials.

At first, RCA management stood firm, refusing to allow announcers to be identified. When listeners wrote in begging for information about announcers, WJZ, and other stations such as WHAS, would send out a short letter stating it was "against the rules to divulge the name of our announcer." That's a far cry from personality-driven radio today.

A different policy

Across the street, so to speak, at AT&T's WEAF, the policy was different. Graham McNamee used his own name on the air, and rapidly developed a following. WEAF realized the value of having the listener identify with the announcers as friends.

They responded. McNamee received some 1,700 pieces of mail in response to his distinctive delivery of his first World Series baseball game in 1923. He rapidly became the favorite of many listeners. The 1925 Series brought in 50,000 pieces of mail.

RCA tried to hold the line. Station manager Charles Popenoe feared the fame his staff was gaining as they appeared at remote broadcasts. Deciding fan mail was station property, Popenoe instructed the mailroom to confiscate messages to Norman Brokenshire. (Brokenshire retaliated by renting a post office box and filing a change-of-address form.)

By 1925 there was no holding it back. Stations took the good with the bad, and while they now had some "stars" to attract listeners, they also had to contend with the potential fees the announcers could earn (as much as 22 weeks' salary *in one night*), allowing them a measure of independence from the program directors' edicts.

Stations made the best of it, now promoting the very announcers they had tried to hide. The country soon knew names like WSB's "Little Colonel", Lambdin Kay; the Solemn Old Judge of WLS, George Hay;

WBAP's Hired Hand, Harold Hough; and WDAF's Merry Old Chief of the Nighthawks, Leo Fitzpatrick. All developed their own "signature" phrases.

Radio Digest even ran a nationwide competition to crown "The World's Most Popular Announcer." Of the 133 names submitted, it was WEAF's McNamee who took the cup. His signatures, "Good evening, ladies and gentlemen of the radio audience" and "Good night, all," so identified McNamee that the post office would receive thousands of envelopes with one of those phrases and "New York" on them. They were promptly delivered to McNamee.

With the rise of network radio, news announcers were added, to give each station its own sound. At NBC, the late Edythe Meserand was among those hired to read the news. According to the Women's Press Club, while still a teenager Meserand became the first network newswoman. (Later she would found the American Women in Radio and Television. Meserand died in June at the age of 88.)

Using the listeners' imaginations as their helper, announcers used their voices to become friends with the public. In fact, listeners often believed their favorite announcer was talking directly to them. As the industry grew, and networks became more powerful, many announcers could move large numbers of people to purchase products. This led to a new breed of announcers who were, essentially, salespeople trading on their fame.

One of the first of these announcer salesmen to take advantage was Bernarr Macfadden. Macfadden built a morning calisthenics broadcast into an effective sales tool for his Physical Culture Magazine and his tabloid paper, the Daily Graphic. Was this perhaps one of the first infomercials?

Soon similar programs popped up, run by health faddists, doctors and even the occasional messiah, including the infamous Dr. John Romulus Brinkley. But that, as they say, is another story.

■ ■ ■

If you have old books, brochures or other materials that would help illuminate the pioneer stations and the people who built them, please consider sharing them with us. Send information to Pioneer Profiles, 2033 S. Augusta Place, Tucson, AZ 85710.

The Job Interview

► JOB, continued from page 21

The best response is the question: "Does this position have a salary range?" The interviewer may reveal the range or offer a potential starting salary. You should have an acceptable salary range in mind. Certainly, you should have the minimum amount you are prepared to take for the position. However, you should not reveal your minimum acceptable salary. It is almost impossible to negotiate upward from a minimum acceptable salary. Once the interviewer knows that you will accept that amount, she has no reason to offer more. It is far easier to come down because of other benefits offered than it is to negotiate up from the minimum acceptable salary.

Also consider the benefits to your career development. Will the job allow you to move to a larger market? Will it help you learn new skills? These may be valuable points to you. You might be willing to take a position that offers other advantages. However, be sure the salary will be adequate for your cost of living. It should be a monetary increase over

your current salary.

If you introduce the subject of salary, the question should be, "What is the compensation package for this position?" Most stations have some paid benefits such as medical coverage, bonuses and other perks. Factor in the value of these benefits. The salary may be lower than you wanted, but if the station offers fully paid medical coverage, and you now have none or partial coverage, the net result will be more money in your pocket.

Step 3: Thanks a lot

Always send a letter to the interviewer thanking him for taking the time to talk with you and for considering your qualifications. Do so even if you think you blew the interview and do not have a chance of getting the job. If you were asked to send another sample of your work, include it in the letter. Express interest in the job and ask for it. A letter is a business courtesy that also keeps your name in front of the hiring person.

In the final part of this article, we will discuss offer letters and explore how interviews go wrong.

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BE It's Back.

SFX, Cox Rethink Studio Design

Bob Rusk

Two major radio group owners, Cox Enterprises and SFX Broadcasting, are in the midst of multi-million dollar construction projects. The jobs provide insight into the process of planning radio facilities in this post-Telecom Act era.

In seven cities where its stations are in separate buildings, SFX is putting them all under one roof. The planned takeover of SFX by Capstar Broadcasting will have no impact on the projects, according to SFX Director of Engineering Stephen McNamara.

SFX has construction projects under way at stations in Houston; Pittsburgh; Greenville, S.C.; Hartford, Conn.; Raleigh, N.C.; Richmond, Va. and Tucson, Ariz. In each of these cities, SFX is putting its stations into a single building. It will cost about \$1.5 million per project for equipment, furniture and moving expenses, according to McNamara. SFX is leasing space in some cities, while it is renovating space or building new facilities in others. All of the projects are scheduled to be completed by late summer 1998.

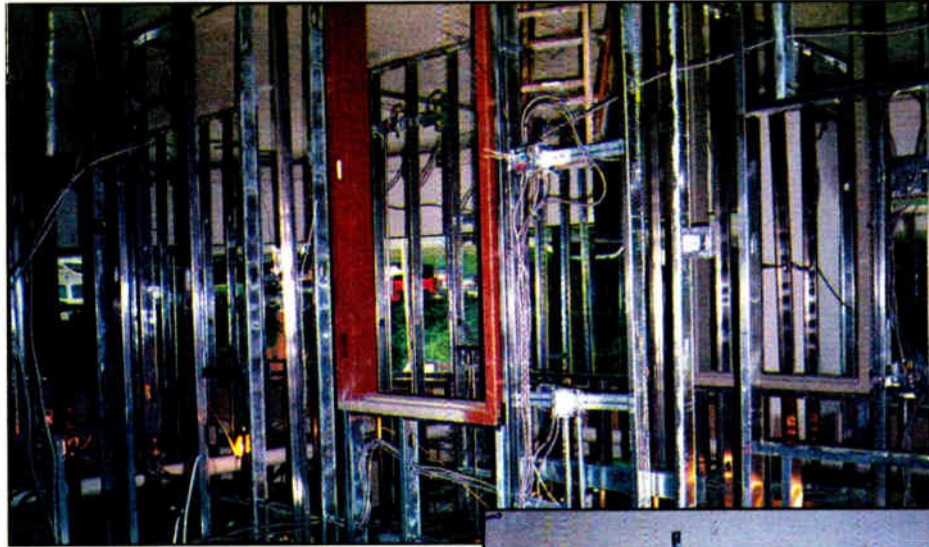
At SFX Broadcasting, McNamara is redesigning dramatically the look and function of the on-air studios at many of the company's stations. In some cases, the studio will no longer play much of a role. Instead, SFX will have several stations in one building, with all of the technical operations in a single rack room.

"We're building rooms that will house between 10 and 16 racks," he said. "Virtually all of the equipment for everybody will be in the rack room. If you ask where the radio station is, the answer will be 'in the rack room.' The studios will become remote control points.

"There will hardly be any equipment left in the studios. There will be a digital console, a computer terminal that will run a hard drive system, and a microphone. No one will even have to be in the control room. We'll be able to run most of our

facilities on a laptop computer in the field. You'll be able to do a show anywhere."

McNamara is even moving the CD players into the rack room, to run off the hard drive.



Not much to look at now, these studios will soon house SFX stations WHCN, WKSS, WMRO and WXYZ in Hartford.

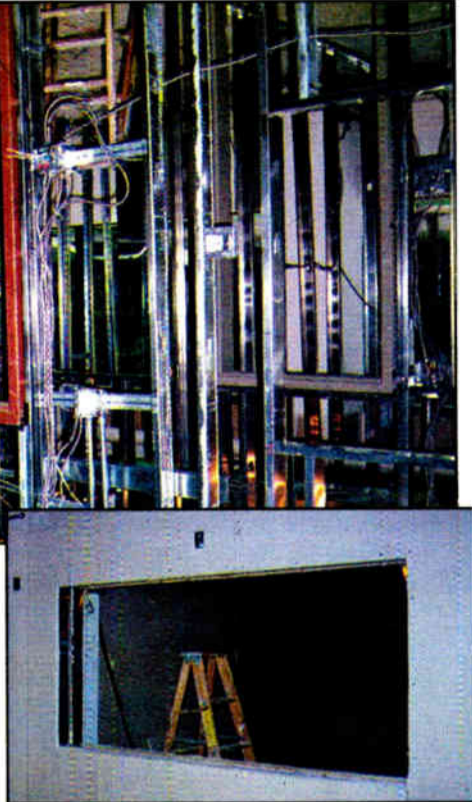
"If you have everything in the rack room, you don't have to run any wire. All of the wiring is between the racks; then you run a couple of control cables to the studio," he said.

"We didn't have a choice," McNamara said of the rack room concept. "With consolidation, we had to guess the best way to do it, and this is what we came up with."

At Cox Enterprises in Atlanta, a \$27.5 million, 195,000-square-foot facility is being built to house WSB-TV and radio

stations WSB(AM), WSB-FM, WCNN(AM) and WJZF(FM).

The Cox building is going up adjacent to the company's existing facility, built in 1954. The radio stations will occupy



60,000 square feet on the first floor of the three-story building.

Three million dollars is being spent on equipment and furniture alone to outfit the radio side, according to John Talbert, director of technical operations, Cox Radio Atlanta. The heart of the operation will be a fully loaded SAS 64000 Auto

Routing Switcher. A Computer Concepts Maestro System will provide in-house audio. Other significant equipment choices include the 360 Systems Shortcut and Instant Replay.

"The studio design, consoles, cabinetry and furniture are all (from) Pacific Research and Engineering," Talbert said. "They are a major player in the project. They are designing and fabricating our central rack room and are also wiring and integrating our SAS switcher."

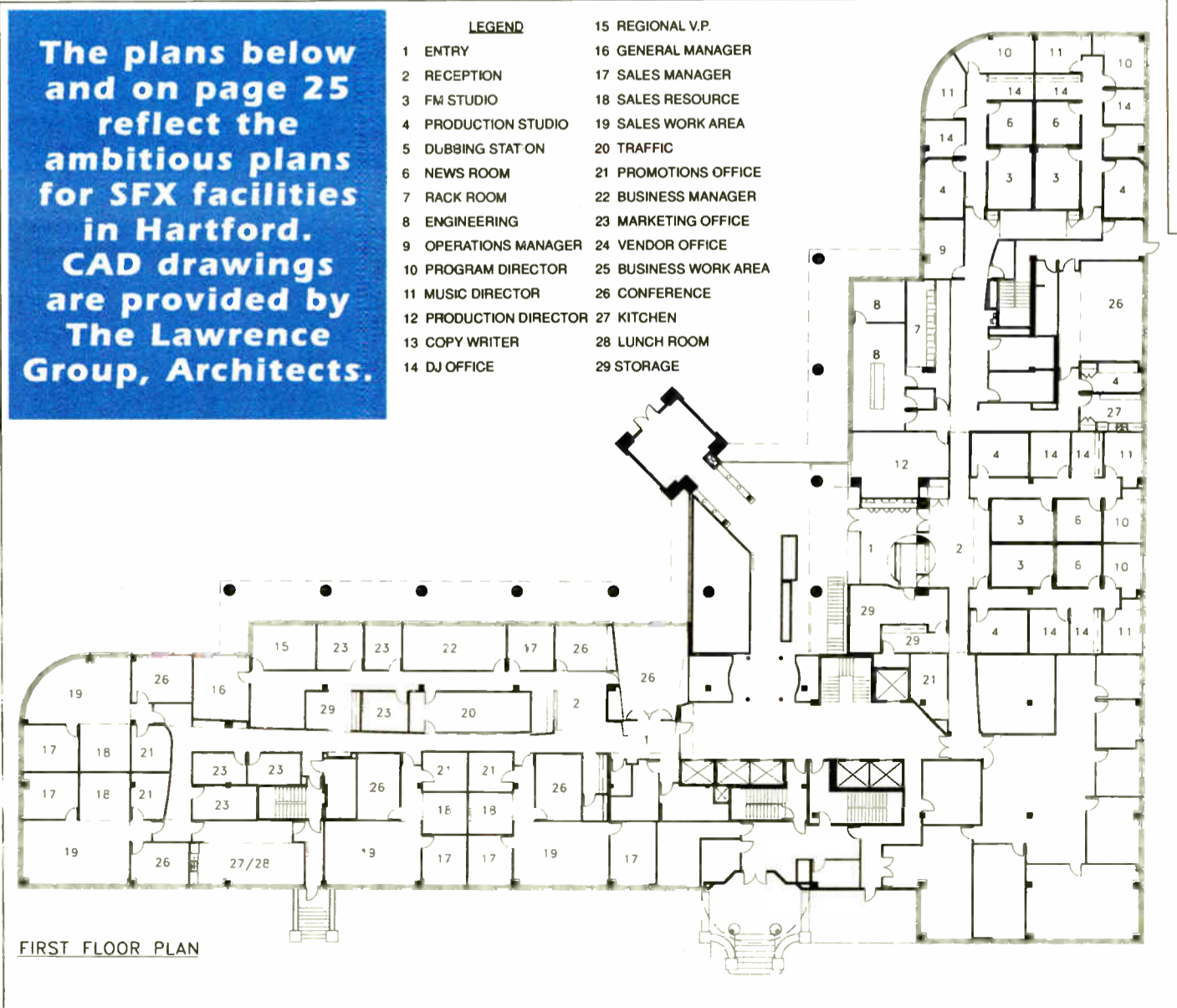
Big wood

The newsroom for the radio stations will be equipped with the "largest piece of furniture we've ever designed and built," said PR&E Account Executive Sandy Berenics. It will measure 30 feet by 20 feet, with room for six individual news work areas.

"The newsroom is going to be (designed with) digital audio," Talbert said. "We haven't selected a system yet, but our requirements are that it will manage audio in a digital domain. It will be an integrated text and audio management system."

Even though just two of the stations will program talk when they move into the new facility, all of the control rooms will be equipped to accommodate that format. "That is the most equipment-intensive (format) you can have," Talbert said. "If you can do talk, you can easily do news, sports or music."

The existing Cox building, which will be demolished, originally housed two radio stations and WSB-TV. Through the years the radio side has been squeezed even more as the TV station has taken over additional space. The new facility is scheduled to be completed in late spring 1998.



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Six Stations and a Sledgehammer

Lauren Rooney

What causes the biggest headache when you combine six stations under one roof? "Not to quip, but everything," quipped Boyd Arnold, general manager for Dame Media.

The chain, based in Harrisburg, Pa., recently purchased three stations in the market: oldies WWKL(FM), country WRBT(FM) and satellite talk WCMB(AM). All three are being moved into the corporate building about a mile away, joining adult contemporary WRVV(FM), news/talk WHP(AM) and satellite adult standards WKBO(AM), already on the air.

The task means walls coming down, walls going up and nerves shattering.

"You're dealing with people and you're upsetting their comfort level," said Arnold. "The human condition is such that they don't like change to begin with."

The 'Napkin Plan'

To minimize the upsetting of everybody's comfort level, Arnold said it is important to have a plan.

The man with the plan turned out to be Paul Thurst, director of engineering for Dame Media. He said it began with a heart-to-heart talk with Bob Gray, chief engineer of the trio of stations Dame had just purchased.

"We sat down and went over a couple of ideas in the corner of a bar," said Thurst. "We drew a few ideas out on napkins."

Thurst then talked with department heads to see what would make their lives better once the construction was done. Eventually the "napkin plan" was finetuned to what can best be described as a donut design: the air studios located along the outer walls of the building, with the inner "jelly filling" of newsroom, production studio and offices.

With blueprints firmed up, it was time to get ready for the contractors. Because

the center of the building was the first to be gutted, anybody calling that area home had to get out quickly. Much like time, demolition waits for no one.

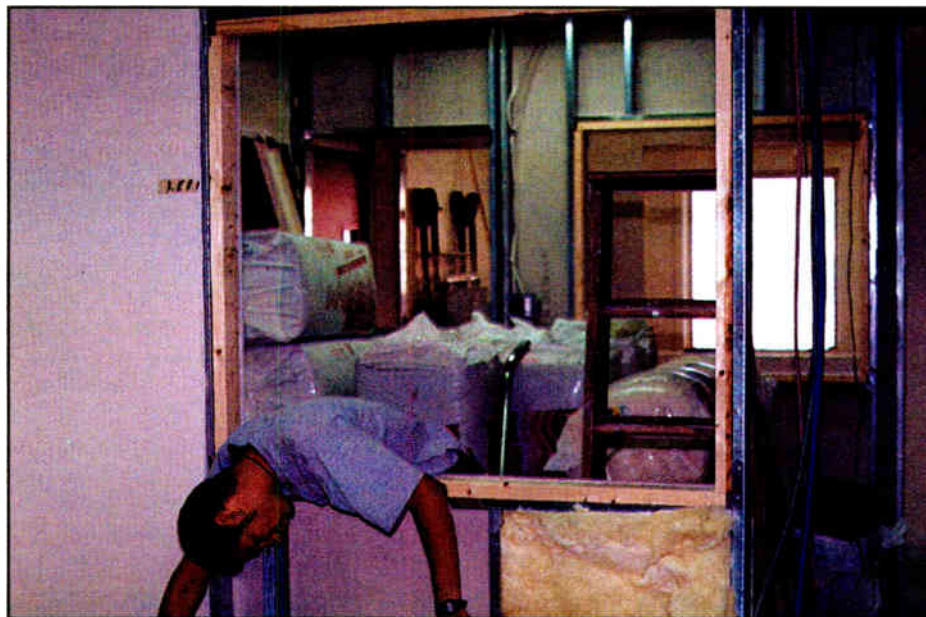
"I got beeped while at the Dame Media station in Albany, N.Y.," said Thurst. "I thought I had more time to move the newsroom, but I was told the four workstations had to be relocated by Friday, and it was Wednesday when I got the call."

approached the last workstation in the room and asked, "Can I cut the power to you now?"

Boom!

On Monday morning, Aug. 11, the first hammer came crashing through a wall and the reality of the demolition hit.

"My whole room was shaking," recalled a WRVV staffer, "but I thought, 'This will make our lives better.'"



The size of the job at hand may be getting to engineer Tom Priesite.

It took Thurst and a few assisting engineers two days to scatter computers, cart machines, printers and phones to safe havens. "The hardest part was finding a place to put everything," he said.

Two workstations were put into storage, another was put in the news on-air booth. The last shares its quarters with an engineering room. While engineers set up makeshift work areas in quick fashion, it was not entirely quick enough.

Friday Aug. 8, in the thick of morning drive, while anchors were frantically writing newscasts, a contractor with wirecutters and flashlight in hand

Another employee lamented, "This hammering is driving me crazy," then added, "This will make our lives better."

Thus was born the battle cry, "This will make our lives better," echoing among the din of drills and power saws. But in reality, it would be a while before things get better.

While some hoped the work would be completed by Sept. 1, Thurst said, "That was never a realistic goal. It takes time to build, paint and carpet. My plan has always been to be out of the other building by November 1."

As RW goes to press, construction is right on Thurst's schedule. He said con-

struction should be done by the end of September. After that, he and his crew were to start working on the studios.

"We are pre-wiring as much as possible while the walls are open," said Thurst. He is hoping to move WWKL, WRBT and WCMB into their new digs during the week of Oct. 15, under the cover of darkness. "We will move them over a weekend night because it will require some off-air time," he said.

Thurst will have an army of helpers. "We are going to marshal all engineering forces in the company for about a week. There will be eight people helping me," he said.

Once the studios are up and running, Thurst knows his work won't be done; he is ready for the inevitable hum or buzz that comes with a new studio. "But we'll take care of those problems one at a time," he said.

Keeping the Collins

The remodeling project is costing Dame Media in the six figures.

The original plan was to have some new consoles for WRVV and WHP. The current Collins mixers are more than 20 years old and Thurst has had his eye on certain Wheatstone products. Unfortunately, some money was lost from the budget for extra work that needed to be done.

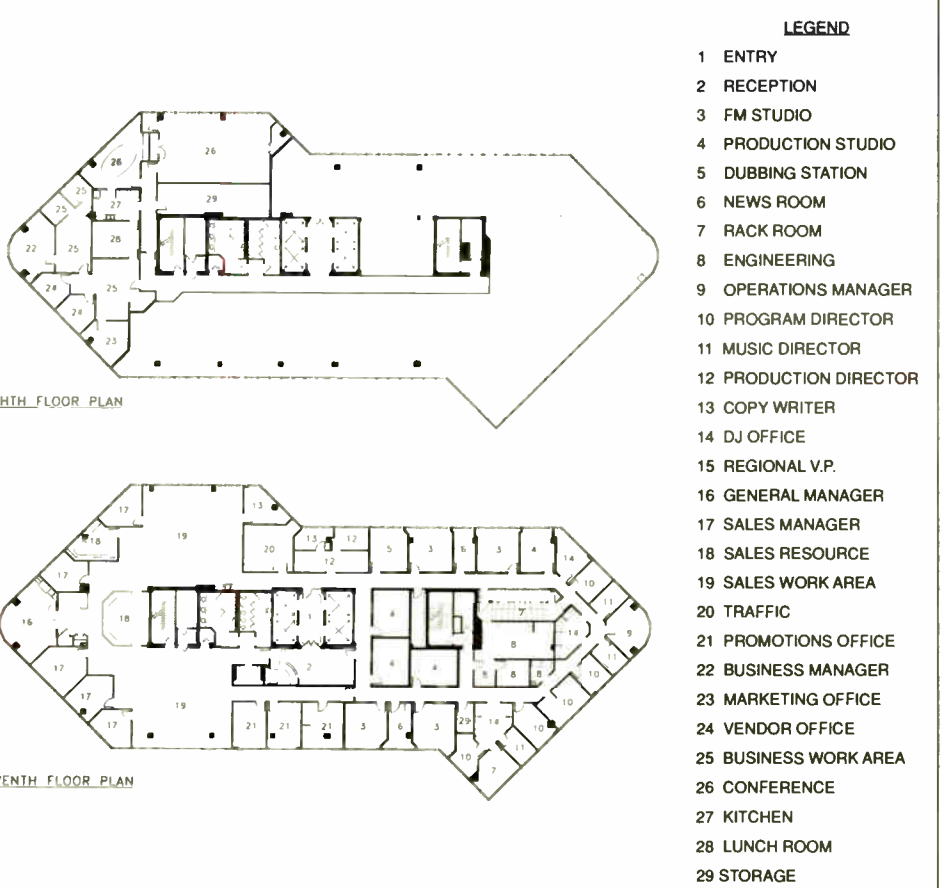
Thurst said, "They added a few windows to a studio, soundproofing work in the ceilings needed to be changed and a bathroom needed work. So now only WWKL will get a new PR&E board, only because their current equipment won't fit into their new studio. The other studios will get some new furniture."

While it is an enormous task combining six stations under one roof, Thurst is finding the work exciting.

"It's a challenge and I enjoy challenges, otherwise I wouldn't work here. This is one of those things that hasn't been done before in this market, and I want to do it right so when my colleagues walk through, they are impressed."

■ ■ ■

Lauren Rooney is a newscaster for WHP(AM), Harrisburg, Pa., and a freelance writer for RW.



ZERO. ZILCH.

BE The Engineer's Dream Machine.

ABG Show Has Local Flavor

Lauren Rooney

National trade shows get plenty of attention, but not everyone can attend them. A crop of regional shows has grown to fill the need of engineers and other radio managers who can't make the nationals or who prefer a quieter environment.

Audio Broadcast Group's fourth annual Equipment Expo is set for Oct. 14 in Raleigh, N.C. As in the past, ABG Southeastern Sales Manager Cindy Edwards is organizing it. She said it's a chance for engineers in smaller markets to get a look at the industry's latest toys.

No charge

"The national shows are far away and expensive to attend. As a result, engineers from smaller markets are missing out on a chance to pick up on new technology," she said.

Regional shows like this one are on a different scale than the nationals. The ABG event will be bigger than last year's, but still easy to take in over the course of one day. Edwards expects 27 exhibitors instead of the usual 10, plus a few equipment seminars.

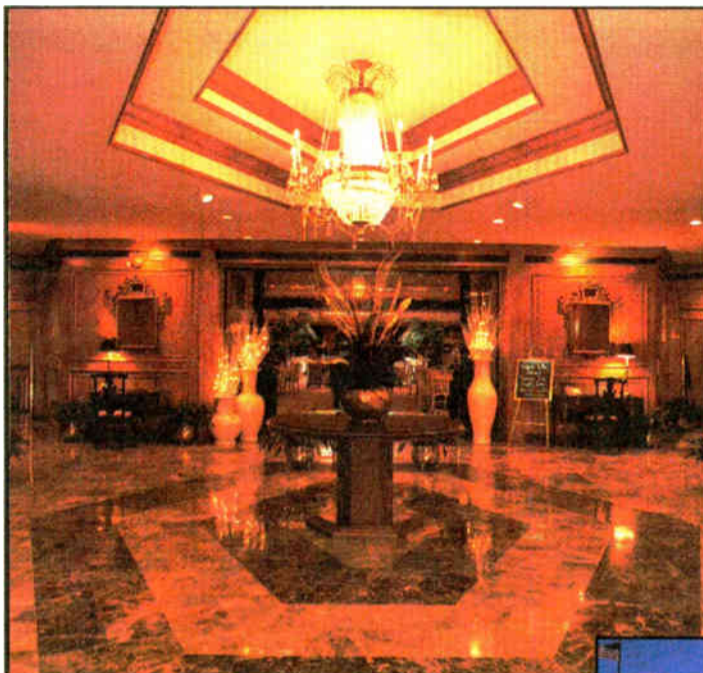
"People we talked with after last year's show said they'd like more," Edwards said. As in the past, she will make sure her visitors are well-fed: free breakfast and free buffets for lunch and dinner.

"We'll have a buffet so the engineers can get a plate of food and walk around the ballroom to visit

exhibitors."

Another benefit of the ABG show is the cost of admission, which is zero.

One of those packing up his equipment and heading to Raleigh is Art Constantine of MUSICAM USA. Constantine, like others, expected to take part in Raleigh, and at The NAB Radio Show in New Orleans last month, where he planned to show off



The ABG expo will be held at the Radisson Governors Inn.

some of MUSICAM's newest codecs and other products for radio users.

Constantine said it's important for him to redisplay his goods at regional shows.

"We realize a lot of engineers can't get to the big shows. If we can bring

our traveling act to them and help them understand what's new and exciting in the world, that helps everyone."

Even for engineers who made it to New Orleans or Las Vegas, Constantine thinks the ABG Equipment Expo is worth visiting.

"My own personal experience has been because of the number of people attending the NAB, you have about four seconds with each person. At regional shows you can sit down and have coffee and get deeply into the nuts and bolts of the products," he said.

Dan Rau, director of broadcast sales for Intraplex, also sees the appeal of a regional show.

"You may not get the scope of the NAB, but you get a taste of it." He said a regional show is a must if you miss the national ones. "You won't get your hands on new equipment that might make your life and the station's life easier."

Intraplex makes T-1 multiplexers, and Rau will



show a studio-to-transmitter link and various program audio voice and data options.

ABG will offer seminars about technology and where it's going. Technology is the main thrust of the talks.

And where is it going?

"Digital, digital, digital," said Edwards. Auditronics will present its digital audio console. "They'll give a talk on digital consoles and why they're needed in the studio," said Edwards. WRAL-TV will demonstrate HDTV, and WRAL Vice President of Engineering Tom Beauchamp will bring some HDTV receivers. The show has a heavy radio flavor, though.

Another area where Edwards sees change is automation.

Regional feel

"Automation is not giving us the warmth we're used to on the air," said Edwards. "It will change, we'll go back to live assist instead of fully automated stations." Enco Systems, for example, will demonstrate ways to make automation more effective in the post-consolidation era.

In addition to learning about new products, engineers can have specific problems addressed, production directors can learn how to use the latest boards, and managers can learn about new ways to manage their facilities.

It takes Edwards about a year to put the expo together. About a week before the show, she said, she gets a few butterflies in her stomach.

"I worry. What if nobody shows up?"

Edwards Sounds the Sales Drum for ABG

Cindy Edwards has been organizing the ABG Equipment Expo since ABG started doing the show four years ago. In fact, it was her idea to have a regional show after talking with customers who complained they couldn't get away for a four-day national event, but said they could make time for a one-day regional show.

Edwards has been in the broadcasting business for about 20 years, the first half in advertising, the rest in sales. "I like selling better," she said with enthusiasm. "I like it because clients depend on me so much, I take care of them. It's very fulfilling."

Edwards will tell you she's not a technical person, although many clients in her territory might dispute that assessment.

"I can tell my clients what equipment they need to get the job done, but if they ask how to hook it up, I don't know."

She began selling technology when a former boss pushed her in that direction. "When I was in advertising at Broadcast Electronics, I had a wonderful boss who would take me to the trade shows and let me watch



Cindy Edwards

the sales people in action. I wanted to sell once I got a taste of it. And I love it!"

In some ways, radio technology remains a man's world. Edwards said there are few females selling. But, she said, the men in the industry have accepted her. "They consider me one of the guys."

— Lauren Rooney



What: ABG Equipment Expo

Where: Radisson Governor's Inn, Raleigh, N.C.

When: Oct. 14, 9 a.m. to 7 p.m.

How Much: Free admission

To register: Call Cindy Edwards at Audio Broadcast Group at (800) 369-7623.

Of course, that never happens." In fact, Edwards said the event grows each year. She's expecting 300, most of whom will come from North Carolina, South Carolina and Virginia.

"But some come down from Washington, D.C. A group of engineers will get in a van and drive down."

And while the Raleigh show will be a good place to see what's hot, Edwards said it's also a good place for engineers to have a good time.

"You see competing station engineers getting together and talking about the business."

ABG Expo Exhibitors

(Confirmed as of Sept. 8)

360 Systems
Audioarts
Auditronics

Broadcast Electronics
Canon
Comrex

CRL
CRM (representing Sony and Shure)
Crown

Cutting Edge
Dielectric
Enco Systems

Fidelipac
Gentner
Gepco

Innovative Audio (representing Tascam and Telux)
Intraplex

Orban
OEI
Roland

Scott Studios
Symetrix
Telos

WRAL-TV (HDTV)
Yamaha

Why Digital? A Discussion

Jim Somich

There is a good reason to convert analog systems to digital: cost. In almost every instance, a digital system can be mass-produced for less money than an equivalent analog system. With the rapidly falling prices of digital signal processors, this is even true in low-cost consumer items. A good example is the modern television set. Most have no knobs at all. All adjustments are in software with displays on the screen. This costs much less than providing controls for all the functions.

Digital music: squeaky clean

The introduction of the compact disc in 1981 began an irreversible trend toward digital music systems. A digital CD player can be built for a fraction of the cost of an analog playback system with the same level of performance.

In an analog system, information is conveyed by the infinite variation of some continuous parameter, such as the voltage on a wire or the strength of flux. When it comes to recording, the distance along the medium is a further analog of time. However much the signal is magnified, more and more detail will be revealed until a point is reached where the actual value is uncertain because of noise. A parameter can only be a true analog of the original if the conversion process is linear, otherwise harmonic distortion is introduced. If the speed of the medium is not constant, there will not be a true analog of time and the result is

A bit is still a bit, whatever its shape.

known as timebase error, i.e., wow, flutter, phase errors and so forth.

It is a characteristic of an analog system that the degradation at the output is the sum of all the degradation introduced in each stage through which the signal is passed. This sets a limit to the number of stages a signal can pass through before it becomes too impaired to be worth listening to. Down at signal level, all impairments can be reduced to the addition of some unwanted signal such as noise or distortion, and timing instability. In an analog system, such effects can never be separated from the original signal; in the digital domain they can be eliminated.

Although it is possible to convey signals that have an arbitrary number of states, in most digital audio systems the information is in binary form. The signals sent have only two states, and change at predetermined times according to a stable clock. If the binary signal is degraded by noise, this will be rejected at the receiver, as the signal is judged solely by whether it is above or below some threshold.

Digital works, or it doesn't

However, the signal will be conveyed with finite bandwidth, as this will restrict the rate at which the voltage changes. Superimposed noise can move the point at which the receiver judges that there has been a change of state. Time instability has this effect too. This instability also is rejected because, on receipt, the

signal is relocked by a stable clock, and all changes in the system will take place at the edges of that clock. However many stages a binary signal passes through, it still comes out the same, only later. It is possible to convey an analog waveform down such a signal path.

That analog waveform has to be broken into evenly spaced time elements (a process known as sampling) and then each sample is expressed as a whole number, or integer, which can be carried by binary digits (bits, for short). A signal path may convey sample values either in parallel on several wires, where each wire carries a binary signal representing a different power of two, or serially in one channel, at higher speed, a process called pulse code modulation (PCM). Digital audio only became viable when advances in high-density recording made the high data rates required economically practical. Today's gigabyte hard drives are an example of such storage systems.

In simple terms, the signal waveform is conveyed in a digital recorder as if someone has measured the voltage at regular intervals with a digital voltmeter and written the readings in binary on a roll of paper. As it is so critical to audio quality, much of the engineering effort in digital systems is spent on the conversion process.

A magnetic head cannot know the meaning of signals passed through it, so there is no distinction between analog and digital recording at the head or medium interface. Thus a digital signal will suffer all the degradation that besets an analog signal: particulate noise, distortion, dropout, modulation noise, print-through, crosstalk and so on.

However, there is a difference in the effect of these degradations on the meaning of the signals. As stated, digital recording uses a binary code, and the presence or absence of a flux change is the only item of interest. Provided that flux change can generate a playback pulse that is sensibly bigger than the noise, the numerical meaning will be unchanged by reasonable distortions of the waveform. In other words, a bit is still a bit, whatever its shape.

This implies that the bits on the medium can be very small indeed and can be packed close together; hence the required data rate is achievable. If the trivial example of the paper tape recording is pursued further, suppose that the tape upon which the voltages were written became crumpled up. If it were smoothed out, the numbers would still be legible and could be copied without error to a new piece of paper. By comparison, if a phonograph record is scratched and gouged, it will sound like a scratched and gouged record evermore.

Large disturbances of the recording, such as dropout or severe interference, may cause flux changes to be missed, or

simulate ones that do not exist. The result is that some of the numbers recorded will be incorrect. In numerical systems, provision of an error-correction system is feasible; in analog systems it is not. A properly engineered error-correction system is essential to return the corrupted numbers to their original value. It is probably true that without error-correction systems, digital audio recording would not be economically feasible.

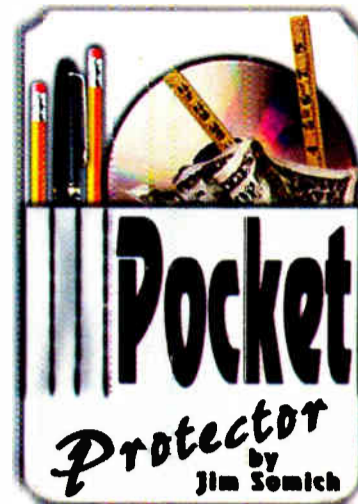
In the digital domain, signals can be easily conveyed and stored in electronic circuitry. Unavoidable speed variations in recorders cause the numbers to appear at a fluctuating rate. The use of a temporary store allows those numbers to be read out at constant rate, a process known as timebase correction. In this way, timebase errors can be eliminated.

The main advantages of digital audio can be summed as follows. They are not in order of importance because this will change with the application.

The quality of a digital audio link is independent of the characteristics of the channel in a properly engineered system. Frequency response, linearity and noise are determined only by the quality of the conversion processes. In recorders there is complete freedom from wow, flutter and other analog recording artifacts. The independence of the quality from the medium also means that a recorder will not display different audio quality if different brands of tape are used, provided that they all have acceptable error rates.

Digital is forever

A digital recording is no more than a series of numbers, and hence can be copied through an indefinite number of generations without degradation. This

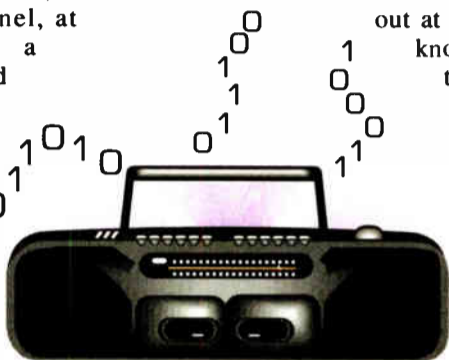


implies that the life of a recording can be truly indefinite, because even if the medium begins to decay physically, the sample values can be copied to a new medium with no loss of information.

The use of error-correction techniques eliminates the effects of dropout. In consumer products, error correction can be used to advantage to ease the handling requirements.

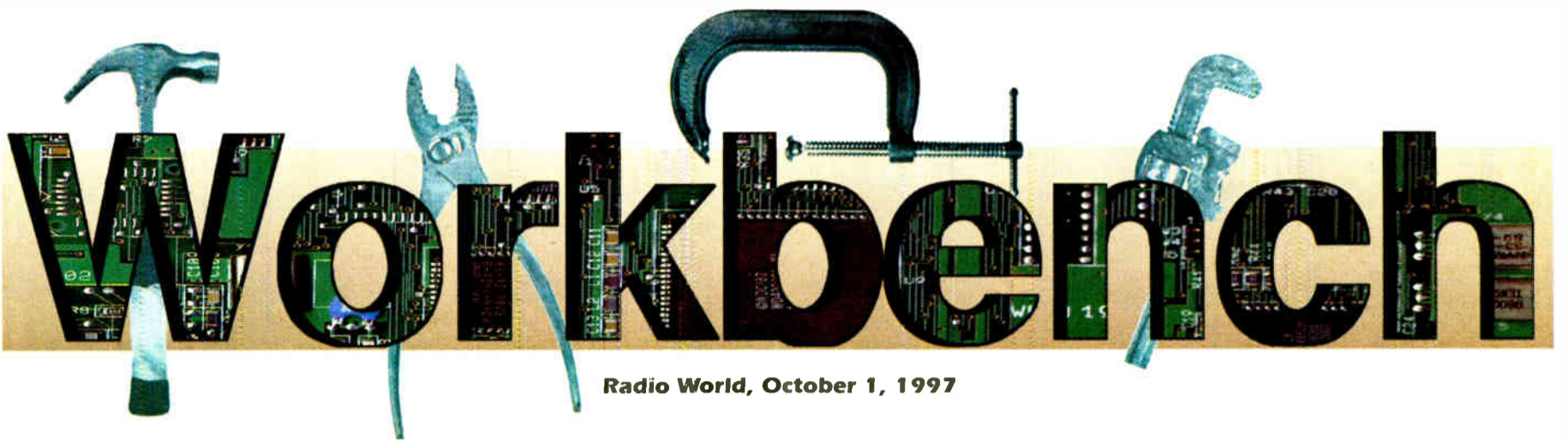
The use of timebase correction on replay eliminates timebase error and can be further used to synchronize more than one machine to sample accuracy, eliminating the need for lengthy timing-in processes. Accurate timebase control also eliminates phase errors between channels. This is particularly important in stereo. The use of digital recording and error correction allows the digital signal-to-noise ratio of the recorded tracks to be relatively poor. The tracks can be narrow and hence achieve a saving in tape consumption despite the greater bandwidth. Professional analog recorders must use wide tape tracks to give extremely good first-generation quality, which then allows several generations of dubbing.

It is possible to construct extremely precise and stable digital filters and equalizers with inherent phase linearity. Such devices need no adjustment, and so the cost of manufacture can be less than the analog equivalent. The adoption of digital filtering makes possible very sharp cutoff filters with virtually no group delay distortion.



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BE No More, No Less.



Radio World, October 1, 1997

Notes About That Scuba Tank

John Bisset

Frank Folsom's tip about using compressed air from an old scuba tank to clean transmitters or blow dirt out of recesses in transmitter buildings or equipment racks (*Workbench*, RW July 23) brought some clarification, both from Frank and from readers of this column.

When Margaret Bryant isn't managing the engineering department of the ABC/Disney syndicated programming studios in Dallas, she's scuba diving. Like Frank, Margaret is a certified diver; she is also an assistant scuba instructor. She was the first to point out that second-hand tanks are not that common, and if you find one, you'd better have a way to fill it on your own. Dive stores usually will not fill a tank unless you are scuba certified.

It's the industry's way of self-policing. Scuba diving can be a dangerous hobby if you don't know what you're doing. A possible way around this is to have a scuba-certified friend get the tank filled for you.

Folsom, the original contributor of this tip, asked to remind readers that federal

a rule in the industrial business to never cross-fill a tank. Oxygen goes in oxygen cylinders, nitrogen in nitrogen cylinders. You probably won't be able to find someone to fill a dive tank with nitrogen. Even if you can get a tank filled with nitrogen, don't.

The next suggestion was to bring a regulator and long hose, and simply tap onto the spare tank of nitrogen in the corner of the transmitter building. *Don't do this either!*

Frank just completed a safety talk at his local SBE chapter. It touched on this fact: The average nitrogen tank holds 220 cubic feet of gas, the volume when the gas is liberated and expands. A 10 x 10 x 10 transmitter room is 1,000 cubic feet. That's four tanks of nitrogen.

Although nitrogen may be great for purging transmission lines, you can't breathe it and survive. If it's used to blow dirt in a closed room, it can smother all the oxygen, and asphyxiation can result.

Also see *RW Readers Forum* on page 5 of our Sept. 17 issue for a comment from Tom Patterson of CBS Radio in Los Angeles on this topic.

Joe Stack at ABC in New York had requested a replacement for the LM-1800. *Workbench* readers to the rescue again! Al Kazlauckas writes that a replacement can be found in the ECG catalog. The replacement number is ECG-743, and the chip can be obtained from Euclid Radio Parts in

Willowick, Ohio. For engineers outside of the Cleveland market, these folks will ship, and honor VISA and Mastercard. Their telephone is (440) 585-5115.

Speaking of parts, are you having as much trouble finding parts stocked at local electronics parts houses? We have several electronic parts distributors around the Washington, D.C. area, and unless it's computer cables, D-connectors, or some common resistors, forget it. Gone are the days of seemingly endless aisles of every conceivable part. I guess that's why you have mail-order companies like Mouser and Digi-Key. If you've had luck with other mail-order parts companies, please send me a name and telephone number so we can tell others. Besides, aren't we getting enough mail already?

We asked for tower-painting horror stories a while back, and did we ever get one. Back in the Feb. 22, 1995 issue of *Radio World*, we wrote about the great service provided by Sherwin-Williams commercial/industrial representatives. We spoke of one station's great experience, in which the rep inspected the tower, prepared the painting specifications, specified the paint, helped the station find a decent painting contractor, and then reinspected the tower after the job was done to make sure the specs had been met, all at no charge.

I just got a letter from Tony Fernandez, president of Sarasota Broadcasting Co.,

licensee of WKXY(AM), AM 930. He read this column, and when it came time to paint his four-tower array, contacted his local Sherwin-Williams rep, who specified the paint. Tony's engineer personally checked the paint cans to verify the type number was identical to what was recommended. Shortly after the job was finished, they noticed the orange color began to fade. Within less than a year, the orange was almost completely faded. The station notified the Sherwin-Williams rep, who brought in their experts. The experts agreed that the red pigment had failed.

Now the horror part, according to Tony: Sherwin-Williams offered to settle the claim by giving the station the red paint free of charge the next time they painted the towers. Compare the estimated paint cost of \$250 to the \$2,700 labor cost to re-paint the towers (not to mention any forfeitures for faded paint!).

To add insult to injury, the station's last paint job lasted almost eight years!

Once again, I'd like to query our readers. Let me know if you have had similar problems, and how you handled them. We'll contact Sherwin-Williams, and give them the opportunity to make things right for WKXY. There are a lot of towers out there needing paint. I can't imagine a company the size of Sherwin-Williams would risk such a bad rap over \$3,000. But we'll see.

■■■

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

Here are a couple of suggestions we definitely do not recommend.

law requires dive tanks be given a hydrostatic test every five years, and most insurance carriers of dive shops require that tanks be opened and visually inspected annually. Frank's tank was constructed in 1966, and still passes the inspection. The point is, some routine inspection is required, even if you are using the tank for cleaning.

What Frank and several other engineers have done is work out a deal with their local dive shops. In Frank's case, filling his tank was no problem because he is a certified diver. For his non-certified engineering friends, the dive shop agreed to supply air only after each submitted a letter, on company letterhead, stating that the sole purpose of the air supplied to this tank was for cleaning equipment and instrumentation, and that the cylinder would never be used for diving purposes.

Such letters satisfied the dive shop, and permitted the engineers to purchase "air cards," which give a discount on tank refills. Once the dive shop staff got to know the engineers, and the letter was on file, there was no problem.

Other readers offered suggestions that sound great but are dangerous. One engineer wrote to our e-mail address, wrwbench@aol.com, and suggested filling the cylinders with nitrogen. At first, this doesn't sound like a bad idea; however there is

Regional Show Season Is Here

Several upcoming events offer SBE members and other radio managers a chance to convene to check out the latest in broadcasting. There is still time to make room on your calendar to attend.

1997 Kentuckiana SBE Regional

Date: Oct. 18
Location: Louisville, Ky.
Cost: \$29 for SBE members, \$39 for others. Exhibits are free.
Info: (317) 253-1640
Notes: The event will feature a variety of workshops and 30 booths.

1997 Broadcasters Clinic

Date: Oct. 21-23
Location: Middleton, Wis.
Cost: \$150 for any two days, \$180 for all three
Info: (608) 255-2600
Notes: About 50 to 60 exhibitors and 150 attendees are expected.

Electronic Media Expo

Date: Oct. 22-23
Location: Bellevue, Wash.
Cost: Free.
Info: (206) 957-1801
Notes: In conjunction with Washington State Association of Broadcasters.
Planners expect 125+ exhibitors and more than 2,000 attendees.

TAB/SBE Annual Convention & Trade Show

Date: Oct. 29-31
Location: El Paso, Texas
Cost: Call for package prices for specific seminars and events
Info: (512) 322-9944

Midwest Broadcasters Conference and Telecommunications Expo

Date: Jan. 18-20, 1998
Location: Bloomington, Minn.
Cost to attend: TBA
Info: (612) 926-8123
Additional Information: More than 70 exhibitors are anticipated.

Great Lakes Broadcasting Conference & Expo

Date: Feb. 23-25, 1998
Location: Lansing, Mich.
Info: (800) 968-7622
Cost: \$99 for MAB members, \$150 for others
Notes: There will be 88 exhibitors, plus seminars focusing on topics for radio, television, management, sales and programming.
Attendance estimate: 1,200.

— Stephanie Muller

FEED LINE

AM Carries Its Own Special Rules

W.C. Alexander

This is the 16th and final installment in a series about AM antenna systems. The previous part appeared Sept. 3.

Let's wrap up with a look at some of the regulatory requirements that apply to AM systems.

The FCC regulates broadcast stations, and in the past, there were many and more specific regulations than there are now. In the age of deregulation, the rules are full of the seemingly harmless phrase, "as often as necessary to insure compliance." This phrase took the place of specific intervals for various readings, calibrations and the like that were once in the rules.

Now, although we have the freedom to make these measurements on our own schedule, the monkey clearly is on our backs to keep all parameters within the terms of our station licenses. If you are caught with a parameter out of tolerance, you are likely to receive a Notice of Apparent Liability (NAL) not only for the parameter violation but for not having measured it as often as necessary to ensure that it is within compliance as well! That may not seem fair, but it goes to show that deregulation may not be such a good thing after all.

Know your rules

We will begin in the transmitter building and take a walk through the regulatory requirements pertaining to every part of an AM antenna system. First, the common point.

An often misunderstood provision of the FCC's rules pertaining to operating power in directional antenna systems states that the authorized input power shall exceed the nominal power by 8 percent for stations authorized 5 kW or less, and by 5.3 percent for stations authorized more than 5 kW (see §73.51). That means a 5 kW station employing a directional antenna will employ an antenna input power of 5.4 kW. The station license should reflect the correct input power (and is, in any case, the final authority as to the proper input power), so be sure you use the common point current value specified there rather than one calculated for the station's nominal power.

§73.1215 lists the requirements for indicating instruments, including common point and base current ammeters. Their accuracy must be within 2 percent of the full scale reading, and the full scale value must not be more than five times the nominal reading. Further, the meter must not read off-scale during modulation. There are certain other requirements pertaining to scale divisions and the like in that section. If you are employing a meter manufactured or supplied by one of the mainstream broadcast equipment manufacturers, you can be reasonably sure that these minor requirements have been met.

You should be sure, however, that the normal reading is greater than one-fifth full scale, and that the meter does not exceed full scale under modulation. Many times, following a lightning strike or some other incident, an RF ammeter is replaced with whatever is available. Particularly in the case of low-power

operation, sometimes the replacement meter will not be of the proper scale.

Increase the sensitivity

If you find yourself in this position and you are using a toroidal RF ammeter (such as those manufactured by Delta Electronics), you can increase the sensitivity of the meter by running multiple turns of the RF feed through the toroid pickup. The reading will be proportional to the number of turns through the donut (i.e., two turns will double the reading, three turns will triple it, and so forth).

For example, suppose your low-power nighttime operation has a licensed

common point current of 0.2 amperes and the lowest scale meter you can find is five amperes. By wrapping five turns through the toroid, the 0.2 ampere reading will appear as a 1.0 amp indication, which is in compliance with the rules. If you do this, however, you will need to file a Form 302 (license application) with the FCC to modify the station license to show the new indicated current.

The requirements for remote reading ammeters are contained in §73.57. Remote reading ammeters must be accurate to within 2 percent of the reading on the regular (local) RF ammeter. The sensors or pickups for remote reading RF

ammeters must be located on the transmitter side of the local RF ammeter. If your site employs remote-reading RF ammeters, it should be part of your regular routine to compare the readings between the local and remote meters.

RF ammeters, particularly thermocouple meters, are the most likely indicating instruments in an AM antenna system to give incorrect readings or trouble. It is an excellent idea to keep a new, factory-calibrated meter (preferably a plug-in type meter) in the transmitter building. From time to time (at least annually), all the meters in the system can be calibrated against this reference meter.

Make periodic checks of the resistance at the common point or non-directional antenna base. The frequency of this resistance check will vary from

See FEEDLINE, page 31 ▶

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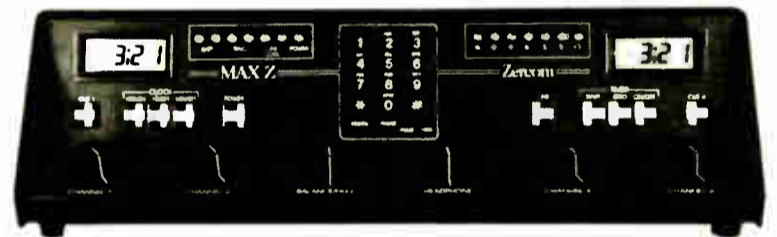
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AM Systems: Demanding, and Fun

▶ FEEDLINE, continued from page 29 station to station, and probably will be determined by the environment around the antenna. Areas with poor ground conductivity or sites with poor or deteriorated ground systems may see a considerable shift in base or common point resistance with changes in the amount of water in the soil. Similar (and sometimes more dramatic) changes can occur when the ground freezes. If you have a common point bridge built into your phasor, you are all set to make a resistance measurement every time you visit the site. Otherwise you will have to use an operating impedance bridge to make the measurement from time to time as required. If the resistance has changed more than 2 percent from the value specified in the license, you will need to file an application for modification of license.

Sampling systems

In directional systems, next to RF

ammeters, the sampling system is the most likely element to produce false indications. The FCC rules contain specifications for sampling systems, and specifically contain the requirements for "approved" sampling systems. The basic requirement for an "approved" sampling system is that the transmission lines exhibit uniform phase shift (less than 0.5 degree difference from the shortest line to the longest line with normal temperature variations).

Should some component in the sample system become damaged or malfunction, it is permissible to operate for up to 120 days without notifying the FCC as long as all other parameters (base current ratios, monitor points and common point current) are maintained. Should the outage exceed 120 days, the FCC must be notified and special temporary authority requested. If portions of the system above the base insulator are replaced, a partial proof of performance will be required. Sample system rules are contained in §73.68.

Field strength measurements at the monitor points (MPs) of directional stations must be made "as often as necessary to ensure that the field at those points does not exceed the values specified in the station authorization" (§73.61). This is one of those instances where it doesn't matter if you read the MPs yesterday and they were correct; if the FCC inspector finds one or more of them higher than the licensed limit today, you are likely to get dinged both for the high MP and for not measuring the points often enough. If you do not have an approved sample system, the same requirement applies, but the interval between measurements must not exceed 120 days.

On the antenna monitor, the indicated ratios must be maintained within 5 percent of the values specified in the station license. Phases must likewise be maintained within 3 degrees of their licensed

values. At the tower bases, base current ratios must be maintained within 5 percent of their licensed values. Note that it is not the base current values themselves that are licensed, it is the ratios.

Should an instance arise in which the



Delta Electronics offers RF ammeters like its TCA-5-EX, shown with remote meter.

parameters cannot be maintained within the prescribed values, you must measure the field strength at each of the MPs. If they are all below the licensed values, you may continue to operate at full power for up to 30 days without further authority from the FCC while the problem is being corrected. If one or more of the MP field strengths exceeds the licensed maximum, you must reduce power to a level that brings the high MP field strength below the maximum. The rules pertaining to directional antenna system tolerances and procedures for operating at variance are contained in §73.62.

Are you an AM believer?

To wrap up, there are a couple of other rules that pertain specifically to AM antenna systems. First, §73.49 requires AM sites using series-fed, folded unipole and insulated base antennas to enclose the base of each tower within a locked fence. The size of the enclosing fence is

determined by the E- and H-field present in the vicinity of each tower base. The safe thing to do is fence each element in the array at the radius specified in the FCC's OET Bulletin No. 65 for the nominal power of the station. By doing this, you can be assured that if something should go wrong and all the transmitter power is fed to any one element, no person can enter into a field that exceeds the ANSI limit. Of course, you can fence the entire perimeter of the property and forego fencing of the individual elements, but in that case you must otherwise delineate the areas where the RF radiation exceeds the ANSI limit.

Finally, §73.154 requires that the results of the most recent set of directional partial proof of performance measurements be kept in the station records and be available to the FCC for inspection. Many stations, however, do not have a copy of their last proof on hand. If you find that you do not have this document, you can order it from one of the copy services in Washington. This document also will provide you with a benchmark for your directional system. Present readings can be compared to those in the proof to determine if a perceived problem actually exists.

It is my hope that you have gained some understanding of the basics and enough working knowledge to feel competent in dealing with the day-to-day operation and maintenance of your system. In this FM generation, the AM band is still my favorite. It has a lot to offer that FM cannot, in addition to a little romance and some sentimental value. In most of the major markets in this country, AM stations hold one or more of the top slots in the ratings, demonstrating that done right, AM does have real potential to succeed. It is our job as engineers to make these stations on broadcasting's "top band" work and sound great. With a little training and knowledge, we can do a good job of it. Happy tuning!

■ ■ ■

Cris Alexander is director of engineering for Crawford Broadcasting in Dallas.

You Read It Here



One Year Ago

The collapse of a 1,520 foot broadcasting tower in suburban Dallas on Oct. 12 left three tower workers dead, and three FM stations and a TV station scrambling to get back on the air.

"Tower Crash Kills Three"
by Lee Harris
Nov. 13, 1996

Five Years Ago

The U.S. should have an RBDS standard in place by early 1993.

The National Radio Systems Committee RBDS subcommittee will meet Nov. 10 to try to accommodate the few objections voiced in the RBDS ballot comments that were due Sept. 30, according to John Marino, the NAB's manager for technical regulatory affairs.

"RBDS Marks Progress"
by John Gatski
Nov. 4, 1992

Ten Years Ago

The two men who were arrested and charged with operating an illegal ship-based radio station five miles off the Long Island coast in late July will not be prosecuted.

At a 27 August session in federal court in New York, charges of operating an illegal station ... and impeding the functions of the FCC ... against Ivan Rothstein, 25, and Allan Weiner, 34, were dropped.

News Item
Oct. 1, 1987

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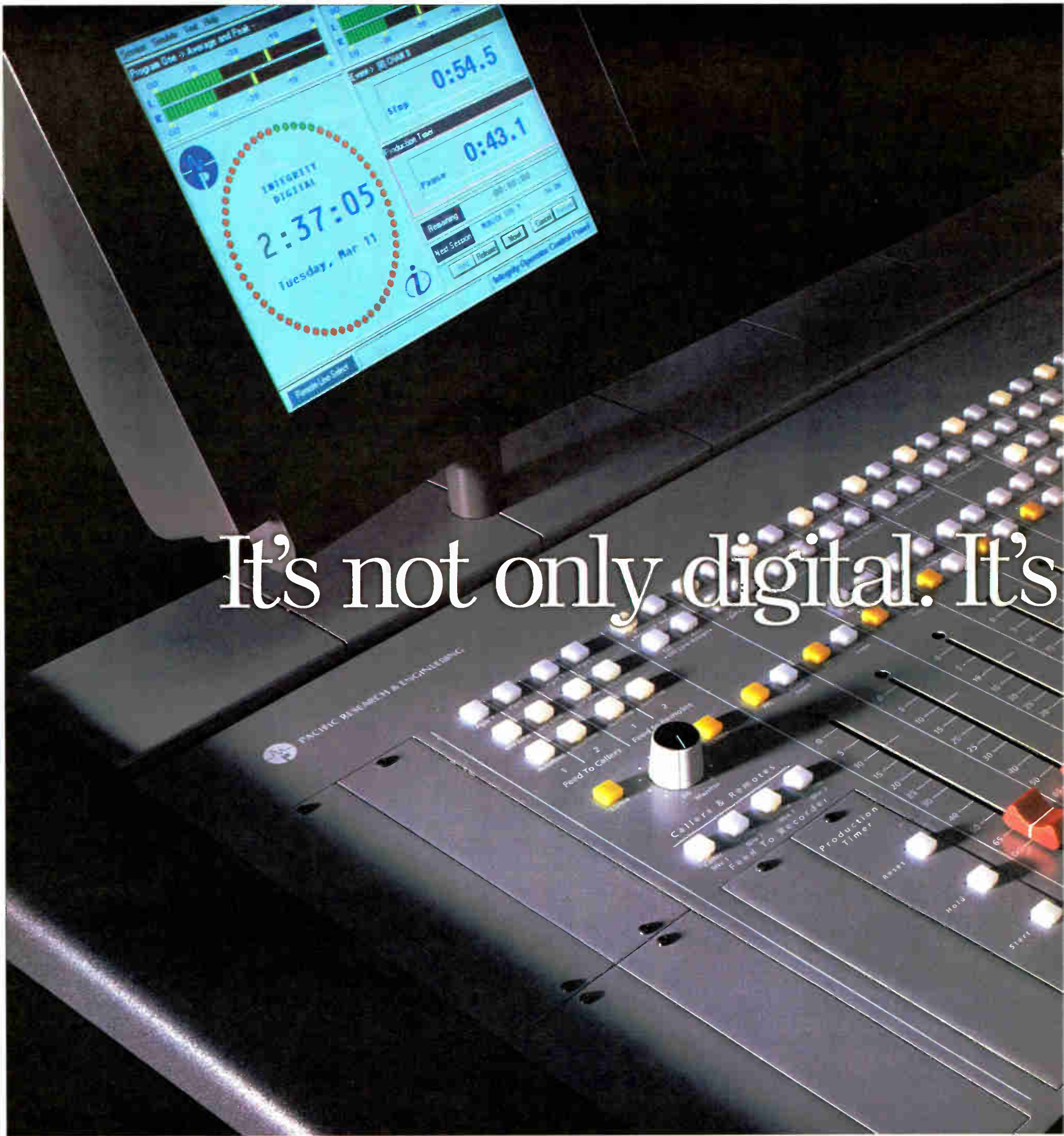
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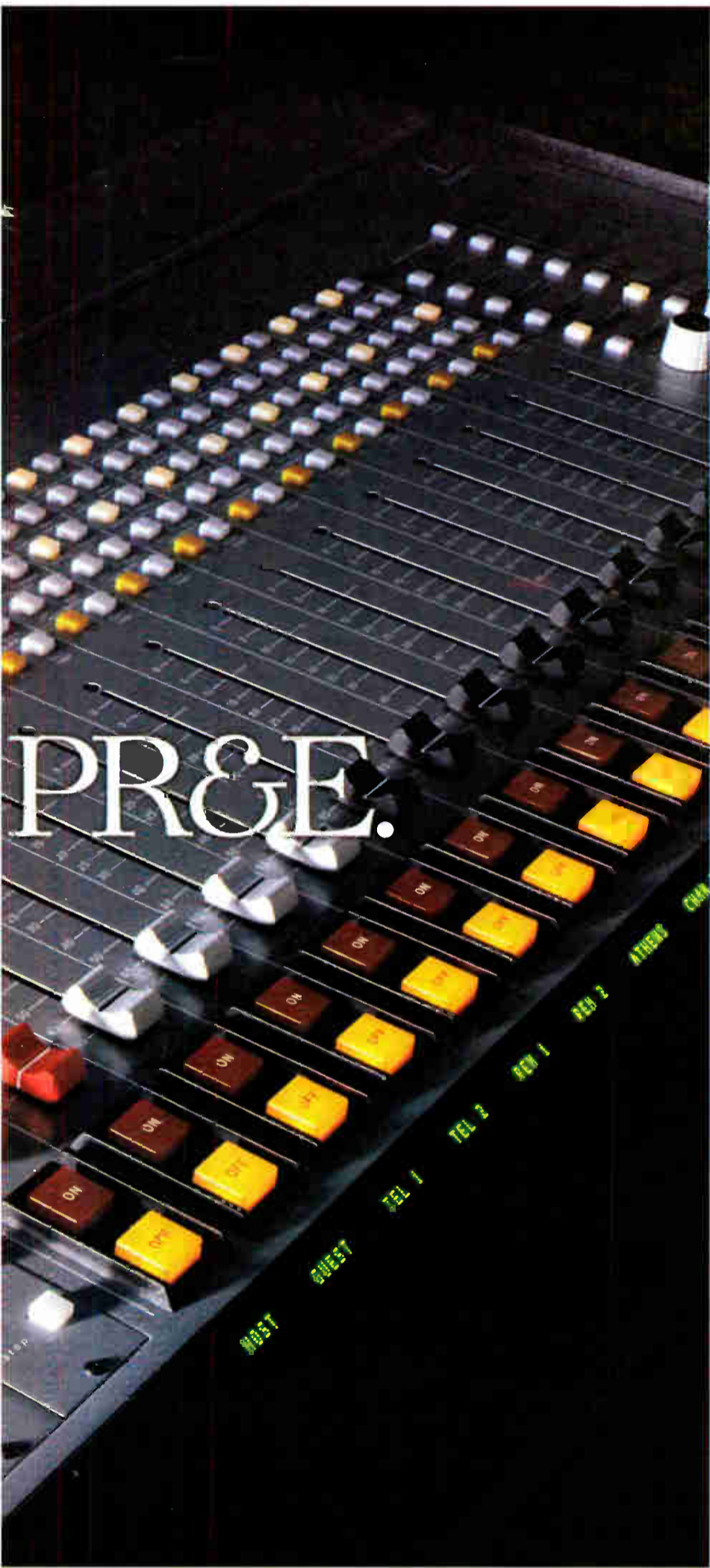
Integrity's difference is more than just digital. It also offers four special-purpose buses to provide automated mix-minus for telephone and remote feeds, each with IFB.



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



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To get an Integrity brochure, visit www.pre.com, e-mail sales@pre.com or call 760-438-3911.



Controls are designed for the fast and furious pace of live radio. For example, our exclusive button guards reduce the risk of accidental changes.

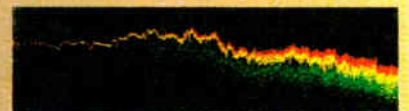


Integrity can accommodate a variety of options, including multiple flat panel displays for delivery systems and other computer devices.



Where great radio begins.®

Studio Sessions



**Syntrillium
Cool Edit Pro
See Page 37**

Radio World

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October 1, 1997

PRODUCT EVALUATION

Denon CD Deck Makes Impression

Flip Michaels

Does your right brain cry out for a rack-ready Denon CD player? Perhaps your left brain says, in no uncertain terms, "I need something a bit more accommodating, something without plastic sleeves or a weak tray."

The Denon DN-C680 may solve your dilemma.

For several years, program directors and chief engineers swore by the Denon DN951-FA. This is the player with the entire CD library stored in those plastic sleeves with the little doors on them. Push it, punch it, stop it.

It must be spring

It was a great player, protecting CDs from jock abuse, but occasionally problematic when those little doors popped a spring.

Next came the Denon DN961-FA. This machine, more often than not, was a compromise between what program directors required and production directors desired. "There will be no more opening of plastic sleeves," stated the programming memo, "easy access for

announcers and production."

That is, until some CD loading trays developed an attitude and went on strike. They sometimes acted as if they were alive, recognizing a CD only when an engineer was present.

Before you start writing nasty letters, one can acknowledge the merits of both units. It is just that a new player has evolved.

They heard us

When Denon designed the DN-680, they must have collected years of feedback.

Envision the voice of the whiny air tal-

The player is rock solid. The tray opens when the Open button is pushed the first time, and closes with just a butterfly kiss. Nice large Stop, Standby/Cue and Play/Pause buttons made my fat fingers happy.

Also, there is nothing like a large, user-friendly illuminated display with all the readings we are used to seeing.

I must be honest and tell you, I really haven't had to use the manual. Everything from the auto cue features and EOM (end of message) notifications were self-explanatory.

Playback is a pitch

One of my favorite features is the Pitch control. On the old players, you had a tuner knob. Turn it left for a lower-pitched playback and to the right for a speedier read.

On the DN-680, there are + and - buttons with a standard range of 9.9 percent.

What makes the pitch control more useful with this particular player is an on/off pitch switch. When you speed



Denon DN-C680 CD Player

ent: "The trays are too weak. The buttons are too small. Can you give us something that my mommy can stack in a rack?"

Product Capsule:
Denon DN-C680 CD Player

	Thumbs Up		Thumbs Down
✓ Big buttons		✓ Large unit does not conserve rack space	
✓ Shuttle wheel			
✓ Pitch control			

For more information call Denon Electronics in New Jersey at (201) 575-7810 or circle **Reader Service 99**

something up and shut it down, the player "wows" itself back to normal speed.

This came in handy for a Maryland Department of Transportation commercial, written with the pitch control as inspiration. Read the sidebar to see where this control took me.

With the DN-C680, the commercial took just a take or two to get the timing down. With any other unit, I would have had to mess with reel-to-reel or go to the DAW.

There are many good features added to this player. One might think the designers had too much time on their hands.

"Auto Cue" is a nifty feature that takes you to the first playback signals of a track, automatically setting the Standby/Cue mode at that point.

"Auto Space" automatically inserts 4-second blank spaces between tracks, great for ensuring indexed recordings on a medium such as DAT.

"Auto Edit" divides tracks on the CD into a first half (side A) and second half (side B) at the point nearest the disc's total playing time. This is ideal for any flunked algebra students among us using 90-minute cassettes.

"Shuttle Cue" is a blessing for the impatient, such as moi. You may recall that earlier Denon units use Forward and Reverse buttons. The longer you hold the button, the faster it will scan along.

But if you take your finger off of it — even for just a moment — you are forced to start back at slow-speed scan. Once you get close to the desired location, then you have to jump to a separate knob for the tight cue.

Now, the DN-C680 gives you a shuttle wheel to fly through the tracks at any speed you desire. Indicator lights show how far to the end of the track you have scanned.

Need a tight cue? Slide your finger to the inner side of the search dial and turn it to your heart's content to nudge right up to frame you want (one CD frame = 1/75th of a second).

The final analysis

One weakness I found is that the DN-C680 doesn't transform into a seltzer spray bottle to keep sales people at bay.

CD-R lovers have all the right connections to the unit; both digital and analog, balanced and unbalanced. Standard CD digital output is at 44.1 kHz, and a sample converter kit is available for 32 and

See DENON, page 36 ▶

BWF: New PC Audio Standard

Alan R. Peterson

In the PC world, the Wave (WAV) file format is used widely for audio recording and playback. It permits the storage of sound data in a number of modes, including PCM (pulse code modulation) and compressed forms such as ADPCM and MPEG.

Now that PCs have made inroads into the broadcast world, the need exists for additional information to be included with audio files. This extra information might include data about the soundfile's content and quality, to be interpreted by the system using it.

Also, due to the eight-character limitations of some computer operating systems — most notably DOS — information fields for Description, Time and Date cannot be related effectively to the broadcast user. In other words, a "cart label" with data relevant to the performance of the audiofile is not possible by conventional digital means.

A recently drafted specification — the Broadcast Wave Format (BWF) — addresses these limitations and establishes a new standard for embedding and recovering this data. The new specification utilizes the conventional Microsoft WAV format and provides an unambiguous solution for the exchange of broadcast audio files.

Prior to the arrival of the BWF, the only way an information field could be included with a WAV file was to write a separate text file and link it together with the WAV file. This meant keeping tabs on two files where only one would be preferable.

The final draft of the BWF specification was established in April by the European Broadcasting Union (EBU). It was recently introduced to U.S. broadcasters by French soundcard manufacturer/importer Digigram and

offered to manufacturers of broadcast software and products using Digigram cards.

Chunky style

The BWF is based on the standard Microsoft WAV audio file format. This is a type of file specified as a "Resource Interchange File Format," or RIFF.

The basic building block of a RIFF file is a "chunk" that contains specific information. This information includes an identification field, a size field and the file contents.

For example, a BWF file would consist of a mandatory RIFF "WAVE" header that would identify it as an audio event, then the following chunks: the new *broadcast audio extension*, which includes information on the audio sequence, a *format extension*, which describes the contents as being either PCM or MPEG, followed by the *wave data* itself.

See WAVE, page 36 ▶

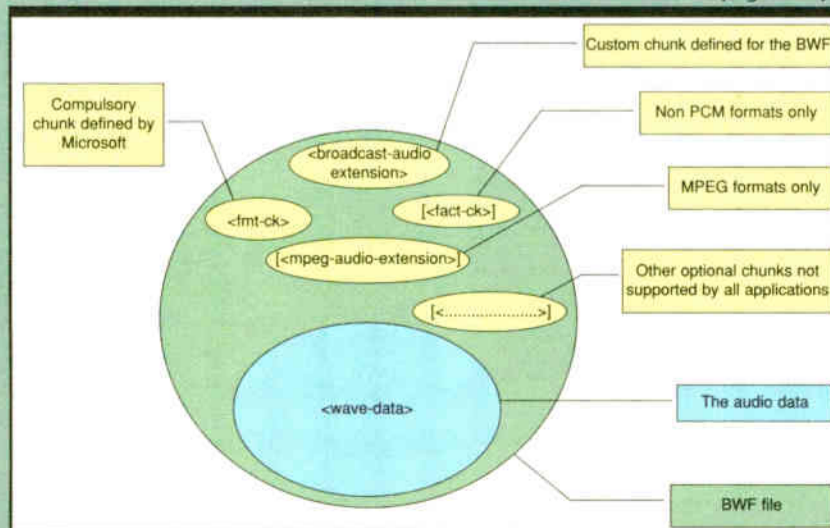


Figure 1 Broadcast WAVE Format File

Courtesy EBU



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World Radio History

Defining the BWF for PC Audio

► WAVE, continued from page 34

If the file is MPEG rather than PCM, additional required chunks include a *fact* chunk and *MPEG audio extension* chunk. The entire package is shown diagrammatically in Figure 1.

It is in the *broadcast audio extension* that the relevant data are included. This chunk requires a number of additional parameters that must be addressed for exchange between broadcasters.

For radio only

The broadcast audio extension includes the following text areas:

- CHAR Description: 256 ASCII characters, which are used as a free description of

the sound sequence.

In applications where only a short description can be displayed, the specification calls for key data to be delivered in the first 64 characters. The remaining 192 characters are used for finer details.

- CHAR Originator: a 32-character ASCII string containing the name of the file originator.

- CHAR Originator Reference: another 32-character ASCII string containing a reference of the originator, perhaps an organization or radio station call letters.

- CHAR Origination Date: a 10-character chain establishing the origination date of the audio file expressed as *yyyy:mm:dd*, or for example, 1997:09:15. Note there is no "year

2000" limitation, so a year can be defined as anything from 0000 to 9999.

- CHAR Origination Time: Again an ASCII entry, expressed as *hh:mm:ss*.

- CHAR Time Reference: Containing the time code of the sequence. This is a 64-bit value which contains the first sample count "since midnight" (the beginning of the event).

- WORD Version: An unsigned binary number giving the version of the BWF. Initially, this is zero.

- CHAR Reserved: A 254-byte region reserved for future expansion of the standard.

- CHAR Coding History: A collection of strings containing descriptions of the coding process. For example, a PCM coding requires the mode (mono/stereo), sample size (8 or 16 bits) and the sample rate. An MPEG file would contain the sample rate, bit rate, layer (I or II) and the mode (mono, stereo, joint stereo or dual channel).

On a machine programmed to display selected WAV data on playback, a typical pop-up text box might contain the following data when a BWF file is played:

```
Teddy's Bedding/Labor Day Sale #1,
Outcue "Sweet Dreams"
Bobby Summers
WZZZ-FM
1997/08/18
15:35:45
MPEG/44.1 kHz/16/Layer II/stereo
```

There are variations in the standard WAV format that require other coding chunks. To obtain the exact specifications of the BWF and how it is affected by these other formats, go to the Web addresses given at the end of this article.

Digigram has offered the BWF specifica-

tion to companies in the United States now using Digigram soundcards.

Richard Darr of Radio Computing Services, Scarsdale, N.Y., is examining the pros and cons of the Broadcast Wave Format.

"I see some definite possibilities, especially for stations in smaller markets," said Darr. He notes that, by including the text field and performance information of a WAV file, "it becomes a cost-effective solution."

Dave Scott, president and namesake of Scott Studios, has already released the BWF to his clients.

"We have 1,600 customers, and three or four have it now," said Scott. "The reasons? Simplicity, standardization, it's in compliance with the Microsoft WAV format now, so why *not* go with it?"

Scott pointed to the number of existing formats and said the industry needs a standard.

"You've got companies doing MPEG vs. Dolby vs. APT, and with the Broadcast Wave Format, any old computer with a Soundblaster will work. It's just about time there was a standard, and the fact it is an international standard doesn't hurt," he said.

The Broadcast Wave Format is a relatively new standard, but is in use in European broadcasting, notably in Sweden. The fact that it bridges a gap between conventional PC audio and the demands of broadcasters using computer playback methods could make it desirable for producers who do work in both domains.

With the BWF specification now available to U.S. radio broadcasters, it will be a matter of time to see if the new standard is embraced domestically.

■ ■ ■

Information on Digigram products and implementation of the BWF is available by calling (703) 875-9100.

Get the full BWF specification at the EBU website www.ebu.ch/pmc_dapa.html or at the Swedish Radio Corporation site www.sr.se/rd/bwf/

New Denon CD Player: 'Rock-Solid' Performer

► DENON, continued from page 34

48 kHz output frequency.

The Denon DN-C680 can output either AES/EBU or consumer digital formats by altering the Preset table. This is a hidden feature accessible through some covert button-pushing on the front panel.

As with all Denon products, it is remote-ready and the manual includes a

schematic diagram to wire up your own remote controller. You can hook this latest model up to your personal computer for external control of playback. Baud rates are 9600 or 19200 bps, your choice.

■ ■ ■

Flip Michaels is production director at classical station WGMS-FM in Washington.

Inspiration can come from anywhere and anything. Working with the Pitch control on the Denon DN-C680 inspired radio copy for the Maryland Department of Transportation's new high-occupancy-vehicle awareness campaign.

Here is an abridged version of the spot:

(Bumblebee fx)

(Announcer:) The bumblebee is a curious creature ("Flight of the Bumblebee," normal speed). Always on the go, flower to flower, place to place. Sort of like, well ... you, the commuter. I-270 North, I-270 South. I-270 North, I-270 South.

Now imagine what would happen if I told you that the "Flight of the Bumblebee" could be performed at a much faster rate? (Music with Denon pitch-shift engaged, announcer read faster) I-270-North-I-270-South-I-270-North-I-270-South!

Yes! Thanks to I-270's new H-O-V — High Occupancy Vehicle lanes — you can spend less time in flight and more time, well, pollinating.

— Flip Michaels

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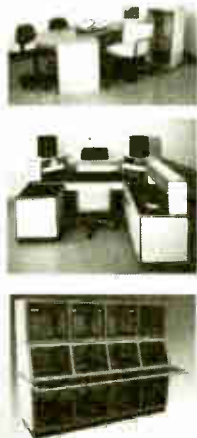
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PRODUCT EVALUATION

Cool Editing at a Cool Price

Art Hadley

Cool Edit Pro from Syntrillium Software does everything the original Cool Edit did, but now has multitrack capability.

Generic \$35 soundcards can play back as many digital audio tracks as a PC can handle. Cool Edit Pro does 64 digital tracks with a whole toolbox of processing for the same price as a four-track cassette "scratchpad." List price for Cool Edit Pro is a breakthrough \$399.

Val Davis gave Cool Edit Pro a capsule look in the last *RW* ("DAW Software: Power, Not Price," Sept. 17, page 53). Here, we really get into the program.

The latest two-track version — Cool Edit 96 — allows you to single-click a file to start it playing, much like a graphics "thumbnail" picture directory.

Cool Edit creates ambiance with the Echo Chamber feature, with settings for absorbency and spacing of walls, floor and ceiling.

Other tools include reverb, frequency and spectrum analysis, multitap delay, 3D echo, graphic, parametric, scientific and "quick" EQs, dynamics and time companding.

Almost any file format you want is represented, plus a few you probably have never heard of.

The 'Art' of forensic audio

The local fire marshal asked me to use the two-track Cool Edit to clean up a body-pack surveillance tape on which an air conditioner and TV drowned out incriminating conversation.

The A/C was easy but the TV was complex. Fortunately, most of the conversation involved a female, and the TV voice was male.

Cool Edit pulled out a lot of the TV, and although the end result included some weird distortion, unusable sections of the tape were made audible.

Cool Edit is instinctive. The folks at Syntrillium know how to make the Windows 95 environment work. You may use it every day and never discover all the things it can do.

So how could it be made better? Make it multitrack.

The two-minute expert

If you are a Cool Edit user, it will take you about two minutes to learn Cool Edit Pro.

Almost every mouse function is backed up by simple and clear keyboard alternatives. For example, *Control-R* works on just the right channel of a track.

Grab track 3 audio with the right mouse button and drag it to track 54. Pick a music track, click any point on the volume envelope and establish a new volume point. Your music is ducked under the voice where you want it.

Editing is non-destructive, the sample file is unchanged and the system adjusts your volume (and pan) envelopes on the fly during playback.

There are a few new zoom controls to use: gradual step-zooms, quick zooms and a set of vertical zoom buttons for maximum detail.

Sixty-four tracks on a stock PC seemed unbelievable, so I tried it.

On a Pentium120 with 32 MB RAM and a SCSI hard drive, I loaded 32 copies of a 16-bit, 44.1 kHz stereo file, 15.5 MB

in size, into the Multitrack section. The tracks were moved around, cloned and heavily cut up. My machine got sluggish across some edits, but nothing serious.

When I played back all 64 tracks at once, my levels were through the roof but everything worked just fine.

You may want a bigger, faster machine, but for conventional "big" mixes, your old workhorse should be fine. An organized hard drive with plenty of space is all this program asks.

Some new features can be lifesavers. Apply the DTMF Filter to remove anything that telephone equipment might erroneously detect as a touch-tone.



Use noise, voice or music as source material to generate "brain wave synchronizing audio" to induce states of calmness. The on-line manual can educate you on this topic.

Adjustable presets, parameters and in-depth explanations hide all over your screen, waiting to be found with a right mouse button click.

Want to scrub? Press the Fast Forward and Rewind button while in the Edit screen. Don't like the speed? Do a right mouse click on the Rewind buttons and a speed menu pops up, with locked and variable winding speeds.

As on tape recorders, there is a Record

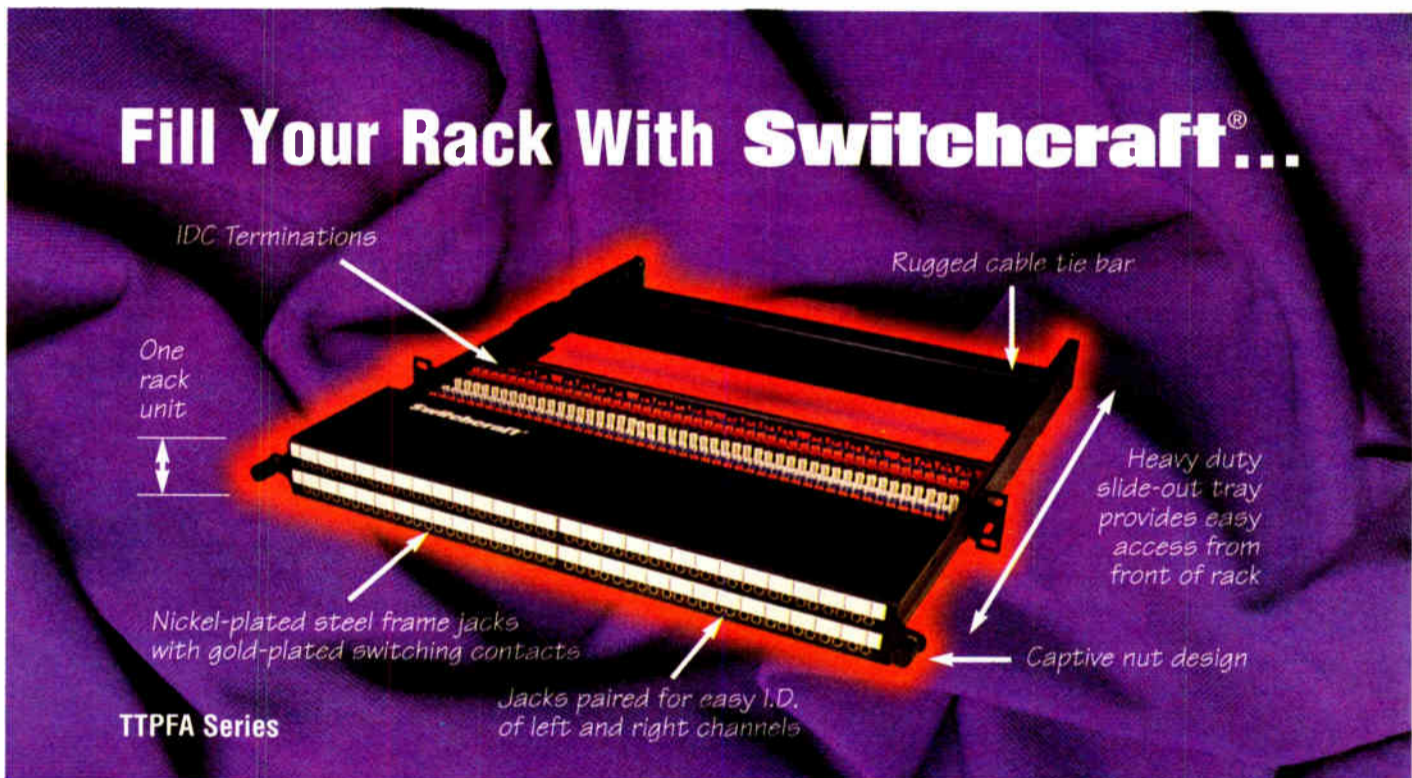
Product Capsule:
Syntrillium Software's "Cool Edit Pro"

	Thumbs Up		Thumbs Down
✓ Great value	✓ Thorough documentation	✓ Excellent use of Windows 95 features	✓ Not available on the website
			✓ Delays while effects are rendered
			✓ Will not recognize a few proprietary formats.

For information, contact Syntrillium Software in Phoenix at (888) 941-7100 or circle **Reader Service 65**.

button. On the Multitrack screen, each track has a Record-enable button, along with Mute and Solo. Press Record.

See COOL, page 38



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Cool Edit Pro: 64 Tracks

► COOL, continued from page 37

Pause, then use your space bar to commence recording.

32 bits

The Pro version features 32-bit processing. Even if your final product is eight bits deep, you can record and process in 32 bits, then downconvert.

Read the manual's discourse on dithering, and you will see why you should limit your range to about 94 dB. That should be enough for any medium.

There is MIDI trigger, SMPTE sync, automatic crossfades, automatic zero-crossing point for click-free edits, scripts and batch processing.

Cool Edit Pro syncs with Cakewalk music software for jingle composing and recording. For the budget-minded, the program works on a simple VGA screen.

Cool Edit Pro lists at \$399 and is offered through software outlets and music stores, which means it should be closer to \$300. I noted Syntrillium did not offer it on their website as they had with previous products.

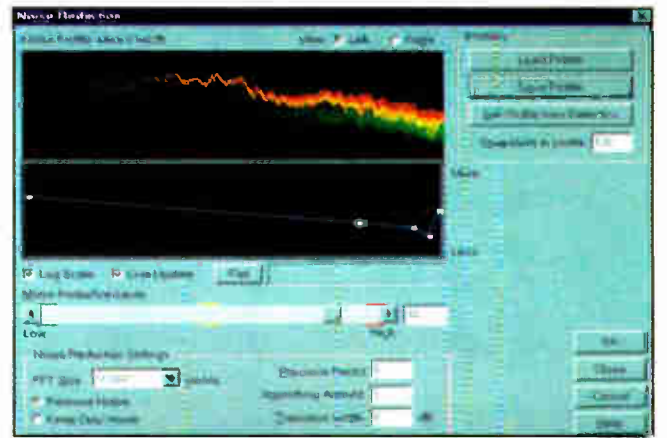
The software comes as a boxed CD-ROM with plug-in demos, sound effects, music, a short but adequate tutorial and a thorough 170-page on-line manual in Acrobat format.

Here was a pleasant surprise. Because we were holders of the Cool Edit "preferred" registration, we could buy one

copy of Cool Edit Pro for \$99. The license let us load one copy on a production machine and onto a *second* computer, either my home or laptop.

Cool Edit Pro does many things better than other programs I have seen at any price. It is inexpensive, quick and easy to learn. Its documentation is so complete that you will find it an excellent introduction to the technical details of digital recording.

Final thought: In almost three years of



Syntrillium Software Cool Edit Pro Noise Reduction

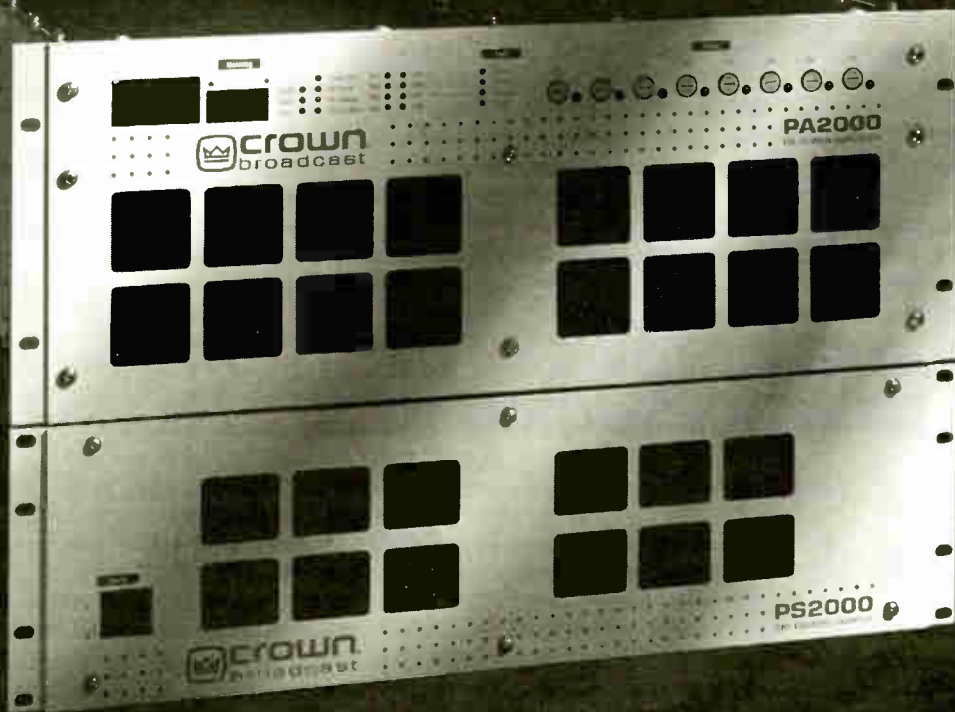
using 386, 486 and Pentium machines running Windows 3.1 and 95, I cannot remember a Cool Edit program ever crashing. How many Windows programs can you say that about?

■ ■ ■

Syntrillium Software Corp. is in Phoenix. Call (888) 941-7100 or circle Reader Service 62. Download a demo of Cool Edit Pro at www.syntrillium.com

Art Hadley is producer/engineer for the Kansas Audio-Reader Network at Kansas University.

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Cool Edit Tech Notes

Cool Edit Pro is designed to run on less-than-stellar systems as well as state-of-the-art stuff. Bob Ellison of Syntrillium Software recommends a Pentium 90 with 32 MB RAM as a starting platform, but said the program can actually handle "radio quality" audio (32 kHz) on anything down to a 486/33.

"Nonetheless," said Ellison, "it helps to have a fast machine and a good hard drive to do things like multiple-input recording."

Soundcard choice is up to the user. Various cards can misbehave with some software, causing clicks, dropouts and system crashes. Ellison said the user may need to make certain memory buffer settings in the Setup file, but claims any Windows-compatible card will work. Naturally, better cards mean better sound.

Absolutely put in the largest, fastest hard drive you can. Unlike multitrack programs that do effects in real time (such as SAW), Cool Edit Pro processes audio files off-line, then writes the result back to the drive.

This means a lot of disk activity and some waiting. A single file, treated with reverb and EQ, could be three layers deep, taking up a corresponding amount of drive space.

However, this method also means processor power is not diverted to calculate effects during playback. The number of tracks does not drop when more effects are added.

Cool Edit Pro is DirectX-compatible and supports third-party effect plug-ins from Sonic Foundry, WAVES, Steinberg and others.

If you have the patience to sit and wait while an older P90 machine calculates 3-D Echo, flanging and compression, by all means give the free Cool Edit Pro demo a spin.

— Alan R. Peterson

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PRODUCT GUIDE

Companies with new product announcements for Studio Sessions Product Guide should send them to:
Radio World, c/o Studio Sessions Editor, P.O. Box 1214, Falls Church, VA. 22041

Yamaha Powered Mixer

The new Yamaha EMX640 powered mixer is useful for PA reinforcement at radio remotes and appearances.

The front panel provides mode switching for main, bridged, main/main and monitor positions. Two 200 W amplifiers are built in, one for main throw and the other for monitoring. When the monitors are not used, the amplifiers can be bridged to provide 400 W to the main speakers.

Additional features include built-in limiters on both amplifiers, six inputs with XLR and balanced quarter-inch

connectors, and Yamaha digital reverb.

Suggested price of the Yamaha EMX640 is \$649.95.



For information, contact Yamaha in California at (714) 522-9011 or circle Reader Service 80.

60 Hz from a battery source.

The Far Outlet is lightweight enough to carry in one hand, yet can provide up to 250 W continuous and 400 W peak power. A DigiScrub digital filter circuit produces low-noise AC power that will not introduce discernible distortion into audio devices or computers powered by the Far Outlet.

A self-contained charger allows the far Outlet to be used as a UPS in the event of a power failure. With a standard deep-cycle battery and depending on load, the device will provide several hours of service between charges.

Suggested price of the Far Outlet is less than \$300, battery not included.



Construction includes a one-inch-thick laminated countertop, oak trim and wood kickboards. The Pro Studio comes assembled except for the optional overbridge. The cabinetry is priced at \$1,250.

See the Pro Studio 1 and other Spacewise products at www.spacewise.com

For information, contact Spacewise Broadcast Furniture in Arizona at (800) 775-3660 or circle Reader Service 88.

E-mu Darwin Relunched

E-mu Systems has relunched the Darwin eight-track hard disk recorder with new software and new features, at a lower price.

The latest incarnation of the recorder includes a 2 GB disk drive for enhanced storage options, a new DSP card with 32-bit floating-point processing for high-quality internal effects and new 2.01 operating software.

Additionally, E-mu has entered an exclusive distribution agreement with Sweetwater Sound of Ft. Wayne, Ind., and Guitar Center of Agoura Hills, Calif., to be the U.S. retail distributors of the Darwin system.

The new pricing strategy places the Darwin at less than \$2,000.

For information, contact E-mu Systems in California at (408) 438-1921 or circle Reader Service 107.



For information, contact Galaxy Audio/Valley Audio in Kansas at (316) 263-2852 or circle Reader Service 100.

Furniture for Small Studios

Spacewise Broadcast Furniture has the Pro Studio 1 cabinetry line for ergonomic and economic use of studio space.

The system footprint and countertop is a modest 3 feet by 6 feet. Two wing cabinets add 12 rack spaces and room for two PC systems. A pullout keyboard drawer and optional overbridge for monitor screens and speakers round out the features.

Personal Power Station

The lunchbox-sized Far Outlet personal power station from Galaxy Audio/Valley Audio provides 110 VAC,

BE Newsroom Editor

The Broadcast Electronics "NewsBoss" newsroom system now includes an integrated digital audio editor for fast, non-destructive single-screen editing of actualities.

This feature allows finished audio cuts to be linked to news stories already written within NewsBoss and then played to air from the NewsBoss prompter.

Like many broadcast audio systems, the new audio editor records in standard WAV format and uses inexpensive non-proprietary soundcards. A built-in VU meter and level controls keeps the recording process simple.

Drop-markers are used to find sound bite locations within a long cut. Multiple edit screens can be opened with cut-and-paste capability, and four Clipboards are included for more sophisticated editing. Zoom controls help locate fine edit points on the graphical waveform editor window.

For information, contact Broadcast Electronics in Illinois at (217) 224-9600 or circle Reader Service 64.



Summit Mic Preamp

Summit Audio introduced the MPC-100A tube microphone preamp with integral compressor/limiter. This unit is designed for high-quality microphone audio input to digital recording/editing systems.

The single-channel device includes a tube preamp circuit followed by a separate tube compressor-limiter section. A high-quality mic input, Hi-Z musical instrument input and line-level input drives

See PRODUCT GUIDE, page 41

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► **PRODUCT GUIDE**, continued from page 40 the first vacuum tube stage.

This stage drives a fast-attack compressor circuit. The rapid attack time ensures clipping confidence before enter-



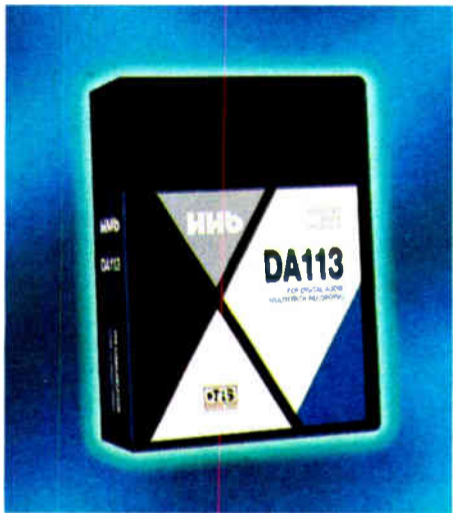
ing any digital system. A switchable front-panel VU meter reads input, output and gain reduction.

Unique to this unit is a step attenuator. This input control simultaneously attenuates the signal while stepping the tube feedback level. The mic input includes a Jensen transformer as well as an electronically-balanced circuit.

For information, contact Summit Audio in California at (408) 464-2448 or circle Reader Service 63.

HHB Digital Recording Tape

HHB has a new addition to its line of media products: DA113 DTRS digital eight-track tape.



The new DA113 is optimized for use in Tascam DA-88 and Sony PCM800 modular digital multitrack machines, and has a recording time of 113 minutes. A specially formulated metal binder ensures negligible drops in outputs after repeated playback cycles in pro applications; after 100 passes, measured drop is less than 0.5 dB.

The DA113 tape joins other products in the HHB Advanced Media Products line, including six lengths of DAT tape, magneto-optical disks, data and audio MiniDiscs and CD-R media.

For information, contact HHB in California at (310) 319-1111 or circle Reader Service 87.

RSP Surround Products

Audio producers moving into DVD soundtrack production should know about the 5.2.5 Controller and the 5.2.5 Encoder from RSP Technologies.

The Encoder accepts standard 5.1 Channel surround audio (L-C-R-LS&RS) from a console and outputs an LT and RT matrix signal for stereo compatibility. The LT and RT outputs are at +4 dBu, electronically balanced, on XLR connectors.



The 5.2.5 Controller is a 1RU electronics package with remote four-joystick controller box. Each joystick has individual Mute switches. Up to four such controllers can be ganged for projects requiring more panned outputs.

For information, contact RSP Technologies in Michigan at (248) 853-3055 or circle Reader Service 81.

Audio-Technica Shock Plates

Audio-Technica introduced three new shock-mount plates for microphone mounting in conference and roundtable-broadcast applications.

Each plate features a flexible suspension panel to isolate the mic from the mounting surface, effectively reducing mechanical noise and vibration. The plates are compatible with Audio-Technica lightweight gooseneck condenser mics, such as the UniPoint, Engineered Sound and ProPoint models.

The AT8646AM mount has a 5/8-inch-27 threaded mount. The AT8646QM features a female XLR connector and the AT8647QM/S has an XLR connector and lighted Mute switch.

For information, contact Audio-Technica in Ohio at (330) 686-2600 or circle Reader Service 82.

Fostex Digital Converter

One of the least expensive digital converters available is the Fostex COP-1.

The COP-1 converts optical S/PDIF signals to coaxial S/PDIF signals. The box features a universal interface for bidirectional conversion, runs on a standard 9 VDC battery eliminator and is competitively priced at \$95. The COP-1 is a simple and affordable solution to bridging the two signal carriers.

For information, contact Fostex Corporation in California at (310) 921-1112 or circle Reader Service 83.

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DIGITAL DOMAIN

Audio-on-Demand on the Internet

Mel Lambert

Much has been made of the interactive dimensions of the Internet.

Aside from having to face the brutal truth that, for most domestic users, 28.8 kbps modems and Power PC/Pentium-based platforms are no longer a luxury but a definite necessity, a number of service providers are getting serious about on-line delivery of music and related media.

While I realize a growing number of U.S. radio stations are providing streaming audio on a regular basis, I wonder if this is the most creative use of system bandwidth?

Sure, it's a blast to be able to dial up access to overseas stations. Personally, I have become a fan of England's Virgin Radio at www.virginradio.co.uk

But can broadcasters make better use of the available program content they beam out from their FM and AM antennas, aside from concerts, news and sports events? Or maybe look for ancillary applications for on-demand music and audio file delivery over the Internet?

Delivering the goods

Acknowledging products from Xing Technologies and Telos' AudioActive, we must concede that the leading proponent

of Web-based audio delivery is Progressive Networks, whose series of RealAudio servers, players and related real-time delivery applications have revolutionized the way we use such services — indeed, take them for granted. But there are other aspects of audio delivery via the Internet that might require additional functionality.

A number of record labels are looking to deliver non-real time offerings of materials via dial-up modems and ISDN links. But this involves copyright protection of music and related media. Our industry also uses links to provide access to music libraries, PSAs and even commercials from a central server via the Internet.



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A number of ad agencies are looking at the possibility of using the Web to deliver audio "proof copies" of ads to their clients, with final delivery of spots to end users.

For these and other applications, we really do require some way of copy-protecting the material, if only to ensure its eventual use at authorized outlets.

One company that has been extending the technological envelope into the thorny area of copyrighted audio files is Liquid Audio, which was formed in early 1996 to develop a number of unique solutions to these and other Internet applications.

Liquid Audio offers interesting techniques. One provides real-time delivery of soundfiles utilizing an enhanced version of Dolby Laboratory's AC-3 digital audio data compression and modem/ISDN links.

Secret decoder ring

Another is a series of elegant encryption techniques for preventing unauthorized use of materials that might need to be downloaded in non-real time using AC-3 at ratios up to 140:1 (10 to 190 kbps rates).

As many record labels are discovering, the threat of audio piracy remains one of the main obstacles to sales and distribution of audio over the Internet. Liquid Audio has developed a two-tier approach to the problem.

First, anti-copy and anti-piracy protection is added to the audio files before being placed on the client's server. Such anti-copy protection, using public key-encryption systems, ensures a secure upload/download and binds the materials to an individual user.

Anti-piracy measures such as digital "watermarking" inject inaudible information into an audio signal that is impossible to remove without ruining the recording, and stay with the audio after it leaves the digital domain.

In this way, watermarking provides a way of identifying bootleg copies and, in the event of unauthorized distribution, might even be used to identify who purchased the material.

Liquid Audio offers a suite of powerful utilities for digital music delivery, including Liquifier Pro, Liquid MusicServer and Liquid MusicPlayer. Liquifier Pro enables users to prepare and publish CD-quality, copy-protected music for delivery via the Internet. It includes DSP functions such as sample-rate conversion, parametric EQ and dynamics processing.

In addition, Liquifier Pro allows lyrics, credits and artwork to be included within the audio file, accessible via the firm's MusicPlayer.

Utilizing standard protocols to deliver scaleable, Dolby-encoded audio and media over Internet provider networks, Liquid MusicServer handles on-line access to data files and includes a database plus utilities for asset management, copyright protection and royalty tracking and reporting.

Mister EDnet

Recently, Liquid Audio and Entertainment Digital Network (EDnet), a company specializing in digital network systems, unveiled a new end-to-end Internet audio solution for the broadcast industry.

Super Sonic Transport (SST) is designed to provide on-line delivery, preview and download of audio via EDnet's network, which includes post studios and ad agencies.

Via SST, broadcasters and ad

See DIGITAL, page 43 ▶

PRODUCER'S FILE

Studio Move, Survival Story

Ty Ford

I have had several near-death experiences. None of them, as I recall, was more painful than moving my studio. Other than the 42 linear feet of albums in my collection, I am really not much of a packrat.

Fortunately, I had a break in the schedule of about 10 days during which I was booked to work out of other studios. As much as I hated removing all of the gear from the racks and boxing it back up,

I convinced myself that it was an appropriate action to punctuate the change in operation. It provided a certain sense of closure.

Wide-open spaces

Over the years, I've found my brain works more efficiently in an uncluttered environment. To look at my office, you would never know it; but above some level of clutter, I become unable to concentrate as well. It's sort of a mild spatial autism. I had a vision of a simpler,

cleaner configuration.

Breakdown of the old studio was first. I left the patch bay in the main rack and labeled each cable, using white electrical tape and a permanent Sharpie marker.

The Mackie mixer I use for an input/output matrix to the Orban workstation presented another challenge. I had numbered its cables on both the mixer and patch bay ends.

To make re-connection easy, I flipped the Mackie manual to the rear panel shot and wrote in the correct cable numbers

available, and includes the relevant URL.

The next morning, the agency rep in New York downloads the engineer's message, clicks on the underlined URL links, and within seconds is listening to streamed versions of the commercials.

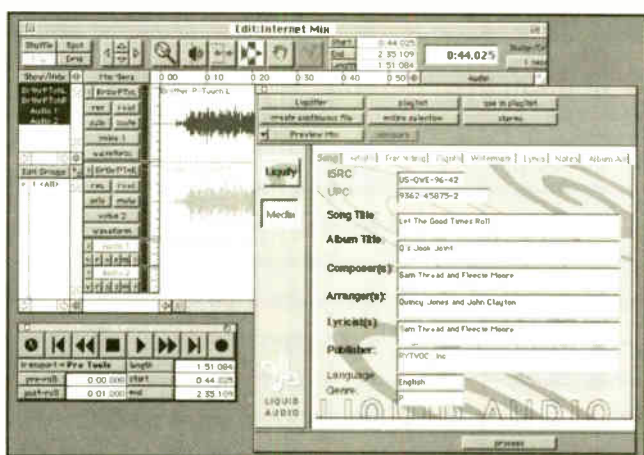
Actual audio quality depends on connection speed, but should be sufficient to make assessments regarding relative levels, music and the voiceover. Even over a 28.8 modem, the agency would be able to download a broadcast-quality version of a 30-second spot in a couple of minutes.

The agency then can e-mail its approval, comments or corrections. Very simple indeed.

Call Liquid Audio at (415) 562-0880 or visit its website www.liquidaudio.com

Entertainment Digital Network (EDnet) can be reached at (415) 274-8800 or at websites www.ednet.net and www.sst.net

Mel Lambert is principal of Media&Marketing, a Los Angeles-based consulting service for the professional audio industry. He can be reached via mediapr@earthlink.net or (818) 753-9510.



Liquid Audio Software

might be used during production of a radio commercial.

Suppose a Los Angeles ad production studio finishes a package of spots, but misses the final cutoff for overnight delivery to New York for approval by the ad agency. Having prepared the spots on Pro Tools using a software plug-in from Liquid Audio, the West Coast engineer logs into an account on the EDnet server and publishes the audio files to his account.

For each of the spots he publishes, the engineer receives back a URL: a Uniform Record Locator, or "pointer" to the audio file. He then sends an e-mail message to the client explaining that the commercials are

Audio Transmission by Internet Made Easier

DIGITAL, continued from page 42 producers can preview CD-quality music and sound effects, then download the sound as linear CD audio for use in production.

"Until now," said Gerry Kearby, CEO of Liquid Audio, "it would take days, even weeks, for a facility to ship tapes, obtain approvals, make changes and distribute final masters. Our technology expedites this entire process via the Internet, and offers professionals instant auditioning and downloading of an unlimited number of music and sound resources."

For users contemplating setting up their own websites with on-line audio, but who lack the resources or technical expertise, EDnet offers a hosting service.

An ad agency might elect to rent space on an EDnet server on an as-needed basis. Audio can be prepared for streaming and distribution over the Internet using special software, or transferred in real time to the EDnet San Francisco office using an ISDN audio codec.

Beyond adding streaming audio capabilities to a client's website, EDnet can simplify the ad-approval process by allowing agencies and studios to e-mail a password-protected audio link to one of more users.

Case example

EDnet and Liquid Audio detail a relevant case example of how Audio Email

right on the manual.

I ran into a couple of challenges during the breakdown. I had made holes in some built-in shelving for routing the audio cables for my workstation. After I pulled the cables, I soldered them to the patch bay.

Guess what? The holes I made for the cables were too small to fit the XLR connectors through, so I had to desolder those connections.

New digs

The new space is bigger and more comfortable, with an extremely quiet HVAC system. The power is relatively clean and, to my surprise, even the overhead fluorescent lighting is quiet. I had to call in Bell Atlantic to get rid of some of the hash on the phone lines, but they took care of the problems in less than a day.

As I sat amid the boxes and empty racks at the new site, it occurred to me this was a great time to reinvent the studio layout.

Like most studios, mine "grew" over time. I put things where there was room for them, which was not necessarily the best place. Before I put them back in, I thought about how much or how little I used each piece.

There were several pieces of gear I seldom used anymore: a Dynafex single-ended noise reduction unit, an Aphex Type C Aural Exciter and a Urei graphic EQ.

I also seldom use the Roland Alpha Juno I and U20 keyboards and MT32 sound module. Even the Revox PR99 reel machines rarely get used.

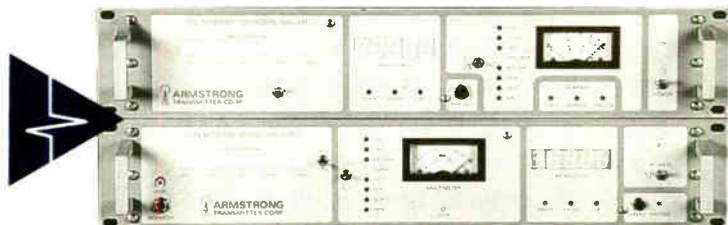
My solution? If I need them, I'll put them in racks on wheels and roll them in for the specific job, then roll them out.

That left the stuff I use most: GML mic preamps, AirCorp expanders, Aphex Compellor and Studio Dominator, Eventide 3000B/SE with sampler, Yamaha REV7 reverb, a Rane headphone amp and several black boxes that "do things."

I installed them in the main rack, from the top down in that order, except for the black boxes. They are completely out of sight. Don't ask me where or what they are; I don't remember.

See FILE, page 45

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The DS-8 features include:

- ▶ Each of the eight relays may be independently programmed for codes and mode.
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- ▶ All connections on screw terminals
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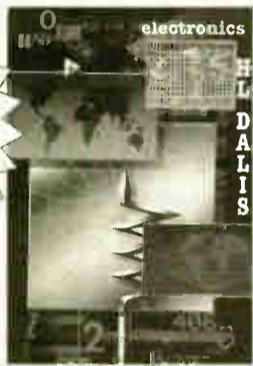
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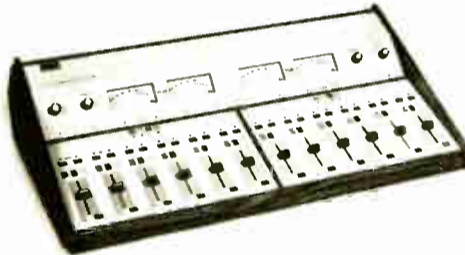
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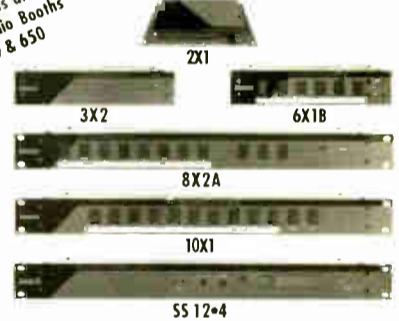
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Planning, Building New Studio

► FILE, continued from page 43

I took a big chance and defied the laws of nature by moving the Mackie, CD player and cassette machine from the main table to a left-side return surface.

I was somewhat concerned that, being right-handed, I would have problems operating the gear with my left hand, but 17 years of sitting between two turntables in air studios can do wonders for your ambidexterity.

Stand by me

My Panasonic SV-3900 DAT machine remained nice and handy in the main rack. A lot of my clients want to leave with a DAT master.

In the end, the Orban controller, computer monitor and two Radio Shack Minimus Seven speakers were the only

pieces on the main table in front of me. The table seemed huge and empty, but that was also part of the plan.

In the original studio setup, clients had to sit behind me. What I wanted to do was create enough space so the client could sit next to me or at the end of the table at a 90-degree angle and still have a reasonable work space. The extra space also will be used for visiting equipment.

Originally, I was using E-V Sentry 100 monitors on the main table, raised to ear level with custom supports, as near fields. While that worked well, I now have the space to push back a bit.

I am still in search of the right monitor supports — something that will support the monitors and still fit in with the 100-year-old table that was custom-built

from piano parts.

The acoustic treatment for the room will evolve as I get accustomed to it. I don't like to go in blindly — or deafly — and cover everything in sight with foam. That often results in dead sounding recordings.

Shimmer

I prefer a certain amount of highly diffused reflected sound. It adds shimmer in a way that few processing units can match. For now, close-miking and a few sheets of strategically placed Sonex are working, but I need some additional absorption for people who cannot work a close mic.

Working with foam sheet goods, such as Sonex, can be fun or a nightmare. I was called in to help a studio in which they were trying to glue the product directly to the ceiling. The glue did not work. It wasn't designed to hold the full weight of a sheet measuring 2 x 4 feet.

While I question the appropriateness of using foam on a ceiling, I suggested that they mount the stuff on lightweight paneling and then attach the paneling with screws to the ceiling after the glue set.

For wall mounting, try framing sheets with wood. Go to the local hardware

store and get some 1 x 3-inch stock, and several packs of small L-brackets. Cut the stock to make a frame that is slightly smaller than the piece of foam you have cut so the foam snugs into the frame.

Screw one side of the L-brackets to the 1 x 3 and the other to the wall. The 2-inch foam that I cut into 2 x 4-foot sections needed no gluing, because the frame held it in place. Incidentally, an electric carving knife works great for slicing the foam.

I still need to isolate the refrigerator on the main floor. When its compressor kicks in, I can faintly hear the sound resonating across the floor joists and down a wall at the far end of the studio.

My plan is to glue 3-inch squares of wood to 4-inch squares of Sorbothane, place the squares with the Sorbothane side down and sit the fridge on top of them.

■ ■ ■

Ty Ford's voice demos can be downloaded with any Web cruiser or via FTP from FTP.Jagunet.com/pub/users/tford

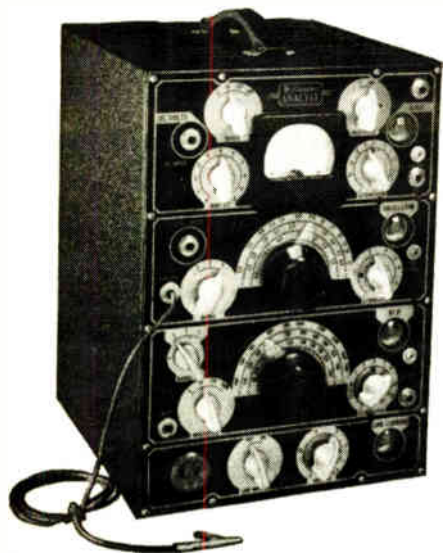
Ty is editing a collection of amazing control room nightmares, such as dreaming you are in an unfamiliar station, the music is ending, nothing is cued up, you're wearing a fig leaf and the general manager is bringing in a class field trip.

Real nightmares only; nothing made-up, please. Please send yours to tford@jagunet.com

'Portable' Analyzer From The Good Old Days

How about *this* for a piece of equipment?

This is the Meissner Analyst, a combined voltmeter/oscillator/signal tracer used back in 1943 for electronic repair, mostly in radio shops. It was manufactured by the Meissner Co. of Mt. Carmel, Ill., and carried a price of \$96.50.



Bakelite AC power plug at the lower left, the "chicken-head" pointer knobs and the four Magic Eye electron-ray tubes.

These tubes would glow green and a slit-shaped shadow would vary in width with the amplitude of incoming signals. They weren't oscilloscope screens, but they looked impressive on customer house calls — back when repair businesses actually made house calls.

The Meissner Analyst was considered a "portable" device, but portability as we know it is different from what it was in 1943. Based on known sizes of the knobs and the electron-ray tubes, the Analyst would have been larger than a typical Heathkit one-channel scope. Given its 12-tube circuitry, it must have also been rather weighty.

— Alan R. Peterson

Compare this device to similarly featured solid-state handheld multi-testers of today, made by companies like Fluke, BK Precision, Wavetek and others.

The metal case was finished in the black crinkle-paint style typical of the era and had a screened front panel. The modules (called "channels" in the ad material) each performed a specific function.

From the top down, a four-range 10 Megohm DC voltmeter chased down voltages inside equipment under test. Sharing space with the meter was an audio tracer, used to troubleshoot audio stages.

Below was a three-range audio oscillator for injecting signals into units under test. Controls from left to right: the three-position Range switch, the Frequency Adjust and Attenuator.

Next down was the RF-IF generator with its 95-1700 kHz range. At the very bottom was the power strip with outlet for the unit being repaired.

Adding nostalgic charm to the Meissner Analyst, note the non-polarized

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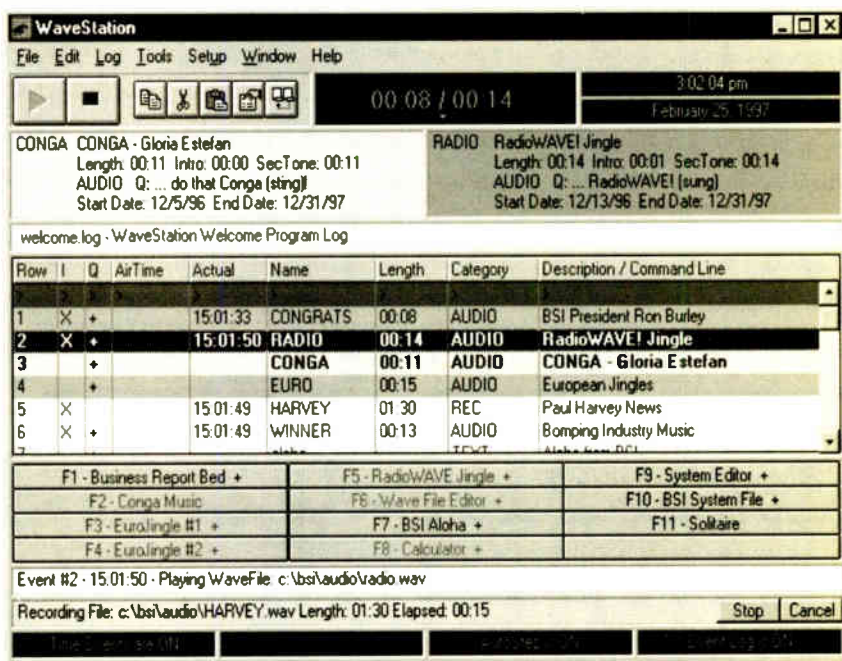
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3					CONGA	00:11	AUDIO	CONGA - Gloria Estefan
4					EURO	00:15	AUDIO	European Jingles
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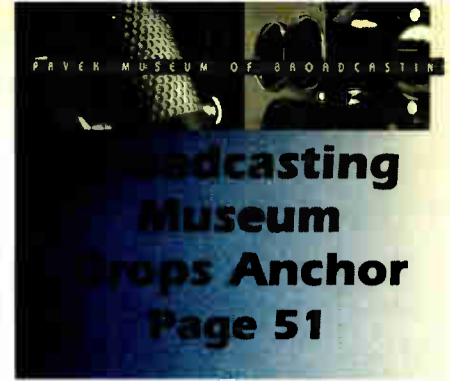
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October 1, 1997

RADIO ADVERTISER

Moral Pitch Brings in Big Bucks

John Montone

"Do you love the cause more than the carrier?" That question is posed at the start of one LifeLine radio commercial. LifeLine's radio campaign is unflinching, unapologetic and, some would say, intolerant. It is the roaring mouthpiece of Christian capitalism.

AmeriVision Communications Inc. of Oklahoma City, which offers LifeLine, is a long-distance carrier that

Given the politically incendiary nature of the LifeLine spots, it's no surprise that some commercial stations refuse to run them.

promises to save its subscribers up to 8 percent on their phone bills and donate 10 percent of the LifeLine profits to charities that, in the company's words, fight the moral decline of our nation. A good part of that fight is an all-out assault against "gay rights."

AmeriVision Senior Vice President/Head of Operations Carl Thompson champions the company's crusade and is comfortable about

spreading its message via commercials that run primarily, but not exclusively, on Christian radio stations.

Strong words

Thompson uses his radio spots to trash the company's competitors, accusing AT&T Corp. and MCI of "spreading gay rights," and Sprint of "spreading abortion." Thompson, who is responsible for the content of LifeLine commercials, further charges that the big carriers "spread pornography on the websites."

"You need to quit using them and



Carl Thompson (right) poses with LifeLine President Tracy Freeny.

turn it to us so we can help restore Christ's kingdom on the earth," he said.

Given the politically incendiary nature of the LifeLine spots, it's no surprise that some commercial radio stations refuse to run them. "They turn us down because we're too radical. They try to say we can't say those things."

AT&T spokesperson Burke Stimson called the LifeLine campaign "advertising by inflammation," saying the charge is "preposterous."

Stimson said the allegation that AT&T actively supports a homosexual agenda may stem from donations made in the late '80s by AT&T to the Gay Men's Health Crisis as a way of confronting the mounting number of AIDS cases.

Even if account execs were lining up for LifeLine's business, they might not get it. Thompson chooses his secular stations carefully. "Mostly talk shows," he said, "Bob Larson and Alan Keyes." But not Rush Limbaugh, whom Thompson calls a "good guy who refuses to take a stand on some Christian issues."

Most of LifeLine's radio advertising budget goes to 400 Christian radio stations, which Thompson admitted narrows the field of potential listeners and subscribers.

"We are trying to limit our market share," he said, in an unusual claim for a businessman. "We don't want the people who don't agree with us, we don't want the world system," he said. "The people that don't like us, we don't want them."

However, Thompson said, "A gay could call and use my service if he wants me to put money to destroy what he believes," he said. "The litmus test is what charity you're going to give it to. They don't get to pick (their own)

See LIFELINE, page 52

Changes in Store for Fund Raising

S.D. Yana Davis

Public radio listeners have grown accustomed to pledge drives. But in coming years, those drives might be eclipsed by another method of gaining new individual contributors.

"Pledge drive" is noncommercial radio jargon for "radiothons" during which staff and community volunteers take long breaks in regular programming to ask listeners to become "members" or "friends" of the station by contributing money. Most public stations hold two or more of these events annually. Station staff, not to mention many listeners, probably would prefer none be held, but economic considerations dictate that they continue.

Many public radio development officers and managers interviewed by **RW** believe stations won't be able to do without pledge drives in the foreseeable future. But a recent large grant to industry giant Minnesota Public Radio by the Corporation for Public Broadcasting may signal an increasing reliance on direct mail.

More direct mail

"MPR just received a \$270,000 grant from the CPB in early June," said Catherine Harvanko, direct marketing manager for MPR. The regional network serves Minnesota and parts of adjacent states, and produces nationally syndicate shows

See MONEY, page 48

ATTENTION P.D.s

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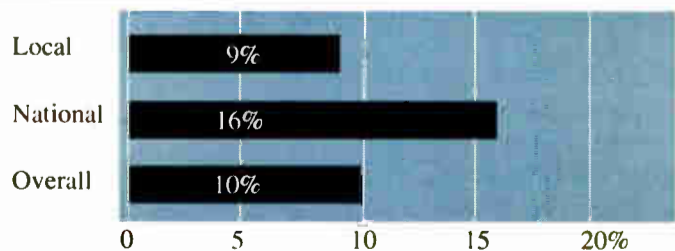
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RADIO REVENUE : YEAR TO DATE



Double-Digit Growth Continues

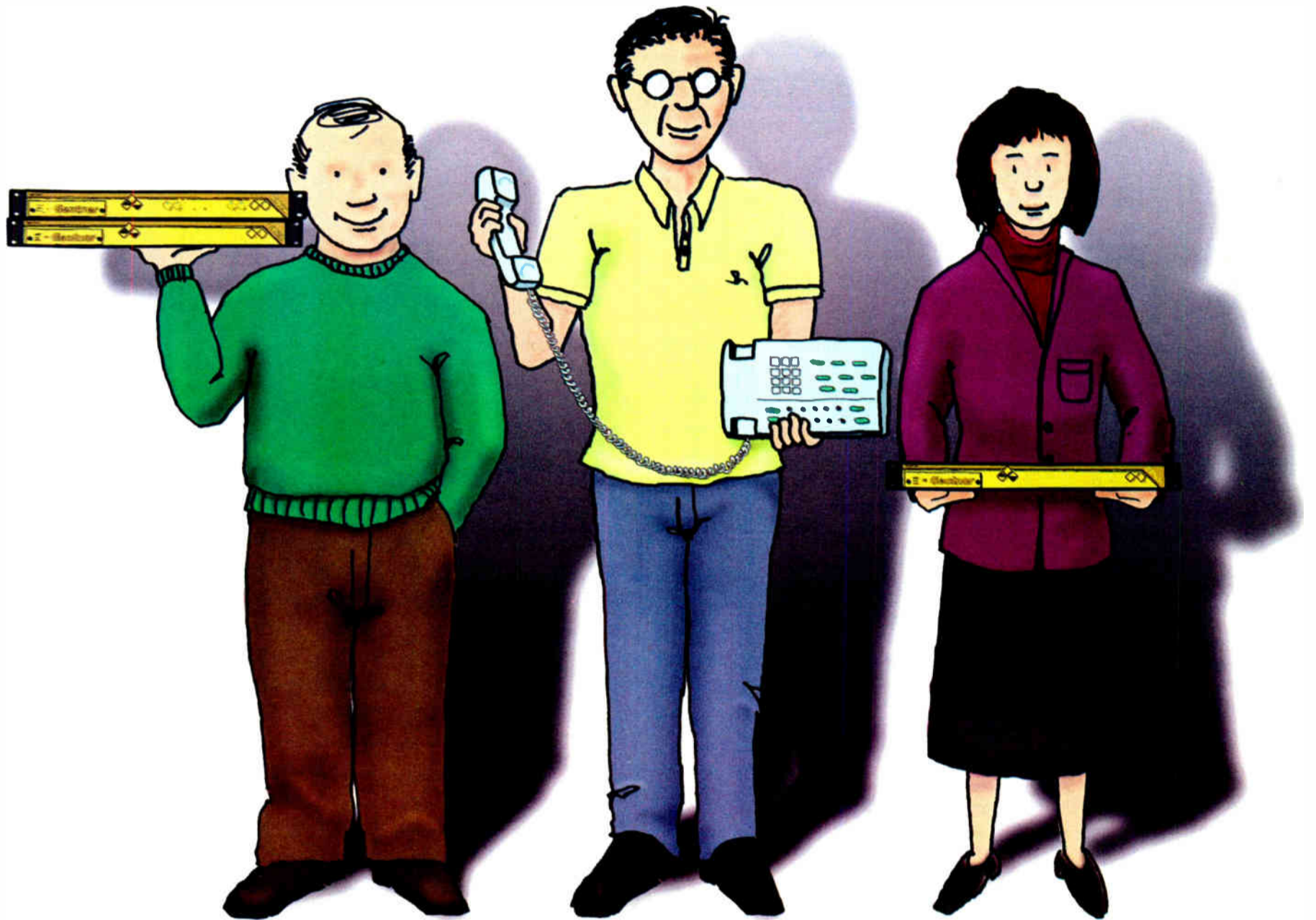
Radio's success train keeps rolling in 1997.

Year-to-date revenue figures from the Radio Advertising Bureau show sustained growth through July, with revenue up 10 percent from the first seven months of 1996.

Breaking things down a bit, regional figures for national-only revenue showed outstanding growth of 19 percent in the West and East, with the Southwest up 18 percent. All markets combined showed a 16 percent jump in year-to-date national revenue; local revenue grew 9 percent.

For the month of July alone, overall revenue was up 11 percent.

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*O.K., it's not new but the TS612 is still the best multi-line broadcast telephone system available.



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World Radio History

Direct-Mail Membership Strategy

► MONEY, continued from page 46

like Garrison Keillor's "A Prairie Home Companion."

The grant, Harvanko said, will allow MPR to expand its own direct-mail membership acquisition program and eventually provide low-cost training to other stations to duplicate the strategy of MPR.

Harvanko said approximately 35 percent of MPR's massive membership, which hovers between 85,000 and 90,000 individual contributors, were acquired through direct mail.

That percentage is high in an industry where direct mail has been used primarily to "remind" those who called during a pledge drive, renew the same members a year later or ask for additional contributions. All the more impressive, MPR's direct mail acquisition efforts began in earnest only in late 1993, when Harvanko came on board.



Catherine Harvanko of MPR

While the up-front cost of acquiring a member by direct mail can be substantial, the downline costs to renew are attractive.

"It costs MPR about \$10 for each listener who responds to a pledge drive," Harvanko said. "But it also costs us about \$10 to renew that same listener during a subsequent pledge drive. While it costs \$34 on average to acquire a new member with direct mail, the average cost to renew that member is just \$1.29."

Harvanko said MPR mailed to about 700,000 individuals asking for contributions during the fiscal year ending June 30, with a response under 1 percent. However, average contributions in the public radio system are around \$60 to \$65, so that 1 percent yields impressive net revenues.

Direct mail success at trend-setting MPR has not gone unnoticed at other public stations. In Pensacola, Fla., WUWF(FM), inspired in part by MPR's example, recently concluded its first direct mail acquisition campaign, according to membership manager Kathy Tyler.

"We mailed on June 1," Tyler said, "and so far our response has been better than what we expected. It's running at about 2 percent."

Tyler said about \$3,000 had been contributed, with more coming in daily. She said WUWF had mailed to 3,200 supporters of the Northwest Florida Arts Council, with a target reply date of June 30.

Tyler said WUWF was motivated by the need for "new avenues of fund raising" and by the downstream low cost of renewing contributors acquired through

direct mail. Tom Godell, general manager of WSIU(FM) in Carbondale, Ill., agreed. "I think by now nearly everybody in the public broadcasting industry realizes that our future is dependent on our ability to raise significant new monies from the private sector," Godell said. "Direct mail acquisition is the most promising new fund-raising method for public radio that has come along since the landmark WKSU-FM study of on-air fund raising.

Average contributions in the public radio system are around \$60 to \$65, so a 1 percent response yields impressive net revenues.

"I think we've done just about everything we can possibly do to recruit new members over the air," said Godell, a veteran of dozens of drives over his 21-year career in public radio. He cited improvements in on-air pledge drive content, including a sophisticated five-step giving path, special premiums linked to holidays like Valentine's Day, and highly produced spots used with live announcing during pledge breaks.

But the bottom line, Godell said, is time spent asking for money. "I sincerely doubt that we can increase the amount of time we spend fund raising on-air without alienating our most loyal listeners and supporters."

WSIU(FM), a "third tier" or small-market station, already conducts two annual pledge drives, each lasting 10 to 11 days. The station also broadcast a special on-air pledge drive in June to meet budget needs before the end of the fiscal year.

"Our plan at WSIU is to participate in the project that's being spearheaded by MPR. I don't expect a windfall (from direct mail) in the first year," Godell said. "If we break even, I'll be surprised. What I'm looking for is income over the

long haul. That's what's going to make the difference."

At least one industry fund-raising executive thinks sophisticated direct mail acquisition will allow stations actually to reduce the number of days and hours spent fund raising on-air.

Soft sell

Carmen Frierson, director of budget planning and membership services at KUSC(FM) in Los Angeles, said, "We'll be able to scale back the number of days spent fund raising on-air and the number of hours in those days, as well as make the most efficient use of that time. We'll be able to use a 'softer' sell, as opposed to the more aggressive style during drives."

KUSC's mainstream classical format had good numbers and a solid contributor base, but changed formats two years ago to a "mix" of classical and non-classical arts music. The response from contributors was immediate and unmistakable.

"Our contributor base plunged to 17,000," Frierson said. For a major public station in one of the largest U.S. media markets, that news was anything



Staff and volunteers at WSIU(FM), Carbondale, Ill. help out during a recent pledge drive. Direct-mail acquisition of members may become as important as on-air solicitation in coming years.

but good. A management change ensued, and KUSC returned to its traditional classical format a year ago.

KUSC membership levels are back up to 27,000 thanks to the response from loyal contributors during three annual pledge drives. Frierson is interested in exploring direct-mail acquisition.

RADIO BUMPERS



Think on these things: listener-supported WLPE(FM), Augusta, Ga., is one of seven stations comprising the Good News Network. The station airs Christian music, ministry and talk shows. The call letters are an acronym for a paraphrase of the New Testament command to focus on that which is lovely, pure and excellent.

The Good News Network hopes to

grow beyond its current seven-station base while focusing on the Southeast. For its bumper sticker, the station chose a color mix of bright yellow, red and black, sure to stand out.

Does your station have an eye-catching bumper sticker? Send it to: RW Bumper Sticker, 5827 Columbia Pike, Third Floor, Falls Church, VA 22041.

"We really haven't done direct mail acquisition in about six years," he said. "The ... renewal dollars are good. It builds potential for the future."

Within the next 12 to 18 months, Frierson said, new direct mail members could become more important than pledge drive contributors at KUSC.

By mailing to arts organization contributors as well as magazine subscriber lists, she said, the appeal goes to individuals who are accustomed to giving or subscribing by mail. Also, southern California is replete with arts organizations that have thousands of upscale contributors and magazine subscribers who fit the public radio listener profile: college-educated, affluent, professional.

At Pensacola's WUWF, with a much smaller potential among arts organizations and similar lists, Tyler said there are "no plans to make pledge drives any shorter," but, as experience is gained in direct mail acquisition, drives could become more focused and less intrusive.

Public radio managers should watch the MPR project closely over the next two years, even as they move ahead with their own direct acquisition projects. For radio staff and listeners, direct mail acquisition may well prove not only more effective but a lot more palatable than broadcast pledge drives — especially if the contributors can still get those coffee mugs and T-shirts.

■ ■ ■

S. D. Yana Davis is a freelance writer and public radio fund-raising consultant in Knoxville, Tenn.

Control Your Losses

Participants in an NAB-endorsed insurance program can obtain a free loss control guide from Royal Insurance of Charlotte, N.C. The guide, created specifically for broadcasters, covers self-inspection programs, tower problems, accident investigation and record-keeping, security, workplace violence issues and general safety.

The NAB Property & Casualty Insurance Program is offered by Royal Insurance and is endorsed by the National Association of Broadcasters, but radio and TV stations need not be NAB members to take part. The loss guide is a free benefit to those participants, who will receive their copy at renewal or can call for one earlier. The guide is updated regularly.

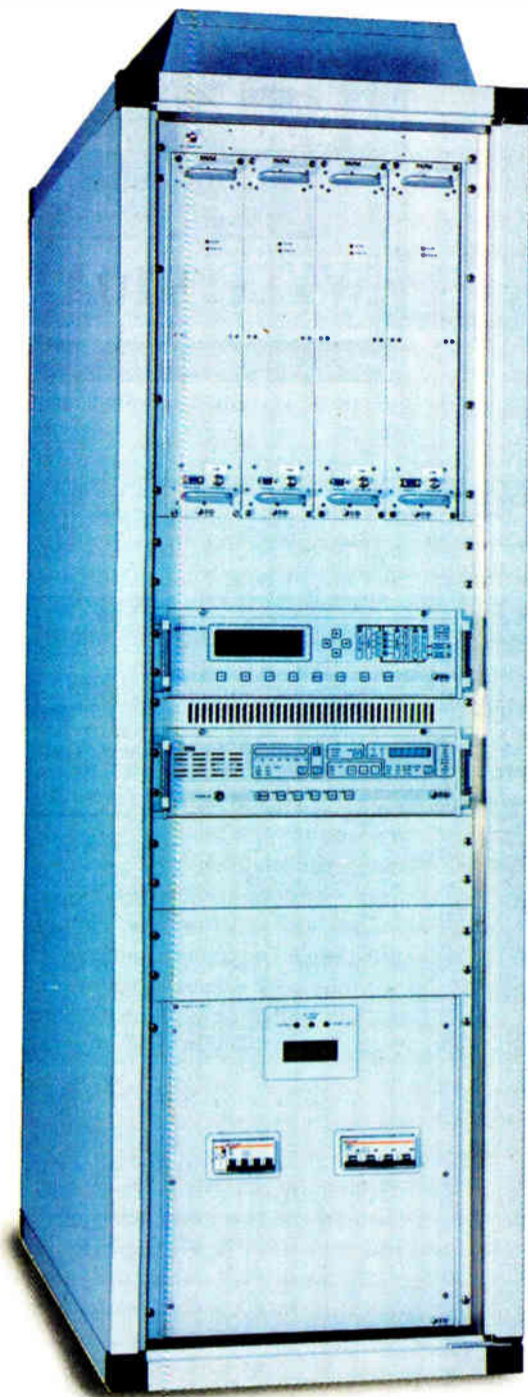
Matt Knox, a spokesman for Royal Insurance national program operations, said the insurance program offers property and casualty coverage for broadcasters, and can be arranged through any independent insurance agent. He said the program has written approximately 250 policies covering 500 to 600 stations.

For information, contact Daryl Everett of the NAB at (800) 368-5644 or Matt Knox of Royal Insurance at (800) 426-4388.

— Paul J. McLane

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GUEST COMMENTARY

Retro Radio: The New AM Wave?

Rob Peyton

Remember those halcyon days of the 1960s? S & H green stamps, supermarket TV tube testers, muscle cars, the race to the moon and your favorite Top 40 AM radio station. It seems like another world — unless you happen to live in Marietta, Ohio.

Tucked away amid the green hills of the Ohio Valley is a 5,000 W idiosyncrasy. When you first twist your dial to it, there's a lot to take in — the sharp jingles, the super-tight format, the outrageous DJs, the screaming contests and promotions. It's Boss Radio.

Just when it was safe to assume that mass-appeal, locally creative AM radio belonged to the history books, it's making a surprise comeback. Why? Because of the irrepressible vitality of high-intensity live jocks, local humor and DJs who interact with the nearby communities through dances, pool parties and concerts. Only live radio can offer it.

Down for the count?

WYLI in Marietta was a dark, antiquated, all-but-forgotten AM station when radio entrepreneur David Strock bought it in 1995. With AM "on the ropes," Strock picked up the station for

much less than the cost of a similar-sized FM.

Dave Strock is doing with WYLI what virtually everyone in the industry says won't work: building a format using music that will attract listeners of all ages. The jingles, news presentations and contests are designed to please multiple groups of audiences, all with a distinctive sound and a sense of excitement. When was the last time so varied a format as Led Zeppelin, Puff Daddy, The Village People and Smashing Pumpkins was heard on AM or FM? While some may perceive this concept as retro, to a new generation it's downright cutting

edge!

What better place to ensure a counter-revolution to sameness than in an area where radio least reflects the mood of young people? Accordingly, Strock's idea is simple: Recreate Top 40 Boss AM stereo. Why AM stereo? AM's much more expansive skywave — perfect for large, sparsely populated areas — has always been an advantage over FM. After all, the amplitude advantage AM has over FM isn't something that



has to be imagined so much as remembered.

Boss Top 40 has captured the mood of this smaller mid-Ohio Valley market, and WYLI has developed a winning format to reflect that mood, with an idea that hasn't been bounced off the ionosphere since the '70s. WYLI is one station to keep an eye on.

Remember when

Anyone who resides in rural regions of this country, far removed from metro areas, realizes the acute dearth of quality music radio. If you happen to dwell in the mid-Ohio Valley, you are essentially musically marooned in one large "dark area" between such far-flung metro areas as Columbus, Cleveland, Pittsburgh, Cincinnati and Dayton.

Long gone are the days when young people could conveniently tune in to local live-personality stations that went down at sunset, only to be replaced by the night-waves of WLS, Super-CFL, CKLW and WOWO. Ever since music gravitated to FM, these wide rural expanses have been largely left with nothing but the sterility of satellite-fed FM.

Dissatisfied with non-innovative satellite radio, Dave Strock has once again turned the local radio market on its head. FM Top 40 was introduced to the Parkersburg, W.V./Marietta, Ohio market in the '70s through Strock's WXIL and rated number one from the start. Ratings grew every year until 1979, when they were the highest in the country.

The station earned ratings as high as a 64.9 APS, over one-third of the population in an 18-county sweep and a whopping 98 percent of all teen listeners! WXIL owned the market. Strock sold WXIL in 1980 at an all-time record amount for that market, and is taking advantage of a niche long overlooked in radio.

Deregulate, deteriorate

The deterioration of local radio can be traced to the deregulation of FCC ownership rules. This led to the now-familiar waves of consolidation. Competition intensified; individual station audiences

See WYLI, page 51 ▶

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Pavek Proud of Its New Mortgage

Alice Hornbaker

After 10 years of leasing its space, the Pavek Museum of Broadcasting has purchased the building in which it is located and taken on a mortgage of \$400,000.

Wayne Eddy, the chair of the museum's board of directors, this summer signed mortgage papers that guaranteed the suburban museum a permanent home in Saint

Minnesota Broadcasters Association (MBA). "The MBA has been terrific," Eddy said.

The full-time director and curator of the museum, Steve Raymer, said the Pavek Museum of Broadcasting stands apart from others because of its year-round schedule, open to the public five days a week, and its children's programs.



Louis Park near Minneapolis — a home for one of the world's finest collections of antique radio, television and broadcast equipment, and for a top educational program for children interested in broadcasting.

"We hope to pay off that mortgage within a few years," said Eddy, who owns radio station KYMN(AM) in Northfield, Minn. He is a veteran broadcaster of almost three decades who entertains listeners daily from 6 to 9 a.m. on the "Wayne Eddy Affair," a mix of music, chat and "just fun," he said.

Secure future

The museum had long been a dream of Minnesota broadcasters, Eddy said. Now, by buying the building, the museum is assured a permanent home for its rare collections, including the Charles Bradley Collection, which represents more than 60 radio manufacturers from the Twin Cities area, and the Jack Mullin Collection, which documents 125 years of audio recording technology.

Money to support the museum comes from donations, fund raisers and the

"Pavek offers local kids special classes where they can learn everything from electron theory to computer logic," he said.

The museum was named for Joseph R. Pavek, the museum's founder, who lived from 1908 to 1989. He was an ardent collector and amateur radio operator, Raymer said. Pavek built his first crystal set and Model T Ford spark coil transmitter in 1919, and received his amateur call letters, W90EP, in 1933. In 1985 he donated his collection to the museum that now bears his name.

The MBA, formed in 1949 to represent the interests of the radio and television broadcasters of Minnesota, wanted to preserve the state's broadcast heritage, Eddy said. The association generates museum funds through fund raisers and marketing. Its director is Jim duBois.

"There's nothing like Pavek anywhere else," Eddy said. "Our kids learn all

Important Info:

WHAT: Pavek Museum of Broadcasting
WHERE: Saint Louis Park, a suburb of Minneapolis
ADDRESS: 3515 Raleigh Ave., Saint Louis Park, MN 55416
PHONE: (612) 926-8198
HOURS: Tuesday-Friday, 10 a.m. - 6 p.m.; Saturday, 9 a.m. - 5 p.m.
ADMISSION: \$3 for adults, \$2 students and seniors

about broadcasting, from equipment to producing a show on air. It's unbelievably heartwarming to watch those kids' eyes light up during workshops. In those eyes you can see the future of broadcasting."



John McNeil shows off the radio he built while attending the Pavek Museum's Saturday Morning Basic Electricity Class.

Alice Hornbaker is a freelance writer, veteran journalist, broadcaster and book author. She writes the weekly column "Life After 50" in *The Cincinnati Post*.

This is one in a series of occasional articles about museums involving broadcasting.

68 Years Ago

Reprinted from Radio World (October 5, 1929).

Editor's note: The RW of old, printed for a time in the 1920s and 1930s, and today's RW are unrelated except in name.

EXHIBITS TELL TUBE HISTORY, 1903 TO DATE

An outline of the history of vacuum tube was told in a series of models and documents, comprising one of the outstanding features of the Sixth Annual Radio World's Fair recently held at the Madison Square Garden.

Beginning with the gas flame detector, used by Lee DeForest in 1903, the history of radio exhibits covered in turn the first rectifier tube with filament and a pool of mercury, the first control electrode vacuum tube with control member in the form of a band on the outside of the glass bulb, and then the vacuum tube with the control member inside the glass bulb, this in the form of a second plate placed closer to the filament than the first plate.

The accompanying patent application of Dr. DeForest, covering this tube, showed the use of a grid bias voltage (1907). The most important invention in the entire history of radio development—the first audion, in the form of a glass bulb with a filament, zigzag wire electrode or grid, and a separate plate was seen next. A subsequent model presented the first commercial audion of 1907, followed by an improved type used from 1909 to 1917. This last audion is quite similar in general design to present-day tubes, with grid and plate placed on both sides of the filament.

It was this type of audion that Dr. DeForest used in the first cascaded amplifier which he demonstrated to the Bell Telephone System engineers in October, 1912. This was also the first tube to contain a vacuum approximating that used in present-day vacuum tubes, and was successfully used in the first oscillating tube circuits.

The exhibit also showed the advance of commercial tubes from 1917 to date.

Ohio Radio Station Brings Back Top 40 AM

► WYLI, continued from page 50

became smaller and many broadcasters began to offer more specialized programming aired at specific groups.

This resulted not only in the creation of more stations, but in radio that sounded more repetitive and inert.

Media conglomerates, struggling to support an onerous debt load, forced broadcasters to take less risk. Once they stumbled onto something that was generating income, they didn't want to risk losing it.

Debt, coupled with significant reduction in competition, has resulted in a sound-alike quality for small-market radio stations. For many of today's youth, channel surfing has meant listening to stations that are essentially no more than satellite "relay stations" for generic, prepackaged music and entertainment — a cold, impersonal monoculture of digital redundancy.

When we ruefully punch our presets and ruminate over prepackaged, generic radio, we generally think of it as irrelevant to our regional individu-

alism. Doesn't the devolution that we see in radio more or less mirror the transformation into boring sameness that has occurred all through American society?

A preponderance of "canned" radio stations seems like more than just a sequence of "earsores." Could it represent a significant social and spiritual decline, not unlike the sameness that dominates our "cookie-cutter" suburbs and look-alike commercial strips?

Standardization of radio simply does not seem flexible enough to meet local and regional tastes. Individualism, regionalism and spontaneity are what made radio great. The question is whether radio can, in our never-ending rush to the future, capture the mood of a still-varied nation. WYLI says the answer is a resounding "Yes!"

Rob Peyton is a freelance writer based in Williamstown, W.V. with an interest in economics, history and current events. He does an unpaid weekly commentary on WYLI but is not otherwise connected to the station.

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Long-Distance Radio Dollars

► LIFELINE, continued from page 46

charity. They have to choose one of our designated charities."

Selective giving

"LifeLine is an affinity product," Thompson said. "We pick charities we have an affinity to; we don't pick the ones we don't like." Thompson calls the LifeLine contributions "love gifts."

Among the charities that receive a portion of the \$450,000 "love gifts" per month are The Trinity Broadcasting Network, The American Center for Law and Justice, the American Family Association, Jerry Falwell Ministries,

Charisma Magazine's Christian Life Missions, Pat Robertson's Christian Broadcasting Network and the Republican Victory Fund, a political action committee.

"The charities are picked ahead of time," Thompson said. "Jerry Falwell will come in and say, 'Can I use you?' and I'll say 'yes'." What follows are LifeLine commercials promising 10 percent to Falwell Ministries. The commercials air during Falwell programs.

The company willingly limits its consumer base, but Thompson claimed the strategy has not hurt the bottom

line. "We do \$16 million a month, with radio creating about 30 to 40 percent of our billing," he said. He said the company puts about 10 percent of its gross back into advertising, with radio getting a large chunk of that.

The nature of LifeLine's spots may offend some listeners, but Thompson described the ads as "in your face" and "effective." He said straight advertising didn't work for his product, so he went negative.

"We were in business for three years and we were running some positive spots and hardly anybody was signing up. Then we came out openly and start-



Headquarters: Oklahoma City

Mission Statement: "To change the world with every call, to reclaim America as one nation under God and return Christian values to our nation."

Ad Contact: Jack Parsons, (800) 805-9905

ed telling people how the competition was promoting pornography and gay rights, and we started getting 40,000 a month to sign up."

He said radio is much more effective than TV for promoting LifeLine.

"Radio has a tremendous listening audience, it's cheaper to run ads on radio and the sign-up ratio on radio is a lot better than on TV. We sign up 150 to 300 a day on the Jay Sekulow Show." Sekulow is an attorney who represents Christians and Christian causes.

Anger, Thompson said, is one reason his radio spots work.

"There is a bigger backlash of anger against lack of morals and corruption in our nation than there is against someone who just wants to give some money to some charity."

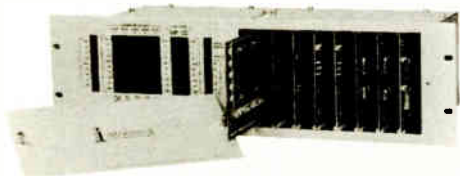
Call the LifeLine campaign what you will, the folks at AmeriVision call it a success.

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Inovonics continues to meet the everyday needs of broadcasters the world over with sensible, top-quality audio-broadcasting products at down-to-earth prices.

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250 - Programmable 5-band Stereo Processor

Gated AGC, 5-band Compression and EQ, split-spectrum Limiting—all with colorless, quasi-digital PWM gain control. Manually pre-program several processing presets or place the unit entirely under RS-232 control.



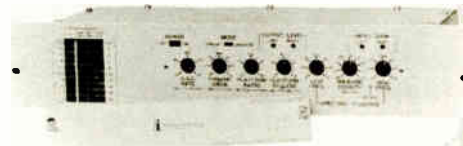
255 - "Spectral-Loading" FM Processor

A very aggressive Triband-PWM Stereo Processor tailored for contemporary music formats. Broad parameter control over the gated AGC and 3-band Compressor/Limiter.



260 - FM/TV "Utility" Processor

Stereo "gain-riding" AGC and a split-spectrum Compressor/Limiter control average and peak levels. Ideal for TV-aural and budget FMs.



716 - "DAVID-II" FM Processor / Stereo Gen

A tight, smooth AGC/Compressor/Limiter coupled with clean Digital Synthesis of the multiplex baseband signal. Also features internal RDS/SCA combining and a built-in Composite Processor. Outstanding, affordable performance has made "DAVID-II" a popular and legendary product.



708 - Digital Synthesis Stereo Generator

A basic Stereo-Gen with impeccable specifications. Includes front-panel metering, internal subcarrier combining and a built-in Composite Processor.



530 - Off-Air FM Modulation Monitor

Accurate, easy-to-read display shows total modulation, pilot injection, stereo separation and crosstalk, RF signal strength and multipath distortion. Alarm outputs for overmodulation, carrier and program audio loss. Eight station presets facilitate quick modulation comparisons.



630 - FM "Relay" Receiver

A professional receiver for translator (re-broadcast) and other demanding off-air pickups. Features composite MPX and balanced stereo program outputs, synthesized tuning, selectable bandwidth, metering, alarms and remote control.



710 - RDS Encoder

A PROM-based "static" RDS/RBDS Encoder. Very easy to set-up and use without the need for a host computer! 15 separate memory "frames" may be programmed with station and program ID codes, service flags and radiotext messages. May also be used with a PC for song titles, promos, etc.



510 - RDS Decoder/Reader

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"Tell them that you switched to LifeLine Long Distance to support conservative values. Tell them that LifeLine is giving over 25 million dollars this year to support pro-family causes. Tell them that the service and quality of LifeLine Long Distance is outstanding. Tell them that you don't appreciate the major long-distance companies supporting liberal and left-wing causes.

"LifeLine wants to thank you for making us your long-distance company. And we will continue to be the 'true voice' for conservative Americans everywhere. With LifeLine, you'll save money, you'll get great service, switching is free, and it only takes a few minutes. So hang up on the big long-distance companies, and switch to LifeLine.

"Now that you know this, why would you use any other long-distance company?"

STATION FINANCING

Sell the Sizzle With Business Plan

Dain Schult

This is the third in a multipart series about buying and financing radio stations. The previous part appeared in the Sept. 3 issue.

Buying your first radio station involves a combination of finding the right deal, successful financing and the right support personnel. These elements first come together with the creation of your business plan.

The plan is your "Open Sesame," your ultimate calling card. A good business plan can overcome just about any other obstacle you may face in your quest to own a station. It doesn't need to be lengthy, but it does need to cover every facet of what you propose to do.

Accept that you will rewrite your plan several times before you hit your own winning combination. Unless you've got the ready cash to pay an investment banker or financial advisor to ghostwrite the plan, you'll be it when it comes to birthing this baby.

Straight from the source

What are financing sources, investment bankers and financial advisors looking for in a business plan? Each person is different, but some things are universal.

Brian Sadler, vice president of Legacy Investment Group Inc. in Atlanta, considers the viability of the concept, historical financial performance and financial projections. But, he said, his main attention is on the strength of the management team.

Richard Stowell, president of the Heartland Group Inc. in Houston, has a similar perspective. "A strong financial model sets the tone for a successful business plan. That and good, stable management are key elements."

This is where having a workable relationship with a seller comes in handy because you will need to have some idea of the station's financial picture. Be prepared to sign a confidentiality agreement before getting to see any financials.

If a station has \$300,000 in gross revenue for the last 12 months, don't project that you'll do \$600,000 in the first year after you take over. Use common sense and predict growth at a rate that people will buy into, like 7 to 10 percent a year. You may do better, but don't promise things you can't deliver.

Line it out

Before you even start to write your plan, take the time to jot down in outline form what you propose to do in operations; what kind of station(s) you propose to acquire; the reasons you chose that station over another; and where you'd like to see yourself in six months, a year, and even five years from now. You may not have even talked to the first station owner, but that's okay. Finding station deals is the easy part. Knowing how you're going to operate them is far more tricky.

The famous Broadway producer, the late Joseph Belasco, used to say, "If you can't write your idea on the back of my business card, you don't have a clear idea." He was right.

Distill the essence of what you want to accomplish. For example, my own business plan was designed with the idea of creating a network of stations utilizing centralized satellite programming, book-keeping and marketing. To capture the attention of financing sources on the very first page of the plan, I boiled it down to a three-word premise: "Create Radio Wal-Mart." There isn't one financing source who couldn't immediately grasp the concept.

There are any number of software programs available that can help you create your own business plan. I suggest that

plans: one that you would show a seller to give him or her some assurance that working with you will pay off; and another version that will sway a financing source to consider and then act on your project.

It's a juggling act, but you can do it as long as you have the ability to customize your business plan to fit the particular needs of each person who will read it. Just remember to have someone else proofread your plan every time you change it. Otherwise you'll find yourself explaining the discrepancies when you meet.

You may have missed these tiny

details, but I can assure you that most financing people carefully read through each plan, and they inevitably will find every mistake you made.

Gee, isn't all this simple? Sort of like building a B-52 bomber in your garage using instructions written by the same guy who does the instructions for VCRs, right? Next time we'll delve into cracking the code and opening the door to the safe.



Dain Schult is a 30-year broadcast veteran and consultant with experience as a DJ, general manager and group operator. He is based in Austin, Texas.

Got a question or suggestion for Dain to address in an upcoming part of this series? Send an e-mail to 74103.2435@compuserve.com and put "Radio World" in the subject field.



Creating a business plan? Don't forget these basic rules:

- Use a spelling checker over and over to make sure you don't have typos or misspelled words.
- Have someone else proofread the plan several times before you release it to anyone to review for real.
- Make sure all of your numbers check out. Don't mention on page one that the purchase price of the station is \$350,000 and then further into the plan write that it is \$250,000. The reader will become confused, and your credibility will erode quickly.
- Remember what I suggested in an earlier installment of this series: Review other company business plans for ideas on how to structure your own.

you look them over and see if one looks and feels right for you. Unfortunately none of these programs are designed for any specific business, so you will have to modify just about everything inside their templates, but it at least gets you started.

I've used Jian's BizPlan Builder, a good program designed with the entrepreneur in mind. It's easy to use, which is good news for people like me who only know enough about computers to be really dangerous.

The real question is, "Which comes first, the business plan or the deal?"

To get financing in place, unless you already have your own money, you need to have a deal or deals in place ready to be financed, or the strong intimation that you can buy a certain station at a specified price.

The only problem is that most sellers don't want to take their stations off the market without some assurance that you're a serious buyer and can proceed with a deal without any financing contingencies. So in many cases you're going to have to create two different business

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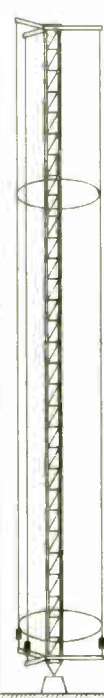
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Radio With a U.K. Accent

D.C. Culbertson

Americans have a love affair with accents. So perhaps it's not surprising that a trend to hire DJs from the United Kingdom has developed among some station managers. The alternative music format seems to be a natural home for jocks with that distinctive sound.

Celtic beginning

Mark Daly of WHFS(FM) in Washington, D.C. grew up in Belfast and got involved in radio while still in high school. Someone from the local

college station at the Massachusetts Institute of Technology, where he had his own show for about a year.

From there he went on to a part-time position at KEKO(FM) in Green Valley, Ariz., applying for the job after learning that the program director was looking for someone with a British accent. Adrian was the only applicant. He says he was in the right place at the right time.

The experience convinced him that he wanted to work in an alternative music format, playing "the music I really loved," so he headed to Boston

I don't consider radio or broadcasting to be my life by any means, but I think I have a knack for it. I just open my mouth and it sounds cute.

— Ian Harrison

BBC station heard him at a public debate and approached him about doing short local interest features. He began hosting his own show on DTRN (Downtown Radio in Belfast) during his first year of college, playing music that ranged from Sinatra to cutting-edge material, interspersed with interviews and humorous bits.

After hosting the show for several years, he moved to London, where he won a job at BBC headquarters in Bush House as "a sort of jack-of-all-trades," playing alternative music and interviewing a wide variety of people, from Margaret Thatcher to Morrissey. A year later, he left to do independent production. His travels brought him to the United States, where he eventually decided to look for a job. "I'd always had this love affair with America," he said.

Daly's first stint on an American station came approximately two years ago at WGRX(FM), Baltimore. "(It) was a very great training experience," he said. Daly learned to tighten and shorten his on-air delivery, but he had always been interested in working at WHFS, which has listeners in Washington, Baltimore and Annapolis.

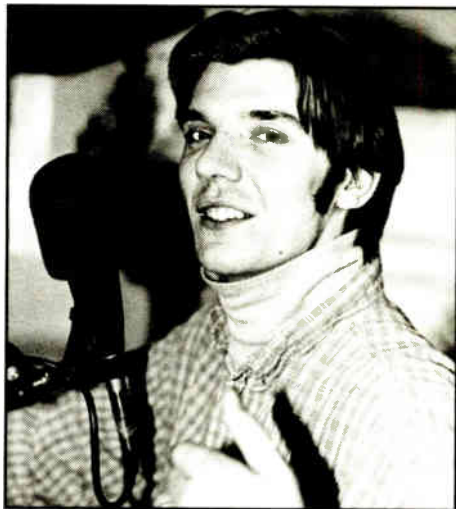
He was hired shortly after sending a demo tape to program director Robert Benjamin. For the past year-and-a-half he has been the Saturday evening announcer. "No one was more thrilled and delighted than I was," he said. It's not a job at all, he said. He called it an opportunity "to play music and chat with friends."

Daly does not think his accent gives him a special advantage or audience. In fact, he admitted he often forgets that his speech doesn't sound American.

Career path

Adrian Healey of WFNX(FM) in Boston goes by "Adrian" on the air. He hails from Wessex, and was working in the travel business when he came to America five years ago. His only announcing experience was as a club DJ. But he "wanted to explore radio possibilities." His first on-air stint was at the

in the hopes that with the help of his many contacts, he would soon have a job. He found a part-time slot at



Ian Harrison

WFNX, and about four months later was offered a full-time midday slot by the program director at WMRQ(FM) in nearby Hartford, Conn. About 10 months later, WFNX offered him a full-time position, and he decided to return there. He hosts the 10 a.m. to 3 p.m. slot weekdays, as well as "Leftover Lunch," a show that features music from the '80s and listener requests. He hopes to become either a music director or program director.

Adrian, who said "99 percent" of the listener response to him is positive, thinks the mid-day slot and alternative format is ideal for his accent, possibly because of the music's strong British heritage.

Like Adrian, Ian Harrison of WEQX(FM) in Manchester, Vt., "kind of fell into the whole radio business," as he put it. The Nottingham native originally ran several alternative record stores in London and traveled around the world for several years before ending up "in a really cool record store" near Killington, Vt., about seven years ago. When he went into the WEKA studios to cut a spot for the store, he did it in one take.

was promoted to full-time midday, and shortly thereafter to music director. Six months later he became program director. The station serves listeners in New York and New Hampshire as well as Vermont.

Green is good

None of these DJs, all of whom work at 50,000 W alternative stations in substantial markets, has had to leave his job due to green card problems. Adrian and Harrison circumvented the problem by marrying American citizens; Daly said he's never had a problem with his and doesn't anticipate one. None of them wishes to become an American citizen.

Harrison has the most responsibility of the three but is nonplused about his job. "I don't consider radio or broadcasting to be my life by any means, but I think I have

a knack for it. ... I just open my mouth and it sounds cute."

He does not know how long he will stay in radio and has no definite plans for his future: "I believe whatever will be, will be," he said.

■ ■ ■

D.C. Culbertson is a frequent contributor to RW.



Adrian Healy (second from left) stands with WFNX DJ Julie Kramer (second from right), with two members of the Cardigans.

"The general manager's eyes lit up because he heard an English accent," recalled Harrison, who was immediately offered a part-time air slot.

Two years ago, Jim McGuinne, program director at WEQX, invited him to send an audition tape, and shortly thereafter hired him for a part-time air shift. Within a year, he

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Others on the Strategic Research Support team include Manager Scott Anekstein, Senior Research Analyst Nancy Gross and Research Analyst Jason Feldman.

For information contact Ted Kelly at Westwood One, (212) 641-2052; or circle Reader Service 122.

Winter radio

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This winter will see the debut of "The AMI Snowboarding Report" from AMINews, a long-time provider of ski condition reports on the radio and over the Internet.

"The talent (for the 'Snowboarding Report') will be totally different for the snowboard reports, and we will use voices that younger listeners will identify with," said John Hamilton, president and founder of AMI.

For information contact Rob Brown at AMINews, (800) 736-3070; or circle Reader Service 146.

NBA on ESPN Radio

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

Jawing about the ocean

The author of "Jaws" wants you to know something: There's more to the ocean than man-eating sharks.

Peter Benchley hosts the nationally syndicated "The Ocean Report," from Finger Lakes Productions. The beauty of the ocean is conveyed through 90 seconds of underwater sound, such as "talking" fish. Environmental issues affecting the ocean also are discussed.

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For information contact David Olmstead at Finger Lakes Productions, (607) 275-9400; or circle Reader Service 194.

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driving to nearby stations to pick up audio on tape (see RW, Aug 6, p. 52). "Now they can spend their time selling radio, instead of acting as a delivery service," said Marty Forbes, vice president and general manager of CFBR-FM-AM in Edmonton, Alberta.

DCI President and Chief Operating Officer Al Kozak called the service "a god-send for radio stations who distribute audio that they produce in their own facilities."



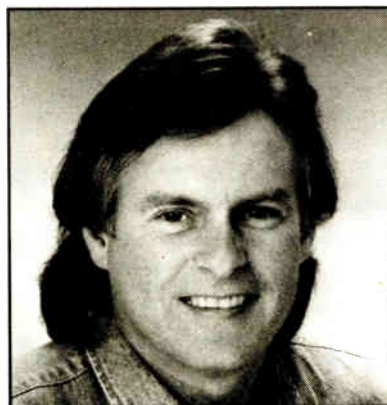
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Country time

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Scott Evans

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The syndicated program originates from the Broadcast Programming studios in Seattle.

For more information contact Dave Newton at Broadcast Programming, (800) 426-9082; or circle Reader Service 219.

Classical voice

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Charley Samson

Network.

Jones Operations Manager Frances Padilla announced Samson's new duties. "Charley's rapport with the listeners stems from his passion for the music and his style of providing entertaining and insightful commentary regarding the composer or featured work," Padilla said.

Samson worked for five years with the SUPERAUDIO cable radio service, which also has a Classical format, and worked for Classical station KVOD(FM) for 19 years.

For more information contact Phil Barry at Jones Radio Network; or circle Reader Service 220.

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Harris FMS CP FM 12 bay tuned to 98.1 MHz, pwr gain 6.8781, 40 kW input pwr rating, \$10,000/BO; Bogner LP 51 476-482 chnl 15 antenna, beam tilt 0 degrees, BO; Andrew 7/8" foam filled Helix coax cable, 200', BO; Scala 26 antenna, 54-66 MHz, 50 ohms, BO. D Blackwell, WQHL, 1305 Helvenston St, Live Oak FL 32060. 904-362-1250.

TOWER SPACE AVAILABLE:

Call L. Richardson @903-759-1243, #1-500' Coord: Lat 32 49 23 Long 94 28 32 located approx 15 mi N of I-20; N or Hwy 49, 2.6 km S.E. of Lassater, Marion County, TX #2-450' Coord: Lat 32 48 13 Long 94 22 26. Located approx 17 mi N of I-20; _ mi W of US 59 on small gravel road, 2 mi N of Jefferson City Limits, Marion County, TX.

Want to Buy

1-5/8" Helix, 2 lengths w/end connectors needed, 180'+ & 70'+ or 250' total; 1-5/8" Helix to 1-5/8" & 3" EIA flanges. J Powley, Scholastic Informational Network, 9279 Dutch Hill Rd, West Valley NY 14171.

Bird Thruline wattmeter rigid line sections (2), 1-5/8" & 3" rigid EIA flange, single or dbl sockets; Bird 1-5/8" #4712A or 4715-200A or 3-1/8" #460A or 4610-200A or equal. J Powley, Scholastic Informational Network, 9279 Dutch Hill Rd,

West Valley NY 14171. 716-942-3000.

Medium to high power FM antenna on or near 97.3. R Kelly, KKOS, POB 681, Van Vleck TX 77482. 409-244-0970.

Phasor & divider for 3 tower DA 5000 ND day, 1000 DA night, or anything close. C Holt, WHNY, POB 1223, Mccomb MS 39648. 601-250-1250.

AUDIO PRODUCTION

Want to Sell

Bose 402-W (4) walnut cabinet speakers, new cond w/EQ & mounting brackets, \$1500. D Murray, Murray Comm, 1028 Woodstone Dr, Kingsport TN 37663. 423-239-4745.

Digitech studio vocalist, new, \$550; Lexicon PCM 41 digital delay, \$300. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

Telefunken V-72 w/pwr. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Industrial Acoustic voice over booth, new, \$900 +shpg; Grim audio patch bay, new, \$120. J Baltar, New Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941.

Inovonics 231 8 band, \$125 +shpg. P Deen, WAJQ, 912-632-1000.

Orban 245E stereo synthesizer. J Gelo, 941-642-6899.

Simpson single VU speaker meters (6), \$120/lot; Yahama PM-180 6 chnl mixer, \$125; (4) cassette bays CU-400 mono, auto reverse, \$350; Sparta A-15 mono console, \$75; Realistic mono public address, 95 amp, \$75. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710.

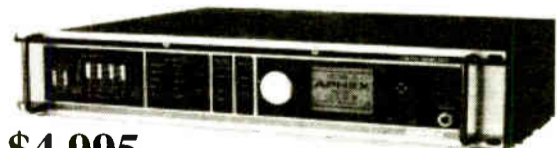
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Eventide H3000BLT harmonizer, new in box, \$2000/OBO. Marc, 914-340-8513 after 5PM.

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

Neve, Api, Gates, Longevin, Collins, Lexicon & other mic preamps, Eqs, reverbs, delays. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Compressors & EQs, tube and solid state. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

AUTOMATION EQUIPMENT

Want to Sell

Arrakis GEM-600 Gemini system w/1.2 Gig + network board & software, w/cart wall; Arrakis TS-8C Trak Star workstation w/270 Meg w/network

board & software, 1 yr old, both currently on air & working, \$11,500/OBO. L Zeve, WHYL, Box WHYL, Carlisle PA 17013. 717-249-1717.

BE1600 for parts, lots of spare cards, \$150 +shpg. P Deen, WAJQ, 912-632-1000.

Schafer 800T stereo in rack, working w/manual, \$500/OBO. J Egloff, WJIM, 5582 Rapid Run Pk, Cincinnati OH 45238. 513-922-7049.

SMC 3050 brain, (2) cabinets, limiter, clock, remote control, (2) random select w/random select racks, Carousels, gd cond w/manuals, u-haul, \$500. C Jones, WMNY, 7620 Old #6, Santee SC 29142. 803-854-6396.

SMC automation system, computer & display, (4) Carousels, 12 chnl audio switcher, (4) liner/ID carts, (2) racks, manuals/schematics, working, \$4K/OBO; SMC automation system, computer & display, (3) Carousels, 9 chnl audio switcher, (4) reel tape players, (2) racks, manuals/schematics, working, \$4K/OBO. K Lewis, KJOK, 949 S Ave B, Yuma AZ 85364. 520-782-3544.

Sono Mag automation system, cart Carousel, DAS-12 auto switcher, DP-2 control panel computer + everything else to make it work, gd for whole system or use for parts, BO. J Hodges, WITC,

Cazenovia College, Cazenovia NY 13035. 315-655-8283 ext 178/136.

CART MACHINES

Want to Sell

ITC Delta stereo cart machines (4), gd cond, \$400 ea or all 4 +manual for \$1400. A Taffera, WZYY, 245 8th St, Renovo PA 17764. 717-923-9106.

ITC SP (2) mono/play, gd cond, \$125 ea +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.



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SMC 24 cart decks (4), \$50 ea; BE 610B 10 cart deck, \$500; Harris PB deck, \$100; ITC Encore, \$150 +shpg for each. P Deen, WAJQ, 912-632-1000.

ITC upgrade PB to record, amps only-no deck, 3 tone, stereo, \$175. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

CD PLAYERS

Want to Sell

Denon DN-C650F, like new,

rack mount w/S/P dif, pitch, original box, \$450. K Thomas, Rebel Recording, 5555 Radio lane, Jacksonville FL 32205. 904-388-7711.

Pioneer CD players (3), 100 disc, 2 mos old, like new, \$500 ea; Pioneer CD player, 100 disc, never used, \$650; Fisher CD player, 24 disc, moderate use, like new, \$200; Fisher CD player, 24 disc, never used, \$300. K Lewis, KJOK, 949 S Ave B, Yuma AZ 85364. 520-782-3544.

CONSOLES

Want to Sell

BE 4M50 4 chnl, 8 input mono mixer w/monitor, cue & headphone amps, gd cond, \$400 +shpg; Cetec Sparta 2001 5 chnl, 10 input w/5 aux input sw w/monitor, cue & headphone amps, gd cond, \$500 +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Harris Medallist 8, Harris Stereo 80, both working when removed from service; Collins 1C-10A. J Smith, WRPQ, POB 456, Baraboo WI 53913. 608-356-3974.

Wheatstone AudioArts 8X, pwr supply w/Phantom, excel, \$200. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

Allen & Heath 2416D 24 chnl

console, 8 subs w/16 trk monitoring w/original shipping box, \$2500; SoundTech ST164 16 chnl w/4 subs, used 10 times, \$1000. D Huether, Dynamic Sound, 358 W Bell St, Neenah WI 54956. 920-722-7228.

Fostex 350 8 chnl mixer w/meter panel, \$150 +shpg. P Deen, WAJQ, 912-632-1000.

Sparta audio console, 8 chnl, stereo, refurb, half complete w/all parts & manual, \$1K; Sparta audio console/TT/table remote set, 5 chnl, (2) BE TT's w/Micro-Trak arms, works & in gd cond, \$1K. K Lewis, KJOK, 949 S Ave B, Yuma AZ 85364. 520-782-3544.

Sparta RS-30 4 chnl stereo mixer deck, (2) TTs, (2) pre-amps, (2) monitor speakers, cue speaker, mike, u-haul, \$500. C Jones, WMNY, 7620 Old #6, Santee SC 29142. 803-854-6396.

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

Parts for Ramko DC385, input/line cards & input selector switches, also input switch flat plastic knobs for Gates Gateway II console. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-6187.

Sparta remote desk, mono mixer, 4 or 5 chnl, (2) TT's & pre-amps. H Hudson, WTVR, 206 Westham Pky, Richmond VA 23229. 804-282-5557.

DISCO-PRO SOUND EQUIP

Want to Sell

JBL 4330 15" studio monitors & horn, \$900/pr. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

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LIMITERS

Want to Sell

Altec 1591-a compressor/mic-pre. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

RE America 533 slimline RDS/RBDS encoder, like new w/all software & manuals, BO; Modulation Sciences CLD-2500 composite line driver/rcvr matched set, great cond, \$860/pr.. D Payne, WZPL, 9245 N Meridian St #300, Indianapolis IN 46260. 317-816-4000.

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Behringer Suppressor DE2000, audio interactive de-esser/feedback processor, freq band-pass filter adjustable from 1-16 kHz, bandwidth from 1-0.1 octaves, suppresses between 3 & 24 dB, 4 mos old, low hr usage w/box & manual, 5 yr warranty, like new, free shpg, \$200. C Marion, JCR Productions, 3911 Glendale St, Philadelphia PA 19124. 215-289-8295.

Optimod 8100A, clean works, used, \$3100. T Berns, WDKR, 2950 N Water St #230, Decatur IL 62526. 217-876-9357.

Want to Buy

Orban 8100A input carts 3 and 4, cards only. D Payne, WZPL, 9245 N Meridian St #300, Indianapolis IN 46260. 317-816-4000.

Teletronics or Urei (LA 2,3,4,1176), Gates, RCA, dbx (160-165), Altec, Collins. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

Want to Sell

EV 666. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Sony ECM 377 condensor w/papers, mint cond, \$450. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

Advantage One 8 chnl biamp mixer, \$375 +shpg; ITC SP cart deck, \$75 +shpg. J Baltar, New Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941.

RCA 77DX, BK1A, \$395; vintage PA mics, Shure 51 Elvis, \$75, EV731, \$95, EV 630 or 635, \$75, RCA mini 77" shaped, \$295. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

Want to Buy

RCA 77 & 44 or other ribbons,

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Neumann, Sennheiser, AKG, many models. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA 77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.

MISCELLANEOUS

Want to Sell

100 urban music CD's, \$200; 500 country music CD's, \$1500. J Smith, FSA Bdctg, POB 1038, Elkin NC 28621. 910-835-2511.

McPhilbin Prolite studio warning light fixtures (6), ceiling pendant type w/dbl lenses, wall mt also, (2) on-air lens, (2) w/recording lens & (2) w/blank lens, \$50 ea +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

RCA open wire transmission line insulators/brackets (60), will sell as whole or in any quantity. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-6187.

Blank recdg disks for record cutter, 28-8", 39-10", one 12" w/cutting needles, \$200. C Collins, Grunert Sound, 1977 S 74th St, W Allis WI 53219. 414-327-4141.

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Burwen DNF-1500 dynamic NR units (2), \$180/both; Rapid Cue mono record decks, (2), \$250/both; KLH transient noise eliminator, \$60. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710.

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Kintronics 500-200 or less power reduction, \$350. C Jones, WMNY, 7620 Old \$6, Santee SC 29142. 803-854-6396.

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Rapid Cue mono record decks (2), \$250/both; Burwen DNF-1500 dynamic NR units (2), \$180/both; KLH transient noise eliminator, \$60. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710.

Tapecaster Rec/Delay, \$275; (2) cart tape PB (answer machines), \$30; enclosed case mono power amp for Ampex 600, \$50; BA-34 C monitor amp, \$25; open air, free standing 80" equip rack, \$80; enclosed equip rack w/rear door on rollers, \$140; Tabletop 12" equip rack, mount equip either side, \$40; KLH transient noise eliminator, \$150; Optimus DCC compact cassette, new w/3 blanks, \$200; Circuit Werkes AC-12 w/3 cards, new, \$500; Telos 6x6 keypad & control unit, new, \$750. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710.

Want to Buy

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Recdgs, 228 East 10th, NNY 10003. 212-674-3060.

MONITORS

Want to Sell

Belar FMM-1, FMS-1, SCM-1, RF amp, \$1700. D Murray, Murray Comm, 1028 Woodstone Dr, Kingsport TN 37663. 423-239-4745.

Belar FMM1, FMS1 104.3 MHz, \$600 +shpg; McMartin TbM 2200, TbM 3500 104.3 MHz w/preamp & manual, \$600 +shpg. P Deen, WAJQ, 912-632-1000.

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Want to Buy

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McKay Dymec AM5 or AM3 rcvr in gd working cond, AM5 w/rack mt preferred, but others considered. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-6187.

Drake ESR 9241 earth station rcvr, Cure B System. J Taffee, WCPE, POB 828, Wake Forest NC 27588. 919-556-5178.

RECORDERS

Want to Sell

Ampex 440 rack mount, mono R/P, 7.5 & 15 ips, \$225 +shpg; Revox A-77, stainless deck plate w/oak cabinet, near mint cond, very few hrs. \$425; ITC 850 stereo, rack mount, 7.5 & 15 ips w/remote control panel (2), gd cond, \$325 ea +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Teac 33405 4 trk w/remote, needs work, \$125; Lafayette 15016 delayed feedback rcd, r-r tape delay, excel cond, \$150. J Borden, Handbasket Prod, 2909 S Logan Ave, Milwaukee WI 53207. 414-482-8954.

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ITC RP cart deck (2); Revox PR-99 (2); Revox B-77 (2); Otari MX-5050; ITC SP cart deck; Lafayette multi-band tuner; Sony TC-260 tape deck. L Leffingwell, Univ of MO, 8001 Natural Bridge, St Louis MO 63121. 314-516-5364.

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Otari 5050II2, \$1800 +shpg. J Baltar, New Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941.

Otari MX5050 BIII2 w/little use, BO. JS Smith, Rocky Mountain Bible College, POB 4, Louisville CO 80027. 303-665-8787 or 303-604-9045.

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Spotmaster rack mount R/PB deck, vintage, \$175; Spotmaster rack mount PB deck, vintage, \$150. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710.

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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.

New & used Ampex 350 style tape transports, motors & parts, various prices. M Crosby, 408-363-1646.

Otari 5050BII (2), mint, \$1200, gd, \$800, portable case available. Redco Audio, 1-800-572-7280.

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

MCI JH-110 _ 2 trk heads, will pay fair price. J Borden, Handbasket Prod, 2909 S Logan Ave, Milwaukee WI 53207. 414-482-8954.

Harris Criterion 80 tape cartridge system in gd cond w/manuals, both record & PB. A Wilkerson, WLIL, POB 340, Lenoir City TN 37771. 423-986-7536.

MCI JH-110A, B, C parts, heads, audio, motors. J Borden, Handbasket Prod, 2909 So Logan, Milwaukee WI, 53207. 414-649-1600.

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

Marti RPT-15 rcvr, CR-10 xmtr (450 455), Larson Omni, Marti 6 element yagi, 100' _ Cablewave w/connectors, new, \$1800. B Barnett, Centrex, 420 E Second Ave, Rome GA 30161. 770-382-9489 ext 40.

Marti STL-8 (2), just removed from service, \$2800. J Smith, WRPQ, POB 456, Baraboo WI 53913. 608-356-3974.

Marti STL8F stereo, pair xmtrs/rcvrs, \$2600. T Berns, WDKR, 2950 N Water St #230, Decatur IL 62526. 217-876-9357.

Moseley PCL-505 STL TX/RX (pair), tuned to 949 Mhz w/FCC mod, just refurbished by J-Square, \$1600. K Lewis, KJOK, 949 S Ave B, Yuma AZ 85364. 520-782-3544.

DISTRIBUTOR DIRECTORY
 The following distributors serving the broadcast industry would be glad to help you with any of your requirements.

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 ask for Kathleen
 kkannapolis@worldnet.att.net

REMOTE & MICROWAVE continued...

Telos Zephyr 9200 stereo, w/built-in terminal adapter, \$3600. B Christenson, Paragon Engr, 11142 Ralzy Creek, Jacksonville FL 32225. 904-619-3899.

Harris Gates RDC-10AC remote control in gd cond w/manuals. A Wilkerson,

Want to Buy

RENT IT HERE!

COMREX New! HotLine ISDN Coders Frequency Extenders

TELOS Zephyr Digital Phone Hybrids

CCS MUSICAM Prima Coders

SHURE PP-410 Automatic Mixers

SCOOP REPORTER 7KHz single POTS line codec

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Burk AR16SA remote control for sale. Never installed, new in box with manuals, \$2000. Call 919-247-2211.

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TELOS STEREO ISDN ZEPHYR
COMREX NEXUS ISDN & SW-56 SETS
1, 2 & 3-LINE EXTENDER SYSTEMS
MARTI & TFT VHF/UHF RPU SETS
WIRELESS MICS & PORTABLE DAT RECORDERS
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RPU WALKIE-TALKIES & IFB PACKAGES

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WELLER AUDIO-VISUAL ENGINEERING
BALTIMORE, MARYLAND
410-252-8351; FAX: 410-252-4261
TOLL FREE: 800-252-8351

WLIL, POB 340, Lenoir City TN 37771. 423-986-7536.

SATELLITE EQUIPMENT

Want to Sell

Digital DJ, switcher by Mueller Engineering, \$300; Comtech 3.8 meter satellite dish, \$600; Prodelin 3.8 meter satellite dish, \$400. J Smith, FSA Bdcgt, POB 1038, Elkin NC 28621. 910-835-2511.

Wegener 1806-24 w/manual, \$200. P Deen, WAJQ, 912-632-1000.

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Want to Sell

Affordable TRAFFIC & BILLING

PC SOFTWARE for DIGILINK & other popular digital systems. Now available with MUSIC SCHEDULER. Excellent for non-automated stations, too. Try it for 60 days. No obligation. For demo, call ABA Software: (941) 643-3689 email abasoft@naples.net

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Want to Sell

10K AM in North Central AZ. 520-774-0864.

Rebuilt Radio Stations in Southern Louisiana, FM & AM, will lease or sell with financing. 804-272-7101 or 888-948-0521 (pager).

Want to Buy

AM or FM licence in S Florida or Tri-State, NY, NJ or CT. S Petithom, WSPN, 955 Main St #617, Bridgeport CT 06604. 203-368-2253.

Looking for first acquisition, small market combo or stand alone FM, prefer Iowa, Wisconsin, Colorado, Wyoming, New Mexico or Arizona. R Pierson, 1366 C 19-1/2 St, Cameron WI 54822. 715-458-2177 eves after 6PM CT.

TAPES/CARTS/ REELS/CD'S

Want to Sell

Denon 970FA, like new, digital out/analog out, \$1100. K Thomas, Rebel Recording, 5555 Radio Lane, Jacksonville FL 32205. 904-388-7711.

Gold Mastercards, music lengths, excel cond, \$.50 ea in lots of 100 +shpg. E Moody, KESE, 216 N Main, Bentonville AR 72712. 501-621-3880.

Albums, over 600 vintage,

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Microtran table top tape degausser, handles 1"-2" tapes, \$150/BO; mechanical tape timers, Lyrec & Seike/Spotmaster, new & used. M Crosby, 408-363-1646.

TEST EQUIPMENT

Want to Sell

Fluke 8012 bench DVM, calibrated by Fluke, \$75. P Russell, Bowdoin College, Sills Hall, Brunswick ME 04011. 207-725-3066.

black gospel, u-haul, \$200. C Jones, WMNY, 7620 Old #6, Santee SC 29142. 803-854-6396.

Carts tapes (200), from :30 sec to 7: min, \$50/lot. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710. 520-617-0579.

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mint cond, \$6800. Bob Lankton Engineering, 4027 Cochise Ter, Sarasota FL 34233. 941-377-1488.

Potomac FIM-21, vgc, \$4000. G Salyer, CPEQ Inc, POB 147, Brandon FL 33509. 813-685-3740.

Eko 950B R-C bridge comparator, \$50/BO/trade; Jackson tube tester 648, \$95/BO/trade. D Bisbee, 685 S Roys, Columbus OH 43204. 614-279-6163.

Gorman Redlich mod CEB, \$150 +shpg. P Deen, WAJQ, 912-632-1000.

Heathkit IM5258 audio test equip & dist analyzer, excel cond, \$375; Tektronix 465 scope, dual trace solid state scope, excel cond, \$1400; Ailtech FL4H, precision audio generator, \$375; HP 520A vector scope, gd working order, \$2100. W Moring, WCSC-TV, 2187 Wappoo Dr, Charleston SC 29412. 803-795-9402.

HP 8640B signal gen, \$1295 +shpg; Rockland single chnl real time spectrum analyzer, \$950 +shpg; HP 8444A tracking gen, \$900 +shpg; HP H382A variable attenuator, \$450. J Baltar, new Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941.

Want to Buy

Heathkit IO-10 small portable tube type oscilloscope from late 1960s. W Gunn, Box 2902,

ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations and recording studios only. All other end users will be charged. Simply send your listings to us, following the example below. Please indicate in which category you would like your listing to appear. Mail your listings to the address below. Thank you.

Please print and include all information:

Contact Name _____
Title _____
Company/Station _____
Address _____
City/State _____
Zip Code _____
Telephone _____

I would like to receive or continue receiving **Radio World** FREE each month. Yes No

Signature _____ Date _____

Please check only one entry for each category:

I. Type of Firm

D. Combination AM/FM station F. Recording Studio
 A. Commercial AM station K. Radio Station Services
 B. Commercial FM station G. TV station/teleprod facility
 C. Educational FM station H. Consultant/ind engineer
 E. Network/group owner I. Mtg. distributor or dealer
 J. Other _____

II. Job Function

A. Ownership G. Sales
 B. General management E. News operations
 C. Engineering F. Other (specify)
 D. Programming/production _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Broadcast Equipment Exchange on a paid basis. Line ad listings & display advertising are available on a per word or per inch basis.

WTS WTB Category: _____
Make: _____ Model: _____
Brief Description: _____
Price: _____

WTS WTB Category: _____
Make: _____ Model: _____
Brief Description: _____
Price: _____

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 800-336-3045 • Fax: 703-998-2966

TEST EQUIPMENT continued...
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1620 (10), used, test gd, \$50; Hickok 800 tube tester, complete in mint cond, \$100. E Davison, 1129 Willowbrook Dr, Springfield IL 62707. 217-793-0400.

EIMAC, RCA, AMPEREX, 3-500, 3CX1500A7, 4-400, 4X150A, 4CX250B, 572B, 807, 833C. Westgate 800-213-4563.

Want to Buy
Burle/RCA 9017, new, surplus or rebuilt, for ITS translator. J Powley, Scholastic Informational network, 9279 Dutch Hill Rd, West Valley NY 14171.

TURNTABLES
Want to Sell

Russco TT (2) w/Micro-Trak arms, works & in gd cond, \$500. K Lewis, KJOK, 949 S Ave B, Yuma AZ 85364. 520-782-3544.

Technics SP-10 TT w/pwr supply, 2 tonearms w/o stylus, \$575/lot or \$295 ea; Kenwood 2055 TT, deteriorated drive belt, \$40. N Williams, KPPM, 1726 S Pebble Beach Ave, Tucson AZ 85710. 520-617-0579.

Technics SP-15 TT platter, BO. J Hodges, WITC, Cazenovia College, Cazenovia NY 13035. 315-655-8283 ext 178/136.

TRANSMITTERS

Want to Sell
Crown FM-100, brand new, ideal for low pwr backup, freq agile, 100 W xmtr. Syd Abel, WRCY, 703-369-1080.

TRANSMITTERS
www.amfntv.com
800-678-4762

Gates 250GY AM 250-500 W w/spare tubes, pwr transformer & mod transformers extra, spares, \$2100/BO. J Cunningham, KEOR, Rt 1 Box 113B, Stonewall OK 74871. 405-265-4496.

Harris FM20H3 20 kW FM at 103.7 MHz, gd cond, currently on air, large inventory of spare parts. P Wahl, WWIB, 2396 State Hwy 53, Chippewa Falls WI 54729. 715-723-1037.

RCA BTA50F 50,000 kW AM tuned to 810 kHz, gd for parts, open for bids. L Timmons, WHB/KMZU, 102 N Mason St, Carrollton MO 64633. 816-542-0404.

RCA BTA5F 5 kW AM, excel cond w/manuals, ready for shpg. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-6187.

USI TA-100 100 mW AM, new, FCC approved, outdoor xmtr range up to 2 miles, \$1500. J Arthur, WRFP, POB 2233, Pensacola FL 32513. 850-484-0186.

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.

BESCO World Leader in AM - FM Transmitters
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"Now in our 30th year"

116 AM & FM Pre-Owned Units in Stock
✓ ALL - Powers
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Call and take advantage of our liberal trade-in plan. Tune and test on your frequency, available on site. Complete inventory on request.
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Fax: 1-214-226-9416
e-mail-besco@why.net.com

RCA BTF-20E 1975 20 kW FM tuned to 103.9, no exciter, some spare parts & tube, working when removed from service, you ship, \$16,500. T Fussell, Springer Bldg, 1240 E Villa Maria, Bryan TX 77805. 409-776-1240.

RF oscillator for McMartin AM xmtr #554024, \$100. P Deen, WAJQ, 912-632-1000.

TA-100 FCC type approved AM low pwr microbdctg xmtrs (2), freq adjustable, 100 mW pwr, approx 5 mi range, sell

together or separate, \$1200 ea/BO. D Neatrour, Radio Omega, 230 N 5th St #910, Reading PA 19601. 610-371-8866.

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.

Used McMartin BF-5M 5 kW-FM tuned and tested on your freq, completely refurbished; Also 3.5 kW & 25 kW. Goodrich Ent. Inc., 402-493-1886.

Used PTEK 500W FM amplifier, \$2950, full manufacturer 2 year warrentee. Other power amps and exciters also available. 408-448-3342.

Want to Buy
McMartin AM/FM xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

Where In The World Are You?
Reach radio professionals worldwide by advertising in **Radio World's** international edition.
Call Simone for more information.
703-998-7600

Quality Power Tubes

3CX10,000H3	4CPX800A	5CX1500B	SV572-3
3CX15,000A3	4CX1500A	572B	SV572-10
3CX15,000A7	4CX1600B	6550C (See SV6550C)	SV572-30
3CX15,000H3	4CX3500A	6AS7G	SV572-160
3CX20,000A7	4CX5000A	6B8B	SV6550C
3CW20,000A1	4CX5000R	6D22S	SV6L6GC
3CW20,000A7	4CX7500A	6L6GC (See SV6L6GC)	SV811-3A
3CW20,000H3	4CX10,000D	6N1P	SV811-10
3CW20,000H7	4CX12,000A	811A	TH5-4
3CW30,000H3	4CX15,000A	812A	TH5-6
4CX250B	4CX15,000J	833A	TH6-3
4CX250BC	4CX20,000A	8161R	TH6-3A
4CX250BT	4CX20,000B	8560AS	YC130/9019
4CX250F	4CX20,000C	EF86	SK300A
4CX350A	4CW10,000A	EL34	SK1300
4CX350AC	4CPW10,000R	EL509	SK1320
3CX6000A7/YU148	4X150A	SV83	
3CX10,000A3	4CX800A	5CX1500A	
3CX10,000A7			

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For the best deals on Celwave products, Andrew cable and Shively antennas.

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2.5 KW FM 1988 Continental 814-R	5 KW AM 1980 Harris MW-5A
10 KW FM 1986 ITA 10,000B	5 KW AM 1982 Continental 315F
20 KW FM 1977 RCA BTF 20E1	5 KW AM 1982 Continental 315R-1
20 KW FM 1973 Collins 831G	50 KW AM 1978 Continental 317C-1
20 KW FM 1972 CCA FM20,000DS	50 KW AM 1981 Continental 317C-1
20 KW FM 1978 Harris FM20K	50 KW AM 1981 Harris MW-50B
25 KW FM 1982 Harris FM25K	50 KW AM 1982 Harris MW-50B

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EMPLOYMENT

HELP WANTED

ACCOUNT EXECUTIVE RADIO SALES: Growing New Jersey radio group is presently interviewing for the position of Account Executive.

Broadcast Equipment Sales: Antenna manufacturer seeks Sales Manager to direct sales and marketing program.

CHIEF ENGINEER: Act fast, this could be your last chance! Wants to hire in October.

ORBAN CUSTOMER SERVICE ENGINEER

Orban is looking for a broadcast engineer to provide technical support to our customers on our line of broadcasting equipment.

Send resume to: Orban, Human Resources, 1525 Alvarado Street, San Leandro, CA 94577.

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WNCI-FM.... Columbus, OH is accepting resumes for the position of Chief Engineer.

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Radio Chief Engineer Paxson Broadcasting - 5 yrs exp. req. Knowledge of directional arrays, transmitters, studio equipment, computer systems, audio processing, telephone systems.

POSITIONS WANTED

Energetic guy w/a hunger for the business, sales exper, in Houston area, will travel anywhere.

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Not a kid, not a dinosaur, seek SE small mkt mgmt opp. Write POB 14706, Greenville SC 29610.

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Chris, 606-293-2341 or e-mail: wx1534@aol.com

Recent bdctg school grad w/medium market exper seeking FT position, creative prod & solid air skills, will relocate.

DID YOU KNOW? We now accept VISA, Mastercard and American Express

ABOUT OUR EMPLOYMENT SECTION

HELP WANTED: Any company or station can run "Help Wanted" ads for \$2/word or buy a display box for \$69/column inch.

POSITIONS WANTED: Anyone can run a "Position Wanted" ad, FREE of charge (25 words max), and it will appear in the following 2 issues of Radio World.

Mail to: Broadcast Equipment Exchange P.O. Box 1214, Falls Church, VA 22041 Attn: Simone Mullins

ADVERTISER INDEX

This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

Table with 5 columns: Page No., Advertiser, Reader Service No., Page No., Advertiser, Reader Service No. Lists various advertisers and their corresponding page numbers.

SUBSCRIPTION/READER SERVICE FORM



FREE Subscription/Renewal Card

I would like to receive or continue receiving Radio World FREE each month. Yes No

Signature Date

Please print and include all information:

Name Title

Company/Station

Address

City State ZIP

Business Telephone ()

Please check only one entry for each category:

I. Type of Firm (check one)

- D. Combination AM/FM station
A. Commercial AM station
B. Commercial FM station
C. Educational FM station
E. Network/group owner

II. Job Function (check one)

- A. Owner/President
B. General management
C. Engineering
D. Programming/production

Reader Service P84

OCT 1, 1997 issue Use until JAN. 1, 1997

Please first fill out contact information at left. Then check each advertisement for corresponding number and circle below.

Purchasing Authority

1. Recommend 2. Specify 3. Approve

Table with 3 columns: 1. Recommend, 2. Specify, 3. Approve. Lists numbers for each category.

Table with 2 columns: Job Title, Name. Lists staff roles and names.

Advertising Sales Representatives

Table with 2 columns: Region, Contact Info. Lists sales representatives and their contact details.

Free Subscriptions are available upon request to professional broadcasting and audiovisual equipment users. For address changes, send current and new address to RW a month in advance at P.O. Box 1214, Falls Church, VA 22041.

Copy & Mail to: Radio World, PO Box 1214, Falls Church, VA 22041, or FAX to: 703-820-3310

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When you need the Best Audio, Auditronics has it. The 801 Series has just what you need. Extremely Versatile and Flexible and yet Simple to operate. Absolute Top of the Line quality in every detail with Buses, Logic and Features galore.

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The 801 has the most extensive logic control system in its price range and console specification exceed those required for Digital Audio Broadcasting. Get your Best Audio from Auditronics, with 30 years of Customer Commitment and Service.

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We've taken the very **best** technology, components and field engineering input to make this the **FINEST** console available.

The **A-6000** is engineered specifically for major market stations that demand a lot of function and need to lead with technical excellence. It's based on an open architecture mainframe that lets you change module locations with **no** restrictions, giving layout top priority and allowing easy reconfiguration as format needs change.

The **Wheatstone A-6000** has the appearance, features and power to excite the most demanding program and production staff; its engineering, performance and thoughtful design will help your personnel achieve broadcasting excellence.

 **Wheatstone**

315-452-5000

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