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 See page 17.

RadioWorld®

Vol 20, No 9

Radio's Best Read Newspaper

May 1, 1996

Gear Faces Export Hurdles

by Christopher Nicholson

WASHINGTON While manufacturers are getting over the cost of selling equipment in the European Community (EC), they are now discovering Russia has established hurdles of its own.

GOSSTANDART, a Russian agency designed to protect consumers from electrical hazards, requires goods being shipped to the Russian Federation have a valid certificate of conformity (COC). All electrical and electronic goods requires a COC to pass through customs.

This news coincides with new rules in the EC. Since Jan. 1, all electronic equipment legally sold in EC countries must undergo extensive testing and receive a "CE" stamp before it can be sold. The CE stamp is considered proof of electromagnetic compatibility (EMC).

Next, as of Jan. 1, 1997, all products shipped to the EC will require a "CE safety mark."

According to Lisa Bell, department manager for GOSSTANDART, SGS U.S. Testing, Russia has had certification requirements for imported products in place since July 1, 1993. Bell said the rules have always been enforced although a lot of untested imports were getting over the border prior to Jan. 1.

SGS, a global company, was accredited by GOST as an official agency for the worldwide implementation of this certification requirement in 1993.

Gost will accept products with the CE safety mark and, according to Dave Burns, studio product manager for Harris, "So far there have been no problems with the UL 1490 mark being accepted."

Burns recently felt the brunt of Russian

enforcement when he tried to send \$30,000 worth of equipment to Russia. According to Burns, having the CE safety mark was not enough to get equipment to its Russian purchasers. Burns said companies must have SGS confirm that the product is indeed

marked for CE safety or UL 1490.

Bell said SGS accepts the CE safety mark and the CE mark. She said SGS accepts the UL 1490 if the voltage information is correct. Russia requires information on 220 volts. SGS also accepts TUV certification and certification from the Canadian Standards Association.

continued on page 6 ▶

FAIR Puts WABC(AM) Talk Show Host on Defensive

by Lynn Meadows

NEW YORK Bob Grant, conservative talk show host at WABC(AM), has plenty of enemies. He also has more listeners than anybody else in the WABC lineup — an average quarter hour count of 200,000.

The monkey on Grant's back is an ever-vigilant group called FAIR (Fairness & Accuracy in Reporting). FAIR typically focuses on misleading reporting but has repeatedly criticized Grant and WABC for airing racist language on Grant's afternoon-drive show.

On March 31, in an ad in The New York Times, FAIR addressed a letter to Disney Chairman and CEO Michael Eisner titled, "Is Bigotry a Disney Family Value?" FAIR asked Eisner to make Disney policy on racist and white supremacy groups clear."

As RW went to press, WABC announced Grant was "terminated by mutual agreement" following comments surrounding the death of Commerce Secretary Ron Brown.

What FAIR is specifically protesting is an endorsement by Grant on Jan. 26, of the American Renaissance Conference to be held in Louisville, Ky., next month.

This conference is billed by its organizer Jarad Taylor, publisher of the American Renaissance newsletter, as a group of speakers getting together to talk about race. Of the many speakers to be featured, none are black. Taylor said no blacks came to a similar conference held in Atlanta in 1994.

Asked if he publishes information about whites being smarter than blacks, Jarad said, "That is certainly what the evidence

continued on page 6 ▶

Radio keeps
 astronaut up-to-date
 on space
 station Mir.
 See page 9.



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Slow Start For EEO Rulemaking

by Angela Novak

WASHINGTON More than midway through the comment period for the Federal Communications Commission FCC rule making to revise EEO policy, only three comments had been filed.

Comments to the notice touched on the FCC's definition of a station's location, the need to include the disabled as a minority group and the need for national EEO requirements.

On Feb. 8, the FCC released proposals for streamlining EEO requirements for broadcasters, especially those who operate small stations or stations in small markets.

The FCC proposed new guidelines for EEO reporting, recruitment, testing procedures and forfeitures. The deadline for filing comments was April 30.

The commission said its goal in streamlining EEO requirements is to ensure that

continued on page 9 ▶

NEWSWATCH

SBE Seeks Data

INDIANAPOLIS The Society of Broadcast Engineers has received reports about severe interference from newly-constructed PCS facilities at 1950 and 1965 MHz to 2 GHz ENG operations on Channels A1 and A2.

A number of relatively high power PCS transmitters have been installed recently in markets on the East and West Coast and the SBE believes the source of the interference to ENG feeds is apparently those transmitters.

The SBE is collecting data from members who have knowledge of these incidents. Send a brief description of any

such incidents to SBE General Counsel Chris Imlay by fax at (202) 293-1319 or via e-mail to cimlay@mcimail.com or to SBE Headquarters.

Ad Revenues Up Again

DALLAS The Radio industry enjoyed its 42nd consecutive month of revenue gains in February posting a three-percent increase in combined local and national spot advertising revenue versus the same month in 1995.

Local revenue fueled this growth with a five-percent increase while national spot revenue decreased four percent compared to February of last year.

Barrett Goes Private

WASHINGTON After nearly seven years as an FCC commissioner, Andrew Barrett joined the Washington, D.C. office of Edelman Public Relations Worldwide last month.

Barrett, now managing director of Edelman's global telemedia group, will head the agency's public affairs work in the telecommunications, high technology, media and utility industries.

RDS Campaign Milestone

ORLANDO, Fla. WMMO-FM recently became the 200th station to join

the year-long nationwide Radio Data System (RDS) campaign sponsored by Electronic Industries Association.

Although the campaign was originally targeted at the top-25 markets, Orlando was added because the city was hosting the CES Mobile Electronics Show in April.

Public Radio Conference

WASHINGTON National Public Radio will hold its annual Public Radio Conference (PRC) in Washington, D.C. again this year from May 15-18 at the Washington Hilton Hotel.

The strategic location gave last year's participants a chance to lobby on Capital Hill against funding cuts. Organizers are encouraging attendees to take time to visit with their elected officials again this year.

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Mic & Line, +4dBu	.004%
DIM	
Mic & Line, +16dBu	.005%
DYNAMIC RANGE	
Line	114dB
Mic	98dB
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AUDIOARTS ENGINEERING

WBAU(FM) Staff Battles Shutdown

by Lee Harris

LONG ISLAND, N.Y. Former WBAU(FM) station staffers are at war with Adelphi University in Garden City, N.Y., over the university's abrupt abandonment of its radio station.

Battlegrounds include the courts, the media and the FCC. The charges range from fiscal irresponsibility to racism.

It started last August when — after 22 years of operation — WBAU was suddenly taken off the air by the university's board of trustees.

Official reasons

Adelphi gave a number of official reasons for the move: the university no longer offered a broadcasting curriculum, the facilities were in need of an expensive overhaul and the student government association no longer wished to fund the station with \$50,000 in student activity fees because almost no Adelphi students were involved in the operation of WBAU.

The non-students who made up the bulk of WBAU's volunteer air staff charge that there were darker motives behind the preemptory shutdown of the station, an operation one staffer likened to a military assault.

"They entered the station, changed the locks, removed equipment, pried signs off the doors, and nobody was able to enter the station," explained Carl Williams, former reggae show DJ and now vice president of the Friends of WBAU, the organization which is leading the fight to return WBAU to the air.

The Jamaican-accented Williams and other Friends are convinced that the administration's shutdown was racially motivated.

"My personal opinion is that they did not want the kind of programs we had. They did not like rap music. They did not like heavy metal. They did not like the kind of people who were coming to the station, who represent the community around Adelphi. Was it because at the time of the shutdown the programming was 52 percent minority? Was it because there were too many black people coming to the station?"

Plethora of programming

"It wasn't just the African-American shows," said Jackie Parker, assistant editor in chief of Africa Unbound, the campus African-American newspaper. "There was a polka show, an Irish show, even a show dealing with Judaism. It was just that this minority-centered programming wasn't perpetuating the reputation that Adelphi wanted. The president wants us to be the Harvard of Long Island."

Africa Unbound has been championing the cause of the Friends of WBAU, investigating, digging up documents, and questioning the administration's motives. WBAU shared its frequency (90.3) with nearby Nassau Community College. When WBAU went dark, Adelphi entered into an agreement to transfer its half of the airtime to Nassau's WHPC(FM) for \$30,000.

"I've spoken with brokers and an attorney who practices before the FCC," Parker said, "and they've told me that even as a non-commercial share-time station, in the New York metropolitan area, WBAU could be worth up to two million dollars. This indicates a squandering, an impetuous act on the part of the president

of Adelphi to authorize such a sale."

"Categorical denial." That's the response of Vince Passaro, director of University Communications at Adelphi to all the charges ranging from racism to squandering of university resources. His version of the WBAU story is sharply at odds with those told by Africa Unbound and the Friends of WBAU.

Not enough students

According to Passaro, there were only six enrolled students involved in the station so the student government association didn't consider WBAU a wise choice for funding. In addition, Passaro noted, Adelphi currently offers no courses in broadcasting and there was no other organization at the university that wanted to take over planning, peopling and funding the station.

As for WBAU being worth millions, Passaro said, "That's not what we found

when we explored our options."

"I've never heard a word breathed by the school's top administration against the programming on WBAU," said Passaro. "Its single greatest achievement probably is having been a leading innovative and perhaps even originating station in the history of rap, house music and hip-hop. That's a point everybody who has been involved in WBAU can take great pride in. The day I came for my job interview at Adelphi, I was walking around with the Dean of Student Life, and he very proudly told me that WBAU was the birthplace of hip-hop."

Passaro called the charges of racism "very convenient to get extra publicity but there is zero evidence to support such a claim."

Williams alleged that some Adelphi students were panic stricken at the sight of the more fashionably dressed volunteers they would encounter in the student activity center which housed the WBAU studios.

CBS Says Goodbye to CBS Americas

by Sharon Rae

NEW YORK Citing the project as unprofitable and falling well below expectations, CBS Radio Networks planned to cease the operation of its Spanish-language radio network, CBS Americas, on April 12.

Six years ago, the Network launched CBS Americas in an effort to provide play-by-play sports, feature programming, and — with the help of UPI — news to radio stations in the United States and Latin America.

Robert Kipperman, vice president and general manager of the networks, made the announcement to cease operation of the network — assuring that "CBS is currently exploring other avenues toward serving the Hispanic Community."

"Our partner in the news portion of the network, UPI, is in discussions with us

about continuing to provide the news service themselves. We are talking to them and other parties about transferring much of our other programming as well."

CBS Americas was launched as the CBS Hispanic Radio Network in January 1990 to provide coverage of Major League Baseball's All-Star Game, League Championship Series and World Series.

The service has expanded to broadcasting Major League Baseball, the NFL and boxing events, sports feature programming, entertainment features and UPI's daily news service.

UPI is jumping at the chance to continue what they see as "a potentially very profitable venture."

Jack Eddinger, director of product development at UPI, said UPI's Spanish service is alive and well and "would like to be able to seek out joint venture

"Guys whose shirts were out of their pants and their belt was closed, you know, the hip-hop look, and they'd be there on the elevator, and people from Adelphi were scared. These people were not there to make trouble, they were not there to steal, they were not there to rape anybody as was alleged. They were just there to get their music played."

Vince Passaro said he never heard any such security concerns voiced by the administration.

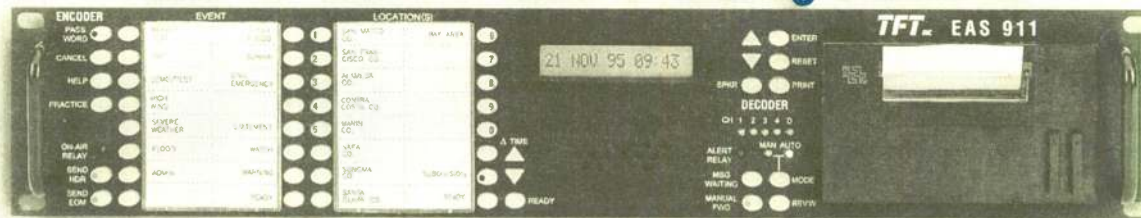
The Friends of WBAU went to New York State court with a lawsuit charging Adelphi with acting improperly in shutting down the station. The case was dismissed.

"It was a ridiculous lawsuit," said Passaro, "a smorgasbord, nuisance suit."

The next stop for the Friends of WBAU is the FCC, where a challenge to the transfer has been filed. Williams said his organization is prepared to make an offer for WBAU in excess of the \$30,000 offered by Nassau Community College. Passaro said the original share time agreement gives Nassau the right

continued on page 10 ▶

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Watch Out for Unnecessary Paperwork, Cost

WASHINGTON We all occasionally run into insalubrious characters in our lives — and generally, we can pick them



out pretty quickly.

Shady deals are tougher to sniff out, especially if they come wrapped in stationery from a company or law firm.

While our front page story about Russia requiring equipment to be certified for importation into Russia is legit, it seems that the recent global rush to certification has encouraged all sorts of companies to step forth and make claim to knowing the requirements of and being able to certify gear for various countries.

One insider put it as a "whole new breed of companies preying on equipment manufacturers."

Manufacturers are just getting over the cost of selling equipment in the European Community (EC). Now Russia is enforcing hurdles of its own.

As our page 1 story indicates, GOS-STANDART, the Russian agency designed to protect consumers from electrical hazards, requires goods being shipped to the Russian Federation have a valid certificate of conformity (COC). All electrical and electronic goods require a COC to pass through customs.

As of Jan. 1, 1997, all products shipped to the European Community will require a "CE safety mark" in addition to the current "CE stamp" required since this January.

The point I'm trying to make is this: know what certification is required before you take your product in for testing. I recently heard a story about a manufacturer that was persuaded that its

speakers/monitors required testing for emissions. He spent the money and had it done. The test: place the speakers on a table and go to lunch. "That'll be couple thousand bucks ... thank you very much."

Watch out.

★ ★ ★

On a much lighter note, spring is definitely in the air and that means ... you got it ... baseball.

Or softball, depending on your level of expertise. RW's own Lynn Meadows has arranged a matchup between us — the in-house newspaper staff — and Washington's WHFS(FM). Watch out Mark Lapidus!

I'll let you know who wins.

★ ★ ★

I have some news for the Web users among you. The Radio and Television News Directors Foundation published "Wired Journalist: Newsroom Guide to the Internet." Written by WDIV-TV Detroit investigative reporter Mike Wendland, the book is free to journalists and costs \$50 for nonjournalist.

Essentially, Wendland offers Internet navigation advice from an electronic journalists perspective. The guide features examples of stories that began on the Internet, a glossary of terms, pertinent Internet addresses for journalists and other information.

The guide is published by the News in the Next Century Project, which is supported by the Robert R. McCormick Tribune Foundation. For information, contact Mark Thalhimier at (202) 467-5213, or e-mail him at mark@rtndf.org

★ ★ ★

Spring being in the air frequently means that many of you will try to turn a hand at some car maintenance. Many of you probably turn to the National Public Radio program "Car Talk," for advice and/or entertainment while you work on your own vehicle.

Well ... "Car Talk" has made the leap to a World Wide Web site (cartalk.com) and



Cartalk.Com Graphic

named Katz Millenium Marketing the exclusive advertising sales representative for cartalk.com

You know, this is an interesting deal for a number of reasons. Added exposure for the NPR program chief among them, but, think of the potential the format offers for any number of programs you may already have on your station.

The Web site will allow users to (among other things):

- Communicate directly with Tom and Ray Magliozzi ("Car Talk" hosts) and ask questions or simply share experiences;
- Search fully indexed copies of "Click and Clack Talk Cars," the duo's syndicated twice-weekly column;
- Learn what NPR affiliate nearby airs "Car Talk" and at what time;
- Browse through the "fun stuff" such as audio postcards that can be e-mailed to friends;
- Use the cartalk.com bulletin board (named Cafe Dartre after Tom Magliozzi's old Dodge Dart) to report personal feedback or read the feedback of others;
- Scan the car classifieds, complete with photos, for used car values, all

categorized by classic cars, American cars, foreign cars, light trucks and vans, motorcycles, commercial vehicles and even vehicles with comical offerings, and

• Scan the personal classifieds that prove "You are what you drive," a monitored listing where a "31-year-old Acura Integra-driving male seeks a 24- to 35-year-old female driving a foreign sports car."

And Katz can target car makers and after-market advertisers. Mass-market advertisers will come for the large number of site visitors — estimated to be 500,000 new viewers each month by the end of six months.

Car makers, and just about any company interested in associating themselves with the popular program that could not do so before, can now associate themselves with the show. Katz reports it has already signed Japanese auto maker Nissan.

OK, I realize "Car Talk" is a national show with a national audience, but the ideas surrounding the enterprise, could, with slight modifications, be a lucrative endeavor for the right local radio program.



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Protect your signal

Dear RW,

Over the last few months, I've been reading quite a bit in RW about reradiation interference to AM station signals from the thousands of new cellular and PCS transmission towers being built throughout the United States. These comments have all been from engineers.

I'm not an engineer, but I have owned and managed AM directional stations for many years. I have also written checks for many thousands of dollars in engineering fees to fix reradiation problems. So, permit me to provide a management viewpoint.

Cellular and PCS towers can be a major hazard to your AM coverage pattern, and your pocketbook. The FCC even says so. In 1987, and again in 1989, the FCC issued public notices emphasizing the responsibility of cellular carriers to notify AM stations prior to tower construction, and then to take very specific actions to protect the AM — for every directional AM within 2 miles, and every non-directional AM within 0.5 miles. Apparently because carriers weren't getting the message in their headlong rush to build towers, the FCC went further and issued a formal rule last year.

By the way, many broadcasters don't realize that this same FCC "first-in" policy also protects them against pattern interference from any subsequent licensee building a tower — a microwave, police or whatever.

Some engineers have written that simple computations, and maybe the odd measurement, are adequate actions on the part of the cellular or PCS carrier to protect your AM station. Well, cost saving is fine, but why should it put you at risk? These cellular tower sites cost up to \$1 million a copy. My engineer tells me that AM detuning "by the book" might average \$25,000. Certainly you should expect them to invest a measly 2.5 percent to protect your station with complete detuning and proof of performance!

What's the best way to protect your station? First, look around. If you see any recent towers within the appropriate distance which haven't been coordinated with you — raise hell! Insist that the cellular or PCS immediately comply, to your satisfaction, with the FCC policy. If they won't, don't hesitate to call your lawyer and the FCC. Second, keep in touch with local zoning authorities for early warning of new towers (and, I've been told there will be many). Work with local officials to get AM station protection written into zoning ordinances and individual permits. Third, after towers are detuned, insist that regular checks and inspections be done — and the results provided to you.

Good luck! With 100,000 new towers to be built in the next few years, we broadcasters will all need it.

Rodger B. Watkins
College Station, TX

The DJ's future

Dear RW,

I read with great interest the column by Bob Rusk about the future of radio. As a broadcaster since 1968, I know how difficult it is to predict the complexion of such an ever-changing industry.

I must say that I disagree with the conclusion that the DJ will no longer be needed in the future. Indeed, the DJ may not be as needed at the station, however, when it comes time to fill those satellite breaks every hour and the station only has one or two voices on staff, it can sound pretty bad.

The DJ will be needed for his or her voice but not so much for his or her body. At D.J.'s North Disc Jockey Service, we have created a new division called "Spots on the Net." We can deliver production over the Internet at a small cost on a next-day basis.

I think one of the pieces of the DJ future will be to produce commercials off-site and deliver them to the station via some kind of electronic transfer. DJs will always be needed in some form, but I think they will do their work from other locations and no longer be needed inside the station.

Nick Dakins

Owner, D.J.'s North/Spots on the Net
General Manager, WLJZ Coast FM
Petosky, MI

Digital debate

Dear RW,

It was interesting to note that Jones Satellite Network (JSN) will be converting some of its formats to digital. As the Jan. 24 article, *Jones Network Taps Wegener for Upgrade*, points out, there is a very strong argument for converting to a digital signal, especially with the excellent music reproduction available on CDs.

Eric M. Wiler, director of engineering at JSN, notes that Jones "is the first major provider of 24-hour music formats to convert to the MPEG audio system." I would like to point out that the Morningstar Radio Network has been completely digital for over 3-1/2 years, and has been using MPEG for over two years. Morningstar Radio Network has over 150 affiliates that are receiving a QPSK FM2 signal based on a similar Wegener system. Likewise, the ABC Radio Network, in conjunction with

Great Days For Radio Production

Current trends in audio technology point to one fact: This is a great time to be in radio production.

Digital audio products offer the production director incredible power, speed and versatility. The result is high-quality commercial audio. The production room has grown from simple studio

to a true profit generator.

There is no shortage of reference and support materials for creative radio production. Witness a recent RW series on effective writing by Ty Ford. Our *Studio Sessions* pages are a source of quality information. Advertising excellence is rewarded in major competitions with major cash prizes, like the Mercury Awards.

The value of excellent production should come as no surprise to broadcasters. The playing field is changing every day, and one company can have several radio stations under one roof. Generating revenue on each one is not a trivial matter.

The lifeblood of any commercial radio station is effective, great-sounding advertising. Digital multitrack and storage systems are a big part of the overall picture, but more must go into acknowledging the production department as the potential moneymaker it can be.

Managers must examine the direction the station is taking and include the production department as part of the strategy. Comptrollers must see where the money is going. Budgeting for new equipment should be balanced with ancillary items like a new music library or acoustic redesign. You cannot do today's job with yesterday's tools.

Explore non-budget items like writing copy. Pay for your copywriter to attend creative workshops. Practice and enforce the principles of good radio production. New technology will not fix a bad job. The how and why of what makes production great should be known by all.

Send your production people to the technical shows. They are professionals in their field and know best the equipment they need to do their job.

A well-equipped, well-trained production department can move from "toy-box" status to being the profit center of the station. This way, everybody reaps the benefits.

— RW

Wegener Communications, recently announced (Jan. 23, 1996) that it will be converting two more formats to the MPEG digital audio system. This continues ABC's conversion, started in 1995, of its networks to digital. With over 400 stations already converted to digital, ABC has plans to convert five more formats to digital.

Instead of calling Jones the "first major provider of 24-hour music formats to convert" to digital, for the sake of accuracy Mr. Wiler should have identified Jones as "another provider of 24-hour music formats planning to convert its analog formats to digital." This would acknowledge that there are already networks, such as Morningstar Radio Network, that provide 24-hour service in complete digital quality. Morningstar has been providing digital service since its inception, and as such, cannot "convert" to digital. Similarly, it would also acknowledge that other networks, such as ABC Radio Network, have already demonstrated plans to convert their analog formats to digital.

Sherrod Munday

Morningstar Radio Network
Nashville, TN

dictates the privatization of at least one state television channel and one state radio channel, Radio Danubius. Further, it specifies the formation of a National Radio and Television Board, similar to our FCC, and comprised of "no less than five members," with a chairperson "jointly nominated by the President of the Republic and the Prime Minister." The board members will represent the various factions of the Parliament.

There are specific dates for the implementation of this new act, and my recent on-site analysis indicates the Hungarian Government is moving swiftly to implement this dramatic change in its broadcasting structure.

I might also point out that there have been privately owned, commercial radio stations on the air in Hungary for some time, and that Metromedia International has a very successful national license operating in Hungary under the name Radio Juventus.

Robert E. Richer

International Media Consulting
Farmington, CT

Ham options

An ordinary Japanese-made rig with a good flat mic, with the processing off and the mic gain backed off well below heavy AGC, when heard on any decent receiver with a large speaker (not that little 3-inch built-in job) will sound surprisingly good, surprisingly full. Assuming, of course, that you have properly tuned in that SSB signal to the right pitch.

Also, nothing prevents any hams from installing a 4.5 kHz crystal filter into the SSB slot as an option.

So, I'd disagree with the premise that AM, per se, has brought a renaissance of hi-fi audio to ham radio. Or, that relaxed, high-quality audio has not been or is not presently available to those who want it.

Randy Bradley

WB2GCR
Albany, NY



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Next Issue of
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Mention Puts Host in Hot Water

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suggests." Jarad added that according to research, North Asians are smarter than whites.

The promotional flyer says one of the speakers at the conference is the author of a book that "demolishes the notion of racial equality in intelligence."

Grant told listeners about the conference, gave the dates it was happening and named some of the speakers.

"These are outstanding speakers and if I can, I'm going to take my microphone down there and tune in," he finished.

WABC Programming Director Phil Boyce is frustrated by the attention the 30-second mention is getting. At what point, he asked, does this become ridiculous.

He said he did not know much about the seminar, but as he understood it, people would be getting together in a public place to talk. The meeting place is a hotel in downtown Louisville that Taylor preferred not to name.

"If the American Renaissance Seminar is as bad as they say it is, if someone can show that to me, why would we support it?" Boyce asked.

Grant, a 26-year broadcasting veteran, said "I'm on the air four hours a day, Monday through Friday. If I wanted to promote this, would I just do it once? It wasn't even a promotion."

According to Grant, he mentioned the conference because it appeared in an ad in American Chronicles Magazine.

"This is an ad-lib show," Grant said.

Grant has been in hot water with FAIR before. In fact, that is one of the reasons the group monitors his show. FAIR has a hotline with several sound bites of racist comments made by Grant.

"I wonder if they've ever figured out how they multiply like that," Grant is heard saying about Haitian immigrants. "It's like maggots on a hot day."

Racism or free speech

Boyce said that Grant is not a racist. Since he became program director last April, Boyce said Grant has said nothing racist.

"I think the world of Bob Grant, and I think he's been unfairly maligned and attacked," Boyce said.

Steven Rendall, senior analyst with FAIR, agreed that the sound bites on the hotline are more than a year old. Rendall said that Grant's new tactic is to promote white supremacy groups like he did on Jan. 26.

Rendall said what he hears from WABC is that Grant never said racist things and if he did, it was years ago. He compared that response to a thief saying "I didn't steal it and it's a lousy bike anyway."

Boyce said he does not see this as an issue of racism or free speech. "I think it's the same attempt to discredit Bob that's been going on for several years."

William O'Shaughnessy, the newly-



Controversial talk show host Bob Grant

elected NAB radio board representative for New York and New Jersey, wrote his own letter to Eisner in response to FAIR's.

"Although I rarely agree with Mr. Grant's pronouncements ... I still have to support his right to speak out on the great issues of the day," wrote O'Shaughnessy. "A radio station achieves its highest calling when it resembles a platform or forum for the expression of many different viewpoints."

Let the public decide

"The philosophy seems to be free speech for racists, censorship for anti-racists," said Rendall referring to WABC's well-publicized dropping of syndicated host Alan Dershowitz for saying Grant was a "bigot" on the air. According to Rendall,

FAIR does not want Grant removed, but would like Disney to release its standards and practices regarding racial comments.

Let the public decide if Grant is a racist, said O'Shaughnessy. Boyce cites examples he believes prove Grant is not a racist. One, Grant recently invited O.J. Simpson prosecutor Christopher Darden on the air and spoke very highly of him. Two, according to Boyce, Grant vigorously opposed the ejection of candidate Alan Keyes from the Republican primary debate in Atlanta earlier this year.

"There are just too many things that they obviously don't tell you," said Boyce. He said that Grant has already paid heavily for previous offenses and apologized for them on the air in November 1994.

The question of whether someone should talk positively on the air about a conference of people who believe some races are intellectually inferior remains unresolved.

Disney has referred the matter to Capital Cities/ABC Inc.

"He is unquestionably conservative," said Capital

Cities/ABC Spokesperson Julie Hoover. "We feel that he runs an appropriate show. To our knowledge, he has not gone over the line." ☺

Exporting To Russia

► continued from page 1

headquarters to approve the ordered equipment. Harris paid SGS \$5,000 for approval of that recent \$30,000 equipment order.

"From my point of view, what they (Russia) have done has simplified getting into Russia by trusting the European Union standards," said Frank Hardy, operations manager for audio products at Pacific Design Engineering. Pacific Design is one of the few companies in the United States authorized to conduct CE safety testing.

According to Hardy, if the process operates smoothly, getting a product approved for shipment to the Russian Federation should take approximately two weeks. Once a product is tested, Hardy said, the report has to be translated into Russian and submitted to SGS for approval.

Bell said turn-around time for SGS approval on already-tested equipment is five to seven working days. If a product does not have any prior certification, however, SGS can do the necessary testing. That can take three to six weeks depending on the product, said Bell.

"The typical product that cost \$1,200 for EMC certification will cost \$3,500 for the safety mark," Burns said. "Most of our vendors are just getting over the shock of having to spend the money for the EMC certification. Now they have about eight months to decide whether they want to spend another \$3,500."

Burns said that the new regulations are workable but will have a hard impact on some manufacturers.

"I think it will shut some people out who either don't want to or can't belly up to the bar, especially the second time around." ☺

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World Radio History

Locality Helps Stations Fund EAS

TWO RIVERS, Wis. Radio Stations in Northeast Wisconsin are preparing their listeners for the switch to the Emergency Alert System (EAS) next year. They are also getting support — financial and otherwise — from their community.

Manitowoc County (pop. 83,000) is located along the Lake Michigan shoreline about 30 miles southeast of Green Bay. The county contains three AMs and four FMs and is especially concerned about alerting its residents in the event of an emergency.

Eight miles north of Two Rivers is the small town of Two Creeks, home of the Point Beach Nuclear Power Plant.

Owned by Wisconsin Electric Power Company, Point Beach produces about one-sixth of the electrical demand for the state.

Three miles north of the Manitowoc



Billboard educates listeners.

county line lies the Kewaunee Nuclear Power Plant operated and managed by Wisconsin Public Service for two other utility partners. The plants are the only nuclear plants operating in Wisconsin. Both have been operating for over 25 years and are nearing the end of their license term.

In addition, Manitowoc County is located in an area affectionately called "Tornado Ally" which is one of Wisconsin's more frequent alert areas.

This combination brings a heightened level of alertness to the broadcasters of the area.

Presently stations are alerted mainly by the Primary EBS outlet, a 100,000 watt

commercial FM in Green Bay which operates 24 hours a day. Locally, stations get alerts through a paging system operated by the Manitowoc County Sheriff's Department and transmitted to radio stations on the same frequency as volunteer fire fighters and EMTs.

The local pager is tested weekly similar to the current EBS plan. Equipment is provided to the stations by the Manitowoc County Emergency Government Office.

With the proposed EAS, the primary alert will apparently change to a Public Radio Outlet in Green Bay which signs off at midnight. The commercial 100,000 watt FM at Green Bay will serve as a second source.

A third audio input will be wired to the NOAA Weather Radio service from Green Bay and the fourth input will be from the locally operated paging system manned by the Sheriff's Department.

Billboards have been installed to educate the public about the changes ahead. The billboards, part of the County Emergency Government's outreach program, depict an alert siren and a portable radio. "When you hear this, listen to this," advises the sign.

The billboards were placed in eight locations that are near the community sirens.

The \$3,000 cost for the month-long display is being shared by the nuclear power plants and local emergency government.

"We've asked for a small grant from the

The billboards were placed near the community sirens.

county emergency government office locally and also from the utilities that own the nuclear power plants," said Mark Heller, president of WTRW(AM) Radio in Two Rivers. "We also intend to purchase a quantity of EAS units from the same provider and will ask for a quantity discount."

A decision on who that provider will be should be completed within three months, said Heller. The stations are awaiting final type acceptance from the FCC of a few manufacturers.

Heller said he hopes to keep the costs to less than \$1,000 net for each station by using the grant money that may be available from non-conventional sources.

"We asked for the help because of the relationship the county has developed with the nuclear generating plants over the years," Heller said. "We saw that the nuclear plants would benefit by the more efficient alerting system."

Heller said he understood that the state of Wisconsin may offer some type of grant to government bodies that need to upgrade their dispatching equipment for the new equipment necessary to meet the EAS specifications.

The local emergency government office purchased the recently released SBE Primer on the EAS and is sharing the book with the county's broadcasters to assist them. The county will modify its paging system to work with the new EAS decoders before the Jan. 1 deadline.

For more information on the Two Rivers plan, contact Mark Heller at 414-794-1800 or e-mail him at 102100.372@compuserve.com

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EEO Comments Trickling in to FCC

► continued from page 1
requirements for broadcasters are not "unduly burdensome." The commission stated that it is committed to maintaining an effective EEO program.

John A. Bulmer of Bulmer Communications, licensee of WHMQ(FM) in North Baltimore, Ohio, and WZOO-FM in Edgewood, Ohio, filed a lengthy comment about the need to redefine the definition of a station's "location."

Bulmer challenged current EEO policy that defines a station's location by its place of license. He described scenarios in which a station's county or Metropolitan Statistical Area (MSA) of license is not the station's main center of employment.

"There is no rational basis why, if a station has no employment presence in a county or MSA, a station must be held to employment standards as if its employment center is within that principle community's MSA county."

He wrote that the commission should define station location, "as that geographical place where the station employs five or more people."

In his statement, Bulmer described the situation at WHMQ, which is licensed in North Baltimore.

North Baltimore is in the Toledo MSA that includes the city of Toledo in Lucas County, which has a 15.1 percent minority work force.

The main studio and center of employment is located in Findlay, Ohio, in Hancock County, which has a 3.8 percent minority labor force.

Although the station serves the southern fringe of the Toledo MSA, it broadcasts mostly to Wood and Fulton Counties, which have a 4 percent and 4.2 percent minority labor force, respectively.

Bulmer stated that he should not be required to recruit from Toledo.

Bulmer also stated that the extensive recruitment requirements take away from employee compensation and local programming efforts. He is against requiring broadcasters to conduct a percentage of their business with minority- or female-owned or controlled businesses.

He pointed out that small stations often do not have the resources to spend on such requirements and that equipment and supplies are purchased with regard to market factors. He also stated that, in some cases, stations would have to go outside the market to find such businesses.

Oleen Eagle, president of Cornerstone Television in Wall, Pa., filed a comment applauding the FCC efforts to revise EEO rules. He stated his preference for national EEO requirements that would be constant for all government agencies. He also pointed out that it is difficult for small markets to recruit minorities.

Brad Saul of Inflight Entertainment, a minority-owned, disabled-owned company in Chicago stated that he is "greatly disturbed" that the FCC does not recognize the disabled as a minority group.

"I urge you to give the strongest possible consideration to adding language to your rulemaking that starts a process of inclusion," Saul stated.

Midway through the comment period,

the National Association of Broadcasters (NAB) was still preparing its comments to the notice.

Telecommunications Council (MMTC) issued press releases.

The NAB stated that it was pleased with the commission's proposals to revise EEO policies and added that it would work with the commission to devise more reasonable and workable guidelines.

The MMTC stated that it was saddened

Bulmer challenged EEO policy that defines a station's location by its place of license.

Immediately following the FCC notice, the NAB and the Minority Media and

KTRH(AM) Heard in Final Frontier

HOUSTON It was a news director's dream.

NASA approached Larry McCoy, director of news, CBS Radio Networks, to ask if they might send The CBS World News Roundup to the Russian Space Station Mir so astronaut Shannon Lucid could keep up on current events.

Lucid joined the space station in late March and will be aboard until mid August. Though she can speak Russian, Lucid is the only English speaker on the space station.

The broadcasts are intended to make sure Lucid does not feel isolated from home and keep her up to speed on earthly news.

"We're thrilled with the opportunity to be a part of this," said KTRH(AM) News Director Joe Izbrand.

According to Rob Navias, NASA spokesman, Johnson Space Center, the 10-minute Roundup is fed weekdays from KTRH through an existing communications loop between Houston and Moscow. When time permits, Moscow uplinks the program to Mir — orbiting 230 miles above earth.

Navias said NASA chose KTRH because it was the only local affiliate station that broadcasts a comprehensive block of national news. The broadcasts began April 1.

"Thanks. It was good to hear the news," Lucid told mission control after listening to the broadcast.

KTRH has a news staff of 32 people. Izbrand said they

are coming up with creative ways to use the local breaks in the CBS World News Roundup. Along with national news, Lucid hears traffic, weather and regional and local news from Houston.

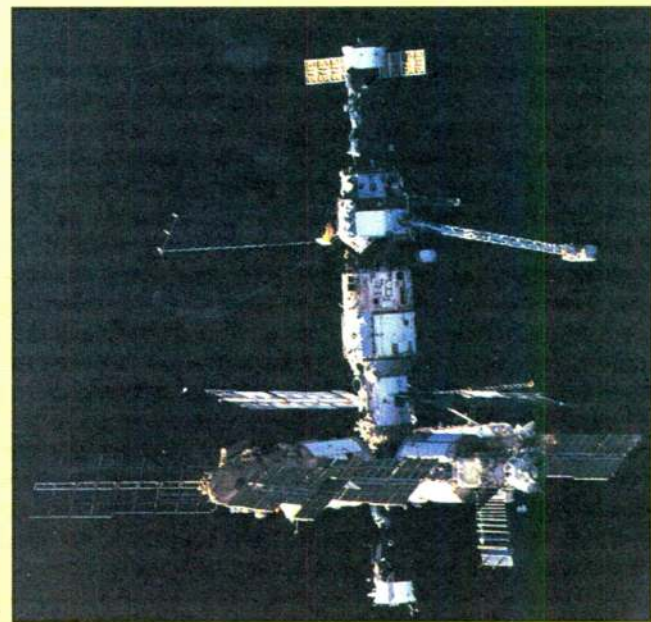
Izbrand said KTRH may add personal touches for Lucid and local listeners. These include news capsules from her neighborhood and

by the FCC proposals and that it sees the proposals as attempts to cutback EEO enforcement.

The MMTC urged the Department of Justice and the U.S. Civil Rights Commission to file comments opposing the FCC notice.

The commission had asked for comments on which categories of stations should qualify for reduced record-keeping and filing requirements or which stations could be exempt from these duties altogether.

Comments were also sought on the proposal to relieve broadcasters from keeping detailed recruitment records if their staff profile meets certain criteria.



The Space Station Mir

Under Water Broadcast

HONOLULU From the depths of the Pacific Ocean, Robert Fishman recently held an eight-minute telephone conversation with Val Kuffel who was in the Atlantic.

The two men were in submarines while their conversation was broadcast live on KSSK-AM-FM in Honolulu and WSTA(AM) in St. Thomas.

Fishman, managing director of the city and county of Honolulu, and Kuffel, the Virgin Islands deputy commissioner of tourism, were participating in the 10-year anniversary celebration of Atlantis Submarines International.

While submarine to surface communication is commonplace, Pam Balash, sales and marketing manager for Atlantis in St. Thomas said, "What was really unique about this was they were talking from submarine to submarine" and it was broadcast live on the air.

Fishman was about 75 feet below the surface when the broadcast took place although Atlantis submarines are certified to go down 150 feet. Both men could see fish swimming.

Dale Machado, chief engineer for KSSK-AM-FM and KUCD(FM), said the project grew.

"Originally we were going to do a cellular call from dock to dock," he said. Then someone asked if it would be a problem to broadcast underwater. Engineers are "used to weird stuff like this," Machado laughed.

First, he had to figure out where to get audio from the underwater telephone. Atlantis uses Orchetron intercoms that transmit through water on a 27 kHz carrier wave. He fed that audio into the Linejack II from Cellabs to send it to the station.

From a surface boat, he called KSSK on a cellular phone. Machado had to push a switch to allow one-way communication at a time. The two conversants were told to finish everything with "over."

Then, to connect to the submarine in the Virgin Islands, KSSK used its Gentner Telemix X system to conduct a conference call.

The feat has been submitted to the "Guinness Book of World Records" for consideration. Atlantis has a fleet of 14

submarines spread throughout ten locations that take passengers on underwater journeys.

Balash said the two men talked about how neat it was to be talking sub to sub across the oceans, what they were looking at and how Atlantis has been good for the tourism industry.



Robert Fishman (top), submerged near Hawaii, talks with Val Kuffel (bottom), who was floating 75 feet deep in the Atlantic Ocean.

REGULATORY UPDATE

Field Offices to Be Automated

WASHINGTON The FCC is preparing to automate its 13 monitoring stations across the country in June and July. The move, which will take place region by region, is part of a reorganization and downsizing announced by Chairman Reed Hundt last summer.

The Interferometer, a machine designed and built in-house by FCC engineers, will replace personnel currently performing monitoring functions. A control center in Columbia, Md. will monitor the Interferometers across the country and contact offices nearby areas where trouble occurs.

Many personnel from the 13 offices are expected to transfer to other field offices

or move to the call center in Gettysburg, Pa. The call center will go on-line early this summer and be phased in region by region. People will be able to get their FCC questions answered with one toll-free call.

Sources said the FCC will still "make every effort" to continue field inspections.

Simplifying Minor Modifications

WASHINGTON A Notice of Proposed Rulemaking on the table now will be of interest to station owners who just want to make minor modifications to their facilities.

The FCC has an NPRM open to consider whether certain types of minor modifications should be allowed without first

obtaining a construction permit.

Currently, stations making changes have to file an application for a construction permit and then, once the modifications are finished, file an application for a license for their modified facilities.

If the new rule is enacted, stations would simply have to file a modification of license application (FCC Form 302) within 10 days of making one of six specific changes.

One, commercial FM stations would be able to power up to the maximum level for the class of station.

Two, FM and television stations would be permitted to replace one directional antenna with another.

Three, FM stations would be permitted to delete contour protection status where

the stations they are providing contour protection for move to fully spaced locations.

Four, FM stations would be permitted to use formerly licensed main transmission facilities as auxiliary broadcast facilities.

Five, FM and television stations would be permitted to change vertically polarized effective radiated power (ERP).

And six, FM and TV stations would be permitted to make slight changes in antenna radiation center height.

The NPRM also proposes that requests for waivers of the main studio location rule be made by letter with supporting documentation instead of by filing a construction permit application.

Also, commercial stations seeking to change to noncommercial status would file a one-step modification of license application rather than a construction permit application followed by a license application.

In the latter two cases, however, prior Commission approval would still be required before the proposed change could be implemented.

The FCC is asking for comments on this proposal and on additional types of minor modifications that could be done without construction permits.

Stations with comments should file them with the FCC by May 16, 1996. Reply comments are due by June 17.

Regulatory Fee Debate Begins

WASHINGTON The Federal Communications Commission (FCC) is seeking comments on its proposed fiscal year 1996 regulatory fee schedule. Congress requires the FCC to collect \$116.4 million in regulatory fees this year — the same amount as 1995. Most of the proposed fees have not changed substantially from last year.

Commissioner James Quello said he is "perplexed" by a proposed increase in the regulatory fee for cable operators from \$.49 to \$.50 per subscriber per year.

"I question the need for any increase in a fee for a service that will be increasingly deregulated over the next three years," Quello said in a statement.

The commission is also requesting comments on alternative methods of assessing regulatory fees to recover the amount that the FCC must collect. ☐

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Staff Will Not Go Gently

► continued from page 3
of first refusal.

In the interim, WBAU remains dark. Its sizable record collection has been carted off to the school library.

Some of the volunteer staffers are trying to place their shows on Nassau's WHPC which is slowly expanding its broadcast hours into those formerly occupied by WBAU.

The transplanted show hosts are determined not to get too comfortable at WHPC.

As Jackie Parker of Africa Unbound explained, "We're devoted to making sure WBAU is brought back to Adelphi University where it belongs." ☐

Lee Harris can be reached by e-mail at lee@harrisnet.com

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Schedule Editor

Cut Number: 99999
Title: TEST SCHEDULE

INSERT CUT DELETE CUT MOVE CUT TOGGLE START CODE EXIT

CUT #	ALIAS	AIR TIME	LENGTH	TITLE	START CODE	TYPE
----- Top Of Schedule -----						
1	0101-03	00:00:00	0:04:31	I STILL HAVEN'T	@SEC	HD
2	0101-05	00:00:00	0:03:18	GOOD THING	@SEC	HD
3	0101-08	00:00:00	0:04:07	HIGH ON YOU	@SEC	HD
4	0101-11	00:00:00				
5	0101-13	00:00:00				
6	0101-16	00:00:00				
7	0111-09	00:00:00				
8	0102-03	00:00:00				
9	0105-15	00:00:00				
10	0106-06	00:00:00				
11	0106-09	00:00:00				
12	0107-07	00:00:00				
13	0107-10	00:00:00				
14	0108-13	00:00:00				
15	0111-14	00:00:00				
16	0109-07	00:00:00				
17	0109-11	00:00:00				
18	0110-02	00:00:00				
19	0110-08	00:00:00				
20	0110-13	00:00:00				

Audio Category Editor

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Text Script Rotation Voice Trigger Clock

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Cut Number: 1 Classification: MUSIC

Cut Title: I STILL HAVEN'T

Locked? NO

Length of Cut: 4:31:53

Cut Group: 02

Kill Date:

Comment:

Out Cue:

Additional Data Settings

0:04:54

Trigger Configuration

Current Mode: Mode # 1

Peripheral Interface: Device # 2

Sort By: PI Port Number

Fader Control Inputs:

Input # 1: Fader-Off-Button1

Input # 2: Fader-Off-Button2

Input # 3: Fader-Off-Button3

Input # 4: Fader-Off-Button4

Input # 5: Fader-Off-Button5

Input # 6: Fader-Off-Button6

Input # 7: Fader-Off-Button7

Input # 8: Fader-Off-Button8

Input # 9: Fader-Off-Button9

Input # 10: Fader-Off-Button10

Input # 11: Fader-Off-Button11

Fader Control Outputs:

Output # 1: Fader-Out1

Output # 2: Fader-Out2

Output # 3: Fader-Out3

Output # 4: Fader-Out4

Output # 5: Fader-Out5

Output # 6: Fader-Out6

Output # 7: Fader-Out7

Output # 8: Fader-Out8

Output # 9: Fader-Out9

Output # 10: Fader-Out10

Output # 11: Fader-Out11

Record Screen Cue Editor

10:00:23

MAN SEAT BELT SAFETY 1

START 00021 UNCLR

WJLK AM HR ID

11:15:42

LOCAL TIME

Line	Time	Event	Length	Type
1	00:00:00	12:00:00 SEAT BELT SA	00:00:00	MAN
2	00:00:00	12:00:00 WJLK AM HR I Legal ID	00:00:00	SEC
3	00:00:00	12:00:00 AMERICAN DEN	00:00:00	SEC
4	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 DRUNK DRIVIN	00:00:00	SEC
0	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 SEAT BELT SA	00:00:00	SEC
0	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 AMERICAN DEN	00:00:00	SEC
0	00:00:00	12:00:00 WJLK AM HR I Legal ID	00:00:00	SEC
0	00:00:00	12:00:00 DRUNK DRIVIN	00:00:00	SEC
0	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 SEAT BELT SA	00:00:00	SEC
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0	00:00:00	12:00:00 AMERICAN DEN	00:00:00	SEC

<< END OF SCHEDULE LOG >>

EDIT LIBRARY HOT EXIT

External Device Control

11:15:42

LOCAL TIME

Line	Time	Event	Length	Type
1	00:00:00	12:00:00 SEAT BELT SA	00:00:00	MAN
2	00:00:00	12:00:00 WJLK AM HR I Legal ID	00:00:00	SEC
3	00:00:00	12:00:00 AMERICAN DEN	00:00:00	SEC
4	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 DRUNK DRIVIN	00:00:00	SEC
0	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 SEAT BELT SA	00:00:00	SEC
0	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 AMERICAN DEN	00:00:00	SEC
0	00:00:00	12:00:00 WJLK AM HR I Legal ID	00:00:00	SEC
0	00:00:00	12:00:00 DRUNK DRIVIN	00:00:00	SEC
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0	00:00:00	12:00:00 SEAT BELT SA	00:00:00	SEC
0	00:00:00	12:00:00 WJLK-AM B LI Liner B	00:00:00	SEC
0	00:00:00	12:00:00 AMERICAN DEN	00:00:00	SEC

<< END OF SCHEDULE LOG >>

EDIT EXIT

Multi Playback Screens

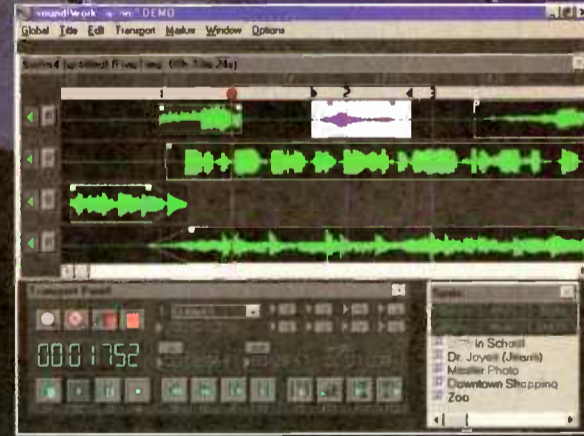
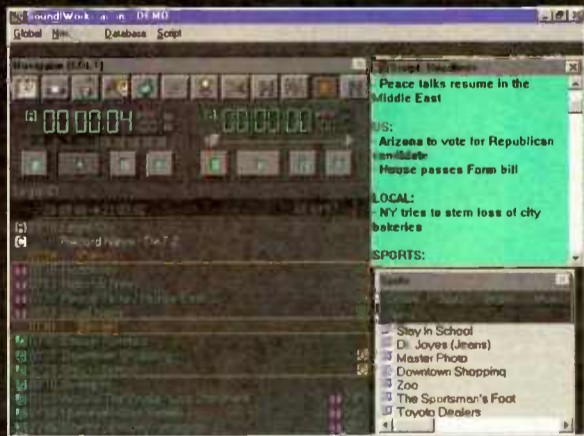
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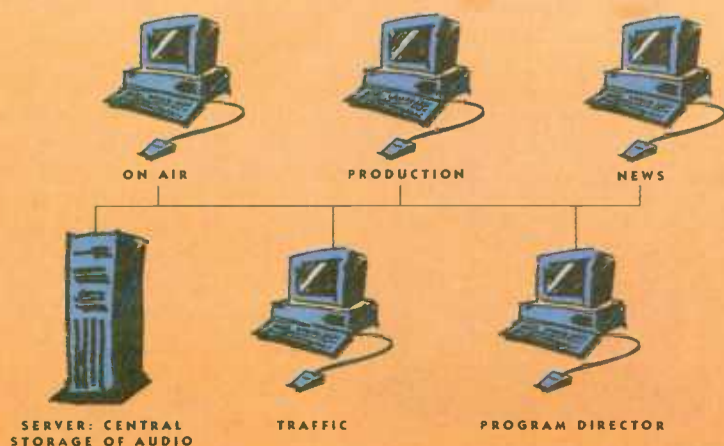


KKND, Tucson - Journal Communications



Kerry Fink - Music of Your Life Radio Network

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Going Public: Life in a Fishbowl

by Frank Montero

WASHINGTON Traditionally, when someone wanted to evaluate how a radio station or group of stations was doing, the first question asked was "What do their Arbitron numbers look like?"

Taking stock

And while that is still the most important determinant, increasingly, this basic question is being followed up by a second, "What's their stock trading at?"

For those who are used to thinking of radio as basically a home-grown family business, stock market indices and NASDAQ quotations and dividend schedules

are believed to be the realm of big TV networks and diversified holding companies that happen to own a few big market radio stations.

However, that has all changed. As radio has become a consolidated big business, the inevitable trend has been for radio group owners to go public to assemble the necessary capital to compete in the big business of the national radio market.

Now anyone can own a piece of a radio station by just calling their local stock broker. The number of publicly traded radio chains has grown dramatically in the past three years and is expected to continue to grow as consolidation and diversification continue under the buying

free-for-all generated by the new Telecommunications Act.

Most radio indices now track roughly 30 to 35 public radio stocks ranging in size from radio powerhouses like Infinity (NYSE:INF), Evergreen (NASDAQ:EVGM), Clear Channel (NYSE:CCU) and SFX (NASDAQ:SFX-BA) to smaller, specialized newcomers like Childrens Broadcasting (NASDAQ:AAHS) with its chain of children's stations and Hefel (NASDAQ:HBCCA) which specializes in a nationwide chain of Spanish stations.

It is largely the dynamic growth and consolidation of the national radio industry that is pushing the groups that hope to

survive and compete to go public. With the lifting of the national ownership caps and the increased number of stations owners may operate in a given market, large group owners are scurrying around to buy up stations and competitors in large markets — and increasingly, in medium-sized markets.

Consolidating capital

This trend began several years before the enactment of the new law when it became clear that the lifting of ownership limits was on the horizon. Foresighted broadcasters began time brokering and buying purchase options on stations that they could not yet own in order to prevent their competitors from claiming them.

Likewise, with the entry of new technologies and delivery systems like digital radio, satellite radio systems and the Internet and World Wide Web, radio broadcasters needed to diversify by opening networks and rep firms and investing in these new technologies to take advantage of the new national scope of radio.

The new direction of radio on this national level is capital intensive and requires new economies of scale to which traditional radio broadcasters were not accustomed.

Such capital investments were once the province of television broadcasting, and even then only with large national chains. Radio broadcasters took their cue from television and Wall Street which introduced sophisticated radio broadcasters to the methods of generating capital on the open market.

More and more we are seeing former Wall Street investment bankers take positions as board members or senior financial officers of radio broadcast firms to help them navigate the treacherous waters of taking a private radio company public.

This first step is called the initial public offering or IPO. The IPO has now permanently been added to the lexicon of radio broadcast jargon. Currently, there are rumors of several prospective IPOs that are awaiting SEC approval to clear so that the stock can hit the street and begin trading.

For broadcasters, going public means having to deal with an entirely new federal administrative agency, the Securities and Exchange Commission, and the army of specialized lawyers, accountants and consultants that goes with it.

Going public

To go public, broadcasters must file a registration statement with the SEC in which they bare all to the government and the public. For example, the SEC's Division of Corporation Finance has indicated that registration statements should include a detailed description and explanation of the risk factors associated with investing in the company's stock, including market factors, financial risks, competition, etc.

Likewise, the company must enlist the assistance of an underwriter, like Solomon Brothers, Paine Webber, Goldman Sachs or others to find buyers for their stock.

The preparation for such an action can be arduous and very time consuming. The company must have a healthy financial statement and sufficient assets and revolving capital availability to grow and make the stock appealing to prospective investors.

continued on page 16 ►



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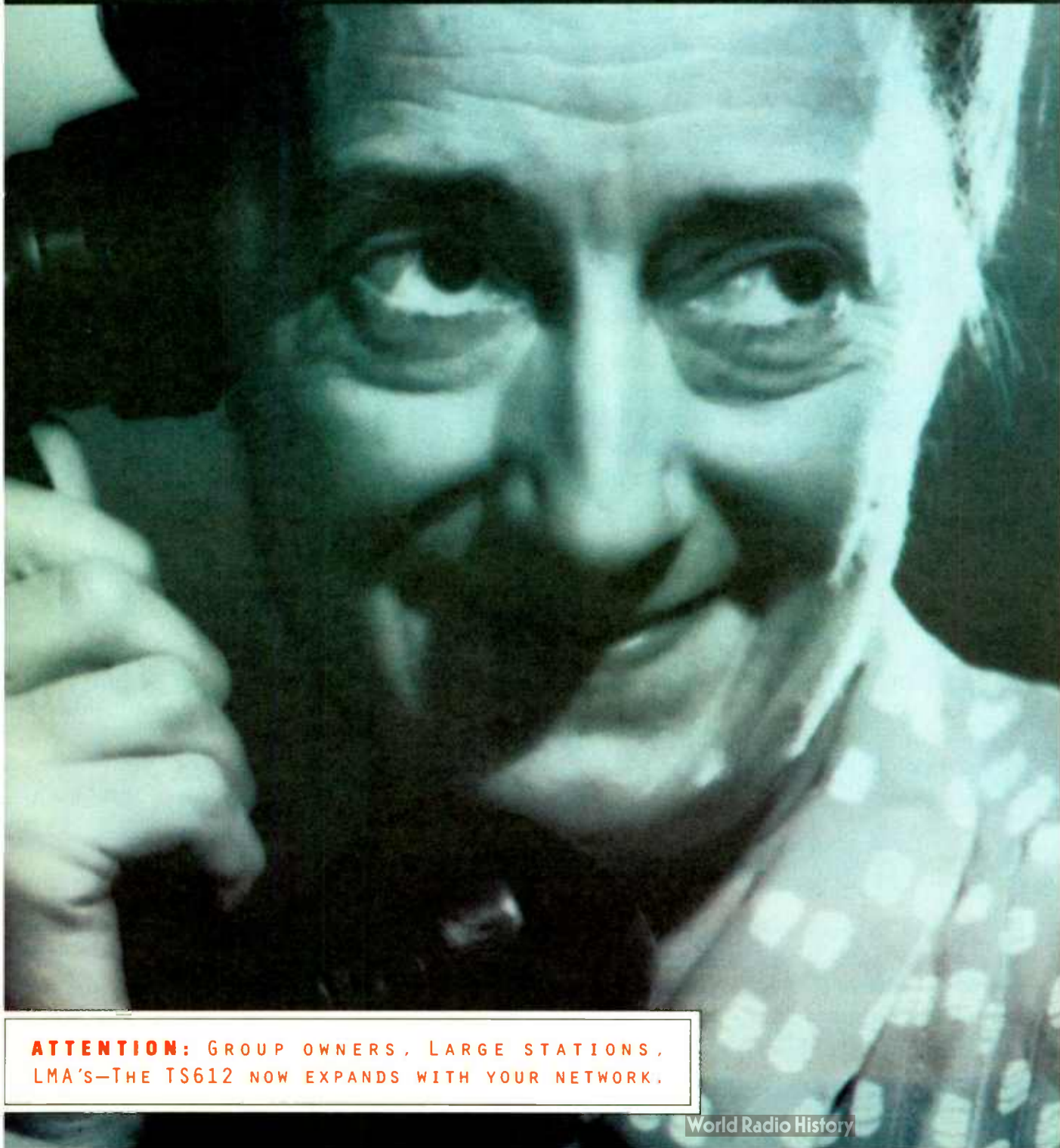
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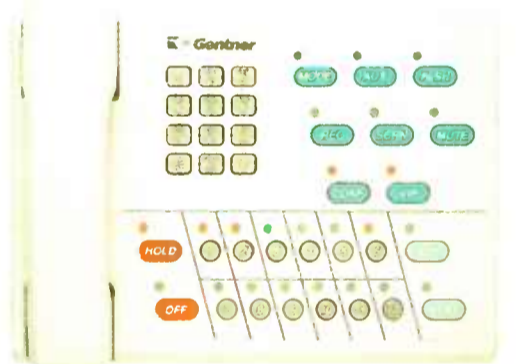
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World Radio History

Preparing for an IPO

► continued from page 14

Lately, it seems that when you see a radio station owner gobbling up stations at a frantic pace, many speculate that the company may be fattening up its stable to prepare for an IPO.

Broadcasters must also learn to operate in a fishbowl. As a public company, virtually all corporate activity is subject to public and governmental scrutiny.

Annual reports must be carefully prepared, distributed to shareholders and filed with the SEC, disclosing all aspects of the company's financial data, salaries of officers and directors, corporate activities and liabilities, and describing in detail the risks and restrictions in

investing in the company stock. This includes a detailed description of all other federal regulations that the company may be subject to such as those of the FCC.

View from a fishbowl

Public companies must likewise comply with a myriad of regular reporting requirements to the SEC. Also, the SEC will scrutinize prearranged confidential transactions or stock transfer commitments, as well as perceived conflicts of interest or other actions by officers, directors and other insiders of the company that may affect the value of the company's stock.

Broadcasters must keep careful watch of the interplay between the relative requirements of the SEC and the FCC which continues to regulate the company's activities. For example, as a public company, the ownership of shares may

reports, and the company is still bound by the FCC's strict alien ownership restrictions which prohibit non-U.S. citizens from holding more than 20% of the equity of a radio station licensee or more than 25% of the equity of the licensee's parent

Taking a company public is a very specialized and intensely intricate procedure. It requires a strong will and substantial resources to execute.

change dramatically from day to day depending on market activity.

The company must still report its ownership structure at all corporate levels to the FCC every year on its annual ownership

company, regardless of whether it is voting stock.

Understanding that ownership in a public company is dynamic, the FCC requires public companies to conduct periodic surveys of their shareholders which must constitute a representational sampling, so as to certify that the ownership of the company has not exceeded these limits.

Likewise, the FCC's newspaper and television cross ownership restrictions still apply and there remain local market ownership caps (although greatly elevated), so the company must be careful when stock is purchased by other broadcasters or media related companies. Although the FCC still recognizes 5% of voting stock as its threshold for counting an attributable interest in a licensee for multiple ownership purposes and most stock market buyers purchase shares well below that threshold, the company must be aware of institutional investors which purchase large blocks of shares.

Stock exchange rules

In addition, the company will be subject to the particular rules of the stock exchange where its stock is traded. The rules of the New York and American exchanges differ, and they differ from NASDAQ or over-the-counter stock trading rules.

Some exchanges, such as NASDAQ, allow for a greater percentage of closed ownership and control of the company by the individuals who take the company public. While a more prestigious market to be traded on, the New York Stock Exchange may require relinquishment of a far greater amount of control over the company's stock, thus making the company more susceptible to hostile takeover attempts on the open market.

Taking a company public is a very specialized and intensely intricate procedure. It requires a strong will and substantial resources to execute. Likewise, once you are on the open market, it is very difficult to take the company private again.

Thus, your company may be permanently subject to the unpredictable whims of the marketplace. However, with the radio industry's landscape changing so dramatically, the market is quickly dividing up between those companies that intend to survive in the new reality and those that will be absorbed by the quickly growing and diversifying mega broadcasters. For many, going public is the only way to compete in the rapidly changing radio world. ☹

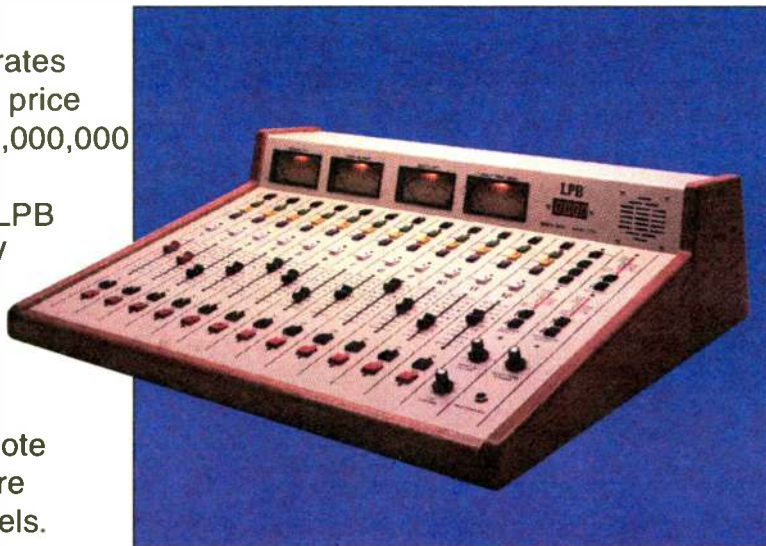
Frank Montero is a communications attorney and partner with the Washington law firm Fisher Wayland Cooper Leader and Zaragoza, L.L.P. Contact the firm at 202-775-5662 or e-mail him at fmontero@fwclz.com

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World Radio History

Studio Sessions

Equipment and Applications for Radio Production and Recording

Making CDs:
Burn Baby Burn!
See page 21

CBC: A Radio Suite to Envy

by Alan R. Peterson

TORONTO You are probably quite satisfied with the well-equipped production room you have built up at your station. Well, as soon as you read about the Canadian Broadcasting Corporation's (CBC) new Radio Performance Suite, you are going to want one just like it.

Imagine a double-height room with two staircases, a dead room also built double-height, a combination kitchen/bathroom and a hallway filled with rocks, gravel, leaves and sand; all designed as active recording spaces.

Behind the glass, there are five control rooms and one editing suite, networked through state-of-the-art Sonic Solutions workstations. This is a studio designed for serious radio work.

Thanks a lot

Do you feel as if your little four-track room lost a lot of its luster just now? Don't worry. Every facility is inherently designed to perform only the job it is intended to do, including yours.

The CBC facility was designed specifically for radio drama. This means accommodating large casts, extensive dialog editing and considerable effects mixing, with a great demand placed on speed.

It also means complete sonic control over the performers' environment. The presence (or absence) of appropriate room tone and response adds to the reality of a performance every bit as much as the effects.

Come with us as *Studio Sessions* examines this marvelous facility and the technology which drives it, courtesy of John M.S. McCartney, senior recording engineer and system administrator for CBC's Radio Performance Production Suite.

Oh, and try not to get too jealous.

History

Nearly 60 years ago, CBC radio drama performances were done live to air. Actors, a sound effects technician and up to 30 musicians shared a stage while an engineer, director and production assistant occupied the control room. Shows went live and were archived to 16-inch acetates.

Eventually, the move was made to quarter-inch tape. Then in 1982, multi-track tape arrived at CBC. Even then, it was a lengthy production procedure. Dialog and effects would be recorded, edited and finally mastered.

A reference dub of this mix would be sent to a composer for a music score which was laid up to another multitrack recorder and finally assembled into a master mix.

The recent move to digital technology was only one part of the overall plan. The performance space was designed to record the drama and also be a part of it.

Look at the view of the main studio in Picture 1. The double-height room's mezzanine level is accessible by two staircases:



Main Studio

es: an all-metal spiral and a conventional staircase with wood and concrete surfaces for a diversity of footstep sounds.

The upper floor is part metal, part wood. The lower floor is wood with a region of marble tile. Depending on need and mic placement, a variety of walking sounds and dialog can be achieved in this room.

Over the main floor is a tunable acoustic "cloud." Combining it with roll-around baffles, the acoustic signature of the room can be adjusted to sound like any space from a jail cell to a cave.

See those windows and doors set into the walls? Forget the view, they are there for creating sound effects. The advantage in having real windows in the studio is in matching the acoustic space with the performers. There is no differ-



Hidden Sounds

ence in EQ or ambience and the action fits the dialog without sounding awkward or artificial.

Across the hall is the "dead room," a production director's dream. The chamber is also double-height, can accommodate 25 performers and really is flat-out dead to simulate outdoor ambience.

The hallway leading to the room is the clincher; it doubles as a micro-Foley stage. The trapdoors along the floor shown in Picture 2 contain river rocks, leaves, sand and gravel.

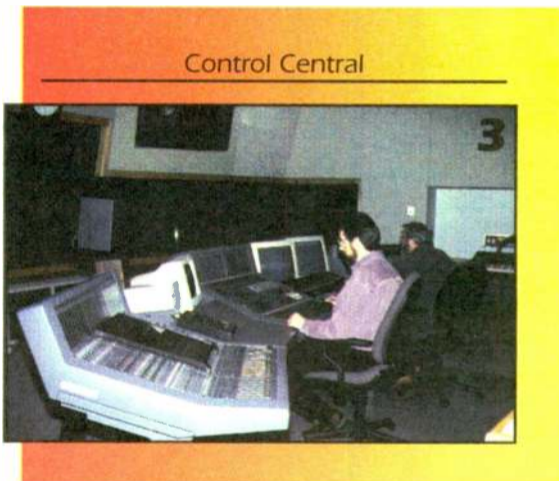
When closed, the floor is a wooden

boardwalk. Put a mic in here and record all the location footstep sounds you could ever want.

Other rooms include a small, hard-surfaced space to simulate a phone booth or car interior, neutral "house" and bright "office" rooms and a combination kitchen/bathroom with working fixtures (see the photos in the April 17 RW, page 35).

Other side of the wall

"The Main Drama Control Room is the centerpiece of the facility," says McCarthy. Picture 3 shows the Sonic Solutions 24-channel workstation used as the main recording



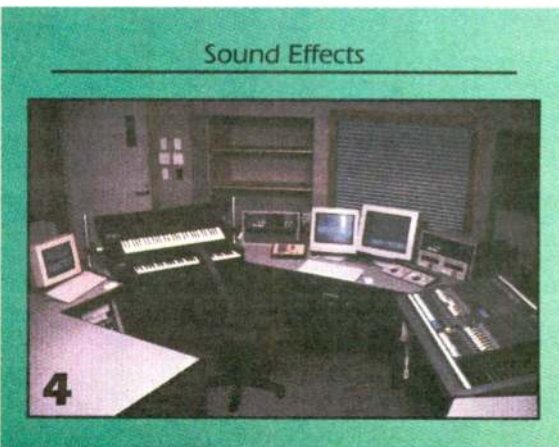
Control Central

system. It runs on a Macintosh Quadra 950 and is coupled via AES/EBU interface to a fully automated Neve Capricorn digital console. Analog and digital trunks tie the main room to all others.

The facility is designed so any studio floor area can be connected to any control room. Centralized patchbays are located everywhere, distributing mic lines, analog and digital audio trunks, video and fiber optics. This system offers open-ended flexibility and keeps rooms from being tied down to specific studios.

For example, if the main control room is scheduled for a mix session, any of the sound effect control rooms can be recording cast or sound from the kitchen or dead room.

Signal processing includes the Quantec Room Simulator for creating ambience.



Sound Effects

The Quantec has the ability to store libraries of show-specific effects on computer.

There are four sound effect rooms, three containing Sonic workstations. Each contain analog consoles, outboard processing and MIDI samplers. A typical room is shown in Picture 4.

Computers and drives are located away from each studio; monitors and keyboards are the only elements inside the studios. To deliver an image of the audio back to each studio, the standard Mac video line was broken out into five coaxial lines.

All studios exchange audio and data via fiber optics. The net's bandwidth is 100 MB per second, translating to a capacity of about 80 digital audio channels at 44.1 kHz.

In operation

An edit decision list (EDL) is made and dialog is recorded into that EDL so audio is in proper relative order; this saves time in final assembly.

Backups are constantly being done. All original takes are saved to DAT and every show's EDL is saved repeatedly in project "folders." These EDLs can be copied into other workstations for sound effect assembly to begin even before dialog editing is complete. In fact, sound effect loading can begin even before the cast recording session has been completed.

Music is recorded to digital multitrack tape, mixed down to stereo DAT and transferred digitally into the Sonic. The entire process remains digital.

The beauty of the networked system allows technicians in any sound effect control room to create Foley effects with the same acoustic signature as the vocal tracks.

All elements sound as if they are in the same real physical space.

The final mixdown brings all the elements back to the main room. The automated console executes the mix, prints it to DAT and records it back onto one of the hard drives attached to the dialog edit suite.

From there, it can be edited to fit a number of different on-air formats.

According to McCarthy, "We have seen considerable improvement in the sonic quality of our productions in addition to a much more efficient use of our resources."

And wouldn't it be nice to have just one of these rooms at your station?

□ □ □

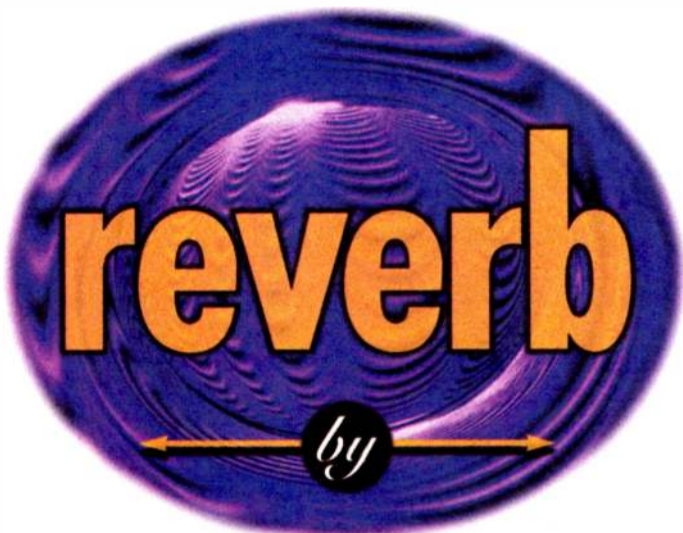
Technical information and photographs were from the seminar "Producing Radio Drama Using Networked Digital Audio Workstations," presented by CBC's John McCarthy and John Stewart at the 1995 Audio Engineering Society show last fall in New York City.



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No longer side effects.

'All Things Considered': Take Two

by Rich Rarey

WASHINGTON Last time out, I told you how Studio 4A at National Public Radio's (NPR) headquarters here was booked to record new program music for All Things Considered (ATC).

To recap, it was mid-summer 1995. The band Wynton Marsalis put together to record "Harlem Suite" for NPR's "Making the Music" was now set up and miked for our theme and jingle session (see the April 3 RW for technical details).

During the course of the session, many different variations of the ATC theme were recorded. Project engineer Mark Greenhouse picks up the story.

"We did the Opening Billboard, the Sad Day Billboard and the 'Dead President' Billboard — as we nicknamed it when something really awful happens in the world. We recorded closing themes, stingers, buttons, everything."

The session also produced the theme played comically as a tuba melody, a lovely solo saxophone, ragtime piano and Mardi Gras clarinet. In all, two-and-a-half hours of tape.

The snag

In spite of careful technical preparation and a group of world-class musicians who had played together the previous week on another project, there were problems during the session.

As conceived, the ATC melody was to be translated into a jazz-style form: "Great American music for a great American Radio show," as ATC director Bob Boilen put it. The brass and reed sections were to convey the signature statement.

"In reality," continued Boilen, "The quality of music and the style turned listeners off. It didn't have a jingle quality. It was no longer a jingle, but a piece of music."

The tonality of the Opening Billboard — the first thing an ATC listener hears — just did not work. The reed sound at the signature was not right. It was a very awkward moment: Do we scrap the time and effort spent in recording and mix-down, or do we attempt a fix?

The Lone Arranger

Arranger Wycliffe Gordon wrote two new parts several weeks after the first session. Two new players came back to Studio 4A to recreate, literally note-for-note, the original brass statement. Eventually, as engineer Greenhouse put it, "the group was sweetly in tune."

"We 'stacked' the trumpet with octaves to ensure the melody stayed prominent," Greenhouse added. "We mixed the original, out-of-tune horns under the new ones to create a rich texture that Bob and I liked, and deleted the reeds in the opening fanfare altogether." Thanks to the SSL console's automation, updating was a quick affair

and the new billboard was generated.

The mixdown tools used for this project included a Lexicon 480 reverb, 300 and PCM80 processors and an Eventide Ultra-Harmonizer.

Using the 480 mono-split configuration, a small-hall ambience with stage reverb was added to the horn section and a modified large wood room reverb setting was used on the drums.

"The piano needed nothing," commented Greenhouse. "The

ensemble, caused a howl among stations and listeners.

The success of the ATC theme project can be measured technically, however, by the clarity of sound and ease of which Studio 4A afforded the participants.

We have found recording and mixing these themes in our own studio had a distinct advantage, similar to that afforded when the local team plays a home game.

Since the ATC theme sessions, NPR's Studio 4A has enjoyed rising popularity with outside clients. In early March, Studio 4A was used for videotaping a television news program pilot, and continues to be sought after for NPR music performances and audience participation



PUBLIC DOMAIN



Mixing the music at NPR's huge SSL console.

300 was set on a viciously modified Cathedral program, with reverb time turned down. That provided the big reverb on the horn 'dinks' playing under the ATC host's text in the Billboard (see sidebar for the definition of dinks).

Great care was taken with blend and pan, and our SSL G+ automation looked like a fire dancing on the display screen."

Was there anything that might have been done differently? According to Greenhouse, "I would have had twice as many players.

I came up with a lot of thick textures with processors in the mix to make the band sound 'expensive'. Because we used tight miking and had no overdubs, the band was a bit thin, and I wanted the new theme to be impressive. That meant having to substantially fatten up the section."

Greenhouse's favorite recollections were of the band's humor. "After a week of intensive time together, the rapport had become chummy.

We were all dazzled by pianist Loston Harris II's seemingly effortless musicality throughout the sessions.

He had a few hand-scribbled notes with length of sections — no musical notation — and he played with such imagination."

Audience reaction

Whither the ATC themes? The critical review from listeners and NPR member station staffs will tell.

Amusingly, the last theme package change in 1983 that replaced the older orchestra version with a smaller

programs.

Until next month, I remain, your ob'd'nt eng'r.

□ □ □

Rich Rarey is the technical director for National Public Radio's "All Things Considered." He can be reached at rrarey@npr.org

Talk Like a Musician

"Play some dinks." "Gimme some chows."

Musicians have a language all their own. If you have limited yourself strictly to radio production all this time, you are missing out on an interesting phase of the art of recording.

Sometimes it is fun to lean away from the console and tilt one ear towards the performance area just to hear what they are up to. Some terms sound comical, but in context make perfect sense. When you can use these yourself and still keep a straight face, you know you have arrived.

"Dinks," for example, are what the NPR crew called the staccato horn parts resembling the choppy rhythm of a teletype.

When a producer says a piece needs chows, don't go racing for the Purina bag. "Chows" are hi-hat cymbal hits done off the beat for texture and musical excitement. Disco drummers got rich during the 70s just overdubbing chows. Listen to Meco's "Star Wars Theme" or the Bee Gees' "Stayin' Alive" to hear it.

"Chops" are chops. It means aptitude ("Man, that guy's got no chops!"). If you never heard "tiddly" before, that one will make you smirk. A tiddly is a little ornamental flourish given a melody line; sometimes written, sometimes improvised but always interesting. Go back into the oldies library and pull out "Raindrops Keep Fallin' on My Head" by BJ Thomas. That last note he sings is the mother of all tiddlies.

Drummers have their paradiddles, flams and momma-daddas, while sample artists work with loops, grooves, stabs, hits and bomsps ... but you are going to have to look those up for yourself.

-Alan Peterson

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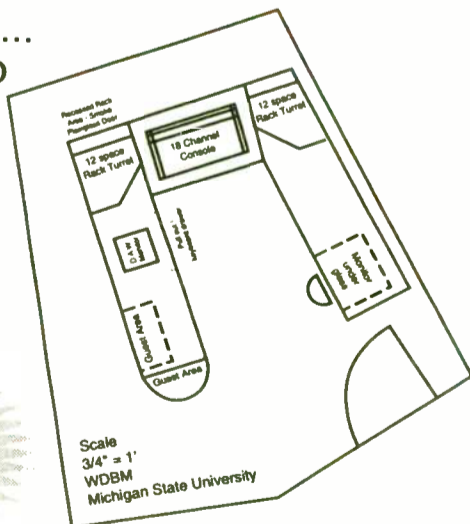
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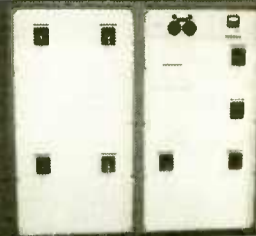
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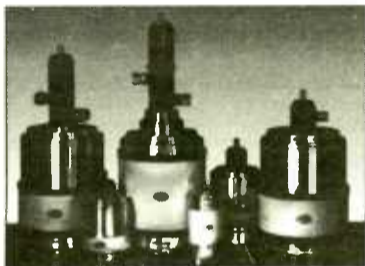
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LINE OUT

Add-on CD Recorder for Computers

Part II of II

by Bruce Bartlett
with Jenny Bartlett

ELKHART, Ind. Last time in *Line Out*, we started to look at the CD-R, or recordable compact disc.

We explained CD-R technology, equipment and software. Briefly, CD-R is an optical, write-once storage medium for audio or data. It is a safe place to archive your station IDs, promos, production music, and so on — all with pristine sound quality and random accessibility.

A CD-R disc will play on any audio compact disc player or CD-ROM player. There are two types of CD-R writer: self-contained and computer peripheral. Prices for the latter start around \$800.

Add-on

Last time we suggested how to use a self-contained unit; now we look at how to use a computer add-on CD-R writer. You will need a sound card and two types of software: sound recording/editing software (to create WAV files on hard disk) and CD-R recording software (to select and sequence the WAV files and transfer them to CD). Some software does both.

Suppose you have several promos on DAT that you want to copy to CD-R. The first step is to copy your promos through the sound card to hard disk. Connect the DAT's Digital Out into your sound card's Digital In. If your sound card has no digital input, connect your DAT's analog line to your sound card's analog input.

You can also make CD-Rs from analog tape, LPs or cassettes. Connect the analog source signal to the sound card's analog input.

Here is the recording and editing procedure. First, using the sound recording software of your choice, record each promo to hard disk as a separate WAV file. Some programs let you record all your mixes as one long file, then break it into separate files with start-IDs.

If your software allows, trim the start and stop points of each WAV file to remove noises before and after the promos. Now use the CD-R program that came with the recorder or other compatible CD-R software.

Playlisting

Select the WAV files that you want on CD and put them in a playlist in order. Again, be sure that the total playing time is less than the CD-R length. You cannot erase and reuse CD-R discs, so be sure to get things right on the first pass. The old carpenter's axiom "measure twice, cut once" is most appropriate here.

Some computer CD-R software adds Start IDs automatically while other software lets you tweak the Start ID times. The software also puts two seconds of blank space between each WAV file. If you want longer blank spaces, record a one-second silent WAV file, and insert it into your playlist where needed.

With your program in final form, you are ready to create a CD. Connect your CD recorder properly, turn it on, and

put in a blank disc. At this point, you can either simulate a recording or actually go ahead and cut a CD.

The simulation — also called a CD image or physical image — lets you check for errors in advance and is writ-

ten to your hard disk. This requires up to 650MB of free disk space. When you run a simulation, the light on the recorder may flash, but the laser is not actually burning pits onto the disc.

ity. High speeds require CD-R discs with yellow or gold cyanine dye. Normal speed is 150 kB per second (kBps), double speed is 300 kBps and so on.

Some programs let you record all your mixes as one long file, then break it into separate files with start-IDs.

When all is ready, start the transfer to CD-R. The CD writer will record the tracks in the order you chose, as well as spaces and track numbers or start IDs. Displays will show how the transfer is progressing.

When the recording is done, the screen will say that the Table of Contents (TOC) is being written. In a couple minutes the system will beep and eject the disc. At this stage, you can make

more copies of the same program or start over.

Some software prints out liners for the CD jewel box with track numbers, titles, and timing.

Handle the disc only by the edges to prevent fingerprints which can create read-errors. Play the disc on an audio CD player to make sure that all the tracks play correctly, and there you have it. There's your finished CD. You are done.

Hardware and software

Examples of self-contained (consumer) CD-R recorders include the Marantz CDR-610 and CDR-620. Call Marantz at 708-820-4800.

Studer has the D740 recorder. Call for information at 615-254-5651. Yamaha makes the YPDR601 and details are available at 714-522-9011.

Denon makes the DN-7700R. Phone Denon at 201-575-7810. And Pioneer manufactures the PR-99 and PDR-05 CD recorders. Other units are available from Carver, Digidesign, Gotham Audio, Kenwood and Otari.

Computer add-on CD-ROM recorders
continued on page 22 ▶

Minding All Your PQs

If you want a CD mastering house to mass-produce your CD-R, you need to know about PQ subcode. Basically it is track-timing information.

All regular compact discs have PQ subcode embedded in the audio data stream.

In the PQ subcode, the P channel indicates what part of the disc is being read: lead-in, track beginning, data, or lead-out.

The Q channel has information on track numbers, track timing, index numbers, absolute time, two- or four-channel format, pre-emphasis, copy prohibit, error detection, and the catalog number for the disc.

PQ subcode is sometimes called Q

subcode. When a commercial CD master is cut, the PQ subcode is sent as a "PQ burst" to the CD mastering machine before the audio data. Not all CD-R software can put the PQ burst on disc.

If the PQ burst is not on your disc, the mastering house will copy your program to a Sony PCM 1630 tape and will add the PQ subcode then.

If PQ subcode is on your disc, then the disc is a CD premaster that the mastering house can use without copying to 1630 tape.

-Bruce Bartlett.

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Record Compact Discs

► continued from page 21

are available from a number of companies.

Philips has three in its line: the CDD521, CDD522 and CDD2000. Call 615-521-4395 to get details.

Sonic Solutions makes the CD-200 CD Printer and TrackMaker software. Phone the company at 415-485-4800.

Pinnacle Micro has the RCD-5020 and RCD-1000 recorders. Call 714-727-3300 or 800-553-7070 to get information, or e-mail tech@pinnacle-micro.com.

Other companies and products include the Opticalmedia OMP 2Xe and OMP 4Xe; Plasmon Data Systems' RF4100 and CDR4220; MicroNet's AT-MCD-PLUS/ADD Sony CDW-900E and the

Spessa CDU-920S.

You can also find out about Yamaha's CDR100 (4X) and CDR102 (2X) recorders. Hewlett-Packard makes the Sure Store CD-Writer 40201, Kodak has the PCD200, PCD225 and PCD600.

There is the Smart & Friendly CD-R 1002, the JVC XR-W2001 and the Pioneer DW-S114X. The Pioneer cannot do Disk-At-Once.

There are many examples of CD-R Recording Software: SimpliCD, Personal RomMaker, Personal Archiver, WinOnCD, OptImage CD-It All and Toast, Pinnacle Micro, Sony's Hybrid Formatter, Digidesign Masterlist CD,

SADIE, Dataware Technologies CDRecord and Adaptec InCat Easy CD-Pro.

Easy-CD Pro 1.4 writes only one audio track at a time.

Corel CD Creator V. 1.01 is included with CD-R recorders from Plasmon, Smart & Friendly, and others.

Optical Media TOPiX software is for

Some programs print out liners for the jewel box with tracks, titles and timing.

the Philips CDD521; phone the company at 800-347-2664.

DAO.EXE is a \$45 shareware program by Jeff Arnold. It records PQ subcodes and lets you set the spacing between tracks. Check the Web site at <http://www.mainstream.net/>

~j_arnold/cdrom/cdrom.html

Blank CD-R discs are made by TDK, Verbatim, Kodak, Taiyo Yuden, 3M, Maxell, Sony, Maxell and Mitsui.

Blank CD-R vendors include Pro Source in Sparks, Nevada (phone 800-903-1234), the Cassette House (phone 800-321-5738, e-mail artmuns@tape.com, Web page at <http://www.tape.com>), Digicom's Web page at <http://www.hookup.net/~digicom/> and CD Archive, Inc. (phone 1-800-860-2376, Web page at http://www.cdarchive.com/cd_solutions/welcome.htm).

□ □ □

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

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PRODUCT EVALUATION

Economical Phones Make the Grad-O

by Bruce Bartlett
with Jenny Bartlett

ELKHART, Ind. Are you fed up with headphones that color the sound? Some are sweet in the highs, but fat on the bottom. Others have tight, deep bass, but have a harsh midrange. Is there a headphone that doesn't cost much, yet is free of coloration? Yes. Check out the Grado Labs SR60.

Costing only \$69, it blows away all other headphones in its price range. The sound of the SR60 is so neutral and revealing, it is a joy to listen to. No tubby bass, no midbass puffiness.

Chances are you have not seen Grado headphones in the ads. The company keeps a low profile.

For more than 40 years, Joe Grado was a top audio design engineer, with over 48 patents to his name. Joe developed the Joseph Grado Signature Headphones, renowned as some of the world's most accurate.

Low cost

The SR60 reviewed here is the lowest-cost model in Grado's award-winning Prestige Series. This line of headphones is claimed to offer great sound at an affordable price. An open-back design, the SR60 has little isolation. You can hear other people, and they can hear what you are listening to.

The headphones cannot block out the sound of the musicians if you are recording live. But if you are monitoring a mixdown or a playback, the SR60 tells the truth.

Other Grado models range in price up to \$695, and are among the most respected headphones ever made.

Design and specs

I like the Grado's no-nonsense styling; reminiscent of old radio earphones, yet classier. Construction is first rate. The phones are black with clean silver lettering. There is a rugged 6.5-foot cable end-

ing in a gold-plated mini plug and phone-plug adapter.

Soft foam ear pads rest on your head. The earpieces swivel up and down, left and right. Ear pressure is a little high — causing mild discomfort — but you can reduce the pressure by stretching the headband.

In each earpiece, a low-mass diaphragm vents into a large, non-resonant air chamber which deepens the bass response.

The diaphragm is specially formed to reduce breakup and to spread any resonances evenly across the audio band.

A dynamic headphone with Neodymium magnets, the SR60 is very sensitive at 94 dB SPL per millivolt. Nominal impedance is 32 ohms.

Claimed frequency response is 20 Hz to 20 kHz, and the drivers are matched within 0.1 dB. Each Grado headphone is hand-assembled in the USA to tight specs.

And the sound?

I auditioned the Grado SR-60 with a variety of CDs and master tapes. Here are my impressions of the SR-60 on various instruments:



Grado Labs' SR60

Drums: Realistic, detailed, powerful impact.

Kick drum: Tight, clear attack, fairly deep.

Cymbals and percussion: Crisp, slightly sizzly. Occasionally harsh — lacks the sweetness of electrostatic phones.

Electric guitars: Strong upper mids. Aggressive.

Electric bass: Fairly deep, very tight and detailed. No boominess. Articulate.

Acoustic guitar: Clean, detailed and accurate.

Sax: True timbre, good presence.

Strings: Airy and mostly smooth.

Flute: Breathy.

Voice: Uncolored and realistic. Slightly edgy and sibilant, but never tubby.

Master tapes: A little brighter than they sounded when I mixed them.

Listening fatigue in the SR60 is very low. The overall sound is neutral and articulate. You do not have to listen through any colorations to hear the music.

Although the extreme highs are less smooth than in electrostatic phones, keep in mind that the SR60 costs only \$69.

In all, the Grado SR60 is an exceptional value with no peers in its price range.

Product Capsule: **Grado SR60 Headphones**



Thumbs Up

- ✓ accurate lows, mids and upper mids
- ✓ deep, articulate bass
- ✓ rugged
- ✓ low price



Thumbs Down

- ✓ extreme highs slightly harsh
- ✓ slightly uncomfortable

For more information, contact Grado Labs at 718-435-5340; or circle **Reader Service 34**.

Give it a listen, and also check out the more advanced models in the line.

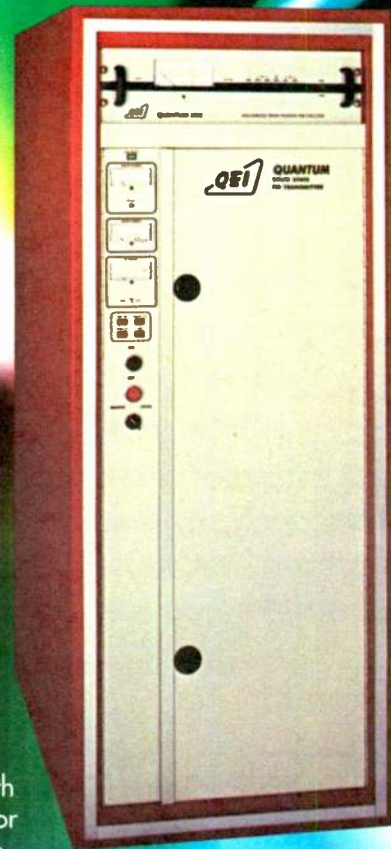
The SR60 comes with a one-year limited warranty.

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Use Your PC on Promos

A neat vocal trick being used right now on alternative and CHR bumpers and liners is a "digital" voice. It is an actual voice which has been filter EQ'd, compressed and given just a subtle touch of digital distortion.

Bet you didn't know you have a digital voice at your disposal even now: the text-to-speech converter included in early PC sound cards. You remember it as a "speech synthesizer."

I admit that silly electronic accent and clipped read sounds just as dorky now as it did in 1989. But like cayenne pepper, all you need is a dash of the stuff to spice up a recording.

You do not want to record the entire body of copy with it, but it is a kick for punctuation drops and phone numbers. Besides, like everything else on the promos now, it will be processed to death anyway.

The DOS and Windows converters that come with the Sound Blaster card create

different voices, both very useful. You might even download generic shareware speech converters from any of the online services or off the Internet. I found a couple on America Online.

Type the text you want read into the PC. It need not be much; just "call now" or "only on Q-102." Connect the sound card's output to your tape or DAW input and roll it.

Mix it up

Once you have the PC's voice recorded, it is time to go to town with editing and processing. Treat it as any other voice track: pitch-shift it down a major third, manipulate it with a sampler, double-track and hard-pan it or add distortion. Beat it to death then fly it into the mix.

Good production people can hear the creative potential in any sound anywhere. Even gritty synthesized speech has its place in the producer's magic bag. Try it out once.

-Alan Peterson



If you need more professional help than this the new DSE 7000FX has a shrink on board.

Relax. Lie back. And think about all those times you were editing spots, racing against a deadline, and suddenly you had to send out for sound effects. Is it any wonder you need professional help? Well, consider this sound therapy.

On board the new DSE 7000FX, you'll find every digital effect you need to create the coolest, most professional spots: EQ by Orban, Compression by OPTIMOO, Reverb by Lexicon. In effect, you get the very *same* effects professional

studios spend thousands on. Except these come standard with the new DSE 7000FX. They work seamlessly with the DSE's legendary mixing console and on-screen interface. And they're incredibly easy to use.

You'll also find that the fastest workstation in radio has gone *turbo*. With added processing power, you'll get more spots done. Be able to add more effects. And on those occasions when sessions get ugly and your :60's seem to run into :70's, relax. The DSE's time compression will shrink to fit.

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Shecky Peterson's NAB Comedy Act

by Alan R. Peterson

WASHINGTON Wow ... no denying the Vegas NAB show took a lot of steam out of all of us. Between walking the floor, busing between buildings and trying to make sense of it all, there was almost no time to actually enjoy ourselves at night.

In our case, we were hustling to get the NAB Daily paper published so you would all have something to read on the bus. Hope you enjoyed it.

You know what you missed? All that Vegas-style entertainment. Bill Cosby, Sigfried and Roy and all the showbizzy stuff the world has come to expect from Vegas.

So you don't feel left out, here is a little post-Vegas comedy warmup to get you ready for the next half of this issue.

Cue the orchestra

(Mild applause - golf claps)

Thank you, thank you. How you all feeling tonight? Had enough of the convention? Hey-yy, how about all those digital workstations? "DAWs" they call them, right? You know what "DAW" means to a general manager?

Doing Any Work?

What did the weekend DJ at the small-market FM station say when the general manager called the station?

"Press - zero - for - more - options."

Why did the midday host blow off the EBS test?

He didn't study for it.

What do you call ten thousand pop vocalists with army-issue rifles?

Militia Etheridge.

How do you get a caffeine-hyped morning man to talk slower?

Put copy in front of him.

What popular stylish brand-name label is the modern small-market overnight DJ wearing these days?

Intel Inside.

What is the difference between Monopoly and Duopoly?

Only play money is risked in Monopoly.

Why didn't the unemployed orchestra leader get electrocuted when he stuck his tongue inside that new digital transmitter?

He was a poor conductor.

Why did the part-time railroad employee get just a little shock?

He was a semiconductor.

Lightbulb jokes

How many morning show hosts does it take to change a lightbulb?

Five. One to change it and four others to say he stole the idea from them.

How do you get 10-year veteran radio newscasters to change a lightbulb?

You don't; that would affect their credibility as a serious reporter in the community (tell me you never heard that line before).

How do you get an audio purist to change a lightbulb?

Tell him it's a tube.

How many sound-check technicians does it take to change a lightbulb?

1-2-3, 1-2-3, 1-2-3...

How do you get an RW reader to change a lightbulb?

Circle Reader Service 237 for information on this topic.

How do you get Don Imus to change a lightbulb?

"Change it yourself, you bald-headed geek!"

What do you get when you drop a truckload of old cart machines down a mineshaft?

A-flat miner.

What did the weekender replaced by satellite automation say into the mic on his first day at the new job?

"May I take your order?"

What's the difference between a modern DJ and a 1987 Yugo?

The Yugo probably has a license.

Why is a puker jock like a new electric heater?

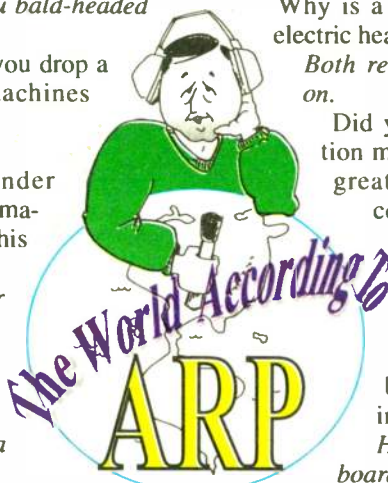
Both really stink when they're on.

Did you hear about the station music director who cut a great deal with the record company?

All he has to do is buy five more this year at the regular price.

Why did the new board-op pour bourbon into the console?

He wanted to jock a tight board.



What does a 21-year-old alternative rock DJ call the Bee Gees?

Music of Your Life.

What is the approximate range of a half-inch analog multitrack reel machine?

About 25 feet, with a good throwing arm.

Big finale

What does a low-rated morning man call slapping the snooze bar seven times before getting out of bed?

Show prep.

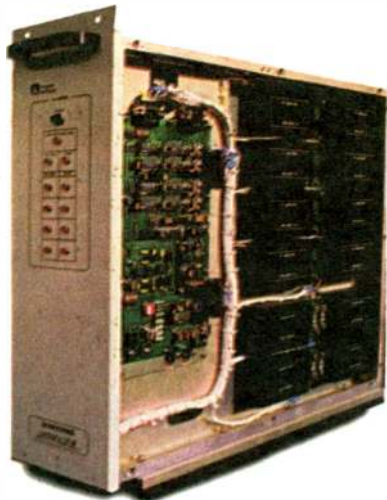
And finally, what's the difference between a fortune cookie and "The World According to ARP?"

One is superficial, only marginally entertaining and quickly forgotten. The other comes with a cookie.

Thank you, you're a wonderful audience. See you at the 10 o'clock show.

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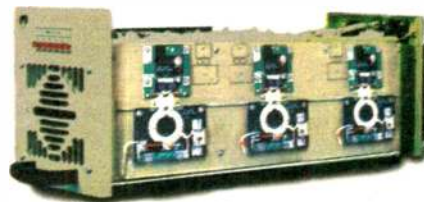
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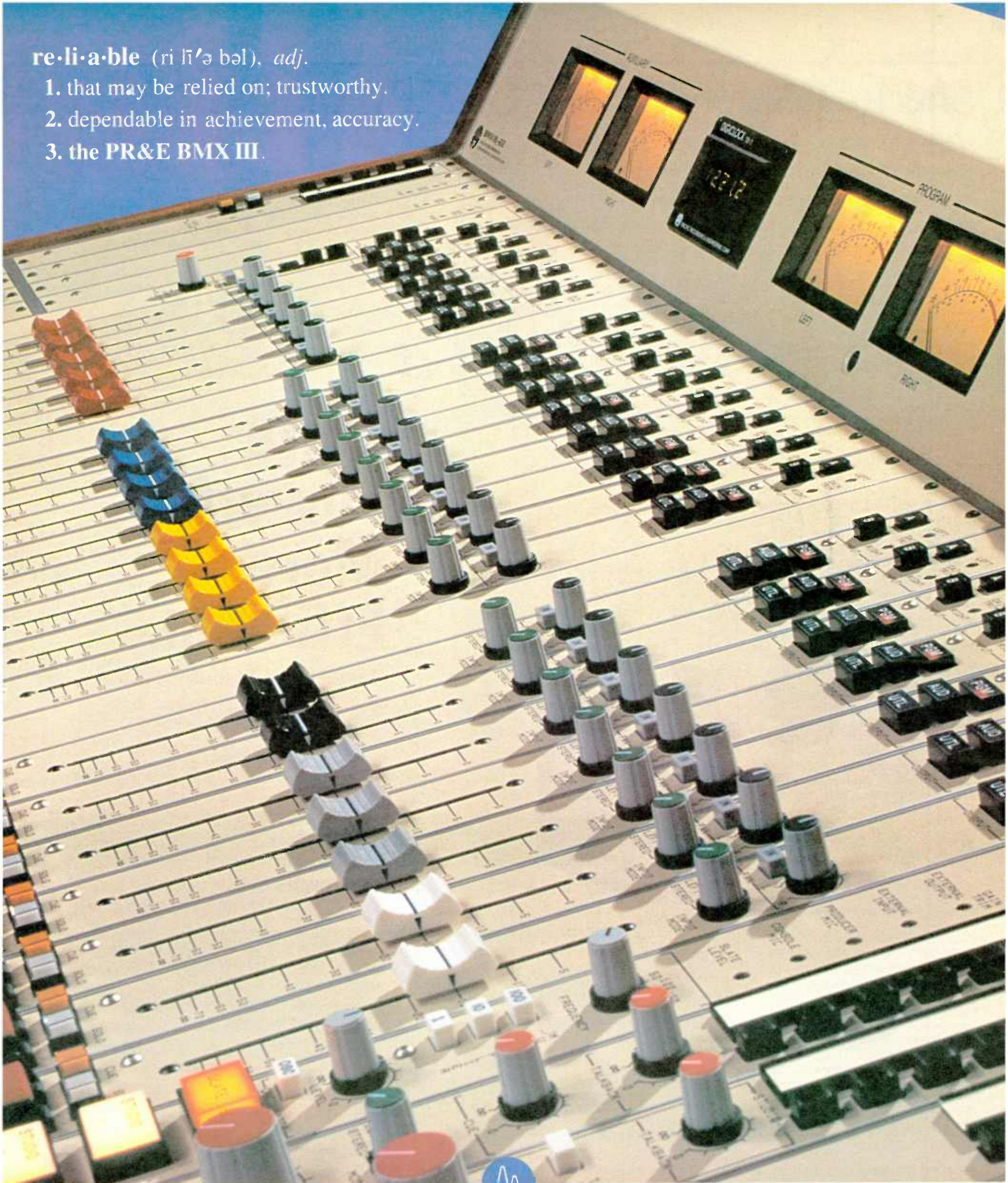


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re·li·a·ble (ri lī'ə bəl), *adj.*

1. that may be relied on; trustworthy.
2. dependable in achievement, accuracy.
3. the PR&E BMX III.



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Circle (82) On Reader Service Card
World Radio History

Running Radio

International Update:
Private radio in Bulgaria
See page 35.

Your Resource for Business, Programming & Sales

Interactive Web Site Sounds Clean

by Alan Haber

ALEXANDRIA, Va. Spring has sprung out here in cyberspace. There are plenty of interstellar flowers — bright and plentiful. There are lotsa great picnics with lotsa great food (and, unfortunately, lotsa ants). And the ice cream cones, piled high with sprinkles galore, aren't bad either.

Yep, all this and more dots the landscape surrounding the ever-hectic global



Haberspace headquarters. There is so much goin' on outside that the cybermail person is rather confused — so much so that he says he's finding it hard to make it up the stairs to deliver the latest news of radio's growing relationship with the Internet.

Well, he must be confused — we don't have any stairs!

But we do have some cool radio Web sites to talk about this month and lots of info to impart, so let's get to it, shall we?

Now for the Neat-O and Net-O Live Broadcaster Sites of the Month!

Actually, one site has captured both of these sought-after honors this month. WEBX — The Web — at 93.5 FM in Champaign-Urbana, Ill., pushes 6,000 W of power to local listeners and bellows to the universe on the World Wide Web. The station, which went on the air on Friday the 13th last October, was started with the idea of going on the WWW, said marketing director Bob Saldeen.

Not only does WEBX have a great looking, highly interactive site (which, by the by, went up on the World Wide Web just after the station first went on the air locally), but it has been broadcasting on the Net with RealAudio 2.0 since mid-March. Indeed, the two-fisted punch of having a great looking site and live broadcasting status pretty much guarantees The Web a priority place in the Haberspace Hall 'O Fame (when we get a Hall of Fame, that is).

Located at <http://www.webxfm.com> on your Internet dial, WEBX greets you with a smart-looking home page. Yes, I know, I know; it's the dreaded black background I love so much. Yet, I think The Web folks have done a nice job here. The white station logo, red-text short-and-sweet mission statement — "Broadcasting Live World-Wide From Champaign-Urbana, Illinois, USA" — and photo-realistic link buttons really make this page shine.

Interactivity is the key to any good radio station Web site. The WEBX folks have taken this to heart, stocking their site with loadsa links that will keep visitors busy for a long time — and keep them coming back, too.

What's here? Let's see: Programming info, jock info (including cool photos, and not just your usual mug shuts, either — check out, for example, weekend jock

Quintin Porter's triple-play of pix); community info; concert info; mass transit info to help people going to events in the Champaign-Urbana area get there and

was growing up.

This is one of the best radio station Web sites I've seen in a long time, folks. You wanna know how to do a site for your station? Check out WEBX soon. Yes, WEBX, this month's recipient of the coveted Neat-O and Net-O Live Broadcaster Site of the Month awards! Clear a shelf in the trophy case, why dontcha?

Oldies on the Web

WLDE, also known as Oldies 101.7 FM, does the groovy oldies thing in the Fort Wayne, Ind., area, and on its spiffy World Wide Web site, which went up in the beginning of February, according to Jeff DeWeese, assistant program director and 10-2 guy.

This site's design is captivating in a cool, retro kinda way.



back; and info on local hotels, restaurants and shopping. And free pages for advertisers.

Lotsa info, in other words. There is also a selection of natty WebWear accessories on offer for WEBX fans to wear worldwide.

WEBX, as I noted above, is broadcasting live on the Net and sounding pretty darn good — the station may just have one of the cleanest sounds of any station broadcasting on the Net. I've been listening to the morning show as I've been writing these words, and I like what I hear a whole lot.

The station is triple-A formatted, with a mix that spans from the Rugburns and Poi Dog Pondering to They Might Be Giants, Elvis Costello, Frank Zappa, and Booker T and the MGs. David Robinson's delivery during the morning show was relaxed and, well, comfortable and quite cool, just like the album rock stations I remember listening to when I

Programming and station info are on offer, as is the latest skinny on "up & coming" station events. A page has been set up to give the lowdown on the station's personalities. More stuff is on the way, said DeWeese, including links to Beach Boys Web sites and a Graceland Tour site.

Site visitors can join the station's Fun Club — to qualify, they have to listen to



WLDE a minimum of two hours a day. Now, that's not too much to ask, is it? Listeners can also join the WLDE Fax Network, which will shoot them station

continued on page 28 ►



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PROMO POWER

Outside Media Boosts Promotions

by Mark Lapidus

FAIRFAX, Va. Television, direct mail, newspaper — you'd like to do them all, but you've got no money.

If your promotion department operates like most, odds are, that because you've got little or no budget, you have decided that outside marketing is out of the question. Suppose I told you that all three of these options are at your disposal but would take time, creativity and effort.

Worth the effort

To obtain this outside media, you may even have to put other projects on the back burner. Is it worth the effort? You bet it is!

Your number one job as a promotion person is to bring new cume to your radio station. With better competition and shrinking marketing budgets, it's time for you to use your creativity in an area that most shy away from. It's an area I think of as "partnership marketing."

Fortunately for us, our counterparts in television, direct mail and newspaper have the same problem we have. They need to figure out ways to spread the word about their product with less budget than ever to work with. They may not know it yet, but they need partners.

Where to start? A partnership plan is not easily laid out on the phone to a total stranger. Find out the name of the marketing director. Step one: Call to introduce yourself. Describe your radio station. Tell the marketing director you've got a unique promotional partnership proposition you would like to discuss over lunch. It's a beneficial plan that will generate more viewers or readers or respondents for them and more listeners for you.

If for some reason they don't bite, ask if it would be better that you talk to someone else in their organization. This statement usually gets attention; they may actually ask you to start over. All this

means is that they're finally listening. If they really have no interest you can either attempt a letter to that outlet's general manager or try their direct competitor.

Your number one job as a promotion person is to bring new cume to your radio station.

Step two: It's lunchtime! Before you dive into business, take a shot at developing a bit of a relationship. You may be surprised at how much you have in common. They do many of the same things you do. In less than five minutes you'll figure out at least three people you know mutually. This commonality builds a natural bond that makes people more receptive to hearing something new.

Step three: Find out what they are trying to accomplish promotionally. Television stations always have new shows they want to push. Newspapers always want to increase circulation. Direct mailers want to increase awareness of their latest piece.

Explain that because your listeners are prime users of television/newspaper/direct mail that your station is the perfect partner to help them meet their goals.

Big Ideas

Here are a few specific ideas for each medium. Television is the easiest partner because they've got so much to promote. One television station is like 15 radio stations. Every show has a different position, image and target. Pick a show that matches the profile of your listeners.

Let's say you've got a male-based cume. Odds are good that many of these men are targets for "Star Trek." On radio: "Every night this month, watch Star Trek on Channel 56. The next morning tune in the Billy Bob Morning Show, answer a trivia

question about the show and win a WXXX CD and a Star Trek movie." On television: "Tomorrow morning at 7:20, wake up with Billy Bob on WXXX. Answer the Star Trek trivia question and win a Star Trek movie and a WXXX CD."

If the television station can't do this in video promos, perhaps they can do a voice over the credits at the end of the program. Maybe your talent can even supply the voice. Why is this a big deal? It works for both of you. They get new viewers and you get new listeners. True, we may have to spend more time promoting this on radio, but an audience for one television show could have more cume than we have during an entire day.

Newspapers have plenty to promote. Every section is like a different radio station. Each section has unique features. You can start by finding out if they've got a writer they would like to promote by having him or her do a daily short feature on your morning show. At the end of the feature, the writer can refer to the paper and even cite a particular story for that day. The gossip columnist can do people news; a business writer can do your stock market report; and a sports writer can do sports analysis.

A side benefit is that these reports bring credibility. Another angle is to take a list of something you're doing on-air and print it in the paper. For example, if you do a "Fourth of July Top 500 Countdown," print that list on page three of the Entertainment section. See if the paper will do an insert card in their vending machines. Encourage your listeners to pick up that paper during all of your pre-promotion announcements and you will have a direct effect on circulation. How about a dating feature on-air at night where every caller is listed in that special classified section of the newspaper?

The toughest part about direct mail is

deciding which mailer best suits your needs. Ask several members of your staff to save their home junk mail for a month. Pull out each coupon mailer. Determine which mailer is targeting your demo. You'll be happy to tell your listeners to look for the new "ABC Saver" in their mailbox this weekend. In exchange, the mailer should allow you to insert a slick promoting your major contest for that quarter, a bumper sticker or maybe even a survey asking people for their opinions about your product.

What about doing trade for commercial spots? Can't we just air commercials for them if they do commercials for us? Absolutely; you can and should! However, many media outlets are tired of trade or just have no room for it. Also, many radio stations run the risk of cutting into cash they may get out of these outlets if they do a trade deal. Do not be discouraged with initial failure. You are essentially "selling" what may be a new idea. As with any type of sales, the more media outlets you try to partner with, the more success you will have. Go get 'em!

□ □ □

Mark Lapidus is the director of marketing at Liberty Broadcasting. Reach him at e-mail: libertyhq@aol.com or FAX: 301-899-3014.

Interactive Web Site

► continued from page 27
contest and event information in advance.

Good start, good site. Check it out at <http://www.wlde.com>.

Off the Cyber-beat

Ahoy mateys! Every once in a while, I like to tell you loyal Haberspace readers about an offbeat radio-related Web site. The Free Radio Network, at <http://www.clandjop.com/~jcruzan/pirate.html> is not only offbeat, it's decidedly fringe.

Dedicated to the wild and woolly world of pirate radio, this might-nicely designed site is packed tighter than a cyber-drum with links to more than an eye patch's worth of pirate stations with names like "Alice's Restaurant," "Monkey Wrench Radio" and the famous "Radio Caroline." Some of the sites that you can link to from here even have audio clips for your listening, dancing and pirate romancing pleasure.

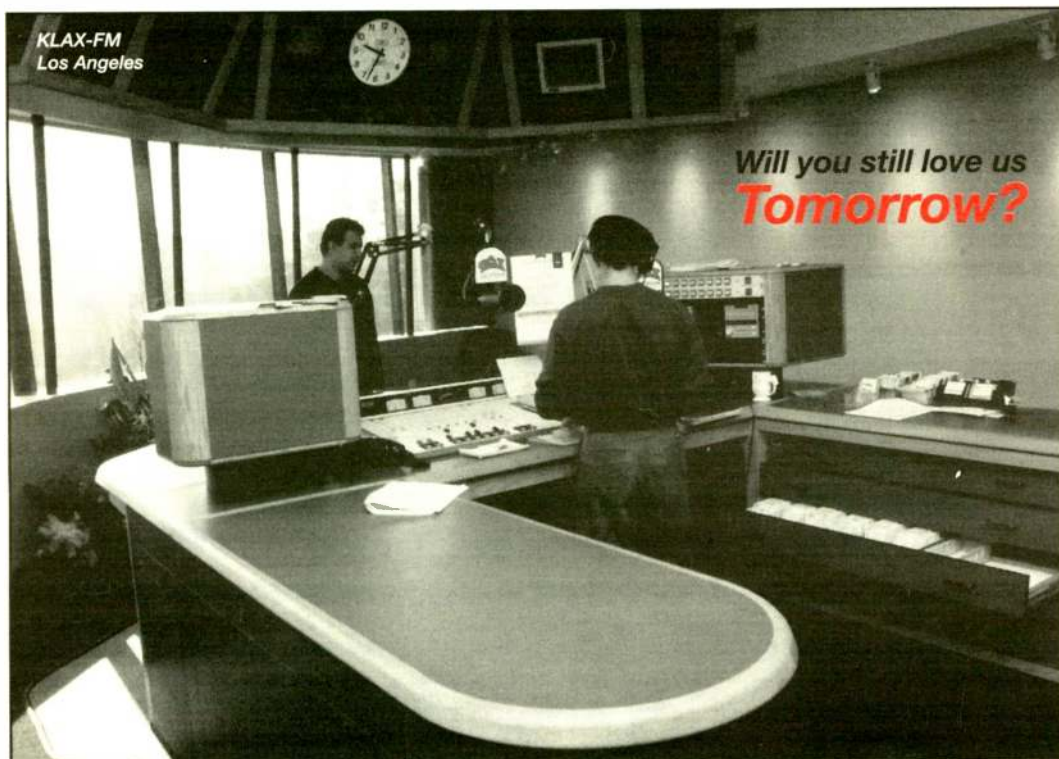
FRN also has links to a variety of pirate radio info pages, e-zines and much, much more. I love the pirate logo that sits to the left of the station links! And, regardless of what you might think about the whole pirate deal, there's a whole lot here to keep you busy and interested.

Ahoy mateys, indeed!

New e-mail address!

Well, I've got so long about WEBX that I've just about run outta space. Before I go, however, a request: If your station is about to start broadcasting live on the Web, is just thinking about doing so or is already pounding the cyber-radio waves, let me know. I want to feature as many such stations as possible right here in this space in the coming months.

Hey! I've got a new e-mail address — well, half of a new one, anyway: zoogang@earthlink.net. So send yer info about your station's Net activities there, okey-dokey? Okey-dokey! I'm gonna get me an ice cream cone and play hooky for a couple of hours. Spring has sprung, alright!



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MANAGER'S NOTEBOOK

Delegating Authority Benefits All

by Sue Jones

BURKE, Va. Anyone who has spent at least a couple of months or more in the radio industry knows the major responsibilities of the staff at a radio station.

Even if there are formal job descriptions, the general manager can hamper, if not strangle, the department heads' ability to perform their assigned duties by not giving them adequate levels of authority to perform their tasks effectively.

Fewer headaches

A "delegation of authority" chart that outlines the approval authorities that each of the department heads has in regard to purchasing, human resources and administrative tasks should be created. This will ensure that the staff can function effectively when the general manager or other staff members are absent.

Failure to define and delegate appropriate levels of authority can create several management headaches that could be avoided:

1. Staff talent is under utilized. If your office manager does not have the authority to purchase any goods and services without the general manager's signature approval, a bottleneck is created. In this example, the office manager may prepare the order forms but must obtain the general manager's signature to place the order. If the general manager will be out of the office for the next couple of days, that order cannot be completed. If the items to be ordered are in short supply (i.e., standard office supplies, copy paper, pens, paper clips, coffee, etc.), the station could possibly run out of these necessary items before the order could be completed.

This delay could be avoided by giving the office manager an annual budget to purchase routine supplies and the authority to make the routine purchases without the general manager's signature. If you want to avoid spending too much money in the first half of the year, limit the purchase amount for each purchase. An example would be a \$300 limit per purchase. Purchases over the limit amount would require the general manager's approval.

Comfort level

If you need an additional comfort level that money is not being spent frivolously or spent too quickly in the first half of the year, review the budget with the office manager on a monthly or quarterly basis. When you are confident that the office manager is handling the routine purchases in a manner that is acceptable to you, you can pull away from that function and review it only on a quarterly or half-yearly basis. By handling the purchasing function in this manner, you have given the staff member the ability and the authority to carry out the duties of the position without unnecessary control.

The station's infrastructure will run more smoothly and you have helped a staff member grow in their decision-making abilities and understanding of managing the budget.

The same type of bottleneck problem could occur with human resources management. A performance evaluation and pay raise could be put on hold until the general manager can review it and approve. The staff member who is

waiting on the pay increase will not be happy with the delays.

This type of problem could be avoided by setting an annual ceiling for salary increases that the department heads use as the guide for increasing salaries for their staffs. If the department head wants to exceed the salary ceiling amount, he or she must justify exceeding the limit to the general manager and get his or her approval. If the department head approves all salary increases in his or her department within the established ceiling, the general manager will never need to be involved.

Another example of human resources

delays could be job offers. If the general manager requires that all job offers be approved at his or her level, a job offer may be delayed until the general manager could approve the hire. In this case, the selected candidate may accept another offer rather than wait for your approval process.

This type of delay could be avoided by setting salary guidelines for specific positions and discussing them with the department heads prior to recruiting efforts. This could be part of the annual budget preparation process.

If your sales manager needs to hire two new sales representatives as replacements, he or she should know the salary

range your station is willing to offer for this type of staff member. The salary issue will come up in the interview process. If the candidate wants a commission percentage that is five percent above your standard and a base salary that is \$10,000 over your base level even for experienced senior level sales representatives, your sales manager can eliminate that candidate from consideration. No further time will be spent on that person. Instead, your sales manager will move on in search of a candidate who can accept your compensation levels, without involving the general manager.

As you can see, the management technique here is to define the monetary limits well in advance, usually as part of the budget development process. If your department heads have not had the

continued on page 31 ▶

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Circle (106) On Reader Service Card

World Radio History

ROOTS OF RADIO

CBS Created Suspense on Radio

by Richard W. O'Donnell

PORT RICHEY, Fla. Did you know Hollywood's legendary director, Alfred Hitchcock, once turned down an opportunity to have a dramatic show that lasted on radio for more than 20 years?

"Suspense" went on the air on June 12, 1942, and kept millions of Americans guessing every week, until September 30, 1962. From start to finish, it was a high-quality production.

The master

Hitchcock arrived in Hollywood from England in 1940, and on the heels of such British hits as "The 39 Steps" and "The Lady Vanishes," he turned out "Rebecca," "Foreign Correspondent" and "Suspicion." All of these films are now classics.

The movie director's strong point was suspense. He kept his audiences dangling from scene to scene while they tried to figure out what would happen next. The approach worked; Hitchcock's films made money and he soon became one of the industry's most famous personalities.

CBS, impressed by the director's success, offered him a deal. They wanted to sign him up for a show they had in mind that would be pure suspense, or as close as they could come to it.

There was a flurry of publicity, and it appeared Hitchcock would soon hit the airwaves with a show

called "Suspense." It never happened. Somewhere along the way, CBS and Hitchcock disagreed about who would have control over the show.

Also, it is possible Hitchcock realized his knowledge of radio and how it operated was vague. For this reason, he may have backed off. His medium was visual. Do you remember Cary Grant carrying the glass of milk in

Hitchcock, the network was convinced the mystery series would work.

It did. The ratings, while not spectacular, were good at the start and "Suspense," after a six-show summer run, returned as a regular on CBS in October, 1942. Thus did it become a radio fixture, and one of the all-time great shows.

Credit for the success of the series should go to producer/director Charles Vanda who launched it, and later, Will Spiers who took over when the October, 1942, show was broadcast. Also, John Dickson Carr, the famous whodunit writer, rates a salute. He wrote some of the early scripts and helped select other stories that were used.

Other notable producer/directors who kept "Suspense" on target over the years included Anton M. Leader, Norman MacDonald, Elliott Lewis, Anthony Ellis, William N. Robson, Bruno Zirato, Jr. and Frederick Henderson.

"Suspense," during its many years on the radio, featured some of Hollywood's greatest names: Humphrey Bogart, Gregory Peck, Fredric March, Charles Laughton, Ann Sothern, Margaret O'Brien, Herbert Marshall, Claire Trevor, J. Carrol Nash, Dennis O'Keefe and Douglas Fairbanks, Jr., to name a few.

Sorry, wrong number

"Sorry Wrong Number" was probably the most memorable show of all. Agnes Moorehead was the star, and her performance as a neglected wife who hears about a murder plot by chance on the phone, was magnificent. This show was repeated live a number of times. Credit sound effects expert Bernie Surrey for his great work on this one; he was in charge of the telephones.

Moorehead became the first lady of "Suspense" and



Agnes Moorehead was the first lady of "Suspense," a radio show inspired by Alfred Hitchcock's success.



"Suspicion," that gun pointed at Ingrid Bergman in "Spellbound" and the shower scene in "Psycho"? Hitchcock knew for sure how to work his magic behind a camera. The microphone may have made him nervous.

Later on, CBS did have a deal with the film giant for his television series, "Alfred Hitchcock Presents," a fabulous success that is still seen in reruns today. But it must be remembered, those shows were filmed; Hitchcock was a master in that field.

In 1942, after Hitchcock turned down the radio offer, CBS was left with a great idea for a show, but

continued on next page ▶

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Suspense on the Radio

appeared on the show several times in other roles. Two performances do stand out. One was an adaption of Charles Dickens' "The Signalman" and the other was "The Thirteenth Sound," in which the sound effects played a key role. Because of the tremendous success of "Sorry Wrong Number," these two other Moorehead productions on "radio's theater of thrills" have been overlooked.

Other great "Suspense" tales included: Ronald Coleman in "August Heat"; Jackie Cooper in "The Clock and The

Rope"; Lillian Gish and Ray Collins in "Marry For Murder"; Herbert Marshall in "Flooding of The Goodwin" and Peter Lorrie in "Home for Christmas." All of these were "tales well calculated to keep you in suspense."

Mention should be made of the Orson Welles' two-parter, "Donovan's Brain," which was outstanding. Perhaps the most chilling show in the series was the "House In Cypress Canyon." Robert Taylor was the star, and it sent chills racing up and down your spine.

On "Suspense," the stars did not play the types of roles you expected them to play. Cary Grant made you nervous in "On A Lonely Road," Jack Benny did a

science fiction yarn and Fibber McGee and Molly were not quite their usual selves in a tight little thriller called "Back Seat Driver."

"Suspense" prided itself on making you wait until the very last minute for the solution.

The best example of this was probably "Salvage," a double-crossing yarn starring Van Johnson. It was one of the best shows in the series; it kept you in suspense until the very last word.

For a while, a character called "The Man in Black" was the narrator. The brief part was played weekly by Joseph Kearns and then by Truman Bradley, and then the part just vanished.

Actor Robert Montgomery showed up as a host for a while and later, producer William M. Robson took over.

Along the way, the stories were allowed

to speak for themselves as well, without a helping hand from a narrator.

Music was an essential part of "Suspense" and such talents as Lucien Moraweck, Lud Gluskin and Bernard Herrman composed the scores for the programs.

The latter wrote music for several Hitchcock movies. His style of music was considered by the director to be perfect for suspense films.

In its final years, "Suspense" was aired by transcription on Sundays.

This allowed the various stations on the CBS network to play it at different times. The half-hour show was trimmed to 25 minutes to allow for the news.

Radio's so-called glory days of drama, music and comedy were pretty much a memory in 1962 when "Suspense" went off the air.

Delegate Authority To Staff

► continued from page 29

experience of developing and managing their own budgets, you may need to train them and provide on-going coaching until you are comfortable they will manage the money appropriately. Once your department heads assume these management functions, some wonderful things happen.

First, they better understand the need to perform their functions within guidelines and will be in closer step with the general manager's management philosophy. Second, you have enhanced the professional growth of your department heads which is one of the most important ways to retain key staff members. Third, you are now free from routine work that can adequately be handled by department heads.

The third benefit may be the most important to you as general manager. Your time will be freed up so that you can focus your management talents on short- and long-term business objectives and planning.

Instead of being tied to the office handling routine administrative affairs, you could be visiting with clients asking what your station does well for them and what they would like for your station to do in the future. You could be evaluating new technologies and how they could be implemented at your station. You could be evaluating another station to purchase and planning how two could tap joint resources and increase profits. This information could become key to your survival in the market.

Establishing monetary and operating guidelines along with training your department heads to handle the routine management issues so that you can handle the strategic management is one of the most effective things you can do to strengthen your staff and stay ahead of the market.

□□□

Sue Jones is a principal in Bisset Communications, a communications management firm located in the Washington, D.C. area. She can be reached at 703-503-4999.

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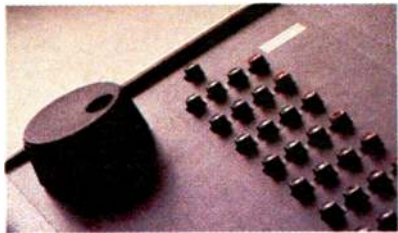
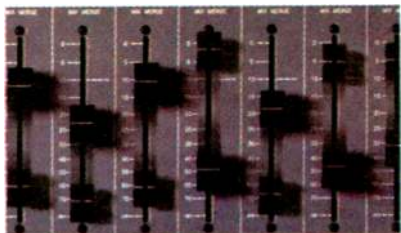
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World Radio History

INTERNATIONAL UPDATE

The Struggle for Profit in Bulgaria

Part I of II

by Frank A. Aycock

BLAGOEVGRAD, Bulgaria It has been more than six years since the fall of the Berlin Wall.

Since then, in response to liberalized laws, confusion over the new relationship between government and industry, funding from international organizations such as the Voice of America and the BBC, or simply the flush of excitement following the demise of communism in their countries, new, private, commercially oriented, music- and advertiser-driven radio stations have sprung up from the Baltic to the Aegean Sea.

But the initial excitement that buoyed this growth is being tempered by the need to produce enough revenue to pay expenses and make a profit. Central and Eastern Europe are beginning to see radio stations close or consolidate ownership as the ability to remain profitable eludes owners and managers.

Reality of profitability

Freedom of the press has run headlong into the need for profitability, and it is a situation that is likely to worsen before it improves. The transition from state-controlled to free-market media need not be a painful one.

Several factors lie behind the current situation.

First, owners of the new radio stations often (although not always) came from the ranks of journalists in the old system. They focused their energies on the journalistic aspects of the station, not on the revenue end.

This fact should be no surprise, as

journalists under the old system were never called upon to develop revenue sources, make sales calls, produce workable advertisements or even to balance expenses and revenues. Their funding came from the government. Advertising was unnecessary and irrelevant to local audiences.

In fact, truly local audiences did not exist under the old system, where radio

Journalists under the old system were never called upon to develop revenue sources.

generally consisted of one or more nationwide channels. These channels each had a built-in audience, because most Central European homes were constructed with cable radio boxes preset to the state-run channel that could be turned down, but not off.

When these journalists left the state broadcaster to found private stations, they were unprepared for the sales and production aspects of operating a commercial radio station.

Adding to their troubles, they had few sources of information or advice to develop the necessary expertise in those crucial areas.

While some made the transition from journalist to businessman, albeit with differing degrees of success, too many others did not.

The stations not founded by state-radio journalists often were started by music directors or music editors. They, too, faced many of the same problems as the journalists, because their focus was on

music and musical programming, not revenue production.

A second problem is the lack of sales knowledge that the radio station sales/advertising staff is likely to have. The knowledge and understanding of how to make sales calls, close sales and pursue clients aggressively are often foreign to the salespeople at these stations.

As such, the sales force often operates

as "order takers" more than as salespeople, preferring to wait for people to call and place an order or until someone asks to talk with a salesperson.

When a sales call is placed, often the salesperson is so eager for a sale that the potential client is able to dictate the terms of the contract, the cost per spot, the length of run and so forth. Savvy clients — of which there are many — often take advantage of inexperienced salespeople, getting terms so favorable to the client that the radio station may only cover its expenses and the salesperson's commission, or it may even lose money once expenses are covered.

A third problem facing private radio is

the "market saturation effect." This suggests that only a small portion of businesses in the city have the means and the desire to advertise. This means that any city with more than one or two private stations will be "saturated" and new stations will, by necessity, have to force other stations out of business to be successful.

Competition

This problem is compounded, according to owners of private stations, by the fact that the state-run radio channels compete with the private stations for advertising, further reducing the amount of money available for the private stations.

The citizens — with the possible exception of young listeners — are accustomed to listening to state radio, with signals reaching a national audience and virtually everyone in any given city.

As such, private stations must compete with a strong, well-established competitor that has government backing, a loyal following and the ability to reach everyone in a city. State broadcasters also have the resources to make mistakes, to test new ideas and to repackage old ideas without worrying about how those mistakes, new ideas, and repackaged ideas might affect the bottom line.

The market saturation effect argument is often used to explain the lack of revenues and profits at private stations, but this is more excuse than fact.

The fourth problem commercial radio faces also stems from the market saturation effect argument: Many business owners lack an understanding of the need

continued on page 43 ▶

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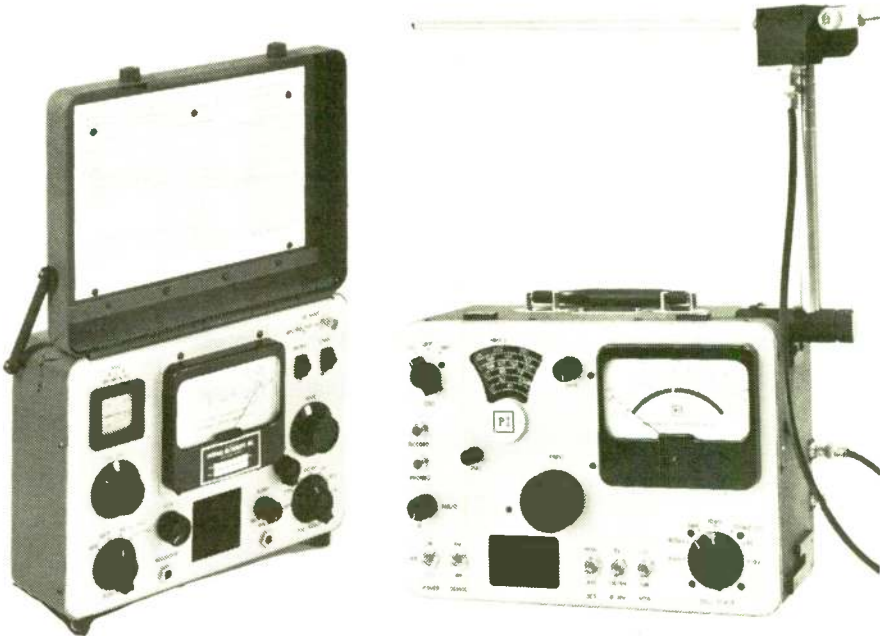
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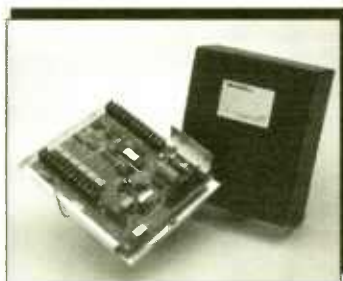
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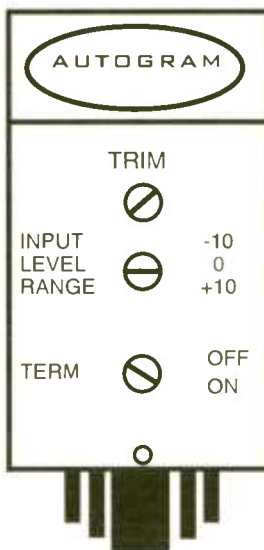


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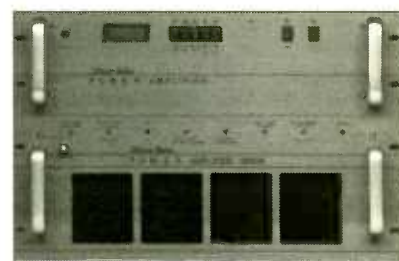
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Mics and Mods for Better Ham Audio

Amateurs Search High and Low for the Equipment That Will Grant Them 'Broadcast-quality' Audio

by Al Parker

HICKSVILLE, N.Y. Listening to the ham bands is, at times, a kind of agony and ecstasy. The agony is the "contest weekends," jamming and other assorted infantile behaviors and, most dastardly of all, bad audio.

Doctoring audio

A casual survey might suggest that genuinely atrocious audio accounts for about 10 percent of the AM stations and about one-third of the SSBers plying the waves of HF on any given night. The vast majority of hams fall into the murky, gray audio category known as "communications quality."

The ecstasy of ham radio is largely a function of an elite group of charismatic personalities and the growing number of hi-fi stations operating today. The ultimate is achieved when a great personality is projected into the heavens through a hi-fi transmitter.

While charisma is something lucky folks are born with, good audio is just a matter of hard work, and sometimes, not really much work at all. For many it is as simple as finding the right microphone. Before resorting to more convoluted methods, beg, borrow or "acquire" a number of different microphones to try out. Sometimes a rig with too few highs can be cured by changing from a dynamic to a crystal microphone. Too little bass can sometimes be fixed by doing the reverse. Once you have exhausted all of these potential easy fixes, it is time to move on to more exotic (fun) techniques.

The first order of business is to make sure that the rig you are using is passing all of the audio frequencies it was meant to. In the case of a modern single-sideband transceiver, with all of its delicate surface-mount components and integrated circuits, you don't have much control.

Some high-end units offer built-in audio equalization. The Kenwood 950 and 870 provide such control. Some low-end Icom models have been modified by users to pass more audio frequencies. This mod involves increasing the value of a coupling capacitor or two.

Such tinkering may produce better audio but will certainly void warranties. Caution is advised. A friend who recently purchased a Yaesu 1000D (primarily for AM use), was actually guided by the Yaesu service department through a series of simple modifications to increase frequency response. Happily, its improved fidelity on AM did not seem to adversely effect SSB performance.

Hams using older AM gear, like Johnson Vikings, Rangers, Heath Apaches, "DX-series," etc., are in a much better position to customize their audio. This is due to the open architecture of older tube-type equipment.

The first day I showed up in the AM window with my stock Viking II, I was offered dozens of suggestions for modifications. I guess that it was self-defense against the pain I was inflicting on the ears of my fellow AMers.

One helpful chap, Steve, WB-3-HUZ, actually sent me a beautiful, computer-

generated list of mods. More accurately, it was a step-by-step cookbook for gourmet and audio. The mods were listed in order of difficulty, with a letter-coded schematic for reference. Even the simplest steps (e.g., clipping out the odd bypass capacitor) produced more highs and/or lows, but sadly, the process fell short of bringing the rig up to the hi-fi category.

It was only after several days of tinkering that I realized the fault, dear Brutus, was not in the mods, but in the old components themselves! Most of the classic

Good audio is just a matter of hard work, and sometimes, not really much work at all.

AM rigs were built a little more than 40 years ago. While old paper and electrolytic capacitors are notoriously perishable, I never considered that resistors manufactured in the '50s might be a problem. I had worked on receivers built well before WWII and rarely had to replace a resistor.

It seems that the art of manufacturing resistors was at a critical turning point in the '50s. The composite used at the time to mold some carbon resistors seems to have been more porous than earlier or later formulas. The result is that, over time, depending on the environment in which the transmitters were stored, they degenerate.

Some of the old resistors in the Viking II had the consistency of clay and measured up to three times the marked value. Some were totally nonconductive. After the old capacitors and defective resistors had been replaced, the once-dull audio came to life. The "HUZ" mods finally had the chance to shine through.

It is important to note that some older rigs have an undeserved reputation for having inherently narrow or rough audio. Many times, bad audio blamed on poor design or some imagined conspiracy to purposely limit frequency response, is really the fault of components that have deteriorated over the years.

Truly original

Before embarking on radical modifications, restore the unit to truly original condition with properly rated components. If the following hints do not produce the hi-fi audio you crave, then feel free to experiment.

Before you start drilling holes for external modulators and bigger tube sockets, please consider that these old rigs have a dignity all their own. There are a finite number of these classics. Too many have already been lost to butchers and scavengers.

It is obvious that the original designers put heart and soul into their creations. The abiding proof of this design integrity is in the fact that these ancient rigs still work so well and are so much in demand. If you really want to slice, chop and drill, maybe building up a rig from scratch is the best way to go.

After the transmitter is brought up to

snuff, attention can be turned to the audio input. The stock high-impedance dynamic microphone works well enough with most rigs to produce communications-quality audio.

In some circles, having your audio labeled communications quality is a gross insult, bordering on fightin' words. Narrow audio, mostly mid-range with some highs and a total absence of lows, has its place.

For SB DXing, such audio tends to cut through noise like a mother's voice shrieking over the rooftops for little Johnny to come home for dinner. From a purely aesthetic point of view it may be horrible, but practically speaking, sharp

audio tends to get the job done. Ideally, we would like to be able to switch from this noise cutting, sharp audio to more full-bodied sound when signals are strong relative to noise.

Typical dynamic communications microphones emphasize the audio range between 400 and 1,000 Hz. A flat response over this range really cheats the transmitter. Most transmitters, even SSB units, are capable of passing audio between 200 to 2,000 Hz. A hi-fi AM transmitter can make very good use of audio input from 100 to over 3,000 Hz.

At this point I would be remiss if I didn't mention the legendary D-104.

The original version of Astatic's classic crystal mic was ideally suited for communications, producing audio short of broadcast quality but of sufficient quality to convey most of the subtleties of the

human voice. The Chrome Lollipop had just the right impedance and emphasis.

Unfortunately, as the CB market blossomed in the '70s, the manufacturer deviated from the original design, incorporating solid-state pre-amps and altering its response curve to more closely mimic dynamic microphones. An early D-104 is a good and convenient way to go. Caution should be exercised when purchasing such a microphone second-hand. Due to the fragility of the crystal element, the performance can be severely compromised if the unit has been mishandled.

Find the right mic

Switching to a typical pro studio microphone is a better antidote to the narrow frequency response problem. Surprisingly, many who have experimented in this manner have been disappointed with the results.

First, there is the impedance issue. Some rigs look for a different impedance than presented by the usual studio microphone.

This is easily solved through the use of an impedance matching transformer, or better yet, by feeding the microphone into a mixing board and then feeding the transmitter via one of the mixer's outputs, providing a reasonable match to just about any transmitter. (A microphone level output works best, but a line level output will also work with a padder interposed to prevent overloading the transmitter's first audio stage.) The mixer approach also solves another problem: excessive mid-range emphasis.

Where the relatively crude D-104 is mechanically equalized to punch up highs and lows, a studio microphone is much more simple. The typical high-fidelity microphone, when applied to a communications transmitter, overemphasizes the 400 to 600 Hz range. In these mid-frequency bands lurk nasty

continued on page 43 ►

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Use Auxiliary Filtering for AM Diplex System

Part III

by Jerry Westberg

QUINCY, III. In a diplex system for AM radio, it is sometimes necessary to further attenuate the reject frequency beyond what is done by the main filters. This can be accomplished by the auxiliary filter. The auxiliary filter can also be used to improve the bandwidth of the system.

Typically, to improve the bandwidth of

energy in the circuit can add to, instead of subtract from, the total stored energy of the system.

To accomplish this, it is necessary for the impedances of the sideband frequencies (let's say 10 kHz) to have the same parallel resistance. An antenna resonator is used to accomplish this. The equation to calculate the parallel resistance from an impedance is $R_p = (R^2 + X^2) / R$.

The antenna resonator is placed between the main and auxiliary filters to adjust the impedance at the sideband frequencies so

auxiliary filter has two types, series and parallel. The types of auxiliary filters are shown in Figures 1 and 2. Both filter types can be used and have the same bandwidth characteristics. For this reason, the type of filter should be chosen based on the stresses and availability of the components. The design equations for the auxiliary filter types are shown in Table 1. It is assumed that the value of C1 is chosen.

There are two questions that need to be addressed. First, does the system require an auxiliary filter? This is a tough question because much depends on the individual antenna system. In general though, the diplex system needs an auxiliary filter if the frequencies are within 10 percent. Also, an auxiliary filter is probably not needed if the two frequencies are above 25 percent apart. The real test is the attenuation from one port to the other. A number of -60 dB attenuation from one port to the other is a good rule of thumb. If the attenuation is only -40 dB with just a main filter, an auxiliary filter should give at least another 20 dB.

The second question assumes that an auxiliary filter will be placed in the design. How do you choose C1 for an optimum system? In the previous article, equations were given to calculate the Qs of a main filter at both frequencies. For optimum bandwidth, the value of C1 should be chosen so the Q of the auxiliary filter will be equal to the Q of the main filter at that frequency. This may not always be possible because the stresses on the components go up as the Q of the circuit is increased. So, it may become necessary to use an auxiliary filter of a lower Q.

An example is given below. An antenna resonator was chosen to give the following impedances where the auxiliary filter is to be attached. This filter is on the low frequency side where the upper frequency is 1,000 kHz.

Frequency (kHz)	Impedance (Ohms)	Rp (Ohms)
790	87 - j38	103.6
800	91 - j6	—
810	96 + j27	103.6

Notice two things about the data. First, the impedance at the carrier frequency (800 kHz) is not quite resonant, but is close. Second, the parallel resistances at the sideband frequencies are of equal value. This will allow the auxiliary filter to improve the bandwidth of the system. The main filter for this design has a Q of about 8. I chose to use a series auxiliary filter with C1 equal to 2,000 pF. The Q of this circuit is 7.1, which is close to the needed Q of 8. L1 will then be 12.7mH. L2 is 7.1mH.

One of the greatest engineering tools since the slide rule is the microcomputer. All the diplexer equations have been programmed into the computer so the parts of the diplex system can be designed with visibility. By following the guidelines presented in this series of articles, you can design an optimum diplex system.

□ □ □

Jerry Westberg designs AM transmitters at Broadcast Electronics, Inc. and also writes phasor and diplex software. He can be reached evenings at 217-223-5702.

Table 1

$W_L = 2\pi \times F_L$
where F_L is the low frequency

$W_H = 2\pi \times F_H$
where F_H is the high frequency

$F = F_L / F_H$
F is the frequency ratio

$Q_M = 1 / (1 - F^2)$
 Q_M is the Q multiplier

$R_L + jX_L$ is the impedance at the Auxiliary Filter on the low frequency side

$R_{PL} = (R_L^2 + X_L^2) / R_L$
 R_{PL} is the parallel resistance at the low frequency

$R_H + jX_H$ is the impedance at the Auxiliary Filter on the high frequency side

$R_{PH} = (R_H^2 + X_H^2) / R_H$
 R_{PH} is the parallel resistance at the high frequency

Series Auxiliary Filter-Low Frequency Side

$L1 = 1 / (W_H^2 \times C1)$
 $L2 = (1 - F^2) / (W_L^2 \times C1)$
 $Q_L = (R_{PL} \times Q_M) / (W_L \times L2)$

$Q_H = 0$

Q_L is the Q added to the system due to this filter at the low frequency
 Q_H is the Q added to the system due to this filter at the high frequency

Series Auxiliary Filter-High Frequency Side

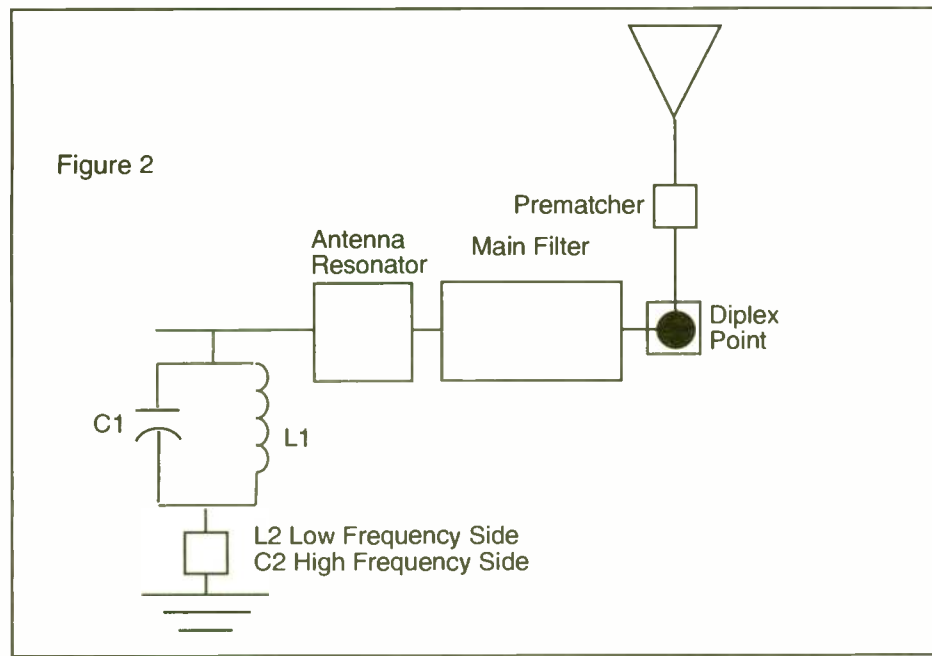
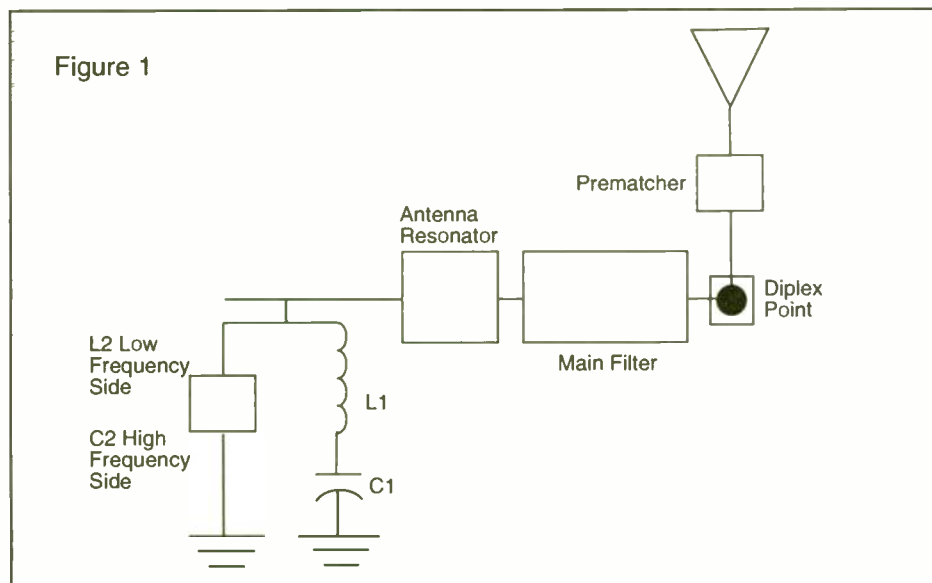
$L1 = 1 / (W_L^2 \times C1)$
 $C2 = C1 \times F \times Q_M$
 $Q_L = 0$
 $Q_H = R_{PH} \times W_H \times C2 \times Q_M$

Parallel Auxiliary Filter-Low Frequency Side

$L1 = 1 / (W_L^2 \times C1)$
 $L2 = 1 / [(W_H^2 - W_L^2) \times C1]$
 $Q_L = R_{PL} \times W_L \times C1$
 $Q_H = 0$

Parallel Auxiliary Filter-High Frequency Side

$L1 = 1 / (W_H^2 \times C1)$
 $C2 = C1 / (F^2 \times Q_M)$
 $Q_L = 0$
 $Q_H = W_H \times R_{PH} \times C1 \times Q_M$



any antenna system, a high Q circuit is added to counteract the system's stored energy. These circuits can be parallel or series resonant circuits. Because an auxiliary filter is a parallel resonant circuit, it can be used for this purpose. For it to work properly, the impedances at the sideband frequencies must be properly oriented. If they are not, the stored

that their parallel resistances are of equal value. It turns out that the amount of reactance needed will generally make the impedance close to purely resistive, thus the name antenna resonator. The antenna resonator consists of an inductor or a capacitor.

Once this is done, the auxiliary filter can be designed. Like the main filter, the

Walkaway: Turn off the lights; lock the doors; go home. A few short years ago this level of automation at radio stations was impossible. But thanks to rapid advances in technology it's now an everyday occurrence. Anyone can go home, but to go home legally it takes specialized equipment. If you're contemplating a walkaway, you need to call about our RFC-1 Dial-Up Remote Control and our DAI-1 Dial-Up Audio Interface. For instant information 24-hours-a-day call our "Fax-On-Demand" from your fax machine and request documents 101 and 110.

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Solving Heat Problems with Vacuum

by John Bisset

SPRINGFIELD, Va. Maintaining ancient equipment is a real art — especially when the components disappear.

If you have an old Cetec/Sparta Centurion console, you'll find it uses the LM381N. This chip has been discontinued by National Semiconductor. The nearest replacement for the LM381 is the LM387N, which has eight pins instead of the 14 pins found with the LM381. It will work in the circuit, however, because the newer IC is smaller. To make the product "fit," you have to make an adapter jig. Thanks to Arthur Reis, who provided this tech note via Compuserve.

If you would like a free sample of Caig Labs ProGold Wipes, circle Reader Service 114. The ProGold formulation comes in a variety of dispensers — spray cans, applicator sticks, etc.

The wipes are perhaps the easiest to use

There are many uses for some products that the inventors never imagined.

on circuit board card edge fingers. We had an ITC 3-D recently that would occasionally lose audio. The trouble seemed to move from deck to deck. After inspecting the boards and the cables, the only visible problem was grunge that had built up on the gold fingers of the card edges. A one-inch square "wipe" took care of cleaning and preserving the contacts for all six boards.

Because gold is a porous metal, the base metal on a circuit card can whisker through the gold and oxidize. This oxidation can disrupt circuits, as we found with our ITC. ProGold not only cleans and deoxidizes the surface, but penetrates the plated surface to molecularly bond with the base metals, improving conductivity.

The wipes or mini-spray can fit easily in a toolbox. If you use the wipes, however, you will be amazed at the gunk you'll wipe off the circuit boards.

Caig Labs has recently expanded their product line to include two products designed to neutralize static buildup. OpticALL cleans and eliminates static from optical viewing surfaces, such as CRT screens. StaticALL neutralizes static buildup caused by low humidity conditions, and can be applied to carpets, floors or other static-generating surfaces.

By the way, if your use of Caig products does not cure the intermittent audio on your ITC 3-D, try replacing the head cables that connect to the printed circuit boards. We've had these go bad, too, and keeping a spare set on hand is cheap insurance.

I enjoyed the many and varied comments about using the diluted "Downey" to static-guard carpets. There are many uses for some products that the inventors never imagined. Edd Monskie is the vice president of engineering for Hall

Communications in Lancaster, Pa. He writes that he and his engineer at a Vermont station found a "new" use for duct tape and a shop vac.

The two engineers were at a New York property troubleshooting an STL. The problem turned out to be their own FM transmitter putting out a spur exactly on the STL frequency. After getting that fixed, they began the hour and 20 minute ride back to Vermont. An hour of this trip involves a ferry ride across Lake Champlain. On their way to the ferry, the FM transmitter died.

They got back to the site and found the main AC breaker tripped and very warm. The transmitter seemed fine, and the current load should have been nowhere near a point of warming the breaker.

A bad breaker was suspected, but as luck would have it, the site is remote, and being late in the day, the prospects of finding a store open with a replacement breaker were slim. Besides, Edd wrote, if they spent the evening searching for a

store and missed the last ferry, it was a four and a half hour drive around the lake to get back home.

The only tools or parts available in the year-old site were things they brought. There were no spare fans, but there was a roll of duct tape and a new Sears Craftsman shop vacuum. You can see where we're going with this! The engineers decided to duct tape the vacuum hose to the front of the breaker. The vacuum had no exhaust port to use as a blower, so they used the vacuum to suck the hot air off the breaker.

It seemed to run cool, so they left the site knowing that if the vacuum failed, there wasn't much that could be done. The next morning, the station was still on the air, a new breaker was found and the vacuum was still working, despite being a little warm. As soon as the vacuum hose was removed, the breaker started getting hot again. After removing the breaker, a number of years of dirt were found in it. Some electrician built the year-old site using an old breaker in a new circuit. Edd Monskie can be reached at WLPA/WROZ, his number is 717-653-0800.

A master electrician told me recently that trafficking in circuit breakers is increasing. Especially at new construction sites, it is not unusual for thieves to rip off the new breakers after they have been installed in electrical boxes. I don't know who they sell them to, unethical electrical contractors I guess. And you thought all you had to worry about protecting was your copper ground system.

All too often this column has had to advise you of an equipment problem. Here's some good news for a change. Last summer, we wrote about some

problems an engineer was having with the new Scientific Atlanta Encore DSR-3610 receiver. The receiver was running hot and it appeared the heat was causing audio failure.

James Nickel works at KJSK/KLIR in Columbus, Neb. He describes himself as an engineer who knows enough to be dangerous! Hey, James, thanks for being big enough to admit it. Truth be known, we've all been there, because none of us were born with our engineering talents.

Anyway, he wrote that they have had a DSR-3610 in operation for over a year

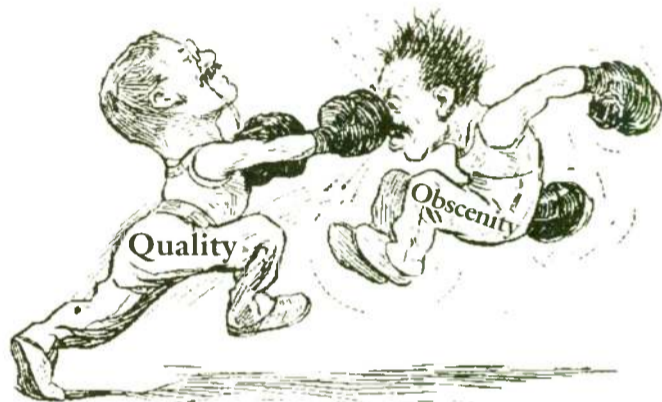
and have experienced no problems with overheating. James has noticed the cooling fan operate, but the unit has worked flawlessly for him. SA and the folks at ABC assure Workbench readers that the DSR-3610 is not supposed to run hot.

Since our initial column, we've encountered a client who is using this receiver as well, and the chassis operates at "room temperature."

□□□

John Bisset is a principal with Multiphase, a broadcast engineering services company based in Washington, D.C. He can be reached by fax at 703-764-0751, or on line at WRWBench@aol.com. Published submissions qualify for SBE recertification credit.

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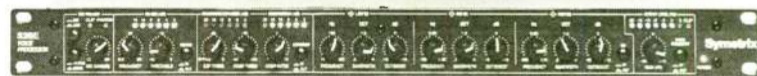
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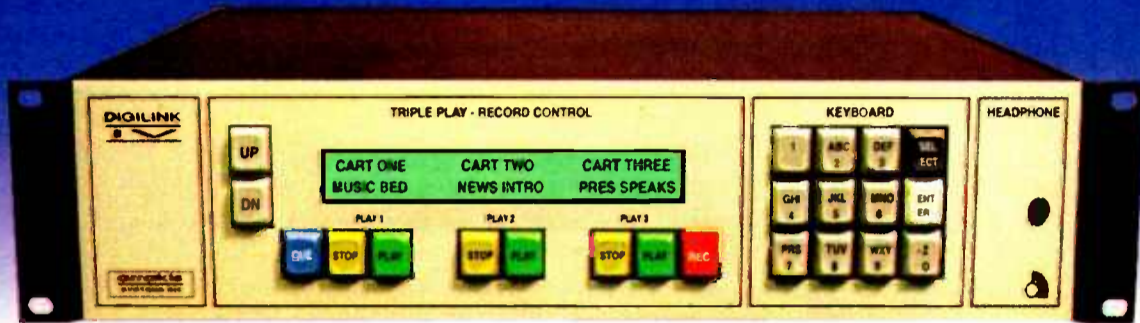


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In addition to its obvious base features, the Digilink 4 brings many new and original capabilities to the radio studio. As an example, the DL4 can be optionally controlled over modem for remote broadcasts. It can be connected to an Arrakis 99 button Gemini control panel for fast & easy recording and playback of jingles, sound effects, etc. It can be optionally connected to a PC

running manual control software for network recordings, live cart machine replacement, store-and-forward applications and much more. It can be connected to an Arrakis DL2 or DL3 workstation to increase the Digilink's play and record capacity. It can even be connected to a Wegener digital satellite receiver for digital network store-and-forward applications or an optional ISDN interface for digital telephone feeds.

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Perfecting High-quality Ham Audio

► continued from page 37

audio components like room echo and fan noise.

De-emphasizing this mid-range through the EQ looses us little in voice reproduction but buys headroom to pump-up the low and high ranges without overwhelming the audio amplifier stages. The bonus is suppression of ugly background noise. With proper equalization, the studio mic can mimic the D-104's punchy emphasis with superior fidelity.

This would seem to suggest that the combination of a high quality studio mic and mixing board would solve all problems. Not only would a board allow us to mix and individually equalize microphones, but it also facilitates phone patches, pre-recorded station IDs and playbacks of other amateurs' audio.

A mixing board with EQ would also allow us to customize audio for several transmitters and a variety of operating conditions. With the twist of a few

knobs we could transform from a noise slicing sharp-edged DX audio to full-bodied broadcast quality sound.

This all seems too good to be true. In a sense it is too good to be true.

from the studio facility is a nasty little thing called the RF field.

When the transmitter and studio are combined, grounding and shielding become almost a religion. Solid-state

The special problem for hams is they operate at higher frequencies than AM broadcasters.

Incorporating a small (or large) mixing board into your ham radio station may not be quite as simple as plug and play.

One of the reasons a megawatt broadcast station's transmitters and antennas are best located a fair distance

audio components tend to gag on a strong RF field.

RF feedback, distortion and roughness can creep into the audio as it makes its way through an imperfectly shielded board and affiliated wiring.

Hams usually don't have the luxury of being able to build a separate facility to house their transmitters.

Most hams, in fact, are lucky to be able to place their transmitters more than a few feet away from the operating position.

The special problem for hams is that they operate at higher frequencies than AM broadcasters.

The higher the frequency, the greater the likelihood that RF will creep into the audio chain.

Next time we will explore some simple techniques for pushing that RF out of your mixer and into more productive purposes, like carrying your new hi-fi sound to far places for all the world to admire.

□ □ □

Al Parker writes about amateur radio and photography. He can be reached at 516-681-6733.

Bulgarian Radio Struggles

► continued from page 35

for and advantages of advertising.

Many small business owners are concerned more with operating day to day than with growing a business that will last for years. This viewpoint is understandable given the often fluid business climate and ever-changing governmental regulations they face during the transition from the old system to a new one.

For the most part, business owners are happy to attract just enough customers each day to cover expenses and to provide some profit. The last thing they want is to spend extra money on advertising, money that might be needed next week for expenses.

Furthermore, advertising might increase store traffic, which would necessitate additional inventory, possible increases in store footage or, perhaps, an entire new building.

Scary Prospect

While small business owners may dream of such a future for themselves, having to invest money in increased inventory or a larger store is a scary prospect, especially when the changing business climate or government regulations might force the business owner to close and lose everything.

The desire for security often is a major driving force in such uncertain, transitional times.

□ □ □

Part II of this series will look at how Central and East European stations are addressing these problems to develop profitable operations.

Frank A. Aycock Ph.D. is associate professor of journalism and mass communications at the American University in Bulgaria.

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Prophet Systems Inc. announces

PAGE #1	Record	Autoroll	Cuts List	Swap		Option Menu
POT 1 (A/S)	POT 2 (A/S)	POT 3 (A/S)	POT 3 (LOCAL)	POT 4 (LOCAL)	POT 4 (LOCAL)	
A APRIL BLOSSOM 00:15 1	B WAGON WHEEL 00:19	C KARLS APPLIA 00:59	D BAKERY CAFE 00:19	E CINNAMON 00:02	F JACKS PLACE 00:08	
G LARRYS RV 00:31	H HDA 00:03 2	I VoiceTRAC fo 00:15 3	J DUDDENS 00:45	K EBS 00:50	L HIRSHFELDS 00:03	
M RADIO SONG 04:08	N DAYBREAK 03:41	O NOTHING'S NE 02:59	P MANDY 03:14	Q WALKIN' AWAY 02:47	R NOBODY'S HOM 03:26	
S LINER A	T LINER B	U LINER C	V LINER D	W LINER E	X LEGAL ID	
1 2 3 4 5 6 7 8						
Sat Mar 2, 1996		POT	Insert	Delete	Mark	
55° High: 58° Low: 32°			17:48:00	ReSync		
06:36:32 PM		1		(0:02) NOTHING'S NEWS CLINT BLACK	02001-01	Adjusted 00:02:59
23:28				Spot Block		00:03:25
KOGA FM # 2		2		TOWN AND COUNTRY (GEORG)	07600-01	00:00:21
SHIFT #04 BILL SMITH	MANUAL MODE	3		KARLS APPLIANCE 1 (John M.)	52060-02	00:00:59
Block Fill ON	Default Source 01	1		B AND J HITCHING POST (E. LEMOYNE)	52015-02	00:00:13
Run UDE	Special Menu			Variety center Update Sale (Georg)	40050-01	LiveCopy
?	Station Data	2		JACKS PLACE	52010-04	00:00:08
EXIT	Reports	End F11	Skip F12	Clipboard-0	Last Delete-0	Hold Bin-27
						-02:31
						Play - Pause

Version 5

Live Show Interface (LSI)

The centerpiece of Version 5 is the new Live Show Interface (LSI). This new interface allows the D-J to run even the most high energy shows smoothly. Fully utilizing the power of Windows, the Live Show Interface features:

- ◆ **Drag and Drop Commercials and Songs**
Audio events can be easily moved around in the log using the mouse or touch screen. They can also be moved to the button bar and the holding bin.
- ◆ **Audio Source Management**
Version 5 allows the D-J to specify which audio card a commercial or song will play out of ahead of time. It is easy to pre-position sliders and to crossfade items. Plus, Version 5 actually allows six stereo audio events to play simultaneously for each control room!
- ◆ **Fully Touch Screen Compatible**
The Live Show Interface was designed from the ground up to be totally touch screen compatible.
- ◆ **Expanded Button Bar**
Forty-two pages of buttons for immediate access to 1008 liner, jingles, laugh-tracks, etc.—PER SHIFT! And you can have up to 99 shifts!
- ◆ **Auto Roll of Buttons**
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- ◆ **Quick Record**
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- ◆ **Holding Bin**
The holding bin is temporary storage for items that the D-J can't get to immediately. He can move them to the holding bin for easy retrieval later in the shift.
- ◆ **Macro Buttons**
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VOA Helps Foreign Broadcasters

by D.C. Culbertson

WASHINGTON With the collapse of communism, the redistribution of national boundaries and the development in Third World countries, many foreign broadcasters have had to adjust to new and unfamiliar conditions.

Training

Radio stations that used to survive on state support find themselves needing to be self-supporting. Censorship has loosened for many of these broadcasters and now they are having to cover events like elections for the very first time.

One way foreign broadcasters get the guidance and training needed to adjust to these new conditions is in workshops run by the International Media Training Center (IMTC) in Washington, a branch of the Voice of America (VOA).

The duties of IMTC, an office of the U.S. Information Agency's International Broadcasting Bureau (IBB), are to provide "training in media-related skills and subjects to key media personnel from developing countries and/or emerging democracies," with the aim of helping to develop "a free and independent media throughout the world." It stresses that this training is strictly nonpolitical.

About 20 workshops are held each year, both in the United States and in participants' home countries. Some are taught only in English, some in the native language with an interpreter, and some in the native language alone.

Participants, generally between six and 15 people per workshop, are all qualified professionals in their field. Two types of workshops are generally recommended: A two-week sales and management course for station and sales managers or a three-week workshop covering the basics of broadcasting including news writing, editing, production and voicing.

Special interest workshops are also available which can cover a number of other topics as well.

Louis Lantner, IMTC's director, said an executive training workshop for managers of stations that have become independent after being state-controlled is extremely popular.

Popular programs

Another increasingly popular workshop deals with election coverage. One was recently done for Bosnians and two are presently being conducted in Pennsylvania and Ohio. Lantner says that the exact way these workshops are run is up to the participants. He added they always stress that just because something works in the States does not necessarily mean it has to work in the participants' country.

These programs were originally the idea of Harry Heintzen, former chief of VOA's Africa division established in 1983. Heintzen initially developed workshops for librarian journalists only, but he soon saw there was a need for other types of training as well and began to expand the program. The IMTC was formally established as a separate entity in July.

Although the workshops are held at

either conference facilities or colleges and universities — chiefly in the Baltimore-Washington area — they always include visits to various area stations to see them in operation.

These stations are always approached by the IMTC, and there is always an effort to match the interests of the individuals in the program with their format; whether it is commercial or noncommercial, and whether it broadcasts top 40, news or easy listening music.

According to Roberta Win, IMTC's program development officer, the IMTC only matches a station with a specific ethnic group if there is a particular interest in doing so; such as a station in Boston that was particularly interested in working with Albanians.

Win says, "I couldn't even begin to hazard a guess" as to how many stations across the country have been involved in the training to date. Lantner figures it probably numbers in the hundreds.

Like the stations involved, the people who run the workshops are a diverse mix. In addition to VOA personnel, Glenn Bell, former president and CEO of Stoner Broadcasting; Larry Patrick, management consultant; radio station sales directors and even university professors have run workshops.

In one recent workshop, the IMTC conducted a 10-day executive Media Management training seminar for seven

continued on page 48 ►

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Radio in Beirut Rebuilt, Thriving

by Barnaby Page

BEIRUT, Lebanon Where will you find Phil Collins crooning "Somewhere," Patrick Bruel performing "Exister" and Mouin Najem with "Ma Hada Yizail Habibo" together on the airwaves?

Not in New York or Brussels, but in Beirut.

Rebuilding the economy

Since the vicious 16-year strife between the Lebanese and their neighbors began to wind down in 1991, the radio industry in this tiny nation has grown apace with the rebuilding of its shattered economy.

Today there are at least six FM and five AM commercial stations in the country, and with one radio set per 1.3 people, Lebanon leads the Middle East in market penetration of radio — ahead of even the oil-rich, gadget-happy Gulf states.

The reason: Growth, which has more than tripled Lebanon's economy since the end of the wars and continues to swell at 8.5 percent per year. This growth has returned the country to the economic major league, with a per capita gross domestic product (GDP) greater than that of more settled nations in the region such as Jordan, Syria and Turkey.

And with a secular government that is actively seeking to regain the commercial preeminence it enjoyed prior to the war, media is quite open and free of censorship.

For Lebanese radio, this growth means more advertisers. It also means increased competition from the burgeoning print media eager to harness

the increasing spending power of the country's 3.7 million people. Advertising rates are currently about \$1 per second on Lebanon's Radio One, for example.

But delivering audiences is no easy task in a nation split along religious (Muslim/Christian), ethnic (Arab/Palestinian/Armenian), political and — perhaps most importantly — linguistic lines.

Complicating matters for marketers, the Lebanese population is difficult to classify; language, ethnicity and religion do not necessarily go together. For example, there are many Christian Arabs. To sidestep some of these social fault lines, the programming of the large commercial broadcasters is music-based.

Three languages

Stations profess to be non-political and non-religious, and mainstream talk radio has yet to hit the shores of Lebanon. Still, the presence of three major languages — Arabic, French and English — forces broadcasters to target their stations narrowly.

The RML Group, for example, operates three stations with culturally equivalent programming: Hit FM on 100.5 MHz playing English-language modern rock; RML99 on 99.2 MHz with French and Europop; and Jabal Loubnan, also known as Ahla Naghham, offering Arabic music on 101.0 MHz. RML also operates a fourth station, the Francophone oldies station Nostalgie, on 88.0 MHz.

The group's principal competitors reflect this trend; Radio One on 105.5 MHz, based in Beit Mery, plays top 40 music 24 hours a day hosted in English

by DJs with names like Simon, Jimmy and Danny. Francophones tune in Radio One sister station La Une at 92.4 MHz for similar programming. Certainly, they have parlayed niche broadcasting into a success.

Radio One recently celebrated its 13th birthday, a venerable age in Lebanese media, and was named by local researchers from Parc, Stat and the Mass Institute as the top FM station in Lebanon. La Une enjoyed the top slot among Francophones.

Nationwide coverage

Another consolation for Lebanese broadcasters is the country's small geographical area, which allows Radio One and La Une to achieve nationwide coverage from a relatively low-powered 10 kW main station and 2.5 to 1 kW relays. They reach not only all of Lebanon, but Egypt, Syria and the coast of Cyprus too.

Next, the station plans to use DAB (digital audio broadcasting), according to station manager Roger Gaspar, potentially giving the station new flexibility in splitting a DAB multiplex into niche channels that would cater to the diverse population of Lebanon.

Whether or not Radio One and La Une manage to retain their premier positions, one thing is certain: The longer that peace lasts in Lebanon, the more crowded and competitive these multi-lingual airwaves will become.

□ □ □

Barnaby Page covers Middle Eastern technology businesses for magazines in Great Britain and Arabia. Contact him in the U.K. at e-mail barney@ludlow.compulink.co.uk or FAX: +44-1584-873027.



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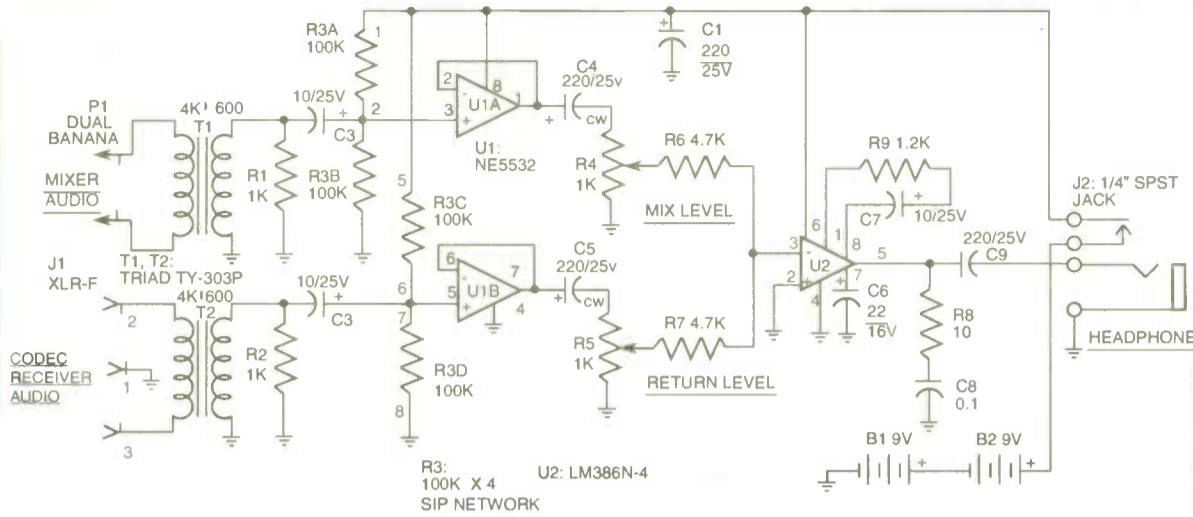
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World Radio History

Correction:

The schematic for Andrew Ellis' "Build a Two-input Mixer-Amplifier" (RW, Apr. 17) was originally printed too light to be read. Here is a new copy of the circuit diagram.



VOA Workshops

► continued from page 46
 general managers from the Caribbean and Latin American which involved trips to the Corporation for Public Broadcasting and top-40 commercial station WQSR-FM in Baltimore.

Working the trade shows

Other recent workshops have included a two-day radio broadcasting seminar for four television executives from Russia and a two-week sales and management seminar at the VOA for ten people from Francophone Africa.

Last September, eight people from Anglophone Africa — most of whom had worked at government stations — participated in an intensive workshop in Radio Newsroom Management. Then, without a break and in spite of jet lag, they headed to New Orleans to attend seminars and meet people at the Radio/Television News Directors annual conference.

Another two-week program last May centered around Slovakian Radio Executive Management and included not only instruction on management and finance, sales sessions, and visits to stations in Washington, Baltimore and Delaware, but shopping trips and cultural excursions.

Late last May, the VOA's Don Henry went to the Caribbean to conduct a workshop in News and Current Affairs, which 14 people attended.

Feedback

When a workshop ends, the instructors get both oral and written feedback from the participants in the form of an oral round table on the last day of the workshop and a written evaluation form. Generally, Win said, response has been "very, very positive" to date, adding that the workshop is "a learning process for us as well as the participants."

In addition to the workshops, some of the participants also do academic study in their field, generally for one year, or short-term internships at a "media outlet" at a college or university.

To date, no one who has done an internship has actually gotten a job at any participating station. Win says that while "I think they would all just jump at the chance to work in the States," there are often obstacles to their doing so, such as the fact that many participants do not speak English or possibly have trouble understanding union rules (unions being nonexistent in many of their countries).

However, in their home country, where they are often greatly needed, IMTC's training better prepares them to deal with the changes in their broadcasting media.

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USER REPORT

LPB Takes the Team into the Arena

by John Bisset

LANDOVER, Md. AM Radio is dead. Perhaps this is true for those programmers who have not cleared the cobwebs from their mind, but for Sports Radio WTEM(AM) and a large number of other progressive AMs, the band is thriving; and the medium is offering some unique marketing possibilities. One such opportunity for WTEM involves a partnership with the USAir Arena, here in metropolitan Washington, using equipment purchased from LPB.

Home of the Washington Bullets basketball and Washington Capitals hockey franchises, WTEM is the flagship station for game coverage. With an average of 18,000 fans filling the sports complex, WTEM recently took advantage of an abandoned AM radiating transmission system to provide play-by-play coverage inside the arena.

Installed several years ago by another station, the system consists of a radiating cable that circles the arena, supported and mounted to the underside of the lighting and speaker catwalk some 75 feet above the playing surface. This limited area broadcasting system is described under Part 15 of the Federal Communications Commission's rules, and does not require either a license or FCC notification for operation.

LPB's carrier current experience has enabled the company to develop a line coupling unit that matches a wide range of impedances. A combination VSWR and Power meter permits monitoring of the signal as the match is being adjusted.

At USAir Arena, the LPB low power transmitter and line coupling unit are driven by a feed from WTEM's broadcast box. The feed can be easily switched to a telephone listen-line coupler, for feeds originating from the station (such as pre- and post-game shows). The concrete and steel construction of USAir Arena insures that the AM signal is contained within the arena, so there is no interference to listeners outside.

Inside the arena, the radiating cable blankets the spectator boxes and seats with a clear signal. The system operates on WTEM's licensed frequency, and, through an intensive promotional campaign, the station encourages devotees to bring a Walkman-type radio along with them to the game.

In addition to hearing the game's play-by-play, fans can also hear the pre- and post-game shows while inside the arena. The additional reach for the station's advertisers to the captive audience inside the arena is another plus.

Why choose LPB? Personal experience and LPB's long-term reputation were paramount reasons. My first LPB low power transmitter was purchased on behalf of Delta Electronics in the mid-70s, and was used to develop an RF signal for demonstrating the company's RF

Ammeters at trade shows.

To my knowledge, that same transmitter is still in use. Although it was only periodically in service, the beating it took being shipped to trade shows demonstrated its reliability. The transmitter was simple to use and adjust; and was an engineer's dream, as you could "set it up and forget it."

The long term reputation and stability of the company was equally important, however. The old timer may



WTEM broadcasts inside USAir Arena.

remember that LPB stands for "L"ow "P"ower "B"roadcasting, because the company's genesis was in providing carrier current AM transmitters, mostly to college radio stations. Their experience in college radio led to a line of built-like-a-tank consoles, which have been modernized and updated over the years, but still retain that rugged feel.

On the transmission side, LPB has placed more than 25,000 transmitter products in the field worldwide and offer cutting edge technology for traveler's information service (TIS) stations and radiating coaxial cable systems.

With this kind of experience, LPB is a natural to offer design support in developing a limited area broadcast system. Most recently, the company has begun providing an FM stereo version of its low power transmitters. These can be used for limited area or radiating coaxial broadcasting systems.

The choice is AM or FM, the applications are endless. Some of LPB's credits include over 70 auto racing tracks, also amusement and theme parks, and fitness centers. The company has provided systems to nearly 70 college and pro sports arenas and stadiums, including the 1996 Atlanta Olympic Stadiums.

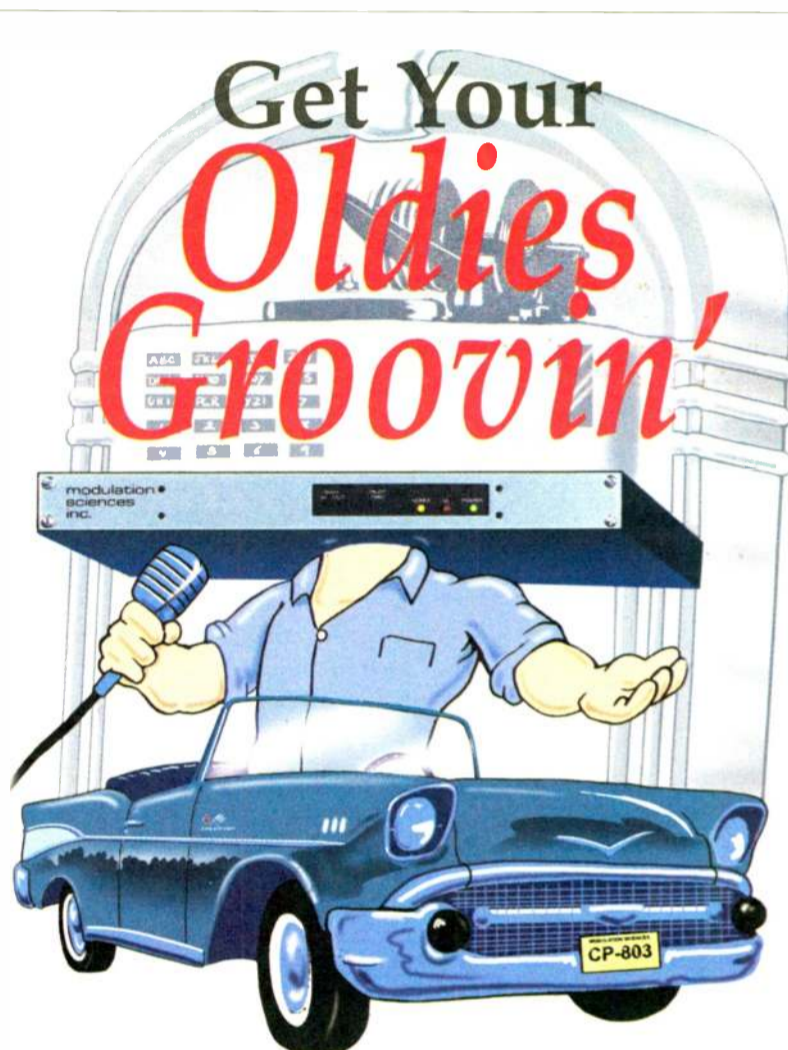
Many of these facilities broadcast a closed circuit program, but just as many have forged broadcast partnerships with local radio stations like WTEM. The versatility of the LPB systems permits the transmitters to be used for the hearing impaired, simultaneous language translation broadcasts, or event rebroadcast, like at USAir Arena.

In addition to these unique uses of the LPB transmitters, the AM versions can be used in the more traditional sense, permitting a station to use its low power

PSA/PSSA authorizations more efficiently. The cost of the transmitter is easily recouped in electrical savings by not burning up power off your 5 or 1 kW transmitter to achieve a 30 or 50 watt low power authorization. A variety of power levels are available, and the transmitters meet FCC requirements.

From both the engineer's and manager's vantage point, broadcasting is always changing. The winners are constantly exploring and developing new markets using existing and new technology. LPB is one of those winners, carving new niches that can be beneficial to the stations investing in its products.

For more information from LPB, contact John Devecka in Pennsylvania at 610-644-1123; e-mail: LPBINC@aol.com; or circle Reader Service 170.



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USER REPORT

WPSL Radio Is All That It Can BE

by Greg Wyatt
Co-owner, VP/GM
WPSL(AM)

PORT ST. LUCIE, Fla. It was a dark and stormy night — no kidding, it really was a dark and stormy night as Hurricane Erin was rampaging through the east coast of Florida from the Palm Beach County line north to Brevard County.

Smack dab in the middle of that hurricane was our new little **Broadcast Electronics (BE) AM-5** sitting in the back of a United Van Lines truck in historic Yeehaw Junction, 45 miles north of its new Florida home.

As the sun rose and the Treasure Coast was assessing hurricane damage, we received a phone call from the truck driver who was a bit perturbed that his delivery of our transmitter was delayed a day by "that ... hurricane."

Within days of the storm, Erin (that is the name we gave our new AM-5) was installed by Treasure Coast Engineers Mike Kerley and Bob Statham. In tandem with the new VMC-16 remote control, WPSL(AM) was preparing for the 21st century in August of 1995.

My wife, Carol, had projected the new transmitter for the 1997 budget, but our Florida Power and Light (FPL) business

representative convinced us to look at other options. That was in 1994.

Shortly thereafter, I received a phone call from Corey Meyer, the Southeast representative for BE. He explained the benefits (in owner's English) of the new AM-5. We chatted with our local banker and all came to the same conclusion: Do we run yet another Indian summer with our BTA-5T RCA (circa 1965-WBZ) and our little 500 W Sparta, or should we look at the alternative?

That alternative became reality for WPSL on Aug. 10, 1995. We are providing quite a challenge for both the AM-5 and our VMC-16 with four power stages every day.

As a relatively young radio station — WPSL signed on in 1985 — we go from 5 kW daytime (Palm Beach County line north to Sebastian) to a mighty 64 W at night (barely Port St. Lucie).

Instantaneous improvement

What we immediately noticed was the instantaneous improvement in our audio — "FM sound on AM," everybody says. We had indeed taken the first big step to become an AM digital stereo station.

The AM-5 also did something else. WPSL, which had its transmitter house cooled by three window air conditioners 24 hours a day since sign-on, was down to two, and eventually one air conditioner.

The power bills from FPL for the last quarter are living proof of what the folks

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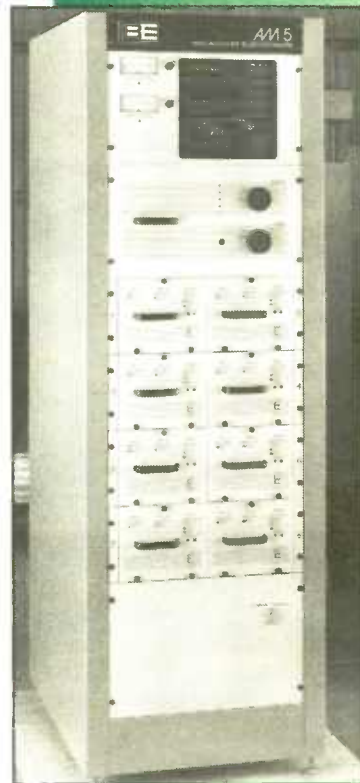
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The BE AM-5 lowered power bills at WPSL.

at BE had said all along: "If you are running older tube transmitters, you simply cannot afford not to make the switch." The kilowatt usage is down dramatically and it does not take a genius to realize we more than make our loan payment back from the power savings we receive from FPL.

WPSL historically had transmitter bills around \$800. For the past quarter with just one air conditioner keeping the transmitter house at a cool 62 degrees (even when the air temperature is 80+), we have averaged less than \$300 per month.

It is hard to imagine a 5 kW transmitter smaller than our equipment racks, but that is the case with Erin. She is only single-phase, 60 Hz, compared with our old RCA which was a three-phase power guzzler.

No down time

We had been warned by some engineers that we would be a AM-5 island in a sea of Harris transmitters on Florida's Treasure Coast. That may be the case right now, but — knock on wood — we have not been down a day since signing Erin on Aug. 10th, and she has lived through a pair of storms of the century since her adventurous hurricane entree to the Treasure Coast.

With the corporatization that is occurring in our business, you have to be on the cutting edge to stay ahead of the big boys. The AM-5 has managed to do that for the 400,000 listeners on the Treasure Coast.

We are now one of 19 stations in the world
continued on page 52 ►

USER REPORT

Power-side Boosts KRVN Farm Radio

by **L.T. Killion**
Director of Engineering
KRVN-AM-FM

LEXINGTON, Neb. In today's highly-competitive world of AM broadcasting, it is difficult to improve a station's ability to reach its listeners once state-of-the-art audio processing and modern digital or pulse modulated transmitters are installed. Most stations fill their allocated frequency to its legal maximum. There is not much room left for any improvement using traditional AM broadcast techniques.

It is possible through the use of a technique borrowed from other communications services to significantly improve an AM station's ability to deliver audio to the listener. The technique is known as compatible independent sideband transmission. **Kahn Laboratories** has developed a novel product called Power-side that allows a station to stack the audio normally transmitted on both sides of its frequency onto just one side of the frequency.

Super sideband

Power-side operates by feeding a specially processed audio and "on-carrier" RF transmitter to the transmitter. The entire transmitter acts as a high level compatible sideband generator.

The resulting super sideband makes the listeners' receiver think the station's transmit power has increased almost four

times. This is all possible without making major modifications to the present transmitter or audio processing equipment.

KRVN(AM) is a member-owned agricultural service organization owned by more than 4,000 farmers and ranchers. Many rural listeners rely on the 50 kW, 880 kHz signal as their main source for weather, market and industry information.

Power-side was installed to maximize KRVN's ability to reach all of the listeners in Nebraska and its five surrounding states. After three months of operation during the portion of the year with the highest skywave interference and the shortest days, Power-side has proven its ability to get through to listeners.

There are several areas where Power-side provides significant performance improvements. At the far edge of the listening area, atmospheric noise and static gradually cover up a station's audio. The increased energy in Power-side's selected sideband masks one sideband's noise and provides approximately 6 dB better noise floor in the listener's receiver. This effectively increases the

distance at which the signal can be heard.

Many stations have small areas of signal garble and dropout in automobile receivers while in metropolitan areas with overhead power lines. Garble is caused by sideband cancellation during the summation of the direct and reradiated power line signals in the receiver. Because Power-side concentrates most of the audio signal on one sideband, phase reversal in the reradiated signal cannot completely cancel the direct signal and cause garble.

Power-side exciter cuts down on skywave carrier interference with a 15 Hz subcarrier inserted as part of the operating system. The subcarrier dithers the carrier frequency and prevents the receiver's detector and AGC from locking to the difference between the Power-side signal and interfering skywave signal. The 15 Hz subcarrier is too low in frequency to pass through a receiver's audio stages, thus the Power-side signal comes through on top.

Many stations have problems with signal garble and distortion at distances of 50 to 150 miles during sunrise and sunset transition periods. This effect,

known as selective fading, is caused by phase reversal and resulting sideband cancellation when normal conducted radiation and skywave signals combine in the listeners' receiver.

Selective fading is also evident when listening to long distance skywave signals. Power-side almost completely eliminates the selective fading effects but nothing can be done for short periods when the carrier totally disappears.

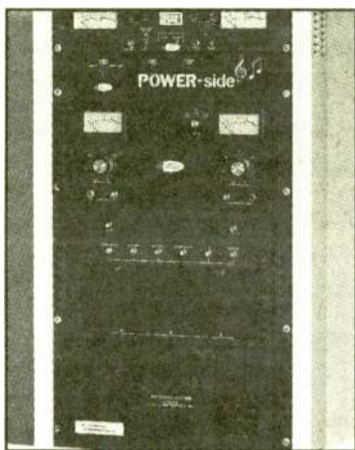
Finally, Power-side also improves reception in directional antenna nulls. Many stations with highly directive antenna arrays experience audio garble and cancellation in antenna pattern nulls. Power-side greatly improves reception in these areas, but nothing can replace a missing carrier.

Positive comments

KRVN is pleased with the reception improvement experienced since installing Power-side. Positive comments continue to come in from fringe listeners. The improved signal penetration is noticeable in both fixed and variable tuned receivers.

Installing Power-side was simple, consisting of finding 32 inches of free vertical rack space for Power-side; inserting Power-side in the final transmitter audio feed; and converting the spare crystal oscillator to a Power-side RF input through a special voltage isolation transformer to avoid lethal voltages on the oscillator chassis.

For more information from Kahn, contact the company in New York at 212-983-6765; or circle Reader Service 193.



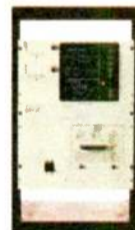
Power-side delivers improved AM audio.

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Broadcast Electronics Fits the Bill

► continued from page 50

on Audionet on the Internet (wpsl.com), taking us further into the next century. But when our newfound Internet friends come to visit Florida's Treasure Coast, they will be enjoying the clean, crisp digital sounds emanating from the AM-5.

Whether it is the full-power at 5 kW down to the low 64 W, there is no distortion whatsoever in the AM-5; unlike so many other brands out there that truly struggle to attain decent sound at extremely low power.

If Carol and I do decide to jump into the duopoly fray, we certainly will not hesitate to give

Corey a call again. The follow-up from factory engineers has been equal to Corey's efficiency as well.

Yes, Erin has made her mark on the Treasure Coast over the past seven months and we hope she will continue to do so for many years to come. As I said earlier, if you are an owner — especially a small station owner with a tube transmitter — just look at our FPL bills. They do tell the story of our new AM-5.

If you have any questions about Erin, do not bother to call our engineer. We have not seen him much, but we hear he spends a lot of time with the Maytag repairman.

For more information from Broadcast Electronics, contact Mike Troje in Illinois at 217-224-9600; or circle Reader Service 65.

Meter Reading

Current Reading	68303
Previous Reading	- 64842
kWh Used	3461

Energy Usage

	Last Year	This Year
kWh This Month	8503	3461
Service Days	34	34
kWh/Day	250	101

Take the Codec "Check" Test:

Can Your ISDN Codec Do All This?

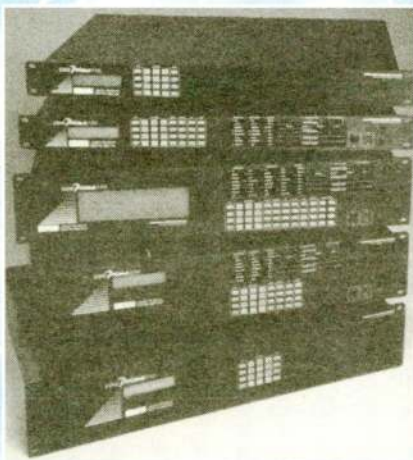
	Other Codecs	CDQPrima™
20-20 kHz CD-quality audio at better than 89 dB SNR and 0.01% THD+N	NO	✓ YES!
Send stereo audio to three distant codecs at once	NO	✓ YES!
Send mono audio to six codecs at once	NO	✓ YES!
256 speed dial addresses with automatic system configuration for the distant codec	NO	✓ YES!
Automatic Dial-On-Audio/ Hang-Up-On-Silence	NO	✓ YES!
AES/EBU I/O with automatic rate adaptation standard	NO	✓ YES!
384 kilobits per second digital mastering quality with BONDING for up to three ISDN lines	NO	✓ YES!
Hands-free factory upgrades directly over your ISDN line	NO	✓ YES!
One-button dialing	NO	✓ YES!
SMPTE Timecode, stereo and ancillary data over 128 kb/s	NO	✓ YES!
Psychoacoustic algorithm adjustment	NO	✓ YES!

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EIMAC

High Power AM Shortwave Broadcast Tube

SAN CARLOS, Calif. An advanced design tetrode tube is the only choice for use as the final amplifier stage in modern high power shortwave transmitters operating from 100 kW to 1 MW. Present day amplitude modulated shortwave transmitters use a single tetrode power amplifier (PA) stage with plate modulation developed by an array of solid-state switches; this allows modulation of 125 percent to 140 percent in the positive direction.

The Eimac Division of Communications and Power Industries (CPI) manufactures several tubes using pyrolytic graphite (PG) grids that are designed for high power AM shortwave service. Grids made from PG operate at extremely high temperatures without melting and have a low coefficient of expansion that ensures the integrity of the tube remains unchanged — even during periods of sustained high modulation.

An example is Eimac's new multi-phase-cooled 4CM1000KG tetrode which incorporates computer-controlled-laser-cut PG grids. This tube is designed specifically for high power AM shortwave broadcast transmitters and is rated at 1,000 kW output up to 110 MHz.

For more information from Eimac, contact Ken Peterson in California at 415-594-4000; or circle Reader Service 99.

SVETLANA

Russian-designed Vacuum Electron Tubes

PORTOLA VALLEY, Calif. Svetlana Electron Devices, Inc. is a joint stock company with design and manufacturing facilities in St. Petersburg, Russia; engineering, sales and marketing in California; and sales and warehouse facilities in Alabama. Svetlana in St. Petersburg commenced operation in the late 1800s and delivered its first vacuum electron devices in the late 1920s.

Svetlana offers a wide range of vacuum electron tubes. The products include power grid tubes for the broadcast, communications, industrial and scientific markets with anode dissipations from a watt or two to several hundred kilowatts. RF power output is provided at all frequencies from a few kHz through the millimeter wavebands.

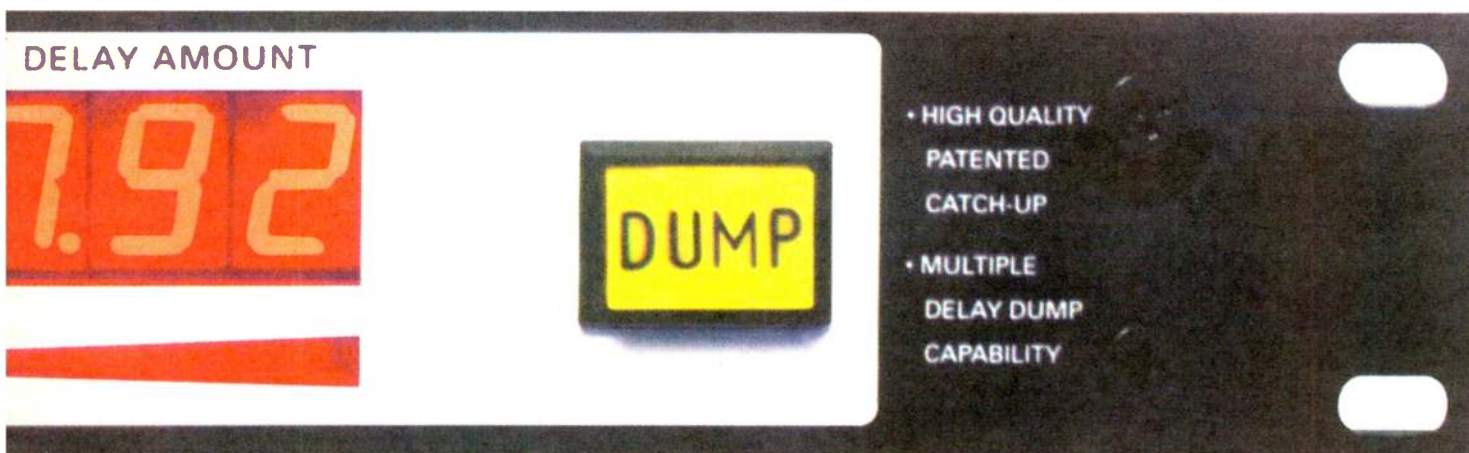
The Russians have, and will continue to invest in vacuum electron technology while Western tube designers and manufacturers have slowed down and virtually stopped as solid-state technology became prominent. Because of the continued Russian improvement in electron tube technology, Svetlana tubes are now among the best in the world, containing features and improvements that are patented and exclusively Russian.

For more information from Svetlana, contact the company in California at 800-578-3852; in Alabama at 800-239-6900; e-mail: 103243.242@compuserve.com; or circle Reader Service 120.

THE ONLY TALK SHOW DELAY THAT CAN MAKE THESE STATEMENTS.

Bad words, **#@\$^&*%!** like bad news, often come in threes. The new Eventide BD500 is the only obscenity delay in the world that can eliminate them. Now, when you hit the Dump button, you don't lose the whole delay and the obscenity **%#^!@*\$!** protection that goes with it. You can divide the total available delay time into not one, or even two, but several discrete segments. You still have protection even after dumping two consecutive **&*\$%#@#!** no-no's.

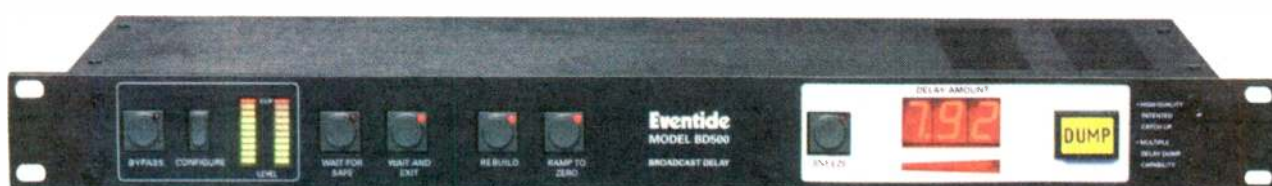
You also get the cleanest, quickest delay catch-up you can buy. Because there's only one way to maximize audio quality and still catch-up rapidly after a delay dump... and Eventide owns the patent. Over the years, several other brands of delay have come and gone. But the simple fact is that the catch-up methods others use must be painfully S-L-O-W to avoid serious audio problems.



And, because you may not be using that analog console forever, the BD500 is also the only broadcast delay that's digi-

tal-ready with optional AES/EBU digital audio inputs and outputs. It's stereo, of course. A convenient new "sneeze" button allows the talent to sneeze, cough, etc. without being heard on air, and without dead air. All front panel switches (except configure) and all status indicators can be remoted (both RS-232 and dry contacts are provided.) Plus, only the BD500 gives talent both a digital readout of delay time and a "quick read" LED bar graph that shows "you're safe" at a glance.

For all these features and quality, you'd expect top-of-the-line pricing. But surprise! The BD500 costs thousands less. It's the best value ever in a broadcast talk show delay. Exactly what you'd expect from the people who invented digital broadcast delays in the first place. Call your distributor, Eventide direct, or check it out on the Web at <http://www.eventide.com>



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World Radio History

USER REPORT

Nautel Gets the Call from Crawford

by **W.C. Alexander**
Director of Engineering
Crawford Broadcasting Co.

DALLAS In 1993 Crawford Broadcasting Company bought its first 50 kW Nautel ND-50 and installed it at its Bay Area station, KCBC(AM). Even after all the success with 1, 2.5, 5, 7 and 10 kW Nautel transmitters around the chain of Crawford stations, I will admit to a little bit of trepidation when it came to placing the order for the 50. I mean, after all, a 50 kW solid-state?

We were not disappointed. Just like all the other Nautel equipment we had purchased over the years, the big 50 arrived on time and was easy to install. This particular unit was the first we had purchased with the built-in C-QUAM AM Stereo exciter. It set up like a dream and made a huge improvement in the station's sound and an even bigger improvement in our electric bill. That transmitter has, to date, been 100 percent reliable. We have had no down time at all with the transmitter operating around the clock, seven days a week.

Nautel or nothing

Last year, when we purchased the unbuilt construction permit for a new 50 kW station in Denver, I did not even hesitate. It was Nautel or nothing. I ordered an ND-50 for the daytime transmitter and an ND-2.5 for night, both with the built-in C-QUAM AM stereo exciter.

Both transmitters arrived just when they were supposed to. The assembly (some is required) was easy, the instructions were clear and everything worked the first time. That is just what I expected.

When you buy one of the big ones, Nautel includes on-site commissioning by one of its field service people. This time, Jeff Welton got the job and left frigid Nova Scotia for the warmer climate of Denver.

When he arrived, Jeff spent a full day checking our connections and all the hardware in the 50 kW transmitter. With the currents that you get in that transmitter at the 50 kW level, a loose connection can produce a lot of heat; so special attention is given to hardware security.

The next day, Jeff fired up the 50 and spent the day going through it, checking everything from carrier frequency to slicing frequency and PDM waveforms — you name it. He was certain that everything was perfect before he pronounced the transmitter fit.

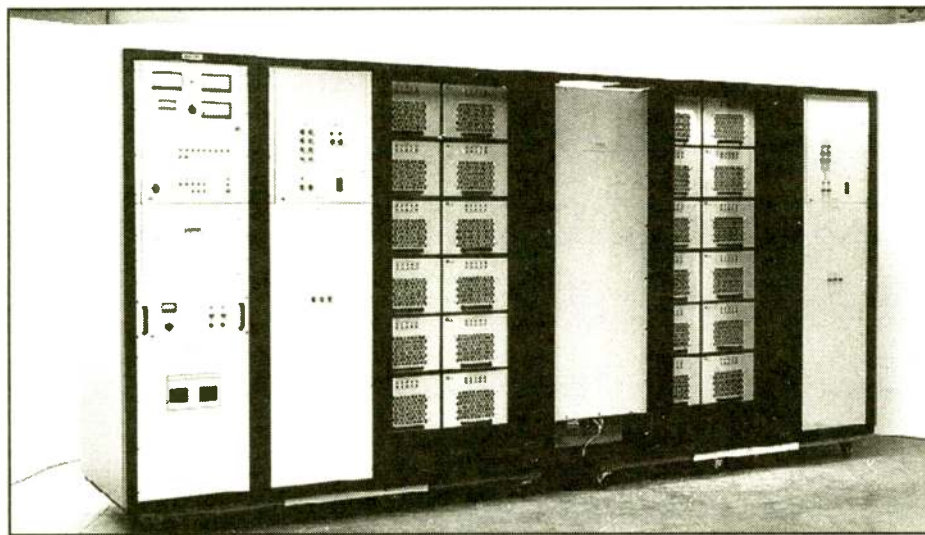
Thorough training session

On his last day in Denver, Jeff trained our engineering staff on the care and feeding of the transmitter. This was a thorough, one-on-one training session that emphasized the annual hardware check and "hot" module removal/repair.

Hot module removal is one of the great features of the Nautel ND-series of transmitters. While the transmitter is still operating, you need only flip two switches, remove two twist-lock connectors and pull. The power subsystem (which actually consists of five modules) is out and the transmitter is still running with no degradation of the sound on the air. The higher power transmitters have enough reserve horsepower to compensate for a missing power subsystem, allowing you to run at full power with a subsystem on

the bench.

As Jeff continued his training session, he demonstrated the removal of a module from a power subsystem and showed our engineering staff how to check the IRF-140 power MOSFETs. The MOSFETs are easy to check and change; even the technically inexperienced should have no trouble with this procedure.



Crawford Broadcasting relies on Nautel transmitters.

During the training session, Jeff did a couple of things that made me a little nervous (but needn't have). First, he pulled the transmission line jumper in the dummy load so that the transmitter was operating into an open load. When he turned it on, there was no smoke, sparks or foul odor; the transmitter quickly sensed the condition and shut itself down.

In the next demonstration, he used a clip

lead (made of No. 22 wire) to short the transmission line at the dummy load. Again, when the transmitter was turned on, it quickly sensed the condition and shut itself down. After the transmitter was turned off, I felt the clip lead — it was warm but otherwise undamaged.

In addition to all the VSWR-protection and stress current sensing circuits, there

are a few other safety features. First, there is a transmitter overtemp protection circuit that will shut the entire transmitter down if the temperature exceeds a preset value.

There is also a fan fail protection circuit that will cut the transmitter back to 10 kW if one of the combiner fans fail. A detuned RF drive sensor is also included that will protect the transmitter in the

event that an off-frequency RF drive signal is applied.

One other feature that bears mentioning is the auto exciter switching. Each ND-50 is equipped with two complete exciter sections: oscillator, mod driver, RF amplifier, power supply — the whole enchilada. The auto switching circuit senses when there is a loss of drive from the selected exciter and switches automatically to the other exciter section.

Switching can also be done manually from the front panel or remotely. In our Denver transmitter, the "A" exciter is the built-in C-QUAM exciter and the "B" exciter is the mono unit. We use the A/B switching to go from stereo to mono.

From the above description, it probably sounds like this transmitter is a hopelessly complex piece of equipment. Nothing could be further from the truth. The design is remarkably simple, and therein lies the key to its reliability.

Easy to understand

The parts count, particularly in the power amplifier section, is very low. Protection circuits are simple and straightforward, without complex parallel channels and loops. Anyone with basic electronics training should have no trouble understanding the transmitter.

The Nautel ND-50, as well as all the rest of Nautel's line of solid-state AM and FM transmitters, is a fine piece of equipment. It is reliable, user-friendly, efficient, simple, and sounds great on the air. When I find something that works, I stick with it. In the future, when Crawford Broadcasting Company has need of a new AM transmitter, I will be calling Nautel.

For more information from Nautel, contact Gary Manteuffel at 207-947-8200; or circle Reader Service 174.

People, Promotions and Appointments

Three new additions have been made to the **Sonic Solutions** management team. Andrew Raguskus comes on as senior vice president, chief operating officer; Ross Ryding joins the company as vice president, engineering; and George Cagle is director, technical services.

Tom Giglio, chief engineer of WQXI(AM)-WSTR(FM) has been promoted to the post of vice president/engineering for the radio properties of **Jefferson Pilot Communications**. Giglio will oversee all technical aspects and engineering in the radio division in addition to continuing his duties as chief engineer of the Atlanta stations.

TM Century has appointed David M. Adriance to the newly created position of vice president of marketing and planning. Adriance was most recently regional manager for Metro Traffic.

Ed Longcrier has joined **Harris Broadcast Division's** radio field sales team in the Southwest United States. Longcrier began working in broadcasting in 1973 and comes to Harris after nine years at Broadcast Supply Worldwide.

TimeLine Inc. announced the appointment of industry veteran David Frederick to the position of director of product marketing. Frederick assumes

responsibilities of managing all of the company's new product development, product operation specification, sales support management and customer feedback programs.

Jimmy Kawalek has been named to the position of market manager for engineered sound of **QSC Audio**.



Kawalek has more than 20 years of experience in the pro audio industry, coming to QSC from Eastern Acoustic Works.

Keith La Honta has been hired as vice president of sales and marketing at **MUSICAM Express**. La Honta previously held the same position at Digital

Generation Systems where he was instrumental in delivering audio distribution agreements with a number of advertising agencies and record companies.

DG Systems has announced the appointment of Jeffrey Byrne to the position of vice president of marketing. Byrne has more than 15 years of marketing, engineering and product management experience in major information technology companies.

Company News

TM Century and **Multiverse Networks** announced an agreement whereby Multiverse will represent all sales of advertising time for the TM Century Comedy Network. This marks the first time TM Century has entered the barter arena to market its broadcast services and products.

Digital Courier International (DCI) announced that common shares of Kwikstar Communications will be exchanged for 100 percent of the common shares of DCI in a successful reverse takeover. Kwikstar will change its name to Digital Courier International Corp.

Ardis will now resell **Motorola's** full line of wireless data products. As a Motorola Master Distributor, Ardis will bundle wireless software, hardware and air time services to address specific customer needs.

From 10 kW to 1 Megawatt, nobody even comes close.

Proven quality and unmatched power.

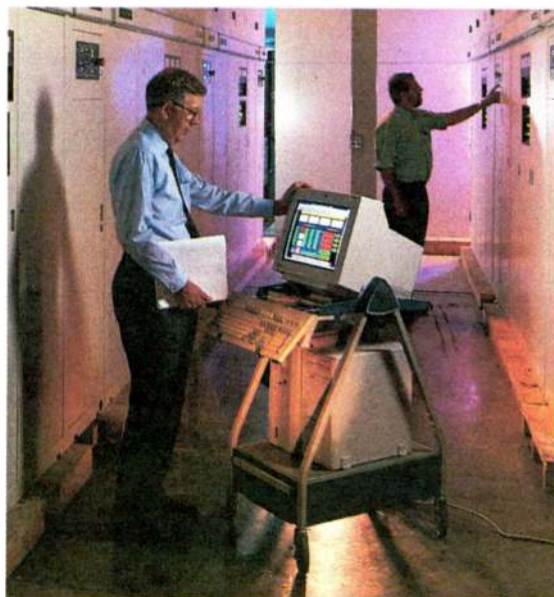
For nearly a decade, Harris has raised the world standards of reliability, efficiency and power for medium wave transmitters. With solid state power amplifier modules delivering an MTBF of 6 million hours, typical AC to RF efficiency to 86 percent and a signal that sounds like FM, Harris DX transmitters have proven to be the choice of more than 600 broadcasters around the world.

To meet the demands of the global market, Harris provides DX transmitters at all power ranges from 10 kW to 1000 kW. In fact, with our 1995 International Broadcasting Award-winning DX 1000, Harris is *the only company in the world that can deliver — and has delivered — a 1-Megawatt solid state AM transmitter.*

**Digital is here
now, with Harris.**

As the only transmitter proven

to be capable of digital medium wave broadcasting, Harris DX Transmitters have been used for every on-air In Band/On Channel AM DAB test to date. And, because DX is the only medium wave transmitter compatible with both analog *and* digital transmission, while meeting IBOC DAB standards, Harris stands alone in its ability to meet your broadcasting demands today, while preparing you for tomorrow.



Experience that serves you well.

Broadcasters worldwide rely on the vast experience and resources of Harris. From medium wave to FM, UHF, VHF, satellite and wireless cable networks, Harris has repeatedly proven its ability to help clients get the most out of their facilities and their budgets.

And that's a matter of record, too.

So, why settle for coming close, when Harris can take you all the way? For more information, just call Harris.

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USER REPORT

Harris Transmitter Gets Island of Its Own

Because of Its Unique Situation, CKXM(AM) Needs A Highly Reliable, Low-maintenance Transmitter

by **Bob Calder**
Technical Product Manager

VICTORIA, British Columbia CKXM(AM) — formerly CKDA(AM) — located here, serves a market area with a uniquely rugged terrain. When the ailing 50 kW AM station was acquired by the OK Radio Group in September of last year, a full roster of equipment upgrades began and key among them was the need for a new, reliable transmitter that would stand on its own throughout the year.

Victoria is on Vancouver Island, off the southwestern coast of Canada. One and a half miles of water separates Chatam Island, where our transmitter site is located, from Vancouver Island, and is accessible only by boat and only during those times when the stormy seas and gusty winds do not dominate the environment.

More than a drive

With the unpredictability of the high seas, there is more than just a "quick drive up the hill" involved in getting to the transmitter site. Such inaccessibility demands equipment that will operate at top performance with little or no maintenance.

We wanted the best sound possible for the station's new country format and were already installing Harris high power solid state FM transmitters for the group's other stations. We found the Harris FM's to be top quality, reliable and economical, so we decided to reap the benefits of solid state digital AM transmission with the Harris DX series.

The entire renovation of the transmitter site was extensive. Other than the shell of the building, everything had to

be replaced — from the 27-year-old transmitter to the ground system and transmission lines. We also had to put in a new two-hop digital STL and construct new, relocated studios at the FM studio location.

When it came to the transmitter, I did a few calculations. We had thought of just replacing the tubes in the old unit, but when I totaled up the costs of tube replacement, hydrocosts plus maintenance, it turned out to be more cost

The owners love the cost-savings but, the most important benefit of the Harris DX has to be simple peace of mind.

effective to buy a new solid state Harris DX.

I had actually only seen the DX at NAB conventions. But I studied the product a lot and it seemed as if it was designed well and that Harris had put a lot of thought into the product assembly. I was fairly confident that I could get it on the air with no problem, so I did not even take advantage of the transmitter seminar Harris provides. On the day I put our new DX together, I accidentally left the manual behind, but the DX is designed so well that, for the assembly, I really did not miss it.

A good thing

I had ordered the DX early in the planning process, so it was ready and waiting when we were ready to install

it. That was a good thing, because I had to direct and oversee the entire site renovation in addition to putting the transmitter together and getting it operating.

Each AM station transmitter site in this area is located on its own little island, stretching from a half to four miles from the mainland. The equipment had to be transported to our transmitter site by barge. September is the calmest month, so we took advantage of a good weather day to ferry personnel over in a motor launch. We were fully prepared to spend the night if we had to.

A tug pulled a 70- by 20-foot barge with trucks containing our equipment

right to the beach of Chatam Island. The barge was pushed onto the beach and a ramp descended so the trucks could drive right to the site. This was especially tricky because we had to make sure the tides were just right so the trucks would not end up driving out into water or get stuck in the sand.

It took me only a day to assemble the DX and it was up and running the very next day. There was no need for tuning; the instructions were good and nothing could have been easier. I knew that when we turned it on and got back onto the boat to head for home it had to work; we could be in a real crunch if it did not.

Since the day I put the DX on the air

that September, it has not given us even one tiny problem. I have not even had to open the cabinet doors, except for some readings. I have never seen a transmitter like it.

Big savings

You can put your hand over the top of the DX and feel cold air blowing. It is extremely efficient; we even had to close down the hot air exhaust just to keep the building warm enough. We are going to save 50 percent of our hydro-costs with the DX, and the hydro-savings plus what we save on maintenance and tube costs should easily offset the cost of the transmitter itself.

The station's sound is now excellent. The new transmitter made a phenomenal difference. If we wanted to, we could drive it hard and modulate it aggressively. But with the new format, we are keeping the station at a reasonable modulation level because we are aiming for listeners who enjoy long hours of tuning in without fatigue.

Of course the new owners love the cost savings and the fact that there is virtually no maintenance. But the most important benefit of the Harris DX has to be simple peace of mind.

There are lots of winter storms with up to 70 mile-per-hour gales when helicopters cannot even fly in and it would be impossible to get to our AM site. I have seen pitch-black skies with pouring rain and 15- to 20-foot high waves when there was no hope of getting to the transmitter. We simply cannot be off the air. In the end, we bought the Harris DX because we wanted the ultimate in reliability.

For more information from Harris, contact John Delay in Indiana at 217-221-7103; fax: 217-222-0581; or circle Reader Service 178.

AUDIO IS NOT DATA!

Broadcasting is on the brink of a digital revolution. There is no doubt that we will become totally digitized sometime in the future. Digital processing is in its infancy. Most DSP processors mimic the best analog processors and sometimes not too well. The truth is that there are some things that analog just does better. Stereo composite processing is one of these things.

MicroCon Systems specializes in Advanced Analog Processing. If you are using a modern digital processor and are dissatisfied with your loudness or dissatisfied with the harshness of digital clipping, join the growing group of savvy broadcasters that are adding the FM FlexiMod to their processing chain. If you are processing your composite with an outdated, grungy clipper, I invite you to demo the FM FlexiMod and realize the possibilities of Advanced Analog Processing. If you are not processing your composite, the FM FlexiMod will give you a competitive edge unheard of just a few years ago.

FM FlexiMod.



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Low-maintenance Load For Medium-wave Transmitters

YELLVILLE, Ark. The OmegaLine Model 77100 Air-cooled Dummy Load from Altronic Research Inc. was designed to provide a stable, low-maintenance load for medium-wave transmitters. Special emphasis was placed on weather resistance, operability in extreme environments and serviceability.

The altitude at the site chosen for this installation was 2527 meters (8291 feet) and service temperatures ranged from -40°C to +55°C. The selection of motors, contactors and other components was driven by the environment and the need for low maintenance requirements.

Our customer wanted to be able to place the load outside of the building envelope and operate it either as a remote or as a standby device. In remote mode, an operator can command the load fans to turn on or off at will. In standby mode, the fans are controlled by thermal switches and cycle as necessary.

The load defaults to the standby mode and the interlock system disables the transmitter when power to the load

is interrupted. This protects the load from attempted operation without cooling.

We used only cermet film resistors from Power Film Systems Inc. The load proved to be stable in operation and, after initial warmup, the VSWR settled at 1.12:1 at 1000 kHz. Later operating periods showed no change in initial VSWR and there was no



change noted during tune-up or power changes.

This load has met the requirements of the operator for operability and low maintenance and is in service now.

For more information from Altronic Research, contact Doug Starkey in Arkansas at 800-482-5623; or circle Reader Service 143.

MARKETPLACE

Recently Introduced Products for the Radio Broadcast Professional

BNC Three-port Adapters

The RFB-1130 50 ohm and RFB-1730-3 75 ohm BNC three-port adapters are available from RF Connectors, a division of RF Industries. Made in a form of the letter F, this two-female, one-male adapter takes the place of a standard BNC "T" connector.

The F shape allows connection directly to an Ethernet LAN card and then the two female ports to the network coaxial cables, which can be strapped together and run downward to a wallplate. The parts can be used for LAN and RF application in the 50-ohm version and CATV and video in the 75-ohm version.

For more information from RF Connectors, contact the company in California at 800-233-1728; e-mail: 102061,2261@compuserve.com; or circle Reader Service 127.



Codec-In-a-Card

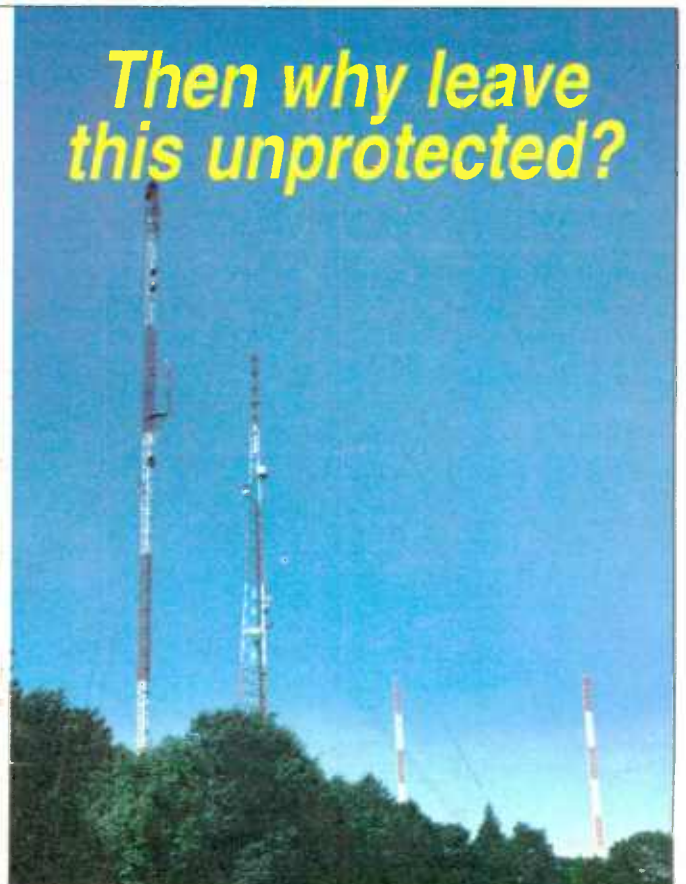
Available from Digital Courier International is Version 2.0 of the Capella PC Audio Codec. This audio card can record and play back MPEG Layer II audio from hard disk or encode and transmit audio in real-time.

Capella 2.0 adds support for WAV file formats (PCM and MPEG) and the option to choose between working in compressed or uncompressed formats. The Capella card comes equipped with all professional digital and analog audio interfaces and also includes Audiocap software version 2.0.

For more information from Digital Courier International, contact the company in British Columbia at 800-909-7888; or circle Reader Service 180.



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For more information from PSG-HomeCraft, contact Steve Hudgik in Oregon at 503-692-3732; fax: 503-692-0382; e-mail: 71450.254@compuserve.com; or circle Reader Service 159.

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World Radio History

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Orban 245E stereo synthesizer, \$225. J Gelo, 941-642-6890.

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Want To Buy

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Telos Zephyr or ISDN codec. L Beigel, 213-466-3595.

Neve, API, MXR, Lexicon mic, EQs, delays, compressors, Harmonizers, reverbs. T Coffman, 619-571-5031.

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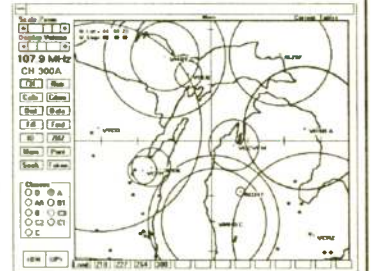
Tapetronics RP-700, needs work, \$95. D Jackson, WNBX, 203-762-9425.

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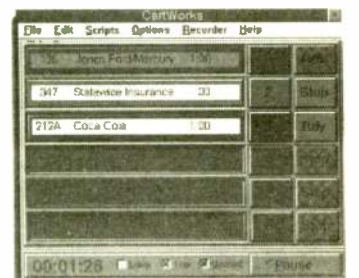
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005 027 049 071 093 115 137 159 181 203	
006 028 050 072 094 116 138 160 182 204	
007 029 051 073 095 117 139 161 183 205	
008 030 052 074 096 118 140 162 184 206	
009 031 053 075 097 119 141 163 185 207	
010 032 054 076 098 120 142 164 186 208	
011 033 055 077 099 121 143 165 187 209	
012 034 056 078 100 122 144 166 188 210	
013 035 057 079 101 123 145 167 189 211	
014 036 058 080 102 124 146 168 190 212	
015 037 059 081 103 125 147 169 191 213	
016 038 060 082 104 126 148 170 192 214	
017 039 061 083 105 127 149 171 193 215	
018 040 062 084 106 128 150 172 194 216	
019 041 063 085 107 129 151 173 195 217	
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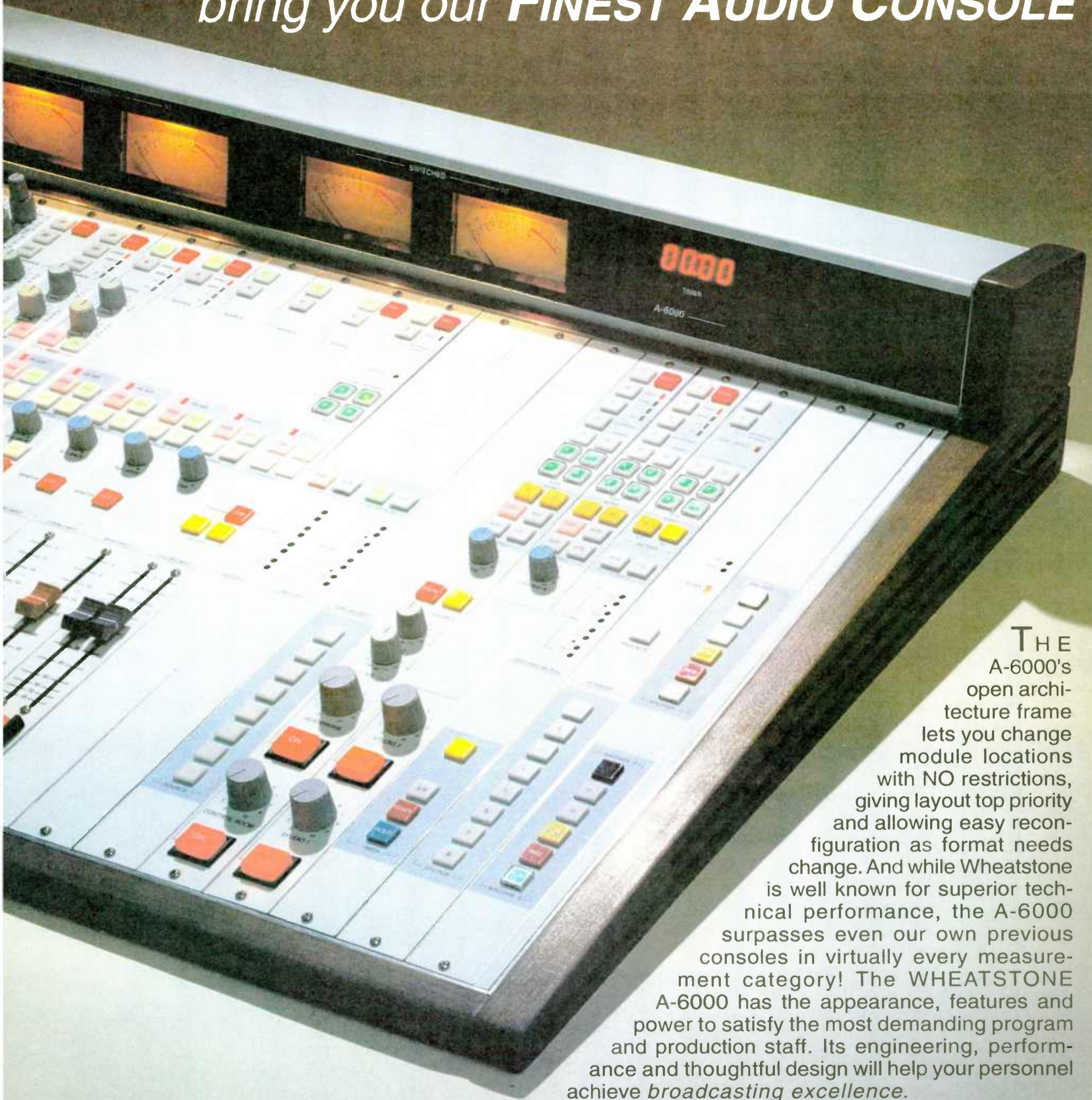
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