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Radio World

The Newspaper for Radio Managers and Engineers

June 21, 2000

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NEWS ANALYSIS

Radio on the Elian Watch

Radio Handled Technical, Ethical Challenges in Covering the Federal Seizure of Elian Gonzalez

by Randy J. Stine

MIAMI Elian Gonzalez continues to be in the news as his case winds its way through the American judicial system. When U.S. immigration agents seized

the six-year-old boy in the early hours of April 22, thousands of radio stations across the country broke the news within a half an hour.

The speed at which those news reports aired demonstrated radio's technical ability to react when covering a major news event, experts said.

CBS Radio, CNRRadio, National Public Radio, ABC Radio and Associated Press Radio used a variety of resources covering the story — both in terms of manpower and technical equipment.

News organizations used multiple technologies to file reports — cellular phone, satellite phone, POTS line, ISDN, Ku-band satellite channel, and, in the case of local stations, Marti wireless RPU transmission.

The media's "tent city," across the street from the home of Elian's great uncle Lazaro Gonzalez, was filled with several hundred members of the media who worked and slept in the

See ELIAN, page 5 ▶



Credit: AP Photo

AP Broadcast reporter Tony Winton, the only radio network reporter on the scene during the events preceding Gonzalez' seizure, attempts to interview Spencer Eig, an attorney for the Gonzalez family

CRL Buys Orban

by Randy Stine

SAN LEANDRO, Calif. Circuit Research Labs Inc. has closed on its purchase of Orban Inc. from Harman International Industries Inc. CRL and Orban will operate together as a publicly traded company. The symbol will remain "CRLI" and the stock traded over the counter. The Orban brand will be retained and operate as a division of Circuit Research Labs Inc., said C. Jayson "Jay" Brentlinger, president, CEO of CRL.

Bob Orban, who co-founded Orban in 1970, will continue to serve as the chief engineer for the Orban division.

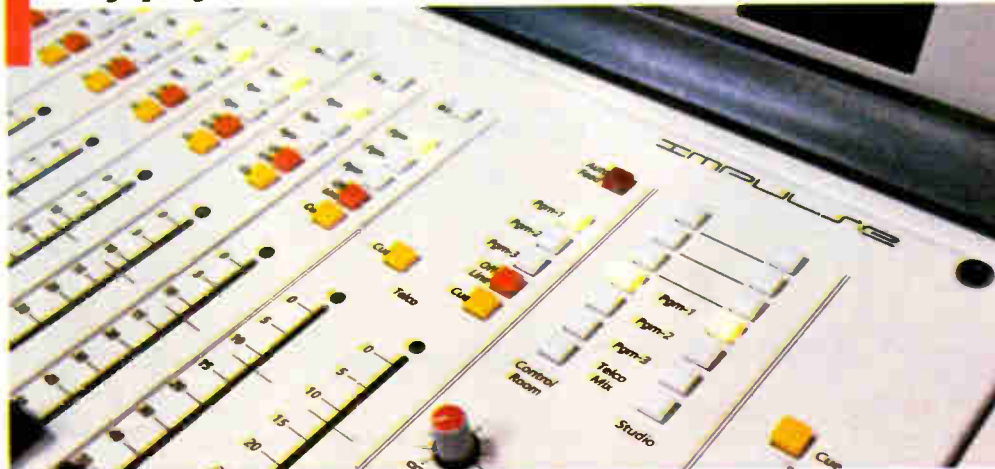
"This is a rare opportunity to combine the knowledge and experience of the CRL and Orban teams ... into a world-class business," said Brentlinger.

The deal closed more than five months after the projected January date. The delay had industry observers buzzing over possible financing problems. Brentlinger said that was not the case. "It took longer than expected. As the auditors examined the books there were major adjustments made for certain things, like obsolete inventory," he said.

The result was a reduction in the purchase price. CRL paid \$10.5 million for Orban instead of the \$15 million figure announced in December (RW, Jan. 5).

Brentlinger said CRL plans to "remain in the acquisition mode ... this purchase is the first step in a five-year plan to improve the company's market share."

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NEWSWATCH

Pirate Busted In Brooklyn, N.Y.

A man has been arrested for operating an unlicensed FM station in Brooklyn, N.Y., on 88.5 MHz.

The FCC said an investigation by its Enforcement Bureau led to the arrest of Vladimir Petit-Frere.

The FCC said it sent more than one warning letter telling Petit-Frere to stop the unlicensed operation and seized his equipment during the arrest on May 10.

Since Jan. 1, 44 unlicensed stations have been shut down, according to the commission.

FCC Looking at Ultra-Wideband

The FCC is considering permitting the operation of ultra-wide band technology on an unlicensed basis.

UWB is used in a variety of applications, including radar imaging of objects buried under the ground or behind walls and short-range high-speed data transmissions suitable for broadband access to the Net.

Police, fire and other rescue personnel can use UWB communication devices to provide covert secure communications. Such devices can be used to distribute wireless services such as phone, cable and com-

puter networking throughout a building.

The commission has stressed the need for more testing to make sure UWB technology could be used in bands below 2 GHz without interference to other users. To be considered as part of the public record, test results must be submitted by Oct. 30.

The commission is seeking comments on the proposal (NPRM FCC 00-163).

Record Revenues For DG Systems

DG Systems posted consolidated revenues for the first quarter of this year of

\$12.7 million — an 11-percent increase over the first quarter of last year.

DG operates a nationwide digital network for distributing audio and video content linking advertisers and ad agencies with approximately 7,500 radio and 725 television stations.

The company credited the rise to increased digital video deliveries during the quarter. DG's private digital video network now exceeds 725 television stations.

Earnings before interest, taxes, depreciation and amortization for the first quarter of 2000 increased to \$946,000, compared to \$8,000 in the first quarter of 1999.

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AUDITRONICS 4.0 NuStar

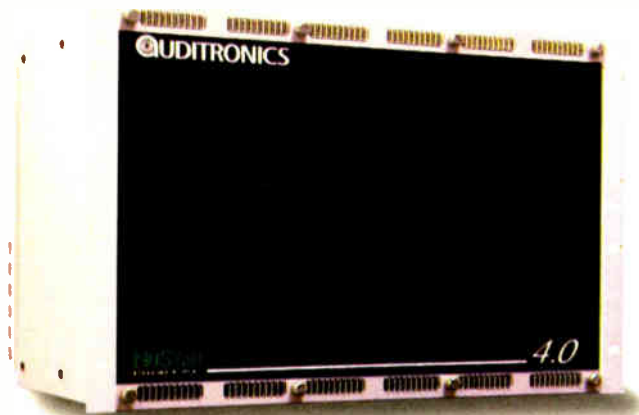
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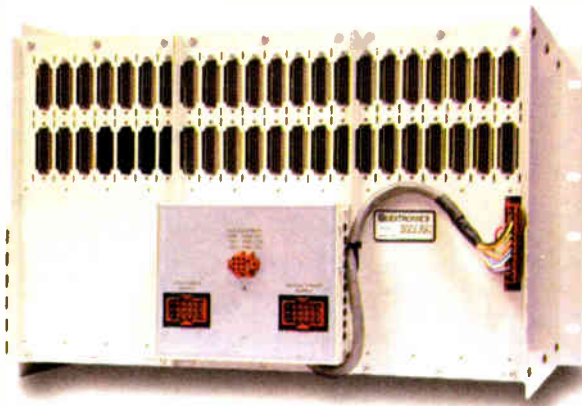
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AUDITRONICS



DIGITAL NEWS

Alcatel Delivers 1st XM Payload

PARIS Alcatel Space has delivered the first of two payloads to Hughes Space & Communications Co. for XM Satellite Radio. The XM payload was manufactured and integrated onto its module at the Alcatel Space facility in Toulouse, France. The 3,500-pound payload will be integrated into the Hughes 702 spacecraft bus.

XM is using two such satellites for its pay-radio, satellite-delivered digital service.



"With 18 kilowatts of total spacecraft power at beginning of life, these will be the most capable satellites Hughes has built," said HSC President/CEO Tig Kregel.

The XM payload will provide two S-band downlink channels over the contiguous U.S. with an equivalent RF transmit power of more than 7 megawatts per channel, said XM. The high power is achieved by combining 16 228-watt S-band traveling-wave tube amplifiers through a multi-stage configuration.

— Leslie Stimson

Panasonic Adds Capacity for Sirius

PEACHTREE CITY, Ga. Panasonic is adding production capacity to manufacture receivers for Sirius Satellite Radio. Matsushita Communication Industrial Corp. of USA, a Panasonic company, said it will eventually produce more than one million units a year at its plant in Peachtree City, Ga.



MCUSA will build and install new assembly operations to produce the AM/FM/Sirius receivers with an initial capacity of 350,000 units a year.

The addition, set for completion this fall, will also enable Panasonic to supply components to other Sirius receiver manufacturing partners.

— Leslie Stimson

Spain Awards DAB Licenses

In Spain, the Ministerio de Fomento, which is responsible for frequency allocation for the country, has

awarded 10 licenses for national DAB transmission, and it plans to allocate two more.

The 10 winners were Antena 3 (SER), Onda Digital, Prensa Española de Radio por Ondas, Radio Popular (Cadena COPE), Recoletos Cartera de Inversiones, Sauzal 66 (Radio Intereconomía), Sociedad de Radio Digital Terrenal, Unedisa Comunicaciones, Unión Ibérica de Radio-Radio España and Unipres.

The five bidders who left empty-handed were Cable Ono, Correo-Tele 5, Europa FM, Radio Blanca and Zeta. Zeta and Europa FM announced plans to appeal the decision.

The Asociación Española de Radiodifusión Comercial in Madrid issued a formal complaint regarding the 10 choices.

"The Asociación Española de Radiodifusión Comercial considers it legitimate to allocate digital frequencies to companies that publish newspapers and operate communications networks but, before giving licenses to these groups, priority should be given to private radio broadcasters of long standing."

The The Asociación Española de Radiodifusión Comercial urged the government to take this into consideration when granting the two additional frequencies promised, and it also urged the allocation of even more digital channels.

Winners of the licenses were determined by the ministry to meet the minimum requirement of being capa-

ble of reaching 20 percent of the public by June 30, 2001. To keep their licenses, the broadcasters must cover 80 percent of Spain by June 30, 2006.

Joan Maria Clavaguera, newly elected president of the Foro de la Radio Digital, the national digital broadcasting forum, advised the industry that digital radio will not replace FM and medium-wave broadcasting overnight. "The old technology will broadcast alongside the new for at least 10 years," he said.

— John F. Mason

Best Buy to Sell XM Radios

Best Buy will sell XM Satellite radios at its 350-plus retail stores when XM launches its satellite-delivered digital audio broadcasting service.



The launch is planned for 2001.

Minneapolis-based Best Buy claims to be the largest volume specialty retailer of consumer electronics and soon plans to operate a Web site at www.BestBuy.com

— Leslie Stimson

EAS a Success in Southeast Kansas

by Lynn Meadows

PARSONS, Kansas People were literally running down the stairs to their basements with children in tow when tornadoes touched down in southeast Kansas in late April. Chris Kelly, news director for KKOW-AM-FM, Pittsburg, Kan., said everybody he spoke with credits the early warnings from the National Weather Service, coverage by local media and local sirens.

to automated stations.

Cantrell said his stations received a tornado warning for a nearby county from the NWS at 8:18 p.m. The Parsons police chief ordered the citywide sirens sounded and local stations relayed EAS alerts. KLKC received three more warnings before going off the air at 8:45 p.m., said Cantrell.

The worst casualty in Parsons was a broken leg, said Cantrell.

The NWS cannot quantify the num-

Without EAS, there would have been more casualties in the town of 12,000.

Kelly said the NWS issued a tornado watch four hours before the tornadoes ripped through the town of Parsons, Kan. He said the first actual warning was issued nearly 15 minutes before the twisters touched down. KKOW-FM is the primary Emergency Alert System station for 11 counties, including those in southeast Kansas.

In Parsons, Gary Cantrell, general manager of KLKC-AM-FM said he saw lawn chairs embedded in trees and a bag of concrete that had punched a two-foot hole in a brick building.

Cantrell said that without the EAS, there would have been more casualties in the town of 12,000. Kelly credited the EAS alerts for getting the message

ber of lives saved by its warnings, but a source said while the U.S. population has doubled since the 1950s to 274.7 million, the number of fatalities per year from thunderstorms and tornadoes on average is half of what it was.

Another NWS source, Paul Polger, verification program manager, said the average lead time for tornadoes has more than doubled in the past decade. In 1989, he said, there was an average of five and a half minutes between the time a warning was issued and the severe weather event. In 1999, that figure was 12 minutes.

RW is interested in how EAS is working in your area. Please e-mail success, disaster or in-between stories to radioworld@imaspub.com

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Setting the Record Straight

Our story in the May 10 issue about the beautiful new Clear Channel facility in Denver contained several errors.

Mary Schanuel was incorrectly identified. She is president of The Synergy Group, a public relations firm representing The Lawrence Group. The president of The Lawrence Group is Steve Smith. Also, Brent Fasbinder's name was misspelled.

On page 16 in the third column, the text "20-bit, uncompressed digital audio" should have read "32-bit."

And two photos on page 14 and 17 were incorrect.

While mistakes like this sometimes occur in the course of publishing almost 1,000 news stories and editorial items each year, that does not diminish my concern when it happens, particularly in such a context.

The idea for this story was mine. I developed the concept over several months, dating to a conversation at a show in 1999, and I worked extensively with our fine freelance writer Ted Nahil and with the staff of Clear Channel to



FM Creative Production Studio



The Main Rack Room

give it the coverage it deserves, as an example of how leading broadcasters in the United States are implementing digital technology.

The photo error was particularly frustrating to me because I was to blame. We had received two sets of electronic images from supplier RDA Systems for separate projects. One set was for an unrelated smaller installation. The other set, which arrived later, was for the Clear Channel/Denver story.

When the article went into production, I pulled images from the wrong electronic file.

The fundamental of my relationship with our readers is accuracy. When we do not get the story right, I owe it to you to correct the record. At the end of the day, my commitment is to tell the story fully and accurately.

The photos on this page are from the Denver project. I believe they are representative of the work that went into this superb new facility.

From the Editor



Paul J. McLane

RW Online Goes Daily

Radio World made IMAS history last month when we launched updates to our Web site, RW Online, each business day.

After almost 25 years, our publishing company now has both the means and intent of providing news and other information to RW readers every business day — and when necessary, almost instantly.

The power of the Internet makes this possible. But so does the strength of our franchise in the industry.

At Radio World, we and our IMAS predecessors have built an industry-leading publication that appears every two weeks. In this information age, two weeks can seem like a long time.

So the ability to report news the same day it happens opens broad and exciting vistas that we are only beginning to explore, while also allowing us to continue to build RW as a publication of analysis, features, trends and in-depth reporting.

Thanks to all who have helped make this happen, including the sponsor of that page, MediaTouch, and to the editorial staff of RW who contribute writing and editing each day to make it happen.

Please let me know how you like it and how we can work to make it even better.

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GUEST COMMENTARY

LPFM to Make Receivers Obsolete

by Fred Krock

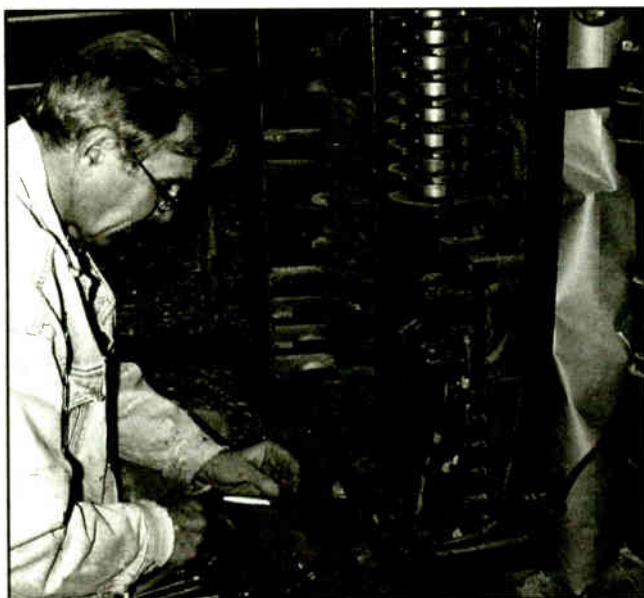
Some people seem to think that LPFM will not cause interference to existing stations. I wish they could spend awhile answering listener calls and letters reporting reception problems. In most stations, these calls and letters wind up on the desk of the station engineer.

In over 40 years of dealing with listener reception problems I have learned one thing: *No matter how hard you try, you cannot underestimate the quality of receivers in the hands of the public.*

Deep shadows

In San Francisco, we have what probably is the worst VHF reception of any major city in the United States. San Francisco is built on hills. Those scenic hills make for exciting car chases in movies and TV programs. They also give FM stations deep shadow areas only a few miles from transmitters.

To make life even more interesting, Sutro Tower is located less than one-half mile from the geographic center of San Francisco. Sutro tower illuminates many of these deep shadow areas with strong signals from TV channels 2, 4, 5, 7, 9 and four FM stations. Two more FM stations have transmitters located on top of



Fred is shown repairing a General Electric K-28 controller on a 1903 interurban car at the Western Railway Museum. As far as he knows, he's one of the few broadcast engineers who has a certificate of completion for a seminar on repairing train air brakes

apartment houses in residential areas.

These conditions really illustrate shortcomings in FM receiver design. We get more than our share of listener reception problems, even with a 110 kW ERP signal.

If everyone had a laboratory-grade receiver, we would have few problems. This is not a practical answer. The last time I looked, Rohde and Schwarz receiver prices started at about \$17,000.

Talking with listeners, I have found that a lot of FM receivers are barely able to handle adjacent-channel rejection required by previous allocation standards. Under reduced protection provided by new LPFM standards, they will receive serious interference from LPFM stations.

Another common receiver problem is front-end overload caused by strong nearby signals. Receiver de-sensitivity, cross-modulation and intermodulation distortion may result. All can cause reception problems.

What may be an acceptable desired/undesired signal ratio causes interference when the undesired signal strength goes above a certain value. If LPFM stations are located in residential areas rather than on remote hilltops,

they will create many problems in nearby receivers.

These are not results of laboratory tests. These are not receivers in the hands of trained technicians. This is the real world. These are receivers in the hands of the public using crude antennas such as whips and line cords. (I never cease to be amazed by people who will spend thousands of dollars on a good stereo system and then not connect an antenna. They blame the FM station for their reception problems.)

Signal concerns

LPFM will make obsolete many millions of existing receivers. Listeners will have to buy new higher-quality receivers in order to receive interference-free signals from existing stations.

Who will pay for these receivers? Will new LPFM stations pay for improved receivers for the public? Who will pay the additional cost of manufacturing higher quality receivers? Don't be silly. The public will have to pay.

You get to know listeners a little bit when talking with them about their reception problems. For the most part, our listeners are nice people. Some are senior citizens living on limited incomes. Telling one of these people that the only cure for their reception problems is to buy a new receiver that they cannot afford can be very, very difficult.

LPFM can only increase the number of these situations. I would like to see LPFM advocates deal with those calls.

Krock is engineering supervisor for KQED-FM in San Francisco.

RW welcomes other points of view.

Radio Faced Pre-Dawn Government Raid

► ELIAN, continued from page 1 makeshift compound, which included satellite trucks, motor homes and tents.

Several observers said the networks paid neighbors thousands of dollars for the privilege of setting up broadcast

raid just as immigration officials were speeding from the scene with the boy.

"We just sensed something was going to happen. People had weird expressions and there was a lot of activity," Winton said.



Fisherman Donato Dalrymple holds Elian Gonzalez as U.S. Border Patrol agents take custody of the boy

shop in front yards within site of the Gonzalez house. Some homeowners charged media outlets as much as \$500 a day to park in their driveways.

Tony Winton, southeast regional reporter for AP Radio, is based in Miami and has covered the Elian Gonzalez story since December 1999.

The morning of the seizure, Winton was keeping the home under surveillance. From his position across the street, Winton filed his first report of the

AP Radio shared a tent with Associated Press Television News near the Gonzalez home. Winton used a Comrex HotLine codec to get on the air the morning of the raid.



"When I first heard the screams coming from the house and cars pulling up, I grabbed the cellphone and told (Washington) it was going down. I then dialed up the Comrex and was on the air just as the agents sped away

See ELIAN, page 6 ►

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Radio Covers Cuban Boy's Saga

► ELIAN, continued from page 5 with Elian," Winton said.

When time permitted, Winton also used AP's Miami Bureau to file reports digitally via e-mail back to Washington.

neck or the headrest of a car for hands-free light as you write."

ABC Radio's broadcast team in Miami consisted of correspondents Tim Scheld, Jim Hickey and John Bascom. They used a

from its 25-person news department to covering the Elian story.

The station not only reported locally, but also supplied stations across the country with audio cuts and reports on a daily basis. Clear Channel owns many of those stations.

"In fact, the day of the seizure, our programming was up on satellite for all Clear Channel stations to carry if they wished," Sheppard said.

WIOD, a news-talk station, typically

had its Marti unit along with a reporter and engineer at the Gonzalez house every day.

On the morning of April 22, the station rolled the Marti truck to the Gonzalez home as word of the raid spread.

Steven Grey, remote broadcast coordinator for Clear Channel's seven Miami-Ft. Lauderdale stations, arrived on the scene approximately 30 minutes after the raid.

WIOD has a 40 W frequency-agile Marti unit mounted inside a Ford F250 van. The van is equipped with a Will-Burt 44-foot pneumatic mast.

The station has a series of five receive sites across Miami, virtually guaranteeing

See ELIAN, page 7 ►



A crowd gathers around the home of relatives of Elian Gonzalez in the Little Havana section of Miami

Credit: AP Photo/L.M. Otero

After the raid, Winton had access to the boy's relatives. He recorded interviews on a Sony MiniDisc MDR-37.

CBS Radio correspondents Dan Raviv and Peter King split duties covering Elian for the network. King said the radio team was headquartered in a tent it shared with CBS Television near the Gonzalez home.

The pair used cellphones and a Comrex HotLine codec with a POTS line in the tent to file stories.

Self-contained

"We are a pretty nicely self-contained group when we go on the road. The Comrex gives us great versatility of being able to use it on any phone line we can get our hands on, either in a hotel or in the field," King said.

King, an RW contributor, uses a variety of audio gear for collecting sound and interviews in the field. His choice of microphones includes an Electro-Voice 635A and a Sennheiser MKH60 shotgun mic. He also carries two Sony MiniDisc recorders — a MZ-B3 and a MZ-R55. For backup, he packs a Sony TCM-5000 cassette recorder.

King's equipment tip: "A snake light. It comes in handy when you're in a low-light area. You can hang it around your

Ku-band satellite channel from ABC Television's remote truck for filing reports.

"It was cabled up to literally right outside of the Gonzalez household — very nice to use. We had it constantly hot to the studio," Scheld said.

ABC Radio correspondents also fed reports to New York via a Comrex HotLine codec from a standard telephone line.

Scheld said that ABC Radio didn't really experience any surprises when transmitting the audio cuts. "We've all been through the drill enough times that we are getting pretty good at eliminating the technical problems we all hate."

Scheld's equipment checklist typically includes an Electro-Voice 635A mic, Audio-Technica AT835B mic, Sony MZ-R3 MiniDisc recorder, Sony TCM-5000 and Sony Pro headphones.

Miami radio stations WIOD(AM) and WQBA(AM) provided south Florida local coverage of Elian's move.

"I still think radio can get more details on the air faster and more accurately than television," said Lori Sheppard, news director at WIOD. "We are storytellers first and foremost. We don't have pictures to help."

The Clear Channel Communications station dedicated much of the manpower

O.J., Monica ... Now Elian

by Randy J. Stine

Some major news events are easily remembered by a single name — O.J. and Monica are two examples.

"Add Elian to the list," said Barbara Cochran, president, Radio-Television News Directors Association.

While some observers criticized the intrusive nature of media in covering the Elian Gonzalez saga, Cochran gave radio a good grade for its coverage.

"The one thing that was troubling about the story was the intrusiveness on this young boy and the people taking care of him," Cochran said. "I think radio as a medium is less intrusive than television. (Radio) is more private."

Cochran said critics should not confuse radio's aggressive news coverage with TV's sometimes-exploitative nature.

"I think all of the radio networks and most of the local radio stations stayed within the bounds of good taste on this one," she said.

Chris Berry, general manager, ABC News Radio Operations, said this was an important story for his network and all of radio. He said it was an "incredible story, which I thought radio in general covered very fairly." Berry characterized radio's coverage as balanced.

"You had a lot of people taking sides on the issue, and a lot of PR and spin control going on from both camps," he said.

Robert Garcia, chairman of RTNDA and general manager of CNNRadio, said Elian coverage presented a few challenges for radio news people.

"The fact that the story became a

battle of still photos at the end made it more difficult for radio than for television. It was certainly an angle radio couldn't ignore," he said.

With any major news story, Garcia said, overkill is a risk.

"But in this case, it was a huge story that demanded a lot of coverage and, I



Technicians, reporters and their gear behind barricades outside of the Miami home of Lazaro Gonzalez

think deservedly so, received it."

CBS Radio News Manager Harvey Nagler said he believes the amount of coverage radio devoted to Elian Gonzalez was on target.

"It was a slice-of-life story. It was something everyone was talking about. In hindsight, I think the story deserved every minute we gave it," Nagler said. "It was not a major catastrophe like radio so often covers, but rather human interest at its best."

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► ELIAN, continued from page 6
a strong audio signal. The receive-only sites send the signal to the studio on 8 kHz or 15 kHz equalized phone lines.

At one point Grey, who works in the engineering department, found himself on the air describing the scene as a mob of protestors began roughing up a Miami police officer.

"I actually used a cellular phone to call the station and told them to throw me on the air. It was really unbelievable how fast



WIOD-AM • www.newsradio610.cc

the crowd grew throughout the morning and how agitated they were," Grey said.

WIOD reporters use a 360 Systems Short/cut Editor for editing raw tape and loading segments and elements for remote reports.

Considering the amount of RF and microwave in the air, there were few complaints about interference in the area of the Gonzalez home. "If you had a spectrum analyzer in Little Havana the weeks leading up to the seizure, it would have been a solid screen of RF," Grey said.

Interference

Lots of RF in the air is not unusual when major news stories develop and hundreds of radio and television crews descend upon an area unannounced.

Grey worked several Super Bowls while he was an engineer at CBS Radio. He compared the scene in the three-block area of the Gonzalez home to that of the National Football League's biggest game.

"It was very chaotic at times and very crowded. I've never seen so many uplink trucks concentrated in one area. Generator exhaust fumes just choked the air," Grey said.

The media compound was strewn with

bundles of telephone lines, electrical cords, audio cables and other audio and RF gear.

WQBA morning co-host Agustin Acosta said the Spanish-speaking talk station doesn't have a full-time news department, so the station depended heavily upon Miami's Metro News Service for updates.

The station, which is owned by Hispanic Broadcasting Corp., has a large Cuban-American audience.

"We took a pro-Elian stance from the very beginning," Acosta said. "I interviewed Lazaro Gonzalez several times and was at the house nearly every day."

Acosta said the station received mainly positive feedback from listeners.

"This was a very emotional time for all of Miami and especially Cuban-Americans. (WQBA) served as a voice of the people and for Elian."



ABC News Correspondent Jim Hickey

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WIOD(AM) Remote Gear List

Sennheiser MKH 60 shotgun mic with zeppelin and boom pole
Shure SM58 mics
Mackie 1402-VLZ Pro mixer
360 Systems Short/cut editor
Bryston 2BLP audio amplifier
KRK K-ROK monitor speakers
Sony MZ-R55CG MD recorder
Marantz PMD-222 cassette recorder
Denon DN-M990R MD recorder/player
Denon 961FA CD player

RF gear

Will-Burt 44-foot pneumatic mast
Quick Set pan and tilt rotor
Marti Electronics SRPT-40E RPU transmitter
Moseley RPL 4010 transmitter
TE Systems 100-watt UHF amplifier
Lectrosonics UM195 wireless mic transmitter with UHF diversity receiver
Bogen AM/FM tuner receiver
Motorola GP 300 walkie-talkies
Nextel I 1000 cellular telephones
Sony Walkman

New Processor Debuts

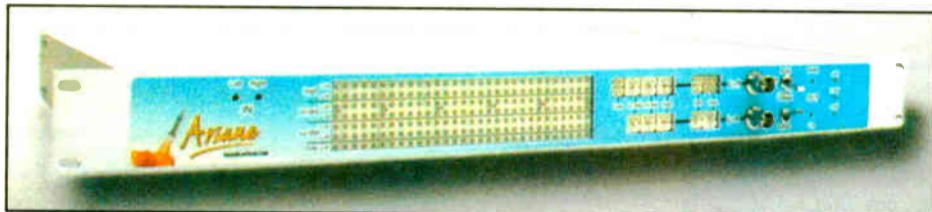
by Alan R. Peterson

Equipment users will be seeing the name TransLanTech Sound soon.

The company's Ariane processor has made its appearance overseas, and the company is working on U.S. distribution.

The RMS-based, multiband platform processor recently debuted in Europe.

Jim Huste and David P. Reaves founded TransLanTech Sound LLC, following combined engineering stints in Raleigh, N.C., New York and Detroit.



Their intent was to take an "American" approach to radio and processing to Europe. Sales stops included RTL Radio in Berlin and Vienna, and Skyrock Radio in Paris.

A little 'extra'

While in Europe, their clients told them they desired something extra to make their stations stand out on the dial. So they added their own pre-processing circuits to take the strain off the main, peak-oriented processors.

Their earliest projects were modified Texar Prizms, but used units became scarce. At the same time, clients insisted on some kind of stereo enhancement. The two decided they would have to do it themselves. The result is the Ariane.

"The Ariane is in the matrix domain," said Reaves. "The audio control has a gain platform where there is no change in level control as long as the incoming audio remains within a certain, user-specified window."

Reaves and Huste call this process Instantaneous Dynamic Range, or IDR. When the audio goes beyond this win-

dow, the control voltage establishes a new platform and the level control once again becomes frozen.

"Because the control is done quickly and then effectively turned off, the sound is more natural," he said. "Most of the time there is no change occurring."

Control also is frozen when audio goes below a user-determined level (release gating).

RMS detection, rather than peak voltage, is used to establish a power-derived control signal, a process that Reaves said

is more like the human hearing response than the system used in traditional processors.

The Ariane also takes care of matrixing the FM signal early in the process to maximize the RMS level within the sum and difference domains.

"This meant that with L-R manipulation, we could create an enhanced stereo effect with no extra equipment, if the user wanted it," said Reaves.

Reaves' explanation of the process is available at www.rwonline.com

Reaves sees unlimited potential for the Ariane, including uses in remote feeds, dubbing studios, dialogue and mixed programming in TV or talk radio.

"It will adjust slightly funny-sounding spectrally balanced material to something more 'normal,'" he said.

The Ariane is in production and will be released this summer to early adopters in the United States and Europe, where beta models are on the air.

It is projected to sell for \$3,200 online at www.translantech.com

Reaves is working with at least one U.S. distributor to carry the Ariane.

BUSINESS DIGEST

StarGuide Digital Acquires Rest of Musicam Express

StarGuide Digital Networks Inc., half-owner of Musicam Express L.L.C., has reached agreement with Infinity Broadcasting Corp. and Westwood One Inc., the other 50-percent holders.

In the deal, StarGuide will acquire Infinity's and Westwood One's stakes in exchange for an equity interest in StarGuide. As a result, Musicam Express becomes a subsidiary of StarGuide Digital Networks. Infinity and WW1 become shareholders of StarGuide.

Musicam Express, using StarGuide technology, is a supplier of program delivery and radio spot delivery systems and services to radio broadcasters.

shareholder of StarGuide, is also chairman of DG Systems Inc.

Infinity Broadcasting operates radio stations, Infinity Outdoor and TDI, outdoor advertising businesses. Infinity also manages and holds an equity position in Westwood One. Infinity Broadcasting is a majority-owned subsidiary of CBS Corp.

Westwood One provides programs and formats. Metro Networks/Shadow Broadcast Services, both subsidiaries, provide information services to the radio and TV industries including traffic news, weather and sports reporting and content.

Meantime, StarGuide Digital Networks

Musicam's partners, Infinity and WW1, will now participate in the growth of Musicam and StarGuide as StarGuide shareholders.

Scott Ginsburg, chairman of StarGuide, said, "We are delighted to consolidate ownership and control of Musicam within StarGuide." He said Musicam's long-time joint venture partners, Infinity and Westwood One, will now participate in the growth of Musicam and StarGuide as StarGuide shareholders.

StarGuide developed the store-and-forward technology provided by Musicam Express and provides satellite and Internet transmission systems used by Musicam Express and other content broadcasters.

Ginsburg, the chairman and controlling

said its subsidiary, Musicam USA, was issued a U.S. patent covering its advanced Musicam digital audio encoder/decoder technology, used in its CDQ Prima, Prima LT, RoadRunner, and TEAM codecs.

And the company said it was issued a patent covering its digital satellite transmission multiplexers and receivers, which are used in multi-media transmission.

StarGuide multiplexers and receivers work in cooperation with its patented Transportal 2000 Internet, satellite and telecommunications store-and-forward and local insertion system, which is in the process of being deployed by Clear Channel, Premier Radio Networks, ABC Radio and others.

The Transportal 2000 system is the subject of other patents allowed and pending.

More information about StarGuide is at www.starguidedigital.com

— by Paul J. McLane

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Let's face it, tape carts have become the broadcast equivalent to dinosaurs and are headed to extinction. With the advent of MiniDisc, why would anyone still rely on an outdated tape cart that, at best, is undependable and offers limited functionality? Good question.

The highly acclaimed Denon DN-M991R MiniDisc Recorder and Player is the logical solution. It packages all the features, performance and reliability that has already established the DN-M991R as the industry leader.

And now, the DN-M991R offers an optional firmware update specifically designed for the broadcast market that promises to expedite the timely demise of the old tape cart machine. Specify DN-M991RM when ordering. For additional information, contact our broadcast specialist at (973) 396-7492.

NEW Airlock: This new feature prevents on-air talent from tampering with recorded material even if the protection tab on the disc is left enabled. Now program directors and engineers can program the DN-M991RM to function as a 'playback only' device.

NEW Visual EOM: Broadcasters can store secondary cue information such as vendor names or cue points. The secondary cue is stored as part of the track name in brackets. When playback reaches the designated End of Message (EOM) point, the secondary information will display and flash, signaling that the track is about to end.

NEW Five Minute Skip Search: This new function allows the user to jump through long tracks in five minute increments and is particularly useful for news gathering and interview applications.

NEW Display Improvements: Characters scroll to the left at a rate of ten characters per second—two times faster than standard—for quicker recognition of disc or track titles. Two other rescroll improvements have also been incorporated to further improve the DN-M991RM's versatility.



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Radio: Optimizing the Signal

Thomas R. McGinley

This year's NAB annual rite of RF and signal optimization included the normal menu of transmitter and antenna topics.

It also included papers on emergency planning and preparedness, as well as network- and Web-based remote control of transmitters and facilities.

It also covered the distribution of broadcast audio over telecommunications networks.

Steve Spradlin of Harris Corp. led off the session describing improvements in the high-performance digital AM transmission design of the DX family of transmitters.

Harris introduced the successful DX-10 in 1987. Now there are more than 1,000 DX models from 5 to 250 kW around the world.

He said two significant improvements have been incorporated in the design, resulting in increased reliability, efficiency, ease of operation and reduced complexity.

Direct Digital Drive (DDD) eliminates the need for an intermediate power amplifier, reducing parts count and tuned-circuit complications. A reduced total of only 62 modules are used for 50 kW, each producing up to 2.4 kW output.

Serial encoding allows the transmitter to reconfigure itself automatically should any module fail, which optimizes modulation and power output without human intervention. Spradlin said, "Harris has made a transmitter that actually takes care of itself."

The modules are hot pluggable and the resulting efficiency approaches 90 percent, AC in to RF out.

Secrets of arrays

Cris Alexander, long-time RW contributor and DOE of Crawford Broadcasting, offered a useful primer on AM directional antenna system repair.

In the age of consolidation, station engineers find themselves responsible for additional stations with no forewarning. Some invariably are AM directionals, for which they may have little or no experience.

Alexander said that an AM DA is like any other electronic device and that clear thinking and a step-by-step approach to problem-solving will yield the best results.

He strongly advised anyone dealing with a DA problem to "not adjust the phasor controls until every possible source of system change or trouble is carefully checked out first. Retuning should only be attempted as a last resort."

Basic test equipment is essential in fixing DAs, and should include a good VOM, a Delta operating impedance bridge, a signal generator/detector like the Potomac SD-31 or Delta RG-1, a field intensity meter, usually the Potomac FIM 21/41 and a set of RF ammeters.

If necessary, find an appropriate friend or local engineer familiar with DAs to help you gain experience using these tools.

Keep and refer to a parameter log of system readings. This will be a huge aid in helping to pinpoint trouble when it occurs.

In most cases, a thorough visual inspection of system hardware usually

will reveal the source. Overheating due to lightning or capacitor failure is easy to spot. Wind or ice damage or pest infestation could also be the culprit.

System problems

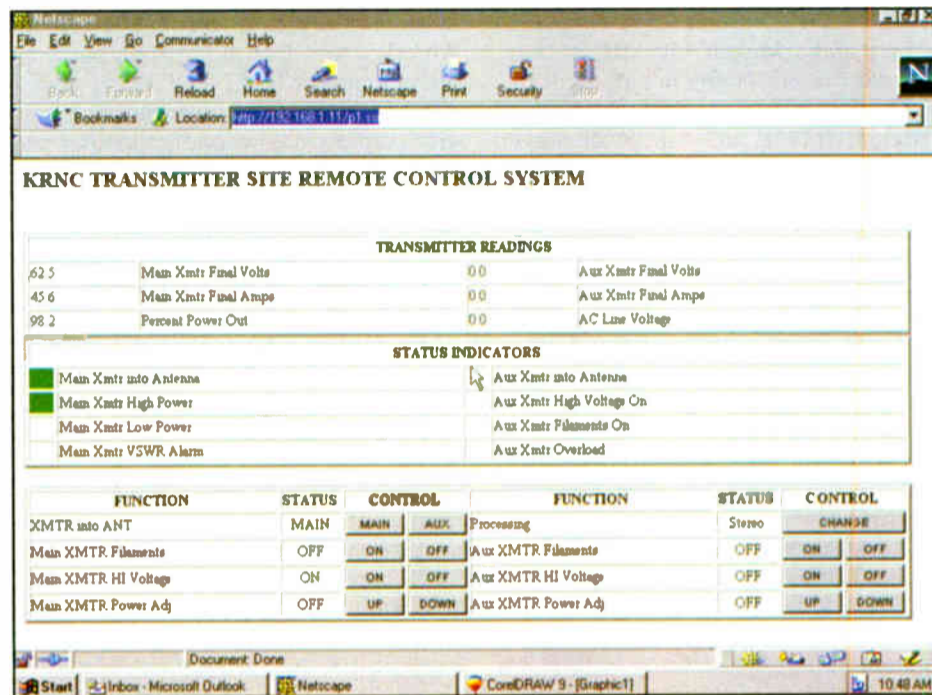
Sample system problems can be isolated by interchanging tower inputs to see if a parameter discrepancy tracks with the sample or stays in the monitor.

Monitor-point readings going out of

of how to prepare for emergencies, which can strike at any time.

Tom identified three categories of emergencies:

- Natural or acts of God, like tornadoes, hurricanes, floods or lightning;
- Man-made, including vandalism, arson, burglary, negligence or bad judgment;
- Personnel, involving sudden loss of a key employee due to illness or death.



Joe Mauk used his knowledge of ham radio packet technology and married it to TCP/IP for access by his station's LAN

tolerance can be caused by local reradiation. Measure five or six additional points on a radial with this problem and compare with the original proof results to determine if the pattern has drifted out.

Outside help may be necessary in such cases.

Consultant Tom Osenkowsky, a frequent NAB speaker and a writer for RW, presented a wide-ranging overview

While insurance coverage can facilitate repair and replacement of lost or damaged facilities, this can be expensive, especially loss of income insurance. Extended off-air outages decimate audiences and income.

Osenkowsky has been involved in many rebuilding projects precipitated by such emergencies. He stressed the importance of providing adequate backup systems for studio and transmitter equipment.

Larger stations usually install backup transmitters and antennas. Engineers also should secure frequency-agile transmission gear that can be transported quickly.

The best backup transmission system is one at a completely different site from the main.

Tom suggested configuring separate backup systems, all the way from studio to antenna, so that if any part fails, switching to the backup gets it covered.

Wherever possible, plan separate emergency studio facilities, whether at a sister station location or a remote broadcast vehicle.

Equip transmitter plants, studios and offices with proper power-surge protection, UPS and emergency power generation gear. Set up all computer systems to include routine data backup. Unprotected hard drives or systems without backup can create real financial emergencies.

Don't forget proper training of personnel as to what to do in case of an emergency. When a key employee is lost suddenly for any reason, any station can find itself in a real bind.

Create a plan to allow access by another key person to your mission-critical systems. The plan should include keys, passcards, passwords and important phone numbers.

Massive network

Marcus Grossenbacher, engineer with Swisscom, the national radio network of Switzerland, unveiled details of an ambitious terrestrial digital program transmission network just completed.

It conveys more than 1,000 programs in four official languages to 500 transmitters at 150 sites spread out across Switzerland.

The Swisscom radio service transmits to 85 percent of the Swiss population. The network is called MODAT and uses the standard telephone company backbone and SDH platform with a multiplexed G.703 2 MB data stream and X.21 link protocol.

It handles five simultaneous channels

See MCGINLEY, page 12

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From AM DAs to IP and HDSL

► MCGINLEY, continued from page 11 of programs encoded with MPEG 2 (at 192 kbps) and MPEG 3 (at 128 kbps) plus route switching and RDS data.

The stream includes the required switching commands to accommodate changing program feeds and schedules, all fed from a centralized broadcast program origination facility. The MODAT-fed transmission sites are backed up with ISDN circuits.

The system was designed to save 50 percent of the costs of many separate leased lines, to reduce maintenance costs and to increase overall system reliability. It took 21 months to build at a cost of \$10 million. The investment will pay for itself in three years, according to Grossenbacher.

The transmitter remote control systems are not part of this network and reside on separate data circuits. A comparable satellite network was evaluated but was deemed not as efficient or redundant.

Swisscom is looking at upgrading this system to an ATM network in the future.

Web transmitter control

Joe Mauk, market chief engineer of Infinity's seven-station group in Fresno, described a novel home-brew method of Web-based transmitter remote control using TCP/IP over a wireless network.

A big challenge for engineers is figuring out how to control and monitor multiple transmitter sites from any location with cost efficiency, reliability and simplicity. Joe married his knowledge of ham radio packet technology to TCP/IP for access by his station's local-area computer network.

The transmitter site is controlled with an off-the-shelf Opto 22 Corp. industrial controller, which provides 10/100 Ethernet and RS-232 ports for communications. Direct dial-up modem

access is available for control from anywhere.

The most impressive part of this project is the conveyance over a wireless link of the neat-looking Web page of metering and status telemetry, in color, to any PC on the station LAN, the corporate WAN and eventually the Internet.

Communication

An old 386 computer running Linux with the Web page GUI then talks to the station's LAN via AX.25 packet technology and a Maxon 450 MHz P channel transceiver running in half duplex.

The Internet Web page is built using efficient HTML and can be displayed by any browser. The Linux OS in the 386 PC is stored on a compact, 8 MB flash card instead of trusting a floppy or hard-drive.

The cost to implement the hardware at the transmitter is only \$1,600 per site.

While direct Internet access is possible, Joe has not yet made the IP addressing conforming, to keep it isolated from hackers.

This clever implementation surely is a sign of the future in doing remote control.

Joe suggested all broadcast equipment manufacturers should start putting Ethernet ports on their gear for modern connectivity.

Distributing broadcast-quality audio over digital telecommunications networks was the topic explored by Ted Laverty, the North American manager for Audio Processing Technology Ltd. (APT) of Belfast.

"Sending digital audio around the world is now just as easy as sending it around the corner," Laverty said. He described the two basic methods of bit-rate compression to save space and bandwidth in the transmission process: APCM, or transform coding such as the ISO/MPEG algorithms, and ADPCM or sub-band coding, like APT-X, which at

a fixed reduction rate of 4:1 exhibits a lower amount of process delay and loss of fidelity in multiple passes than APCM, according to Laverty.

There has never been a wider range of methods by which to transmit digital audio over the telecommunications networks of the world. Laverty described the characteristics of ISDN, DSL and T1 services. For quick dial-up remote broadcast applications as well as leased point-to-point circuits for STLs, ISDN is widely deployed throughout North America and Europe at data rates of 56/64 kbps per BRI.

DSL or digital subscriber line services rapidly are becoming popular and available for users within three miles of a telco central office. Using the "last-mile" copper connection from homes and businesses to the CO, HDSL can achieve data rates up to 1.5 Mbps.

ADSL is used for Internet applications and is affordable. DSL will remain popular until the copper-wire infrastructure is replaced by fiber.

T1 and fractional T1 have been the workhorses for high-speed 1.5 Mbps data and multiline multiplexed applications. Although more expensive, broadcasters use them for many STL and WAN applications.

With compression, sending digital audio over networks and the Internet is easy and is happening everywhere. Using IP, audio files can be addressed for accessibility and delivery anywhere in the world with security and without any loss of quality.

APT has now developed "enhanced APT-X," which handles 20- and 24-bit digital audio. Laverty predicted that as equipment takes advantage of 20- and 24-bit audio standards, and as higher data-rate transmission channels become more widely available, all data-reduction algorithms will improve even further.

Glen Clark, a former chief engineer and audio processor manufacturer, now a consultant, is bullish on AM radio.

When AM digital audio broadcasting becomes reality, Clark said, "the pecking order of stations in many markets will be turned on its ear."

With consolidation, AM transmission facilities upgrades occur at a furious pace. But AM directional operations have been saddled with the traditional time-consuming and expensive process of tuning in and proofing their proposed patterns before they could be licensed for operation.

Clark has literally transferred much

of this process out of the field and into the computer.

Drawing from the venerable "Silliman talk-down procedure," Clark uses a Cray supercomputer to synthesize target tuning values to produce the desired pattern in a fraction of the time of trial-and-error iterations from field data.

The procedure places a number of field engineers taking measurements along a radial as the phasor is set to produce zero fields at each of those points. This essentially forms error vectors, which are used to help characterize the real-world environment, complete with reradiation sources.

The Cray supercomputer then includes this data to find much more accurate parameters for the antenna monitor.

In the case of a new 50 kW, six-tower DA-2 array for WWJ in Detroit, Clark achieved final parameters for licensing after only four iterations in two weeks.

This technology makes it possible for stations to proceed with upgrades or rebuilds using directional arrays which might be difficult to prove without having to spend obscene amounts of money.

Antenna science

The final paper of the session featured Manohar Lal, chief engineer of All India Radio, New Delhi India.

Lal presented theoretical details of a new-concept antenna, which produces high efficiency and high gain with small dimensions. The concept is derived from the modification of Maxwell's displacement current.

In the 1860s, James Maxwell formulated the equations upon which the laws of electromagnetic radiation are based. Lal states in his paper that Maxwell identified a displacement current from the extrapolation of Ampere's law. It was merely a charging current such as that which exists between the plates of a capacitor and did not radiate a magnetic field. Its current was uniform in the whole area between the plates.

Lal suggests that this displacement current can be modified to flow only at the periphery of the plates and thereby produce a magnetic field around it.

He claims to have tested the hypothesis and can launch a signal with gain, bandwidth and directivity properties, which could revolutionize the science of building antennas.

Tom McGinley is a 35-year veteran of radio engineering. He is employed by Infinity Broadcasting, for which he recently assumed managerial duties in the Seattle market. He is technical adviser to RW.

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MARKET PLACE

Netia Signs Preferred Partners

Netia has added four "preferred partner" suppliers in the United States.

The companies are Broadcast Richmond in Indiana, Broadcast Connection in Colorado, Giesler Broadcasting Supply in Texas and Bradley Broadcast & Pro Audio in Maryland.

Netia is based in France and has a North American office in Roanoke, Texas. It offers software for professional use in radio and television broadcasting. It said it plans to reinforce its presence in North America further.

For information contact Netia North America in Texas at (877) 699-9151 or visit the company Web site at www.netia.net



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Tips for Effective Studio Lighting

Charles S. Fitch

This is one in a series of articles about the National Electrical Code and how it applies in the radio station environment. Previous parts are available at www.rwonline.com

In the May 24 issue, we addressed the differentiation between ambient and task lighting. We also talked about light hygiene concepts, including color temperature and the Color Rendition Index (CRI).

Let's move on with some specific examples of good and bad lighting applications.

I've witnessed a dimmer wiping out an AM station on its own air monitor, even with the transmitter a short distance away. That's RF noise!

The NEC requires that exposed metal parts be grounded to carry any fault currents directly to ground (NEC 250-110 et al). Due to the high count of lighting fixtures and the prevalence of metal enclosures and exposed parts, it's important to assure this grounding is in place.

The NEC does not specify construction details or qualify lighting fixtures (other than custom ones, built by electricians on site) on a model basis. This is done off-line by independent laboratories such as the Underwriters Laboratories Inc. and carried in separate documents.

Note that labs do not inspect every one of those fixtures. They review the design and compliance with proper safe design of a sample model. Millions of fixtures can be manufactured and sold based on one submitted sample.

Check continuity

Even though the industry has a spot-check system that will catch the most egregious cheaters, many defective fixtures get made, shipped, sold and installed.

A few years ago, I discovered that the manufacturer of a popular lighting fixture had made a critical post-submission change when going to mass production.

The submitted model had riveted together bare metal components, assuring bonding conductivity, and then was painted. The product sold had all parts painted before assembly, effectively insulating all metal pieces. The result: many of the million fixtures made did not have electrical continuity between exposed metal sections!

Do not depend on the manufacturer for this continuity. During an installation or the next time you service your fixtures, confirm that all exposed metal parts are grounded.

An electrically leaky ballast, a phase (hot) line pinched under an ungrounded cover producing a voltage on this part could create a first-class shock hazard. You will appreciate ground integrity

when this happens.

Incidentally, an easy "out" for your insurance carrier for a fire or damage claim is that the calamity was caused or facilitated by an unlisted device. Always use listed material whenever appropriate.

In the raceway

Not all fluorescent fixtures are listed or recognized for "raceway" use. What does this mean?

In the recent past, fluorescents, especially surface-mounted models, often were wired in a daisy-chain manner, with conduit running from one to the

other. The connections were made inside for the first unit; then power continued onto the next one and the next, using the body of the fixture as a raceway for the wires.

Heat from ballasts inside the fixture had a tendency to dry the insulation on the wires, particularly if they lay against the ballast. Eventually the insulation could become brittle and drop off, exposing the bare wire — an obvious shock hazard.

In some cases, actual shorts were the upshot.

For this reason, the NEC at 410-31 does not allow you to pass wire through a fixture and make connections in it unless it is recognized for this use.

This normally means special channels are required inside the body of the fixture. Be careful when you buy them, and double-check that your fixtures are wired suitably when installed.

Many stations do not have full-time air studios anymore. With modern automation and an emphasis on performance efficiency, many stations now consist of a suite of production rooms. If anything, this creates a more highly charged creative arena.

Anything that helps this creative effort is worth exploring. Nothing affects mood and mindset more than lighting. You can't have anything less than the best in such spaces.

Even with the demise of tape and the rise of digital memory in PC-based editing and automation, the well-designed production room contains a lot of equipment.

Lighting and solid-state displays provide status indications and locate command inputs. These and video-screen displays are best read in moderate to low light levels. Because color often is used as an information element, incandescent lighting usually is the first choice to light these spaces.

The creative process is helped by the reduction of distractions. Low ambient lighting and specific task lighting is the traditional, effective approach.

The blend of task and ambient light-

ing as well as the selection of task light level are personal choices. For this reason, variable light level adjustment is needed. The light fixtures should be grouped logically by area and use, and each cluster controlled by individual dimmers.

Dimmers that cost less than \$100 are usually of the "control triac" variety. These control the average voltage (peak to peak) in the incandescent bulb by cutting off the voltage waveform at some point up the sine wave, essentially creating a square wave.

The sharper the transition of a square wave, the more harmonic overtones it contains. Some triac dimmers make a nice, sharp edge and create wideband noise of substantial energy all the way up past the AM broadcast band.

I've personally witnessed a dimmer completely wipe out an AM station on its own air monitor, even with the transmitter just a short distance away. That's RF noise!

This noise has a tendency to worm its way into other gear, such as the process circuitry of CD players, and onto switching power supply rails.

You can attenuate this effect by using bulbs that are as low as possible in wattage such that little dimming, if any, is needed. You can also buy dimmers with low-pass output filters that stop this harmonic generation before it leaves the dimmer or, at a minimum, you can make downstream filters for the ones you have.

Many defective fixtures get made, shipped, sold and installed.

If you want to do it right, buy a remotely controlled dimmer package that uses "saturable"-type dimmers. These do not generate square waves but act more like a variac. The DC-type controls are on the wall but the active dimmers are elsewhere, which puts the dimmers' mechanical noise and heat at a distance.

Useful tips

A few other suggestions:

Paint the ceiling flat black in small rooms. This removes the ceiling from the edge of your vision and doubles the perceived room volume.

Avoid track lighting, which clutters the atmosphere and puts visual noise on the upper edge of your eyes' horizon.

For ambient lighting, use warm, white wall-washing fluorescents or an edge soffit with continuous-strip fluorescents around the room, aimed up, with light bounced from a gray ceiling. This approach works well to fill in a general space. These fluorescents also generate less heat than comparable incandescents.

Some compromises may be in order



if you are planning fluorescents to illuminate an existing multiple-use space or a room that originates production work for only a short time each day.

For instance, if you originate multi-guest community shows out of your conference room, you may want to move noisy ballasts out of the fluorescent fixtures, into the hallway.

Ballasts have been advancing, and some solid-state units are almost silent. Audition a few.

When retrofitting or installing new ballasts, look for models that offer high efficiency, RFI reduction, near-unity power factors.

Keep in mind that many high-efficiency ballasts are solid-state and actually change the line frequency applied to the bulb. Certain frequencies work better than others. This may create RFI problems when there is no filtering.

Don't be afraid to change ballasts in your fixtures as long as the new ones match the bulb types you are running.

Avoid fluorescent dimmers. They are

expensive, have noise problems and are tough on bulbs. Better to pick the proper fluorescent bulb than to dim it.

In your conference room, try switching the ceiling fluorescents in two or more groups, especially if you are using four bulb ceiling fixtures. One wall switch might activate the outer two bulbs in each fixture, with a second switch for the inner two.

This allows you to select a high light level for the visiting accountant who needs to pore over detailed ledgers, and a lower, relaxed level for the group talk show in the same studio.

Next episode, we will outline a few classic light horror stories and how you can avoid them on your watch.

■ ■ ■

Charles S. Fitch, W2IPI, is a registered professional consultant engineer, a member of the AFCCE, a senior member of the SBE, lifetime CPBE, licensed electrical contractor, station owner and former director of engineering of WTIC-TV in Hartford, Conn., and WSH-TV in Marlborough, Mass.

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Balanced Power Made Easy

Bob Henry

Balanced power is beginning to take on interest from those in recording and radio station use, as well as other applications where balanced power would be desirable — and for good reason, due to its excellent isolation and electrical noise cancellation characteristics.

purchased new.

However, an effective and affordable power balancer can be made, as shown in the diagram.

Basically, it incorporates the use of two resistors and capacitors to form a virtual center-tap across the output winding of an ordinary isolation transformer.

Usually, a good used isolation trans-

The resistor/capacitor combination draws a small amount of power (about 10 watts), which provides a relatively low impedance center-tap, which is connected to earth ground.

While not being quite as efficient as an actual center-tap secondary winding, it is just as effective in most AC power applications. Obviously, the idea is to provide around 60 volts per power leg referenced to ground (or center-tap), thus 120 volts across the secondary transformer winding.

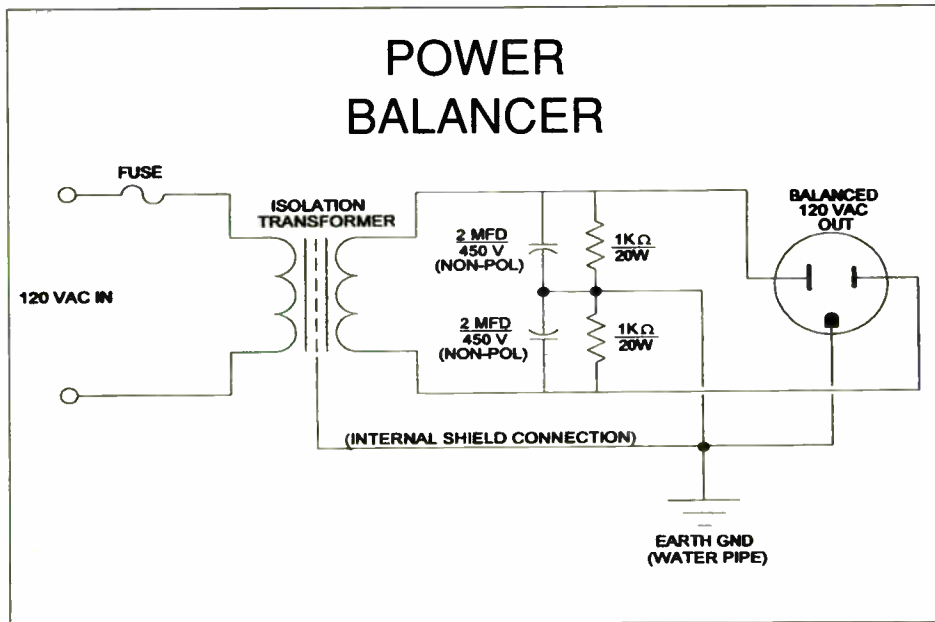
Because the center-tap is not power-to-load dependent, then this virtual form of center-tap is adequate for this kind of application.

Almost all electronic equipment loads have either side of the AC line floated above the chassis ground. But in several instances, some kinds of equipment may use a small capacitor (around 0.001 MFD) and/or a high-value resistor (around 1 mega-ohm), or a combination thereof may be used to form some kind of ground reference.

This can cause a slight voltage offset, but the low impedance of the power balancer will counteract any "stray" reactances or resistive offsets such as this, which will keep the 120 volt output power balanced.

Bob Henry is a broadcast engineer at KNME(TV) in Albuquerque, N.M.

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But even with these advantages, a power balancing unit can be quite expensive. Building one is great, if a center-tap isolation transformer can be obtained — again, making it a bit cost-prohibitive if

former with an adequate V/A rating can be obtained at an surplus electronics store. I purchased a 500 V/A isolation transformer for \$40 at a local surplus electronics store.

MARKET PLACE

Broadcast Richmond Studio 1, 2, 3

Broadcast Richmond said it will offer three new levels of service to its customers, called Studio 1, 2, 3, to help select and install equipment.

Studio 1: BR works with the customer to understand the studio application. BR tailors the equipment list to meet the project drawing from its product lines, with integration issues considered. This service is free.

Studio 2: In this level of service, which the company said is reasonably priced, equipment and furniture are shipped to BR. The equipment is unpacked, and furniture is set up. BR installs the equipment in the cabinetry, and measures and cuts cable lengths. Source gear is connected to the console. Equipment connections are crimped and soldered. The AC network is installed with breakered, master on/off switching.

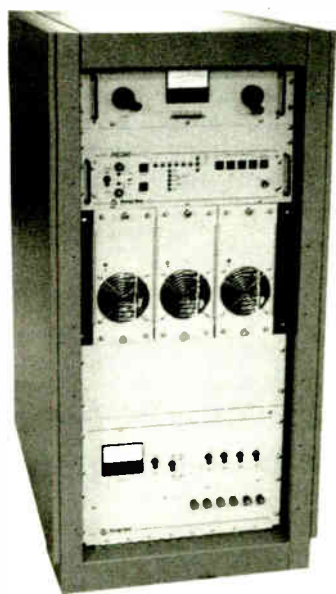
Broadcast Richmond tests the system, troubleshoots it and prepares system documentation with color-coded connections. The system is repacked and shipped.

Studio 3: Broadcast Richmond's complete on-air or production studio now can be installed in typically one or two days on site. Color-coded cables assist in the installation. BR says Studio 3 will save "a fortune."

For information contact Broadcast Richmond in Indiana at (765) 966-6468 or visit www.broadcast-richmond.com

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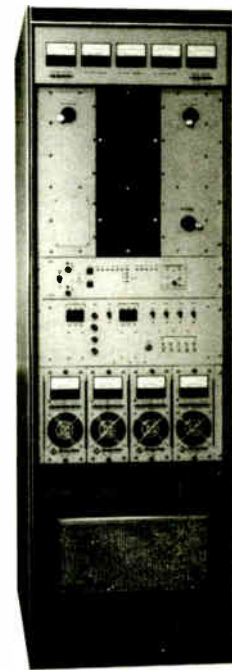
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FIRST PERSON

Preparation Eases Handover Coverage

Tom Richardson

On Dec. 20, 1999, the small Portuguese enclave of Macao on the southern coast of China was reunited with the People's Republic of China.

Our Radio Free Asia team — myself, Director of Technical Operations U.S. David Baden, Director of Technical Operations Asia Tony Reno, and Senior Producer Editor Patricia Fetta — was responsible for making sure that RFA covered the events in full.

Daily reports

We had to transmit daily reports and live commentary back to the United States via ISDN for broadcast to China in Mandarin and Cantonese. The feeds were incorporated into our daily broadcasts, culminating in a five-hour live simulcast of the handover ceremony.

We had to go to Hong Kong just to get extra microphone cables and stands.

RFA was created by the United States government to broadcast news and commentary to select Asian nations whose citizens otherwise lack adequate sources of information. Programming originates from our headquarters in Washington, D.C., and we cover international events involving Asian interests.

We wanted to capture the live energy of this event, and we planned to have on-the-street reporters using cellular telephones to participate in commentary and to get reactions from the people involved.

The news anchors in Washington would provide color commentary while the on-location perspective was maintained by the presenters in Macao.

RFA Gear List

The following equipment was used by RFA to cover the Macao Handover Ceremony:

Orban Audicy DAW
Yamaha 01V digital mixer
Telos Zephyr ISDN codec
Telos ONE digital hybrid
Furman AR-Pro AC line voltage regulator
Marantz PMD-650 portable MD recorder
Sony MZ-B3EV portable MD recorder
Shure SM58 microphone
EV 635L-B microphone
Shure SM7 microphone
AKG RE20 microphone
Toshiba Libretto 100CT laptop computer

We needed an easy-to-set-up equipment package for two identical broadcast booths in the press center, our operations hub.

The press center was a converted office building that offered direct visual access to the event location. The ceilings were high and the temporary walls did not reach all the way to the ceiling, providing little, if any, opportunity for acoustic isolation. It got pretty noisy during show time.

Several road cases containing the bulk of our gear was shipped in advance, and we hand-carried small peripherals with us.

This event was large and there were enormous political ramifications. Many dignitaries, including the presidents of both China and Portugal, were to be in attendance, as well as thousands of entertainers and more than 4,000 accredited journalists.

Security for the event was tight. There were police checkpoints literally at every street corner. An entire 20-square-block section of downtown was encased with 10-foot-high plywood barricades along the perimeter surrounding the arena.

On location

The area was open only to official traffic and there were difficulties finding food and other items while on location.

Everyone was out and about, on location, sourcing equipment and coordinating with the operations hub. We rented local cellular telephones for the week and had everybody connected. This allowed us to keep informed and stay on schedule.

Setting up the studios was straightforward. Each booth had an Orban Audicy digital workstation and a Telos Zephyr ISDN codec along with a Telos ONE digital hybrid as a backup line.

There were challenges in keeping the codecs connected to Washington. The problem was not with the codecs or the algorithms used, but the local ISDN lines.

We had to alternate between international long-distance carriers on several occasions. It was not uncommon for a connection with MCI that worked the day before to fail the next day, necessitating a switch to either Sprint or AT&T.

In our preparations, we configured the codec presets with various dial-up configurations. Both ends of our operation could initiate the connection. We fed in dual redundancy with the Telos ONEs in case we lost sync lock during the broadcast.



The ceremony site as viewed from the press center

The switch protocol is independent of both the long-distance carrier you want to use and the far end unit with which you are connecting. In Macao, the switch protocol was set to AT&T Point-to-Point (PTP) and service profile identifications (SPIDs) were not required.

Companhia de Telecomunicações de Macao (CTM), the local telecom, provided the NT1 network terminator and we simply connected to the eight-wire subscriber termination interface with a RJ45 connector.

No problems

Our shows went off without a hitch, and the ISDN lines stayed locked the entire time.

In addition, the Furman AR-Pro line voltage regulators worked flawlessly. The 14-outlet unit delivered consistent 120 V AC and could handle loads totaling up to 30 amperes as long as the input voltage was greater than or equal to 120 V.

tance carrier access codes on both ends of the production, or you may find yourself scrambling for sync lock 30 seconds before airtime.

One other problem we encountered was that the cellular phones we rented were local-use only. They did not work outside Macao, nor did they work with our U.S. calling cards.

Running out and getting last-minute items at computer and electronics shops was an arduous task. There were not that many stores to begin with, and the city was a virtual ghost town.

In the weeks leading up to the handover, police raids resulted in many arrests and the seizure of firearms. Businesses were closed and apartment buildings appeared to be empty during a transitional period where normal activities such as commerce and nightlife were almost nonexistent.

As a result, we had to go to Hong Kong just to get extra microphone cables and stands.

All in all, our trip was a success.

Problems with local ISDN lines interfered with the codec connections to Washington.

One thing I have learned on trips like these: When configuring the codecs for international use, check in advance for the local ISDN protocols and the need, if any, for an internal terminal adapter.

If the country you are looking for is not listed in the user manual, do not assume there will be a default setting. Call the manufacturer before you go. There are usually ROM upgrades available to accommodate local ISDN lines in most countries.

Furthermore, make sure to have all your units preset with your long-dis-

We worked hard but had a little fun, too. The city was cleaned up and decorated to celebrate the handover.

Everything had turned red — buses, parks and even a red carpet lined the entire procession way. The Macao handover ceremony was a true changing of the guard.

■ ■ ■

Tom Richardson is senior producer technical for Radio Free Asia, based in Washington, D.C.

Share your radio project experiences with us. Write to us at radioworld@imaspub.com

WIRED FOR SOUND

Mix and Match? You Con Du It!

Steve Lampen

So how do you know how many cables to put in what conduit?

My company, Belden, still makes a "conduit capacity chart." This is one of those "slide-rule" calculators, which shows the diameter of various cables on one side and a generic list of sizes on the other. You can get one by calling (800) 235-3361. Other cable manufacturers offer the same thing.

On the Net, try these two sites:
www.belden.com/products/tpadvncp.htm
 and
www.belden.com/products/cncpcht.htm

If you know of other links about conduit, conduit fill and similar subjects, let me know and I will include them in future columns.

I suggest these Web offerings because they show you how to calculate conduit fill for multiple cables of different diameters. Most of the "slide-rule" calculators only show one kind of cable at a time.

While it is possible that you have

Installing once is a lot cheaper than twice. Do the most you can in one shot.

multiple identical cables, or maybe even one single cable in the case of audio snakes, it is just as likely that you will include a variety of cables. The use of audio, control and computer data cables run together is common.

Check fit and interference

Where you mix and match your cables in conduit, there are really two issues.

First, will they fit in the conduit you've chosen (or, more sensibly, what size conduit will you need to fit them comfortably)?

Second, will they interfere with each other?

There is a simple formula you can use for multiple cables in a single conduit:

- Obtain the diameters of each cable you will use in the conduit.
- Multiply each one by 0.7854, which gives you the area of each cable.
- Add all the areas of all the cables together.
- Then look at Table I, which accompanies this story, and find the conduit fill you want. You must pick a number less than shown. For instance, if all your cable areas add up to 0.500, that means you could put them in a 1-1/4-inch conduit at 40 percent fill, but nothing smaller.

The suggested standard is 40 percent fill. Lesser numbers are included if you intend to expand your system later but are not sure what you will be

putting in.

If you do intend on expanding your system at some future date, this would be an excellent time to design that expanded portion. Then you can do the math for the entire finished installation and put in the correct size conduits now.

In fact, since you will know what to pull for future expansion, why not put it in now? The only risks are that technology may change, or you may change your mind and want to put in something different.

The cost of wire and cable in most installations is around 5 percent of the total cost of the installation. So, for a minor amount (less than 5 percent) you can put in all your future wiring. It can be easily stored in wiring closets or pulled through the walls and left behind blank wallplates.

Profitable planning

One thing is for sure; getting your installers to install once is a whole lot cheaper than twice. And, because the cost of labor often is as much as the cost of the cable, it makes sense to do the most you can in one shot.

You should also be aware that it is much easier to pull cables in one go through a conduit than in successive layers. The plastic jackets of cable are nowhere as hard and smooth as the inside of a conduit.

Many flexible cable jackets, in fact, have a tendency to "grab" (i.e. not slide) on each other. Others bunch up.

This is the reason stiff cables with hard shiny jackets often are easier to pull through conduits than those flexible cables with soft "matte" jackets. Flexibility can work against you. And, more often than not, those flexible versions do not perform any better, and usually cost more, than their hard, shiny cousins.

Mixing and matching performance is another thing! Most designers and installers know to keep power and signals separate, even in separate conduits if you can.

This also helps in safety, because conduits are (we hope) grounded.

The other reason to keep signal and power separate is, of course, to keep the 60 Hz of the power away from the signal cables. As mentioned in previous columns, there is no shield commonly used in a cable that will have any electromagnetic shield effectiveness at 60 Hz, except for solid steel conduit. So put them in separate conduits.

For similar signals, such as audio with audio, historically, most installations divided cables by level. That is, the mic level signals (-60 dB or thereabouts) would all run together. Line level (+4 dB or thereabouts) would run in another.

This was due mainly to the "balance" on these balanced lines. And that balance is due mostly to the "balance" on the source and destination devices. If you can get these number (common-mode noise rejection, or CMRR) from the manufacturers of the equipment you will be using, you will know whether you will have the 90 dB of crosstalk, or whatever number you will require.

I'll add that transformer-balanced outputs and inputs, that is, those devices with actual coils of wire, are still the king.

Balance is the key to combining different cables. We'll get down to the nitty-gritty of balance, and further

considerations of conduit, in our next column. And we'll examine a rarely mentioned cable parameter that is important in conduit installation: cable-pulling strength.

Steve Lampen is technology specialist, multimedia products for Belden Electronics Division in San Francisco. His book "Wire, Cable, and Fiber Optics for Video and Audio Engineers" is published by McGraw-Hill. Reach him at shlampen@aol.com

Table 1

Conduit Size	Equivalent Square Inches	30% fill	40% fill	50% fill
1/2	.30	.09	.12	.16
3/4	.53	.17	.21	.28
1	.86	.27	.35	.46
1 1/4	1.50	.46	.60	.79
1 1/2	2.04	.63	.81	1.08
2	3.36	1.04	1.34	1.78
2 1/2	5.86	1.82	2.34	3.11
3	8.85	2.74	3.54	4.69
3 1/2	11.55	3.58	4.62	6.12
4	14.75	4.57	5.90	7.82

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Talkin' Tech, Talkin' Tubes

James G. Withers

This is a follow-up to a three-part series about the basics of tube construction and practical implementation in modern broadcast transmitters. The most recent part appeared Nov. 24, 1999.

Many e-mails have come in regarding the recent series of articles on tube technology and applications in broadcast transmitters.

Some of these pointed out areas in the articles that need expanded explanations, and others relayed pertinent questions.

Tube renaissance

One reader pointed out that in addition to being prevalent in transmitters, tube technology is undergoing something of a renaissance in studio equipment.

This is absolutely true. Microphone processors, in particular, are readopting tubes. Many audio engineers believe that subjectively, tube amplifiers simply sound better than solid-state analog. (or, God forbid, digital) equipment.

The words used to describe the differences are "warm," "rich," "full," and so forth. These are valid comments and the subtleties are, if not completely measurable, certainly apparent to discriminating ears in a studio setting.

There are a couple of reasons for these subtle differences.

First, tube amplifier stages typically are AC coupled. The output from the first stage is coupled to the grid input of the second stage through a capacitor. This is called AC coupling because AC current passes through a capacitor but DC does not.

Solid-state amplifiers, on the other hand, typically are DC coupled. Because capacitors are sensitive to frequency, the response of tube amplifiers is slightly different than solid-state amplifiers.

Second, tube equipment often is transformer-matched. This is because the output impedance of the audio amplifier

stage is not the same as the input impedance to any following pieces of equipment (such as an audio console).

The transformer is simply an impedance-matching device. Transformers are nothing more than inductors wound on a common core and they, too, are frequency-sensitive.

Inductors pass DC easily, but present increasing resistance to AC current as the frequency increases. Again, this makes the frequency response curve of a tube type device slightly different than a solid state unit.

Finally, the tubes themselves have frequency-response characteristics. Element size and number, plus external components and connections, all combine to modify the frequency response curve of tube gear.

All told, these differences are very small, but still noticeable, and that is the warmth (softness, fullness, etc. etc.) that some engineers covet enough to endure microphonics, cold filaments and the other less endearing traits of vacuum tubes.

Maintenance precautions

Another e-mail brought up some questions regarding transmitter safety in tube-type transmitters.

Basically, the writer wanted to know how he could completely remove any risk associated with poking around inside a broadcast transmitter.

The short answer is: Can't be done. The long answer is, well, longer, and best illustrated by a short tale.

It was 3 a.m. and I was deep into the "Cabinet of Death," which was what we called the power supply cabinet on our RCA TT50-FH, 50 kW TV transmitter. We had a high-voltage short, and had disconnected several high-voltage components as we tried to isolate the problem.

One of the components was a filter capacitor. After carefully "sticking" the terminals, I had disconnected the positive lead. The negative lead, being at ground

(or so I thought), I left hooked up.

After all, ground is ground, right?

We turned on the high voltage (8 kV), and voila, no short. After letting it run for a couple of minutes, we shut it off.

We isolated the problem to a shorted filter choke, so after "sticking" the high-voltage transformer secondaries (but not the disconnected filter cap), I went to reconnect the positive lead to the capacitor.

Literally one inch away from touching the terminal, I decided, just to be ultra safe, to go ahead and stick the terminal. The resulting arc astounded me!

It was 3 a.m. and I was deep into the 'Cabinet of Death.'

How could a capacitor with the positive high-voltage lead disconnected regain a lethal charge? After I calmed down, I found the answer in the schematic.

The negative lead did not go to ground, as I had assumed. It went, instead, to the positive side of the 4 kV IPA plate supply. Since 8 kV is more positive than 4 kV, the capacitor was happy, but that peculiarity set up a scenario which came very close to killing me.

Because, as soon as the plates were turned on, the capacitor promptly charged up to 4 kV! Furthermore, with the positive lead disconnected, there was no discharge path, so it would have stayed fully charged for hours, if not days. It is very probable that had I touched the terminal someone else would be writing this article.

The bottom line? Even when dead tired (no pun here) at 3 a.m., a cautious

transmitter engineer will always assume that high voltage exists on a high-voltage component, unless he or she has personally discharged that component immediately prior to working on it.

It is dangerous to assume interlocks are working, or that a zero reading on a plate voltage meter means that there is no high voltage anywhere inside the cabinet.

I know some engineers who leave the shorting stick touching the terminals of components as they work on them. The method is up to the individual. The important point is having a routine and sticking to it.

Tuned circuits

Finally, several e-mails came in with questions/comments about transmitter tuning.

While there is a certain amount of Black Art involved, there are also well-understood principles at work that govern the hows and whys of tuning a tube-type transmitter.

I specifically mention tube transmitters, because solid-state transmitters most often use wide-band coupling, which eliminates frequency sensitivity across a fairly large bandwidth.

With proper design, a solid-state transmitter can easily function across the entire band with no tuning required whatsoever, even though at each end the efficiency will drop off (because the input and output circuits are optimized for mid-band operation).

Tuned circuits made up of variable capacitors, inductors or both are used in the grid and plate stages of IPA and PA tubes to tune the tube to resonance. The component values are chosen (when the transmitter is initially designed) to match the impedance of the tubes to the input source (an exciter) and the output load (the antenna).

A more detailed explanation of transmitter tuning and tuned circuits in general will be presented next time.

■ ■ ■

Jim Withers is vice president of engineering for Pacific Broadcasting. Send e-mail to jim@koplax.com

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Workbench

Radio World, June 21, 2000

Emergency Prep for Summer Disasters

John Bisset

While you are inspecting your generator, check the exhaust flap (Figure 1, below). This weighted cover keeps both the elements and the insects out of the exhaust.

John White is the chief at the Crawford stations in Portland, Ore. John uses several Unity 4000 satellite receivers, and made some extensive tests after failure of one of the receivers. The results of his measurements suggest that the Unity 4000 receiver design is inherently sensitive to overload conditions.

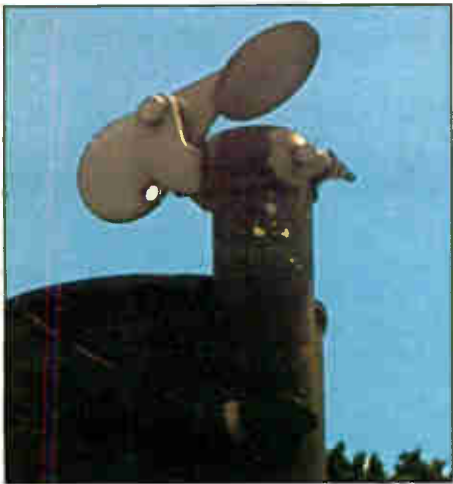


Figure 1: While you are inspecting your generator, check the exhaust flap

John also suspects that when the receiver is near the overload point, it may become more sensitive to cross-polarized and adjacent signals.

With regard to the overload conditions, John found a small reduction in signal level that produces a large improvement in con-

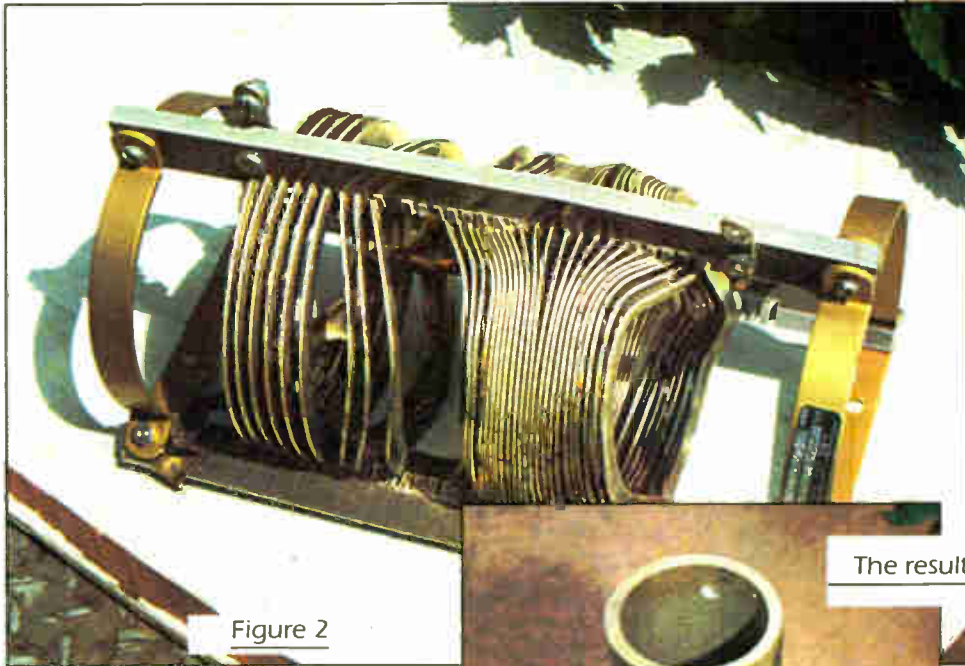


Figure 2

sistent with non-linear overload.

High RF levels near the overload point of the receiver produce degraded Eb/No. The receiver high RF alarm did not work when an apparent overload condition was present.

The low RF alarm does not appear to be a reliable indication of the corrective action needed. An Eb/No value below 10 would indicate that something is wrong. In such a case, suspect either a high or low RF level.

John made a number of other measurements that he would be pleased to share with Workbench readers. E-mail your request to jdwhite@teleport.com

Summer storms are in full force, and the results of Mother Nature's fury can be



Figure 3

seen in Figures 2, 3 and 4. The pulse of energy caused by a lightning strike can cause coil windings to collapse.

Figure 2 shows a coupling network coil that got slammed. Some engineers will try to bend the coil windings apart to



The results of Mother Nature's fury

Figure 4

avoid the cost of replacement.

Forcing a screwdriver between the ribbon windings and coaxing them apart makes you appreciate the force of a storm (and why you don't want to be around when one strikes).

Figure 3 shows the same collapsed windings — this time, on a static drain choke. Figure 4 is the interior of an ATU (antenna tuning unit) building that caught fire after a lightning strike.

Unfortunately, the building was used to store boxes and supplies, which served as fuel for the fire. Keep this in mind when storing items — the base of a tower is not the most secure of storage sites.

See WORKBENCH, page 20 ▶

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The addition of MP3 increases compatibility with existing ISDN codecs. The Matrix delivers 15 kHz on POTS. With an optional ISDN module, it offers G.722 and turbo G.722 as well as the MP3 algorithm.

Tom Hartnett, director of engineering for Comrex, said, "Fraunhofer ... (was) able to adapt a



highly efficient Layer III implementation to our existing platform, creating a flexible new codec for use in the Matrix and future products."

The Matrix won a **Radio World** "Cool Stuff" Award at NAB2000.

For information about MP3 visit the Fraunhofer Web site in Germany at www.iis.fhg.de/amm/techinf/layer3/index.html

For information about Comrex contact the company in Massachusetts at (978) 263-1800 or visit the Web site at www.comrex.com

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Intraplex STL Plus Is IBOC-Ready

Harris Corp. offers enhancements to its Intraplex STL Plus system, including support for in-band, on-channel digital audio broadcasting.



The system consolidates transport of program audio, voice and data for STL, TSL, inter-studio and inter-city communications over a digital T1, microwave or fiber-optic link.

Harris said STL Plus allows stations to transition the STL portion of their digital air chain to support next-generation DAB.

The equipment has been qualified through participation in trials of USA Digital Radio IBOC systems at stations WPOC(FM) in Baltimore, WJFK-FM in Washington, D.C., and KLLC(FM) in San Francisco, as well as the Lucent Digital Radio system at WPST(FM), Trenton, N.J.

Also, a new video codec for STL Plus digitizes and compresses video for transport over digital networks. Users can vary and select data transmission rates to optimize the picture. The module can be used for surveillance, remote monitoring and video-conferencing.

And a single STL Plus can now be used as a gateway to control and monitor any other system located on the network. Using this feature and interface software, engineers can remotely configure other STL Plus systems connected to their network, perform diagnostics and monitor performance and alarm information across a station group.

For more information contact Harris in Ohio at (800) 622-0022 or visit the company Web site at www.harris.com

Storms Spawn Mother Nature's Fury

► WORKBENCH, continued from page 19

He's become our resident generator expert — Walt Billings of Total Engine Service and Supply in Baltimore offered an alternative to running your generator all day using the building load to test operation.

Sensitive to engineer's time, Walt pondered whether an engineer could even spend an entire day at a transmitter site. True, it seems those days have past. Walt's solution is to use the equivalent of a transmitter dummy load to test your generator. It's called a load bank, in generator lingo.

By disconnecting the generator from the transfer switch and wiring it into the load bank, the generator can be run at its full-rated capacity.

There are several advantages to using a load bank. First, the building load may not provide a full-capacity test — air conditioners may switch on or off, for example.

Second, within an hour of a full-capacity load-bank test, you'll know if there are problems with your generator. There are added benefits, too. Diesel-powered generators build up carbon that occurs with light loads or no-load testing. The full capacity test will burn off that carbon.

The test also pushes all the engines sys-

tems to the limit, fleshing out problems. For example, if the fan is loose, it won't take long at full capacity before the generator shuts down with an overtemp fault.

But when you balance the cost with the time savings, not to mention the benefits, it's a worthwhile investment. Scheduling this kind of maintenance once a year, or

The base of a tower is not the most secure of storage sites.

Does the generator smoke when it gets up to full load? That may indicate a problem with the injection pump or the quality of the fuel. The radiator, water pump, and belts are all taxed during this kind of performance test, so the result is much more definitive.

By running the generator up to full load, within the hour you'll know if there are leaking head gaskets, a bad radiator, a problem with the fuel injection system or any other problems.

The only drawback is the test does cost money. Walt estimates the cost for such a performance test would be \$500 to \$600.

even every other year will give you a true performance report on your generator. Walt Billings can be reached at TESSCO, (410) 633-4621.

■ ■ ■

John Bisset has worked as a chief engineer and contract engineer for over 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged, and qualify for SBE recertification credit. Fax your submission to (703) 323-8044, or send e-mail to jbisset@harris.com

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SBE NEWS

Frequency Coordinators Are Quiet Heroes

Richard L. Edwards, CPBE

The author is vice president of the Society of Broadcast Engineers. Radio World provides this space to SBE as a service to the industry.

Every time there is a disaster, chances are that, before the news vehicles, reporters and anchors arrive, the Society of Broadcast Engineers has already responded to the task.

While routine events such as football, baseball, auto racing, golf, tennis and so on don't create too much of a demand on the volunteer coordinator, emergencies can overwhelm the best of us.

For me, three immediately come to mind.

Storm service

Hurricane Andrew, a Category 4 storm, forced its devastation on Miami on Aug. 24, 1993. Sixty people were killed, 2 million people were evacuated from their homes, power was out for days and the media presence outnumbered government assistance.

On top of our normal responsibilities as broadcast engineers, we had to satisfy the visiting media's needs. Not only were we assisting other stations in getting back into service, but my "day job" and its 14 transmitters needed attention.

The second emergency for South Florida was the ValuJet Flight 592 crash into the Florida Everglades on May 13, 1996.

The concentration of RF in a single area was intense, and most operators were attempting to transmit signals to the same receive site. However, the cooperation among the local stations was excellent and all went well.

Then there is Elian Gonzalez, the small Cuban boy who was fished out of the Atlantic Ocean on Thanksgiving Day last year, followed by an early-morning

house call from the full power of the federal government. Somehow Dan Collins, the local frequency coordinator, kept everyone happy.

Double duty

In another significant situation, Hurricane Hugo wreaked havoc over a vast area of the Carolinas in September of 1989, leaving a path of damage with hurricane conditions as far inland as Charlotte, N.C.



Media events like the O.J. Simpson trial put frequency coordinators to the test

The highest winds were in northern Charleston County where Category 4 conditions were experienced. Local coordinators William Booth in Charlotte and Jack Becknell in Charleston, S.C., had their hands more than full.

Hurricanes, possibly more than any other disaster, have major impact on our business. Local coordinators are required to perform double duty during these times because they not only provide for their stations' needs, but also for the

needs of visiting media present in the community to purvey the news to the rest of the world.

During these times we are ready to assist stations with temporary facilities for remote sites in the event a main studio or transmitter site is lost.

On Feb. 26, 1993, I followed closely the terrorist bombing of the World Trade Center in New York. Hats off to Walter Sidas and Bill Mierisch. Sidas was in a little better shape because WCBS had a

backup facility on the Empire State Building, as built by Joe Fedele.

Even though New York City has an extensive Part 74 infrastructure, the demands were substantial.

News as it happens

Everyone remembers the tragic bombing that ripped through the heart of downtown Oklahoma City on April 19, 1995.

Usually Oklahoma City concerns itself mainly with weather-related conditions. Dennis Orcutt earned his stripes at this time. This had to be the highest demand for frequencies ever in the state.

Of course, we could not go without mentioning the media frenzy in Los Angeles that began after the June 1994 murder of Nicole Brown Simpson and Ron Goldman. The eight-month-long O.J. Simpson murder trial did not end until October of 1995.

If you saw the media circus around this, you could not believe the atmosphere. Howard Fine performed an incredible job. Across from the courtroom building there were literally double- and triple-stacked production facilities. America wanted to know every action immediately.

Back to New York, or in this case Long Island, where Bob Wolf and John Caracciolo had to respond late Friday night, July 17, 1996, when TWA Flight 800 from Kennedy International Airport disappeared from radar 12 minutes after takeoff. Again, the New York Part 74 infrastructure was helpful, but additional needs always mount.

In April of 1999 disaster struck again, this time in a suburb of Denver. Two armed students made history with senseless shootings at Columbine High School.

Media impact was substantial, and



local coordinators Wayne Wicks and John Hellyer met those demands, both veterans at coordination. Just a few years earlier, in December 1996, nearby Boulder was rocked by the murder of JonBenet Ramsey. No other murder has fascinated the American public and attracted the mass media like this one.

Last summer, Bob Sweeney probably was one of the busiest people in America. Again, catastrophe from an airplane when John F. Kennedy Jr., his wife Caroline Bessette-Kennedy and sister-in-law Lauren Bessette disappeared over the Long Island Sound in July 1999.

This particular weekend, the nation and the world watched as exhaustive search attempts failed. We saw the Kennedy family grieving yet another loss.

Sport success

The SBE and its frequency coordination efforts have provided services to the nation and the world by assisting in times of adversity, but we also are looking to the future.

Under the watchful eye of Karl Voss, the 31 National Football League teams and SBE have completed a successful first-year cooperative effort of game-day coordination. Jay Gerber of NFL Films conceived and brought life to this new program.

With the participation of SBE game-day coordinators, the concept became reality with minimal input from the national level. Due to its success, the NFL has approved the program for years to come. As we move forward, Voss will continue development of the NFL software with assistance from Jim Bernier and Dan Collins.

The success of the game-day coordination effort has led Bill Ruck in San Francisco to expand on the concept with smaller versions for baseball in the Bay area.

Over the next few months, SBE will play a substantial role in national political conventions, with Louis Libin chairing a committee supported by Howard Fine, Ray Benedict, Steve Gansky and me.

Every day frequency coordinators around the country volunteer their time to help you, your station, networks and many others. I know I have not been able to mention everyone who has been involved and made invaluable contributions to its efforts, but they are there and they are appreciated.

If you can think of a way we can be more helpful, please let me know. You can reach me at rick@TowerAmerica.com

And if you have a coordination success story of your own to tell, share it with the readers of **Radio World** at radioworld@imaspub.com

We hope to hear from you.

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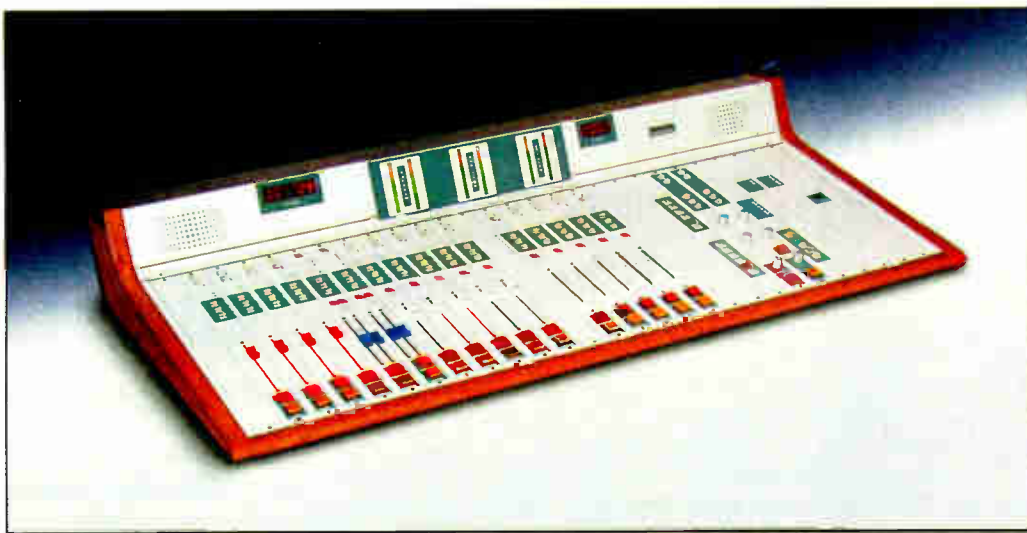
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World Radio History



Low-Power Opinion Spectrum

Alert *Radio World* readers continue their barrage of e-mail messages and letters regarding the Federal Communications Commission's creation of a new class of low-power radio.

RW welcomes opinions and guest commentaries from those involved in the debate. Write to us at radioworld@imaspub.com or use the address on the inside last page.

Dear RW,

I wish to comment on Tom Taggart's letter (*RW*, April 26) in which he states that, "In hilly terrain ... a 100-watter 18 miles away on the second-adjacent can put quite a hole in a Class A's audience."

If this is so, I can't help but wonder how much interference would be caused by another 6 kW Class A located 19 miles away on a second-adjacent channel.

I'm especially curious about the answer to this question, since such spacing would fully comply with the FCC's current interference criteria.

*Thomas Desmond
Plano, Texas*

Dear RW,

The concept of reallocating Channel 6 (82-88 MHz) for low-power FM is an intriguing proposal.

The only problem would be getting tuners that can receive the new frequencies to the market. This may be easier than one thinks thanks to the Japanese allocation of 76-108 MHz for domestic FM.

Japanese manufacturers can make these frequencies receivable on receivers sent to the U.S. That is, if these receivers

aren't already capable.

I purchased an Aiwa portable receiver that is capable of tuning 76-88 MHz when set to Japan mode. How many receivers sold here have this same capability?

Nevertheless, with a date of 2006 to introduce FM on Channel 6, it would give manufacturers more than enough time to bring expanded-band tuners into the U.S. marketplace.

All (the NAB) really cares about is money, all I care about is serving my community.

— Frank Vela

In fact, with the Japanese FM band going as low as 76 MHz, the FCC should consider also reallocating Channel 5 (76-82 MHz) and reallocating the whole thing to both commercial and LPFM use.

Increasing the FM band by 60 channels should alleviate all worries of LPFM interfering with commercial stations and allow commercial stations that are being stepped on by other commercial stations to move to cleaner pastures.

It would also help if the FM channel were increased to 400 kHz in order to make IBOC work. It's an interesting proposal.

*Andrew Cheadle
Chief Executive Officer
AJC Audio File
Lakewood, Calif.*

Dear RW,

I am tired of hearing about how LPFMs will cause interference to existing commercial stations. So another engineer and I took it upon ourselves to conduct a test.

Under the channel-spacing rules, the following cannot happen, but let's just say that there is a Class A 15 miles from an LPFM which happens to be operating with 100 watts at an antenna height of 50 feet. The Class A is on 95.5 and the

LPFM is on 95.7.

We drove about 3,000 feet away from the LPFM and already we were getting splatter from the Class A. We conducted this test again, this time 25 miles away from the Class A.

Our findings were very interesting. We listened to the Class A as we drove from the LPFM. About 1,500 feet away, the splatter was gone. You must remem-

ber we were out of the Class A's primary signal but still it was unharmed.

According to the rules, first-adjacent must be 35 miles from the Class A, and at that point the Class A would have a signal strength of 124 microvolts, which can be nonexistent on most portables.

A few members of my community and I plan on filing for an LPFM. The NAB is using interference as an excuse. All they really care about is money, all I care about is serving my community.

*Frank Vela
Chief Engineer
WTBH(FM)
Crystal River, Fla.
See LPFM, page 25 ▶*

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► LPFM, continued from page 24

Dear RW,

Thanks to Don Pritchard for his letter to the *Reader's Forum* in your Feb. 16 issue. I couldn't have said it better.

Our station, KLQP(FM) (25 kW on 92.1), is licensed to Madison, Minn., which is a community of about 1,900 people. We have been here for 17 years and we still do daily obituaries, lost dog and cat announcements, birthdays and anniversaries, live high school sports, tons of farm market reports and what some call "Tradio" (radio classifieds) at no charge to our listeners.

We are a self-supporting commercial FM station. My partner in this venture is a guy I've known since second grade who is our sales manager. I am the general manager, news director, chief engineer and program director.

We run 24 hours a day with digital automation to help us out. We have one other full-time employee and a handful of part-time announcers, most of whom are local high school students. We do not use satellite programming (other than our news networks); all programming originates in-house.

We are "mom-and-pop" radio in the midst of giants and we are still on the air. We have found our "niche."

A couple of years ago we petitioned a frequency in a small town in South Dakota, with the intention of building a station *in that community* (about 1,200 population). Four others filed for the construction permit and we were "bought out" in a private auction for the frequency.

That station has now been built by a group owner. The funny thing is, most residents in the city of license have no idea that their community has a radio station! It is headquartered elsewhere in a much bigger city with little mention of the small town's existence.

Congress and the FCC have allowed this type of thing to happen, so it amazes me they are now so surprised there is little or no "local" service.

I look forward to the day direct broadcast satellite radio forces the "music giants" to scramble to find their "niche" in the market. Maybe then we will see the return of "local" service once again in many other communities.

As for LPFM stations? Bring 'em on! They won't be doing anything we aren't doing already here at KLQP.

Maynard R. Meyer
President, GM
KLQP(FM)
Madison, Minn.

Dear RW,

Your March 15 editorial on "NPR and LPFM" lauded NPR for taking a responsible position on the LPFM issue.

It also noted you were "cynical about the sudden interest" from NPR, implying such interest was perhaps less a matter of altruism than situational convenience, and that a subsequent editorial might explore this.

At the risk of undermining a future editorial, I would offer the following:

To my knowledge, the International Association of Audio Information Services only twice ever requested anything from NPR. The first time was when the LPFM issue surfaced. With resources that are, at best, well short of meager, the IAAIS asked NPR if our interests were sufficiently convergent to join forces.

NPR President Kevin Klose, at that time still very new to the job, never hesitated. Certainly it was convenient, but that's not really the point. As I see it, NPR was asked for help, and NPR delivered.

The second instance was when NPR was asked if they would be interested in building on the current alliance. More

As I count 'em, IAAIS is two-for-two in the NPR arena, and the door is open for future partnerships.

I look forward to the day direct broadcast satellite radio forces the 'music giants' to scramble to find their 'niche' in the market.

— Maynard R. Meyer

specifically, IAAIS asked if NPR would be amenable to having Mike Starling (NPR VP for engineering) serve on their board. Again, there was no hesitation, and Mr. Starling is the newest board member.

If I had to characterize the radio reading service attitude, it would be one of gratitude and appreciation. Cynicism doesn't fit.

Carl Matthusen

General Manager
KJZZ(FM)/KBAQ(FM)/
Sun Sounds Radio Reading Service
Immediate Past-Chairman of the
Board of Directors, NPR
Board member, IAAIS
Phoenix

RW Editor Paul McLane replies:

The point we were making in the editorial was aimed at some LPFM opponents who have seized on politically convenient arguments to make their case. Others in this debate have been less measured than NPR in their responses.

As a long-time supporter of radio reading services, we know how hard they fight for attention and support.

But this wasn't clear in the editorial as written. It did sound like our cynicism was aimed at NPR.

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LPB Transmitter: AM for LPFMers

Alan R. Peterson

Many prospective broadcasters have filled out their LPFM applications and have already scouted out frequencies and antenna locations in their respective markets. All are ready to hit the ground running.

But technical issues, the lack of spectrum in some markets, conflicting positions between the NAB and the FCC and a proposal in Congress to rescind the establishment of LPFM have ground the intended service to a slow crawl.

It may be hard to tell which way the winds of LPFM will blow. Until then, community-minded micro-broadcasters anxious to hit the air need not sit on their hands. Many can go on the air now, albeit on a different band.

LPB Inc., the new owner of Fidelipac and the company that put low-power college radio on the map, offers the AM-2000, a nifty little mast-mounted transmitter and antenna combo that presents the bored micro-broadcaster with an alternative to thumb-twiddling: legal, license-free broadcasting *on the AM dial*.

A look-see

The AM-2000 is an FCC-certified, self-contained, 100 mW frequency agile AM transmitter and antenna combination that comes under Part 15 regulations as an "unlicensed secondary device." Solid-state guts and a frequency synthesizer assure the AM-2000 sounds good and stays on the mark.

The eventual goal of micro-broadcasters is to be on FM, but much can be gained by spending time on AM first.

The downside is that 100 milliwatts does not go far. By design, the signal of the AM-2000 fades between 1,000 and 2,600 feet. With efficient grounding, a wide radius might be possible while still remaining legal.

LPB positions the AM-2000 as a limited-range device to be "used for auto racing, guest and tourist information," according to the company Web site. I see a further use: to help get prospective LPFM operators established in their communities by getting them up and running legally on the AM band first while LPFM details are hammered out in Washington.

Granted, there is a condition in the LPFM application process stating that applicants may have no other broadcast interests. Whether or not license-free AM communication falls under that condition remains to be seen (much as the rest of the LPFM regulations).

However, if that indeed were the case, an applicant could conceivably be rejected for owning and operating a CB base station. The interpretation of the law could be that broad, so check with your lawyer.

The LPB AM-2000 transmitter is 6 by 8 by 4-1/2 inches in size and weighs about four pounds, most of the weight coming from the lockable and gasketed weathertight steel enclosure. A separate power transformer box remains indoors where it's dry, feeding juice and program audio to the transmitter via an audio/power snake cable.

LPB engineers designed the AM-2000 to function with a stock Radio Shack 102-inch whip CB antenna. No expensive or esoteric components here. If an antenna gets bent in the wind, fifteen bucks puts you back on the air.

Even though the eventual goal of micro-broadcasters is to be on the FM dial, much can be gained by spending some time on the AM dial first.

For one thing, it establishes credibility right in the neighborhood that a prospective licensee intends to serve — a foothold that may pay off when LPFM grants are handed out.

For another, it is a low-risk, low-cost way to ascertain whether such a service is viable in the community. After all, if what you offer is any good, listeners will latch onto you whether you are on FM or not. Best of all, it is almost foolproof. One big red button puts the AM-2000 on the air with no readings to take. Furthermore, a license-free station need not be EAS compliant, although it is good practice to leave the air during a legitimate emergency and let the big rigs take over. And unlike non-commercial LPFM, you can probably bring in an advertiser or two to offset the electric bill.

What if there are no available FM frequencies in a market? Except for the largest metropolitan areas, there is frequently room on the AM dial in most markets to shoehorn in a Part 15 station.

AM radio is still a viable and vibrant band. As said in these pages before, if AM truly were dead, manufacturers wouldn't build receivers anymore.

On the air anywhere

The interior of the AM-2000 reveals the same solid, socked-down PC board construction seen in other LPB transmitters. That smiley "robot face" seen inside the case holds a milliammeter, selector switch and a pair of tuning slugs.

Altering the positions of 10 DIP switches on the PC board sets the operating frequency (530 to 1700 kHz). The frequency seemingly can be set "between the cracks" at dial settings such as 855 kHz.

Once set to an available frequency, the transmitter is peaked with the use of a non-inductive alignment tool on one of the two tuning slugs. When the meter shows 0.6 milliamperes, the AM-2000 is at its legal limit of 100 mW.

Obviously the meter can be set higher, which translates to slightly more power output. But that is risking a hefty fine and equipment seizure by your friendly neighborhood FCC man. If you're going on the air, play by the rules.

I tested an AM-2000 unit at 650, 840, 1170 and 1630 kHz in the bedroom community of Annandale, Va., a dozen or so miles from Washington, D.C. With nothing more than a Walkman-type CD player connected directly to the audio input at first, I fired up the inaugural broadcast of ATR — "Annandale Terrace Radio."

Beginning simply by clamping the AM-2000 to a front porch railing for

ground, I took to the street and drove around, listening to my signal. Not good. The low height of the antenna coupled with the hilly contours of this community and the insufficient ground caused the signal to fizzle long before it should have.

Next, the AM-2000 was clamped to a chain link fence between houses. Even worse. The fence was better at absorbing my signal than providing a solid ground, so my program audio went nowhere.

Finally, I actually did what the LPB manual said to do: mount it higher than nearby rooflines and metal objects. I used 1.5-inch diameter metal wiring conduit as a mast to raise the AM-2000 over the roof.

Bingo

Bingo. I had the Doobie Brothers for three to four blocks in all directions. It got noisy very quickly after that, but for this little suburban cluster, a four-block radius was more than adequate.

Residents that heard and followed my testing suggested the usefulness of the AM-2000 as a "Neighborhood Watch" service and a truly "local" radio station for the two schools serving our immediate community.

As in a full-power station, good modulation and audio quality is assured when an audio processor is used ahead of the transmitter audio input. Very good results were obtained using a Behringer "Composer," an inexpensive compressor/limiter found in music stores. LPB engineers reported similar success using a comparable PreSonus compressor.

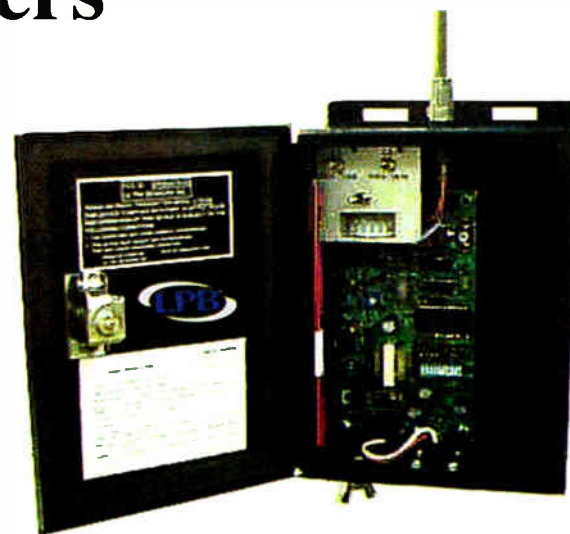
Efficiency and distance improve noticeably when the AM-2000 is solidly grounded.

FCC regulations state that the combined length of a Part 15 AM antenna and ground lead cannot exceed 120 inches. One might think that, because the antenna already occupies 102 of those inches, the very short ground left behind will impair performance.

Ah, but look again. The operative word is *ground lead*. You cannot run a copper grounding wire all the way up the mast to the transmitter, but nothing on earth is stopping you from hoisting an AM-2000 atop a 60-foot-high all-steel billboard and grounding directly to the structure. As long as the total combined length of the antenna and a grounding *wire* do not top 10 feet total, everything is kosher.

In my own case, the metal conduit I used as a mast was sunk about 18 inches into the soil. I might have eked out another dozen yards or so of coverage had I dug in a few copper radials, but that might have been pushing the legality of the rig, to say nothing of the rental lease on my house.

I am certain some enterprising wiseguy is going to try ways to increase the range of a low-power transmitter such as the AM-2000 — perhaps by buying two or three units



The interior of the LPB AM-2000 transmitter: Tune it up and get on the air

and attempting a directional array (don't bother), or adding an ersatz capacity hat to the top of the antenna.

This would not increase the physical length of the antenna, but would affect the electrical length. I doubt that FCC engineers would let a capacity hat slide; it would void the type-acceptance certification of the transmitter.

Why mess with it? The AM-2000 is a capable performer the way it is. Mount it high on a metal pole, get a cheapie compressor, scrounge a retired rotary pot console from another station in town — engineers never throw that stuff away — and you are on the air, legal and license-free.

Maybe you won't get the three miles you were hoping for with an LP100 license, but it puts you on the air before everybody else. You can resolve programming issues and technical bugs early and allow your intended audience to get familiar with you before moving to the FM band.

And if you can't staff your Part 15 station around the clock, check out WebJockey, a fairly impressive \$99 computer radio automation program also offered by LPB.

If I were to offer a suggestion, it would be that LPB include a page on lightning protection or suppression in the manual. Manufacturers of consumer electronics routinely do this in their manuals, and while a transmitter owner may have more smarts than the average Joe may, it cannot hurt to educate a user what to do when the clouds grow dark.

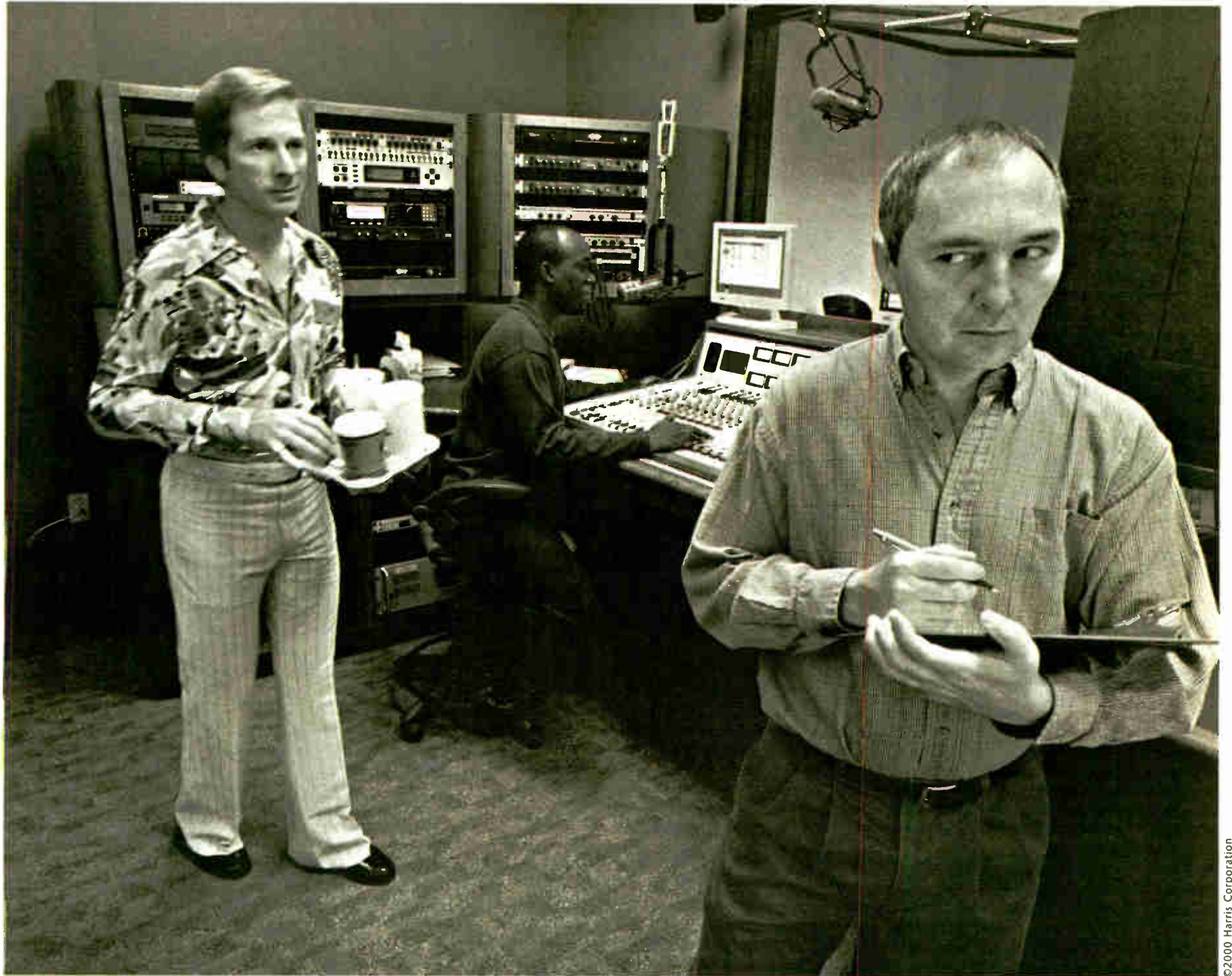
I do like the AM-2000, although the \$1,800 price tag seems lopsided compared to its wattage. This limits its appeal to serious and semi-serious broadcasters, which is probably not a bad thing. The specifications and performance of the AM-2000 place it far above those crummy "hobby" transmitters one can obtain anywhere.

A parting thought: whether it's 100 mW or 100 MW, AM or FM, broadcast responsibly and within legal limits. The FCC will not grant an LPFM license to someone who acts outside the law.

■■■

For information, visit the LPB Web site at www.lpbinc.com or contact the company at 877-LPB-COMM

Alan Peterson is an RW technical adviser and newly-christened program director of cable/Internet radio station WEBR at Fairfax Public Access Corp., Fairfax, Va.



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GM Journal

**MarketWatch:
New Orleans**



See Page 32

Radio World

Resource for Business, Programming & Sales

June 21, 2000

NEWS ANALYSIS

Flying Below Radar: Groups to Watch

Scott Fybush

Think you've finally come to grips with the extent of radio consolidation in the deregulation era?

Consider this: The top two radio groups by revenue — Infinity and the combined AMFM/Clear Channel — together produced more than 10 times as much revenue last year as the third-ranked group, ABC Radio Network.

"When you get beyond the Clear Channels and Infinities of the world, things get small really fast," said James

Marsh, senior broadcasting analyst at Prudential Securities.

The revenue figures tell only part of the story, though. Down there beneath the big groups, plenty of entrepreneurs are still buying and selling radio stations like it's, well, 1990.

Profit from consolidation

To Regent Communications CEO Terry Jacobs, the executives at Clear Channel Radio are anything but an evil empire. In fact, they're neighbors.

"We're in the same building with Clear

Channel Radio headquarters," said Jacobs from his office in Covington, Ky.

But while Randy Michaels rules his 870-station empire from the twelfth floor, Jacobs is reaping some benefits of consolidation down on the first floor. After all, he used to work alongside Michaels when the broadcast group upstairs was still known as Jacor.

"I know those people fairly well," said Jacobs, "but when we went into registration for our IPO last November, we thought we weren't going to be able to talk to them about picking up some of the stations they were spinning off (in their merger between Clear Channel and AMFM)."

Jacobs said the timing worked out well, though.

"After we priced (the IPO) in January, we went back to talk with Clear Channel,"



Terry Jacobs

flush with more than \$150 million raised in the offering.

The result, in March, was a deal in which Regent traded \$67 million in cash

See GROUPS, page 40 ▶

ARBITRON'S JANUARY 2000 WEB RATINGS

U.K.-Streamed Station Ranked No. 1

London-based Virgin Radio's Internet channel (www.virginradio.co.uk) ranked No. 1 in Arbitron's January measure of Top-10 Cumulative Internet Audience (see chart).

Virgin Radio, the first international Webcaster to join Arbitron's "InfoStream" service, recorded a monthly audience of 173,200 listeners in January, with a hot adult contemporary format.

The next most popular Webcaster in the Top-10 Cumulative Audience measure was Christian Pirate Radio (www.mycpr.com), an Internet-only station with 81,000 listeners. The contemporary Christian-formatted station is owned by Salem Communications.

And once again appearing in the top three stations ranked by Arbitron's monthly Top-10 Cumulative Audience InfoStream report was www.kpig.com an album adult alternative-formatted station, with 80,800 listeners. New Wave Broadcasting LP broadcasts [kpig.com](http://www.kpig.com) from Monterey, Calif.

"The fact that Internet-only audiocaster, Christian Pirate Radio, is one of the top channels in the January InfoStream ratings illustrates, once again, that consumers are listening to Webcast programming they cannot find on traditional broadcast stations," said Joan Fitzgerald, director of marketing, Arbitron Internet Information Services.

Another trend that Fitzgerald noted is growing with each monthly InfoStream report is that Webcasters sign on with multiple streaming services to increase their content's distribution across the world.

For instance, the top-rated [virginradio.com](http://www.virginradio.com) is streamed by Akami, Ginger and PSINet.

The top Internet channels in terms of time spent tuning (listening) is No. 1 www.kpla.com an adult contemporary station from Columbia, Mo., with an average six hours, 30 minutes listening. Next was www.kplu.com a jazz station from Seattle-Tacoma, Wash., with an average of five hours, 25 minutes, followed by the country station www.q106.com from Madison, Wis., with an average of almost five hours (see chart).

Arbitron InfoStream Report — January 2000 Top-10 Cumulative Audience

Channel	URL	Monthly Audience	Format	Market
Virgin Radio	www.virgin.com	173,200	Hot Adult Contemp.	International
Christian Pirate Radio	www.mycpr.com	81,000	Contemp. Christian	(Internet Only)
KPIG(FM)	www.kpig.com	80,800	Album Adult Alt.	Monterey, Calif.
WGKX(FM)	www.kix106.com	77,500	Country	Memphis, Tenn.
Texas Rebel Radio	www.texasrebelradio.com	70,900	Album Adult	Austin, Texas
ZDTV Radio	www.zdvtv.com/radio	62,400	News/Talk	(Internet Only)
KGDU(FM)	www.cd93.com	48,900	Mod. Adult Contemp.	Monterey, Calif.
ABC Radio News	www.abcnewsradio.com	45,200	News/Talk	New York
WABC(AM)	www.wabcradio.com	41,700	News/Talk	New York
KHYI(FM)	www.khyi.com	34,000	Country	Dallas

Arbitron InfoStream Report — January 2000 Average Time Spent Tuning

URL	Format	Corp. Affiliate	Time Spent Tuning
www.kpla.com	Adult Contemp.	Premier Mktg.	6 hrs. 30 mins.
www.kplu.com	Jazz	Pacific Lutheran Univ.	5 hrs. 25 mins.
www.q106.com	Country	Mid-West Family	4 hrs. 52 mins.
www.wgms.com	Classical	Bonneville	4 hrs. 41 mins.
www.kbac.com	Album Adult Alt.	Roberts Radio	4 hrs. 35 mins.
www.92kqrs.com	Classic Rock	ABC Radio	4 hrs. 11 mins.
www.waus.org	Classical	Andrews Univ.	4 hrs. 11 mins.
www.wkdd.com	Hot Adult Contemp.	Clear Channel	3 hrs. 55 mins.
www.wnsr.com	All Sports	Randolph Victor Bell	3 hrs. 41 mins.
www.wplj.com	Hot Adult Contemp.	ABC Radio	3 hrs. 29 mins.
www.magic98.com	Adult Contemp.	Mid-West Family	3 hrs. 29 mins.
www.klty.com	Religious	Sunburst Media	3 hrs. 28 mins.



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MARKET WATCH

Big Easy Gumbo Delights Listeners

Ken R.

Check out radio in New Orleans: You can find a station called "Bayou 1450," local shows with Cajun food recipes and a blend of music that is unique.

Arbitron ranks this historic city number 41, but back in 1840 it was the fourth-largest city in America. Then it boasted "the largest number of free people of color of any southern city."

This radio market reflects all of the elements of the cultures of the city's founders. Founded by the French in 1718, 44 years later the city (along with the rest of Louisiana) passed to Spanish hands before being sold to the United States in 1803.

History lesson

Mix in the Native Americans of the region, the Acadians expelled from Nova Scotia in 1755, the black slave trade and plantation economy it fueled, and the wide variety of immigrants from around the world who came to the city and one can see why New Orleans has such a varied palette of influences today.

Radio revenue is growing in the Crescent City, from about \$49 million in 1997 to \$54.4 million in 1998 to almost

\$60 million last year, according to Melanie Green, media relations director for BIAfn. BIAfn estimates that the market's revenue for this year should be about \$65 million, Green said.

"Clear Channel takes in about 40 percent of the local ad dollars, Entercom gets about 43 percent and Centennial

from urban, rhythm and blues to rock to oldies and gospel. Of the top five stations, three are various forms of urban programming.

Arbitron Winter Book's No. 1, Clear Channel station WQUE-FM, airs contemporary hip-hop and urban sounds. Second-ranked in Arbitron's Winter



Kids race for candy at this year's Clear Channel Easter egg hunt

takes about 11.3 percent," said Green. "And most of the stations in the market have changed hands since 1993."

There is much diversity in programming with formats that run the gamut —

Book, WYLD-FM, also a Clear Channel property, features adult urban artists such as Whitney Houston.

"Old school" soul groups from the last three decades fill the airwaves on Centennial's KMEZ(FM). The station ranked fifth in the Arbitron 12-plus Winter ratings.

There are even more top-20 stations in the 12-plus demographic with other formats unique to the Crescent City airwaves.

WODT(AM), another Clear Channel station, plays delta blues, while WWOZ(FM), (not rated by Arbitron, but one of four public stations in this market), cooks up a rich stew of New

New Orleans

Market Rank: 41
 Revenue Rank: 40
 Number of FMs: 19
 Number of AMs: 17

Estimated Revenue (in \$000s):

1996: 47,200
 1997: 49,800
 1998: 54,400
 1999: 59,600
 2000: 64,900

Revenue Growth:

'93-'98: 7.9%
 '98-'03: 6.7% (est.)

Local Revenue: 84%
National Revenue: 16%

1998 Population: 1,262,200
 Per Capita Income: \$15,549
 Median Income: \$31,072
 Average Household Income: \$41,669

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Corporate grip

Despite the unusual diversity in programming, corporate ownership is the rule here.

Clear Channel owns nearly 40 percent of the market's audience share with its seven stations, according to the Winter 2000 book. And BIAfn reports that Clear Channel takes in 40 percent of this market's radio revenue.

Entercom owns another 30 percent of

SEE MARKETWATCH, page 34

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New Orleans

Commercial Radio Market Overview

Station	Owner	Format	BIAfn's 1999 Est. Station Rev. (in 000s)	Winter 2000 Rating
WQUE-FM	Clear Channel	Urban	7,300	12.7
WYLD-FM	Clear Channel	AC	5,250	9.2
WLMG(FM)	Entercom	Soft AC	3,500	7.2
WWL (AM)	Entercom	Nws/Tlk/Spts	11,500	7.2
WTKL(FM)	Entercom	Oldies	3,600	6.0
KMEZ(FM)	Centennial	Urban/Oldies	2,100	6.0
WNOE-FM	Clear Channel	Country	5,200	4.4
WEZB(FM)	Entercom	CHR	3,200	4.2
WRNO-FM	Centennial	Clsc Rock	4,050	4.2
WLTS-FM	Entercom	Hot AC	3,000	4.1
KKND(FM)	Clear Channel	Modern Roc	2,000	4.0
KUMX(FM)	Clear Channel	CHR	2,100	4.0
WYLD(AM)	Clear Channel	Gospel	1,600	3.9
WCKW-FM	222 Corp.	Clsc Hits	1,400	1.9
WBYU(AM)	Centennial	Adlt Stndrd	600	1.9
WSMB(AM)	Entercom	Sports	900	1.1
WBOK(AM)	Willis	Gospel	740	1.0
WKSJ(FM)	Guaranty	Clsc Rock	N/A	0.9
WODT(AM)	Clear Channel	Rhythm/Blue	400	0.8
WTIX-FM	Fleur de Lis	Oldies	350	0.7
KGLA(AM)	Crocodile	CHR/Span	N/A	0.5
WTIX(AM)	GHB	News/Talk	360	0.5
WFNO(AM)	NOPG LLC	Spanish	N/A	0.4



Stations are ranked in order of Arbitron Winter 2000 12+ share. Copyright 2000 the Arbitron Company. May not be quoted or reproduced without the prior written permission of Arbitron. Other information provided by BIA Financial Network through its MEDIA Access Pro Radio Analyzer Database software.

Mardi Gras Day Parade

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Unusual Radio Rules Crescent City

▶ **MARKETWATCH**, continued from page 32 the market share with its six signals. When you add the third player, Centennial, you have 82 percent of New Orleans radio revenue in the hands of three players.

These three broadcast groups own the top 14 stations in this market.

"Q-93," Clear Channel's WQUE-FM, has the No. 1 morning show, as well as the top slot in the Winter Arbitron ratings, according to Ernest L. James, Clear Channel GM in the market. James said the program is personality-driven.

"CJ & Company is comprised of CJ Morgan, a 10-year veteran with us, and Monica Pierre, an Emmy Award-winning

newswoman. They have a strong moral voice and are involved in the urban community. They're people of real character."

James said that these morning talents share their personal experiences and play a little music, too. But there is more to WQUE-FM ratings success than a couple of local personalities. One example is the annual WQUE-FM "Teen Summit."



Les Nubians perform at WYLD-FM's Mardi Gras celebration

"We hold it at the Superdome and we let teenagers talk about issues like sex, drugs, education and violence," James said.

Reformed prisoners, school superintendents, police and some of the biggest urban musical artists are invited to the "Teen Summit." At the event, four \$5,000 scholarships are awarded to college-bound students.

Recent recording stars in attendance have included Faith Evans, No Limit and the Cash Money Crew.

WYLD-FM is a heritage station. This urban contemporary mainstay holds an annual Memorial Day Weekend "Family Reunion" for its listeners.

Other Clear Channel stations, WYLD(AM) and WODT play gospel music and blues respectively. These properties come together to hold a festival at Scout Island in City Park that plays host to about 30,000 people from the community.

Clear Channel owns three other stations in New Orleans, but they operate from a separate building.

"We have two buildings currently housing our stations," said Bill Tatar, promotions manager for the Clear Channel cluster.

Cluster ops

"WQUE-FM, WYLD-AM-FM and WODT are all in our building on Gravier St. here in New Orleans. About a mile away, we have another group of stations which were acquired over the last three years including KUMX(FM), KKND(FM) and WNOE-FM. Our studios are a mixture of old and new equipment, but we plan to consolidate our operations sometime soon."

"WNOE-FM has been a highly rated country station for 20 years," said James. Crazy Eddie and the Breakfast Flakes with Ray Romero and Rebecca Lynn hold forth in the mornings and then "today's hot country" rolls the rest of the day. The station held the seventh place in the Winter Book.

Ginger Noah is creative director of Neworleans.com, a privately owned company devoted to promoting the city.

Noah said he loves Clear Channel's alternative rocker KKND (11th place in the Winter Book).

"They're running one contest now where people paint the exteriors of their cars and buildings to expose the call letters," said Noah. "The station is giving away a free apartment for a year in the Warehouse District, free money, free tanning and free food."

Entercom is the market's second-largest corporate owner by Arbitron's

Winter listener measure, with a 30 share. Market manager Craig Jacobus oversees the company's six New Orleans stations, including the heritage all news/talk/sports WWL(AM).

Topics might turn from a new Cajun recipe from Chef Buster Ambrosia to the recent felony conviction of former Louisiana Governor Edwin Edwards.



Walton & Johnson

Entercom's WWL, ranked third in the Winter Book, is the market's only full-time news/talk operation. The station carries a news block weekday mornings, New Orleans Saints football and syndicated talkers Rush Limbaugh and Dr. Laura.

The other major player in the market is Centennial Broadcasting, based in Winston-Salem, N.C. Headed by former ABC Radio executive Allen Shaw, Centennial owns stations in only three other markets: Las Vegas, Denver and Vero Beach, Fla.

"WRNO-FM is 'the rock of New Orleans,'" said Tom Kennedy, general manager of the Centennial stations in the market. The station placed eighth in the Winter 2000 Arbitron ratings.

"The morning show features Walton and Johnson, and these guys have been in this town about 15 years and they are very funny, but they also make social commentary."

"WRNO-FM is a classic rock station that plays more than 1,200 songs in rota-

tion," said Kennedy.

"The advertisers tell us we have a better audience profile than the news/talk station for the demographic they want to buy. I guess you could say we are more eclectic than your standard 'Stairway to Heaven' station that plays a much shorter list."

WBYS(AM), known as "Bayou 14-50" in tribute to the region and another Centennial station, features "The Bob and Jan Show" weekday mornings. Bob and Jan Carr were local television celebrities in the 1960s and are well known to their older audience.

After 10 a.m., the ABC syndicated Stardust format takes over the airwaves to serve up big band standards.

WBYS also broadcasts minor league Zephyrs baseball in addition to its nostalgia music format.

"KMEZ is the fifth-rated station in town," said Kennedy. "It's classic R&B and almost all music." Known as "Old School 102.9," this station is targeted at women 35-54.

"We have the most professional staff in the market, bar none. We bought these stations in 1998 and I couldn't ask for a better group of people," Kennedy said.

The independents

There are only a couple of independent stations remaining in New Orleans. WCKW-AM-FM is owned by 222 Corp., whose sole business is the WCKW-AM-FM stations.

"I'm the GM, my brother is sales manager, my wife is the comptroller, my mom is CEO and my father put the station on the air in 1965," Sid Levet said.

Last August the station changed its rock 'n' roll format and their on-air staff on the FM side. In its place, WCKW-FM substituted a '70s-based oldies format called "'92 point three," "the point." And WCKW-FM is now the only station in town with all music in the morning.

Levet said the station used to have "Bob and Tom" (syndicated) in the morning.

"Our cume doubled when we took them off."

"All the sex talk and the Viagra knock-off drug ads are gone. We got people calling to thank us for taking that stuff off the air."

WCKW-FM also has the tallest tower in the state of Louisiana.

"We rock soft and carry a big stick," said Levet.

WCKW(AM), heard only in the "River region" near New Orleans, is a gospel-formatted station.

Dwayne Breashears, program director for public station WWOZ, said that his

See MARKETWATCH, page 35 ▶

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▶ MARKETWATCH, continued from page 34 station is all music, 24 hours a day.

"And of that, 65 percent is contemporary and traditional jazz, 25 percent is blues and R&B, and the rest is 'world music,' including Cajun and zydeco."

Breashears describes the difference between those two local musical genres



WQUE-FM news anchor Monica Pierre at Q-93's 'Teen Summit'

this way: "Zydeco is more black-oriented, Cajun is of French origin."

The station has about 65 regular show hosts — all are volunteers. WWOZ also has a few unique on-air services including an arts billboard called "Artline" and "Livewire," which describes daily community events.

"Our Web site gets about 1 million hits per month because of our unique music and the fact that we're non-commercial," Breashears said.

The National Public Radio affiliate in this market is classical "grand dame" WWNO(FM). In addition to its classical music format, the station carries popular NPR and Public Radio International programming like "All Things Considered" and "This American Life."



There is also WTUL(FM), a college radio station from Tulane University that runs a free-form format and employs only volunteer student hosts, engineers and announcers.

And then there is WRBH(FM), "radio for the blind and print handicapped," the first full-time reading service on the FM dial in the United States. WRBH signed on the air in 1982, at 88.3 on the FM dial.

Nick Spitzer, host/producer of "American Routes," the only nationally syndicated music show from New Orleans, (see "Roots Rock On American Routes" page XX), described the WRBH service in the context of this market.

"The reading to the blind and the sick and shut-in is essentially kind of an old Louisiana welfare-state thing. I think that it's an admirable thing, but it's just something you expect in Louisiana with our long tradition of 'every man a king' and charity hospitals and there it is. It's been there a long time," Spitzer said.

Neworleans.com's Noah said the market is experiencing an upswing in tourism.

"We have walking tours, cemetery tours, river boat cruises and Jazz Land, a big theme park which is opening right

now. Then of course there's always Mardi Gras."

Beverly Gianna of the New Orleans Metropolitan Convention and Visitors Bureau noted that the city now has 10 National Historic Districts.

"You can roam through the French Quarter, take a carriage ride and hear tales of voodoo queens and pirates told to the calliope tunes of passing riverboats."

"The economic climate here is healthier than any time in the last eight years," said Kennedy of Centennial. "Are we looking to buy other stations in the market? Every day ... but there isn't a lot of inventory available."



Ken R. is a former broadcaster and jingle producer who now devotes full time to writing. He can be reached at kenr5367@aol.com



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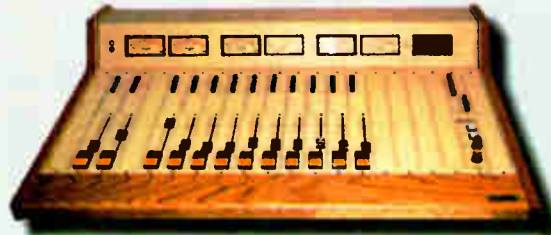
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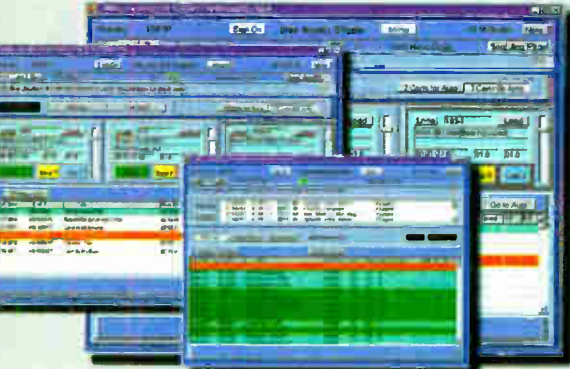
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Roots Rock on 'American Routes'

Laura Dely

"American Routes" is heard in more than 175 markets and is the only nationally syndicated radio show from New Orleans — but no one in the Big Easy can listen to it.

beyond program just doesn't fit into the format of New Orleans public stations.

"It's ironic, given how popular Louisiana culture is, that there's really no regular presence except ours. We're strongly the Louisiana, New Orleans and Gulf South in our sound, but we're not exclusively that," Spitzer said.

Spitzer said.

Bayous, beltways

The show travels along all "American Routes" to find music and performers from the "bayous to the beltways, from blue highways to blacktop," as Spitzer intones over the "Guitar Boogie Shuffle" of The Virtues at the start of each show.

The Connecticut-born Spitzer believes his show has a high affinity to NPR news listeners, which he attributes to the show's mix of music and its history.

"We've gone so far as to say that 'American Routes' is music and information. Because we tell about what it meant when James Brown said, 'I'm black and I'm proud,' or how reggae music

evolved out of Jamaican sugar cane workers hearing American soul music on their transistor radios," Spitzer said.

The result is a kind of inverse of the NPR news magazine shows like "All Things Considered."

"They've got little buttons and stingers and zippers that fit between the segments and music segments. We pretty much have all music, but we also have little occasional segments. So, we're music and information. They're news and information."

Credentials

Spitzer has a doctorate in folklore from the University of Texas with a specialty in Creole and Afro-French Louisiana. He knocked around Texas and Louisiana in the late 1970s and early '80s and was the first Louisiana state folklorist.

He moved north to Washington, D.C., for a 10-year stint in the mid-'80s to work on the Smithsonian Folk Festival on the National Mall, and created the Public Radio International program "Folk Masters."

He returned to Louisiana in 1997 with the idea for "American Routes."

"'American Routes' was honestly a show I had had on my mind since I got out of college. I'd always wanted to do a kind of syndicated American music show, but over the years I got a little wiser and I gained some musical knowledge and got more engaged in the Gulf South.

"So the show that we're doing is one that had always been on my mind but had not become a reality till we got funded by CPB in '98 and went on the air with it."

The first "American Routes" went on the air in April 1998. It was initially distributed to just 12 stations. In just over two years, the show has grown to more than 120 stations.

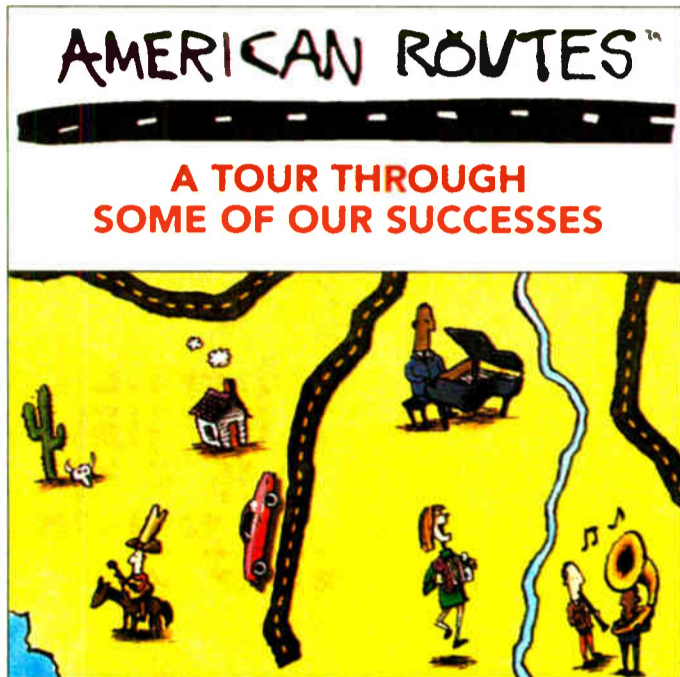
"American Roots" has just added four stations in Hawaii, at least that many in northern Michigan, and all of North Dakota — which Spitzer said he thinks is about seven stations.

"With all of the repeaters these sta-



Nick Spitzer

Photo by Rick Olivieri



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Nick Spitzer, host and producer of the show, which is supported by the Corp. for Public Broadcasting, said the two-hour blues, country, jazz, soul, zydeco and

information. Because we tell about what it meant when James Brown said, 'I'm black and I'm proud,' or how reggae music

tions use, it's hard to tell how many markets or stations are getting the program exactly," Spitzer said.

KCSN-FM in Los Angeles has just announced that it will air "American Routes" at both its original "graveyard" slot and will add a new "prime-time" 7 p.m. slot to its weekend lineup. The addition, Spitzer said, "is a very big deal."

Oregon Public Broadcasting has also announced a deal to carry "Routes," on four of its member stations: KOPB-FM, KOAC(AM), KRBM-FM and KOAB-FM.

All of these recent announcements account for an addition of at least 21 new stations since the beginning of the year.

The show built new studios in an old New Orleans water-bottling plant last year. They have two Sonic Solutions workstations.

"We're very proud of the fact that we have a very well produced sound, but that we are able to play rough-and-ready music," Spitzer said.

To take a "trip" with Spitzer, visit the "Routes" Web site at www.americanroutes.org

BOOK REVIEW

And Now, on With The Countdown

New Book Tells the Story Of 'American Top 40' as The Show Approaches Its 30th Birthday

Peter King

It's hard to believe: July 4, 2000, marks the 30th anniversary of the debut of "American Top 40," a program that has been a staple of American contemporary hit radio weekend programming for most of those three decades.

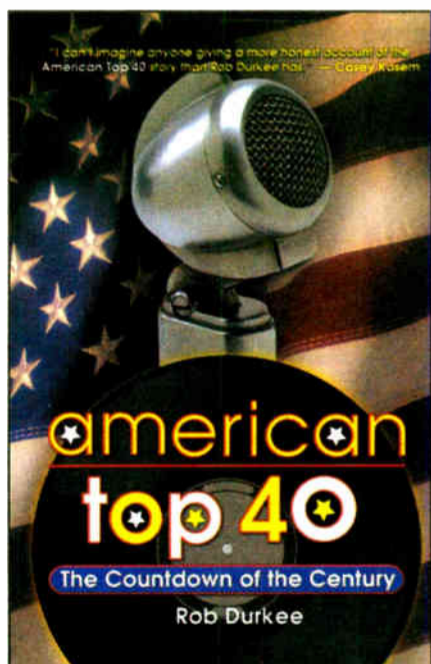
The show went off the air in 1995, but was reborn in 1998. Now, its storied and sometimes checkered history is chronicled by current AT-40 researcher-contributor Rob Durkee, in his book titled "American Top 40: The Countdown of the Century."

Inside stories

A long-time devotee of the program, Durkee won a spot on the show after a 10-year letter-writing campaign. His book is sometimes lovingly told, yet is anything but a valentine.

Durkee tells many inside stories, warts and all. In many cases, these are "no-holds-barred" accounts of the evolution of AT-40. In particular, his accounts of the show's ABC years (1982-1995) are scathing.

"American Top 40" tells the stories of co-creators Casey Kasem, Ron

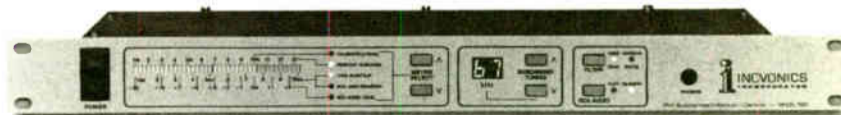


Jacobs, Don Bustany and Tom Rounds, and how the convergence of their careers resulted in AT-40.

Its humble beginnings include the first show's 18-hour recording session, which was compressed into three hours of on-air programming, and the road trip that two members of the production team took to drive in a Chevelle Super Sport to El Cajon, Calif. — the closest and fastest way they could hear the debut broadcast on KDEO(AM).

See A-T 40, page 42 ▶

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Groups on the Rise Avoid Clusters

► GROUPS, continued from page 31 and 11 small-market stations in Ohio and California for nine stations in the larger Albany, N.Y., and Grand Rapids, Mich., markets.

"They were able to sneak in stations in some of the most favorable Clear Channel markets and spin off their tiniest stations in unrated markets," said Prudential's Marsh.

They're not likely to be the last additions to Regent's portfolio, which now numbers 40 stations.

"We sit with money in the bank and no debt, over \$100 million in acquisition capacity without having to raise equity," Jacobs said.

"Our strategy is to concentrate on markets 50 and smaller," he said. "Any market we go into, we want to be either No. 1 or No. 2 in revenue, with the best signals in the market."

Jacobs said Regent will have room to add to its clusters in six of its 10 markets after the Clear Channel deal closes. And if Clear Channel grows again, Jacobs stands ready to pick up more spin-offs.

"We're one of the first people they call," he said — that is, if he doesn't see Michaels in the hallway first.

The minority radio boom

Regent's nine stations were only a few of the dozens that went on the market as part of the Clear Channel/AMFM merger. From Providence, R.I., to Los Angeles, owners used the opportunity to enter new markets or strengthen their positions in existing clusters, none more aggressively than Radio One.



Alfred Alonzo

"It feels like they've come such a long way in such a short period of time," said Prudential's Marsh of the black-owned broadcaster.

From its bases in Washington, and Baltimore, Radio One has grown to nearly 50 stations, with much of that growth coming in just the last few months. From Clear Channel's spin-offs, Radio One picked up a dozen stations in markets such as Cleveland, Dallas, Houston, Los Angeles and Raleigh, N.C.

Since that \$1.3 billion acquisition, Radio One has also added stations in Charlotte, N.C.; Augusta, Ga.; Indianapolis; Dallas; Boston and Minneapolis. In several of those markets, the company now controls the only urban-formatted FMs.

"The demographics are really attractive," said Tim Wallace, senior broadcasting analyst at Bank of America Securities.

While Radio One dominates the black audience in many major markets, several companies are splitting the prize that is the big-city Hispanic market. Hispanic Broadcasting Corp. (HBC), Spanish

Broadcasting System (SBS), Entravision, Radio Unica and Lotus Communications compete in markets from New York to Miami to Los Angeles.

But while most of the groups use Spanish-language music formats as their weapons, Radio Unica is trying a different tactic.



Steve Dawson

"We are the only 24-hour-a-day Spanish radio network in the United States," said Steve Dawson, the network's executive vice president and CFO.

Instead of the multistation clusters the other broadcasters are paying top dollar to assemble in each market, Dawson said, "Our motto is to have one station in each market, with our efficiencies coming through network programming instead of replicating the programming in each market."

Where music stations might have a hard time programming the same format to New York's Puerto Ricans, Miami's Cubans and Los Angeles' Mexicans, Dawson said Unica's news and talk format reaches all those communities through hosts like Pedro Sevcec, better known as the nightly TV news anchor on Telemundo — "the Tom Brokaw of Hispanic broadcasting," said Dawson.

Since its IPO last fall, which raised \$109 million, Unica has grown to 14 stations, most in the top-20 Hispanic markets. In addition to its own stations, Unica boosts its reach to 80 percent of the nation's Spanish-speaking audience through affiliates, including one — WINX(AM) in the Washington market — owned by another growing Hispanic broadcaster, Mega Communications.

"HBC, Radio Unica and SBS are primarily top-10 market players," said Mega CEO Alfred Alonzo.

"We're not going after L.A. and Miami."

Instead, Mega is building station groups in markets with smaller percentages of Hispanic listeners — Boston, Philadelphia and Washington among them.

"It's become very difficult to buy stations post-deregulation because the same companies keep buying things up," said Alonzo, noting that he'd love to add a Boston FM to his two AMs there, but hasn't been able to.

Nevertheless, Mega did manage to make one purchase from the Clear Channel/AMFM spins, adding WGNE-FM in the Daytona Beach, Fla., market.

Alonzo notes one more difference between his 20-station group and the bigger players: Mega is privately held, with most of its financing coming from

investor Adam Lindemann.

Being private, said Bank of America's Wallace, can be a problem in the age of the IPO.

"If you're not a public company and you don't have public financing, you're at a disadvantage when it comes to buying at the high multiples stations are trading at," he said.

That's one reason some longtime private broadcasters are going public. After nearly four decades in the hands of the Beasley family, the Florida-based Beasley Broadcast Group made its IPO in February, and promptly closed on a pair of stations in Augusta, Ga., expanding its cluster there to four FMs and two AMs.

"We are looking to buy clusters and/or existing stations in markets where we already have a presence, should the opportunity arise," said Caroline Beasley, the group's vice president/CFO.

That strategy led the company to buy three AMs in the Miami/West Palm Beach, Fla., markets, adding to a cluster that already includes top-rated WPOW(FM).

"We find these large-market AM acquisitions attractive and lucrative because of the lower multiples of 10-11 times cash flow they provide," said Beasley, whose company is entering a new market, Boston, with a single station, WRCA(AM).



Caroline Beasley

very comfortable with," said Bank of America's Wallace.

Prudential's Marsh said investors are more comfortable with radio as a whole right now than with TV station groups, as illustrated by the drop in Emmis Broadcasting's stock in early May, when the company announced its acquisition of Lee's TV group.

"The operating fundamentals (for radio) look tremendous," he said. "They've never looked better."

Before groups try to get too big too fast, though, Marsh said the accounting and cash-flow troubles of one high-flying group should serve as a warning.

"The lesson learned at Cumulus is you have to control your growth. I think

Beneath the big groups, plenty of entrepreneurs are still buying and selling radio stations like it's, well, 1990.

Another company about to go public is New Jersey's Nassau Broadcasting, which filed for its IPO May 9.

The company declined to comment on its plans while in the "quiet period" before the offering, but its strategy is made clear by the filing itself: "We are ... focused on building local radio station clusters in demographically attractive suburban areas surrounding major metropolitan markets in the northeastern United States."

So far, the market in question has been New York City, where Nassau has grown from a single AM/FM combination in Princeton, N.J., into a 32-station cluster ringing the Big Apple's suburbs from Ocean County, N.J., to Allentown, Pa., to Bridgeport, Conn.

In the land of giants

It's that sort of focus that smaller group owners hope will keep them alive in a world where Clear Channel and Infinity dominate.

"It is my belief that radio remains very much a local business," said Caroline Beasley. "By successfully establishing strong clusters in most of our markets, we compete very effectively with the larger radio groups found in those same markets."

Understanding the communities they serve helps some of the minority groups appeal to investors as well.

"Radio One and HBC have outstanding management teams that investors are

investors are going to be more skeptical this time around in terms of management," he said.

"A group needs to have a management team that's operated previous entities, Marsh said."

That bodes well for upstart groups like Nevada-based NextMedia. With 42 stations, most in small markets, it barely registers next to the big guys. But Marsh said Wall Street believes in its management team.

"Carl Hirsh, who's been in radio on the tower side as well as the station side — it sounds like they've got some smart money backing them, and clearly Steve Dinetz has experience as a CEO."

Marsh is also bullish on Regent, where CEO Jacobs' resume includes a stint as founder and CEO of Jacor, as well as founder of the first version of Regent, which he sold to Jacor in 1997.

With the support of analysts, Jacobs hopes one day to rival his old colleagues 12 floors above.

"We're hoping to have several hundred stations," he said. "We think that we'll be one of the long-term survivors in the business."

■ ■ ■

Why is your group worth watching? Tell our readers. Send e-mail to radioworld@imaspub.com

Scott Fybus is the editor of *NorthEast Radio Watch* when he's not reporting for *Time Warner's R News* cable channel in Rochester, N.Y.

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Fans Follow 'Papa'

One-on-One Sports host "Papa" Joe Chevalier has fan clubs across the country, according to One-on-One Sports.

Some of his recent exploits included a preview of the Lenox Lewis-Michael Grant fight that took place fight night in New York City for the World Heavyweight Championship.

"Papa" Joe invited boxing experts Al Bernstein, Lou DiBella and Bert Sugar to join him beside the big-screen TV at Mickey Mantle's Restaurant for a live four-hour broadcast. Listeners were encouraged to call in with questions for "Papa" Joe and his guests.

One-on-One Sports is a 24-hour sports radio network. The programming is broadcast live to more than 425 affiliated stations.

The network and "Papa" Joe can be heard at www.1on1sports.com
For more information call Beth Roncke in Chicago at (847) 509-1661.



Papa Joe Chevalier with Executive Producer Tim Parker in the 'booth' at the Super Bowl last January

The Onion' Adds New Markets

Westwood One's "The Onion Radio News," a daily 30-second satirical radio news feature derived from the online publication of a similar name (aka "The Onion"), has added three new markets to its service: WCKG(FM) — Chicago, KKND(FM) — New Orleans and KYNG(FM) — Dallas.

"The Onion Radio News" now airs on 103 stations across the U.S., including those in seven of the top 10 markets. "The Onion" Web site (www.theonion.com) receives over half a million hits weekly.

The site won a Webby Award in 1999 for the "Best Humor" Web site and "Audience Favorite."

"The Onion" has just signed its first feature film deal with DreamWorks Animation, who optioned the rights to an "Onion" article by head writer Todd Hanson, who is signed to write the screenplay.

For info contact WWI at (888) 937-8966.



Onion writers (front row, left to right) John Krewson, Rob Siegel (back row, left to right) Carol Kolb, Mike Loew, Todd Hanson, Tim Harrod

'American Top 40' at 30

▶ A-T 40, continued from page 39

The number of affiliates grew from seven to 118 stations one year later. By the time the show went off the air in 1995, thousands of stations worldwide had broadcast AT-40.

Durkee writes about the evolution of American popular music during the show's run, and some of the problems created by trying to stick strictly to Billboard magazine's top-40 chart.

For example, many affiliates objected to rap records in the countdown when the music became a force during the 1980s.

Also covered are the show's transition from real-time/analog to state-of-the-art digital, and the rocky roads endured when Kasem left the show and was replaced by Shadoe Stevens.

Also detailed is the ultimate demise of the show under ABC's reign, when Kasem moved to Westwood One in 1988 to host a countdown competitor after a contract dispute with ABC. (The loss of Kasem was seen by many to be a major mistake by the "bean-counters" at ABC.) The book also reports Kasem's return to AT-40 for its rebirth under the AMFM flag in 1998.

Chapter 5, called "I Really Got Mad," tells the story of the infamous "Dead Dog" tape and other notable moments.

The "Dead Dog" tape is an outtake in which Kasem went ballistic. He was asked to read a long-distance dedication to a dead dog, transitioning into an up-tempo record.

Behind the mic, Kasem said, "I want a goddamn concerted effort to come out of a record that isn't a fucking up-tempo record every time I do a goddamn death dedication!"

AT-40 tells the stories of other infamous AT-40 moments, spoofs, bloopers and plain mistakes.

Chapters deal with guest hosts — first to fill in for Kasem? KRLA(AM)'s Dave Hull, on show No. 69 in 1971 — the Stevens years ("The Dream and the Nightmare"), and the politics of a small production company, Watermark, being taken over by giant ABC.



Casey Casem, circa 1974

Durkee writes how Shadoe Stevens was "muzzled" during the ABC years and about the demise of AT-40 under ABC's umbrella, and finally, the show's rebirth in 1998.

Also here: sixty-seven pages of AT-40 charts, including year-end rankings, top-40 recording acts, songs of the rock era, the top 40 Christmas songs, the top 40 rock-and-roll acts by decade, top 40 songs of the disco era, top 40 girls of the rock era and more.

It's interesting to see the evolution of these categories as the show ages. In 1971, for example, the top five acts of the rock era included Elvis, the Beatles, Pat Boone, Connie Francis and the Supremes. There are several versions of the AT-40 Book of Records, and a listing of the AT-40 top 100, 1970-1995.

"American Top 40: The Countdown of the Century" appears to be exhaustively researched and footnoted. Durkee seems to have made great efforts to present a balanced account. It's a good read for anyone with a sense of or an interest in some prime radio history.

Peter King is an Orlando, Fla.,-based reporter for CBS News radio.

"American Top 40: The Countdown of the Century," by Rob Durkee. 350 pages, Macmillan Publishing Company, New York. \$24.95.

Radio's Most Wanted

PROFILE: David Hood

Chief Engineer / AudioWALT Supervisor
Emmis Communications / WTLC AM & FM
Indianapolis, Indiana
Radio World reader since its inception (1977)

- Hometown: Elwood, Indiana
- School: Purdue University, BS/EET
- Favorite radio format: Old radio mystery programs and Imagination Theatre
- Favorite radio station: All the Emmis Stations in Indy
- Favorite color: Blue & green
- Favorite piece of equipment: My good ole Tektronics scope!
- Hobbies: Reading tech manuals, World War II history, and Sherlock Holmes
- Coffee: With Sweet & Low
- Proudest moment: Getting my first class radiotelephone while a sophomore in high school
- Favorite Section in Radio World: Workbench, everything else - I even like the ads!
- Reads RW because: Radio World is my main source for broadcasting information, especially news about DAB!



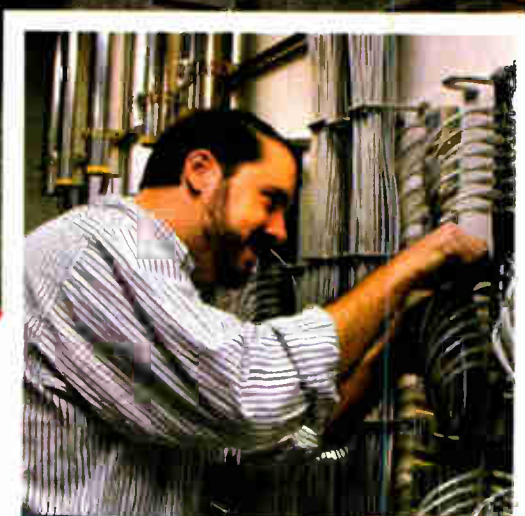
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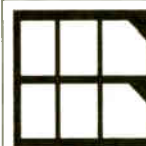
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NPR Honors Armstrong

In honor of what would have been Louis Armstrong's 100th birthday, National Public radio will launch "Satchmo: The Wonderful World of Louis Armstrong," a 13-part series the week of Armstrong's self-declared birthday: July 4.



"Satchmo" will pay centennial tribute to the jazz master in one-hour segments as part of the NPR "Jazz Profiles" documentary series.

"Satchmo" explores Armstrong's 50-year career from his seminal work in the 1920s through his popular work in the '60s.



The series will feature sound clips and recordings of the New Orleans native and the people who knew and worked with him.

Listeners will hear archival interviews with Armstrong, Billie Holiday, Ella Fitzgerald, Louis Prima and Bing Crosby, among others.

Recent interviews for the series include Wynton Marsalis, Jon Hendricks, Gary Giddins, Nicholas Peyton as well as 20 other musicians, friends, writers, historians and scholars. New York Daily News writer Stanley Crouch will host the series, with an introduction from singer Nancy Wilson, Jazz Profiles' regular host.

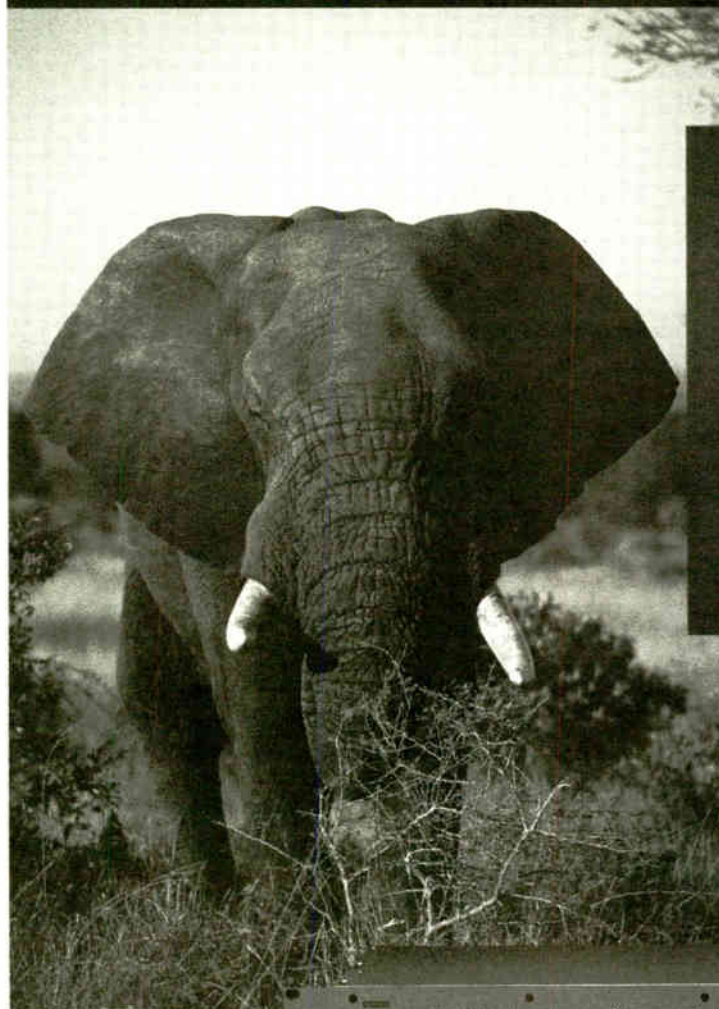
— Laura Dely

Mother Nature Vs. One-On-One

Despite 84-mile-an-hour winds, golf-ball-sized hail and a tornado touchdown on their headquarters, One-On-One Sports won the battle to provide uninterrupted service to its 425-plus affiliates during the big storm that slammed the Chicago area May 18. A funnel cloud is pictured here as it circles the One-On-One studios.



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THE GM FROM HELL

Ken R.

He might have been a fire-breathing, gin-snorting monster. She might have been a devil from the River Styx in human form.

This general manager made your life at the station miserable. During your period of indentured servitude you suffered mightily.

Perhaps you are still there taking a daily pounding. We invite you to take a break from shoveling sulfur to enjoy some stories of wretched excess. The names have been omitted to protect the hideously guilty.

How cheap was he, Johnny?

Most station managers are famous for "trading out" certain goodies and paying the tab with commercial airtime.

For example, WXXX (a hypothetical station, not the real one in Vermont) airs hourly spots for a local exterminator for three weeks. Chances are that station doesn't have an infestation problem ... anymore.

Houses of furniture, trips to Tahiti and jewelry are typical booty. But a man we'll call "Mr. D" not only traded out the entire heating and air conditioning system for his personal residence, he awakened the station engineer at 3 a.m. one frigid December morning to fix it when it broke down.

In another story from the dark side of radio, a consultant tells of a GM who didn't want to bear any heavy upfront promotional costs.

So when a contest entrant won the grand prize on the air, this GM walked back to his luxurious wood-paneled office and turned on his T-shirt machine. He manually pulled down the press and stamped the station logo on the shirt and dropped it at the front desk for the lucky winner to pick up.

This same man also replaced Coke and

Pepsi in the station pop machine with off-brand Cheapo Cola, but kept the name-brand prices.

Then there was a gent we'll call "Mr. L" who hired a top morning man from a distant market at a large promised salary. The air talent moved to town and began raising the ratings almost instantly.

But what a surprise when he looked at his first paycheck. The GM had quietly changed the deal, shorting the talent about \$200 per week.

The new morning host asked his boss about this inadvertent "mistake." He was told, "Hey, you're here. You can always move back if you don't like it."

When I get my final check, plus a generous severance, too, of course, I'll be happy to tell you where everything is.

— A CE who was abruptly fired

And talk about cheap! A Midwest GM grabbed his afternoon host as he walked out of the studio after his air shift.

"My boy," said the gracious manager, "you've been doing a great job for us and I'd like to show you how much we appreciate it. Follow me back to my office, please."

The delighted air talent began to have thoughts of bonuses, trips or maybe that long-promised but never-delivered company car.

Upon reaching the office, the GM turned to the small safe on the floor. The air talent began to drool. The general manager bent over and removed five small cards from the safe and handed them to the young announcer. "Listen, your rat-

ings are way up ... so I want you to have these. Share 'em with your family."

The jock looked down at the five "dollar-off" coupons from Arby's he had been handed and knew his dreams of that station car would be on hold for a long time.

"Mrs. M.," a general manager at a Florida station that lagged in the ratings, rallied the troops one morning for a rousing pep talk.

Good intentions

"We're gonna really make a splash during this rating book. No expense is too great!" she boomed.

"We're gonna spend so much money on a prime-time TV schedule and no one will be able to remember any call letters except ours!"

A roar of approval went up from the staff-member audience.

But the excitement was short-lived. As it turns out, the "huge TV schedule during prime time" couldn't be traded out with the local NBC affiliate, so the station had to settle for a few fringe spots during the late-night roller-derby game on cable. There was no noticeable ratings spike, by the way.

In a large Michigan city, there was an elderly gentleman general manager who was active in Republican circles.

Prior to a 1973 newscast, he entered the booth and told the talent, "Young lady, we're tired of all these 'Watergate' stories. We won't be doing any more of those on our station."

The ability to make decisions is an important quality for any manager to pos-

sess, as this GM from the Lone Star state demonstrates.

It seems this gentleman loved the decision-making process so much, he always made decisions, and then would reverse himself within minutes.

The PD at another station would complain to his boss about the sales department selling 28 minutes an hour in morning drive. "You're absolutely right," boomed the big guy. "We have to get those sales guys to follow the rules. Who do they think they are, anyway?"

The PD, feeling vindicated, marched back to his office sneering at the sales manager on the way. The sales manager then went to the GM and said "those guys in programming are tying our hands. They don't want our station to make any money. What are you going to do about it?"

"I'll tell you what I'm going to do. I'm going to go right in there and have a good talk with that #*&\$*% program director. You know the commercials are what pays his salary!"

Net result: everyone is angry and confused.

Our last story proves that "what goes around comes around."

A chief engineer was fired abruptly from a Georgia radio station. He was asked to clear out his desk by 5 p.m. that afternoon.

A few days later, his younger, less-expensive replacement ran into the GM's office in a panic.

"Hey, boss ... I can't find our Optimod! And the schematic diagram for the whole station is gone, too!"

The GM placed a hurried call to his ex-employee and demanded to know what happened. The former chief calmly said, "When I get my final check, plus a generous severance, too, of course, I'll be happy to tell you where everything is."

The former engineer took the liberty of hiding certain items in the drop ceiling of his office. By the way, the two checks were FedExed that very day.

■ ■ ■

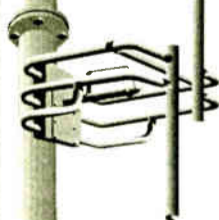
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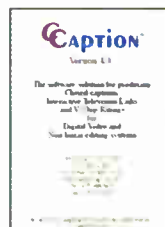
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Rockaway, NJ 07866

Reader Service No. 9

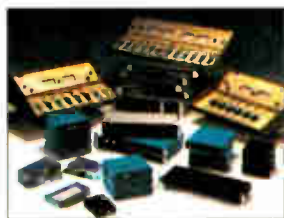


Literature Gallery

◆ CONSOLES/MIXERS ◆

Audio Technologies Inc. (ATI) products include the Vanguard series of broadcast consoles, Micro-Amp series of modular and self-contained microphone, line and distribution amplifiers, monitor amplifiers, headphone drivers, interface amplifiers, audio processors, studio metering systems and the NanoAmp series of small mixers for fixed or portable use.

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 E-mail: les@atiguys.com
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Reader Service No. 16

◆ DIGITAL CONNECTION, A/D, SYNCHRONIZATION ◆

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Reader Service No. 12

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 E-mail: info@opticomm.com
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Advertisement

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E-mail: tubesale@econco.com
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Woodland, CA 95776



Reader Service No. 22

◆ RBDS, RDS & SCA PRODUCTS/SERVICES ◆

The **Inovonics 701** is a simple RDS encoder that gives your station a "digital presence" for less than \$400. Your call letters, advertising or station promos will scroll across the front-panel display of the new generation of consumer radios. Easy to set up and use, the Model 701 brings your station up-to-date in minutes.

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E-mail: info@inovon.com
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Reader Service No. 27

◆ SERVERS/STORAGE ◆

The MA-600 series of Video Servers from **MATCO** offer exceptional performance at a reasonable cost. Both the dual stream Motion JPEG box (MA-611J) and the multiple channel MPEG2 unit (MA-6xxM) include all hardware and software necessary to record, store, manage and playback either commercial or program length material. 80 hours of storage (at 8 Mbits) may reside in the MPEG unit, 24 hours (at 2.5 Mbytes) in the JPEG unit. Additional storage adds expansion units. RAID is available.

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E-mail: matco@wenet.net
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Los Gatos, CA 95033



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The **MATCO MA-204B** playback automation and commercial insertion controller programs up to 3 channels, and contains an internal 22x3 Router with optional balanced audio. The MATCO MA-206B is capable of programming 12 channels, and controls your router. Both are capable of controlling VTRs and servers (using Time Code or Tones), as well as the Matco MA 600 series of Video Servers.

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Reader Service No. 24

◆ STUDIO ACCESSORIES-SUPPORT ◆

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Sierra Madre, CA 91024



Reader Service No. 29

Literature Gallery

◆ SWITCHING, PATCHING, DISTRIBUTION ◆

Audio Accessories Inc., a leading manufacturer of audio and video patchbays, has released a new 56-page catalog that features information on 1/4-inch long-frame panels, .172 (TT/Bantam) panels and Audio Accessories' exclusive 1/4-inch 2 x 32 long-frame panels. The catalog has detailed information on more than 50 different styles of pre-wired audio patchbays, including the new KRONE punch-down terminal. **Phone: 603-446-3335; FAX: 603-446-7543**
Web: www.patchbays.com
E-mail: audioacc@patchbays.com
 25 Mill St.
 Marlow, NH 03456



Reader Service No. 30

◆ TELCO SYSTEMS & HYBRIDS ◆

JK Audio Inc.'s new catalog is packed full of telephone interface tools for radio remotes and television IFB feeds. From a simple telephone interview to a multi-location broadcast. Check out our new RemoteMix Sport and Innkeeper 1x Digital Hybrid. A variety of products to help you with your telephone interface needs.

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 Sandwich, IL 60548

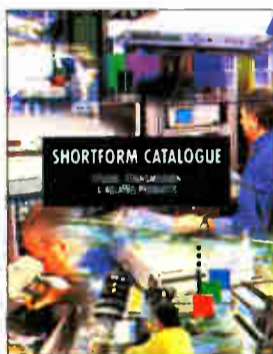


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Reader Service No. 31

◆ TEST, METERING & MONITORING EQUIPMENT ◆

FLEX-CORE's 174-page catalog #975 features split-core and solid-core current transformers, potential transformers, electrical transducers for AC and DC applications, harmonic analyzers, signal conditioners, panel meters, KWH sub-metering systems and analog to pulse converters.

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FAX: 614-876-8538
Web: www.flex-core.com
E-mail: flexcore@email.msn.com
 6625 McVey Blvd.
 Columbus, OH 43235



Reader Service No. 35

◆ TEST, METERING & MONITORING EQUIPMENT ◆

The **Inovonics** 520 AM Modulation Monitor features a built-in, tunable preselector and an optional active-remote antenna for off-air AM modulation measurements. A peak-holding display and two sets of peak flashers keep close watch over processor and transmitter performance, and an RS-232 port allows remote data display and analysis.

Phone: 800-733-0552
FAX: 831-458-0554
Web: www.inovon.com
E-mail: info@inovon.com
 1305 Fair Ave.
 Santa Cruz, CA 95060



Reader Service No. 32

◆ TEST, METERING & MONITORING EQUIPMENT ◆

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Reader Service No. 36

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◆ WIRE & CABLE ◆

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Reader Service No. 37

Studio Sessions

Two Tascam
MiniDiscs,
No Waiting

See Pages
52-53

Radio World

Resource for Radio Production and Recording

June 21, 2000

NEWS MAKER

Rathe From the Lincoln Center

Producer Steve Rathe Talks About Getting It Right — the First Time

Carl Lindemann

With virtual reality a defining experience of the next generation, live broadcasts are becoming something of a lost art. Steve Rathe is one of the remaining masters of bringing live music to radio.

As senior producer for his production company, Murray Street Enterprises, he is best known for producing NPR's Peabody Award-winning "Jazz From Lincoln Center" series.

In addition to making those weekly programs, Murray Street has marked its 10th live production of the annual "Paul

Winter Solstice Celebration" from the Cathedral of St. John the Divine in New York City, one of NPR's most popular holiday broadcasts.

Basement broadcasting

Rathe's 35-year career in radio broadcasting, which began with a station in his parent's basement, has brought him a wealth of experience and awards.

Comparing the challenge of producing "Jazz From Lincoln Center" and the "Paul Winter Solstice Celebration," Rathe spoke to *RW* about the demands of live broadcasting, the "Decca Tree" and how

he redirects skills and resources to get it when there is no second take.

RW: What's the general setup for making a recording?

Rathe: We do a lot of pre-production. I just came from a survey, checking out the hall, the cable runs; this is the second survey. I did one a few months ago, just to make certain that the room was satisfactory.

We almost always use the Decca Tree array, augmented with spot mics. But at this venue we'll be using a different recording rig.

Next, there's a production meeting with the band and sound people to review the final evolution of the stage plot. We've been exchanging documents for a couple of weeks now, with proposed mic plots and stage layouts and that sort of thing.

We'll all meet again to go over all the details and then the band (The Lincoln

See RATHE, page 60 ▶



Steve Rathe

All Hail the New Public Access PD

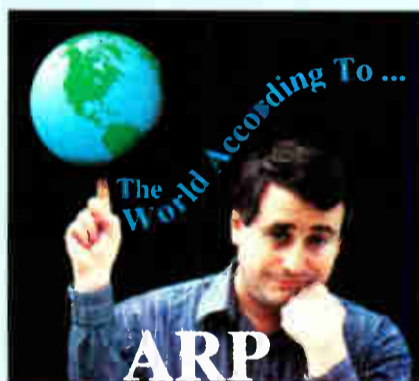
Alan R. Peterson

Great ... back in the Hot Seat again.

In mid-April, The Boys in the Big Office at Fairfax Public Access decided to move me up to the program director's seat of WEBR radio. This is the cable and Internet radio channel that I have been documenting for some time now here in the pages of *RW*.

Like many broadcast stations, WEBR has experienced several incarnations and call-letter combinations since its founding about a decade ago.

Originally WCXS ("cable access," dig?), the station became WEBR ("Web Radio") when it began streaming audio over the Net three years ago.



but still managed to hit the air in September 1998. The evening they had the formal tie-and-tails dedication of the studio, I was in Seattle at The NAB

While it is easier being a PD in the land of cable and Internet radio, the gig is not without its speed bumps.

In 1998, I began chronicling the construction of a digital broadcast studio and the snags we ran into. You might remember my tales of leading a ragtag gang of radio geeks and engineers, contributing evenings and weekends to help lug studio furniture, cut holes, string cable and wire things up for a Labor Day launch.

We missed the date by a few days,

Radio Show. I missed my own party, but I heard it was quite lovely.

Throughout most of 1999, all I had to do was keep the room wired together and run an automation system for unattended dayparts. While I did that, the existing program director/radio coordinator juggled announcers and a public who had to

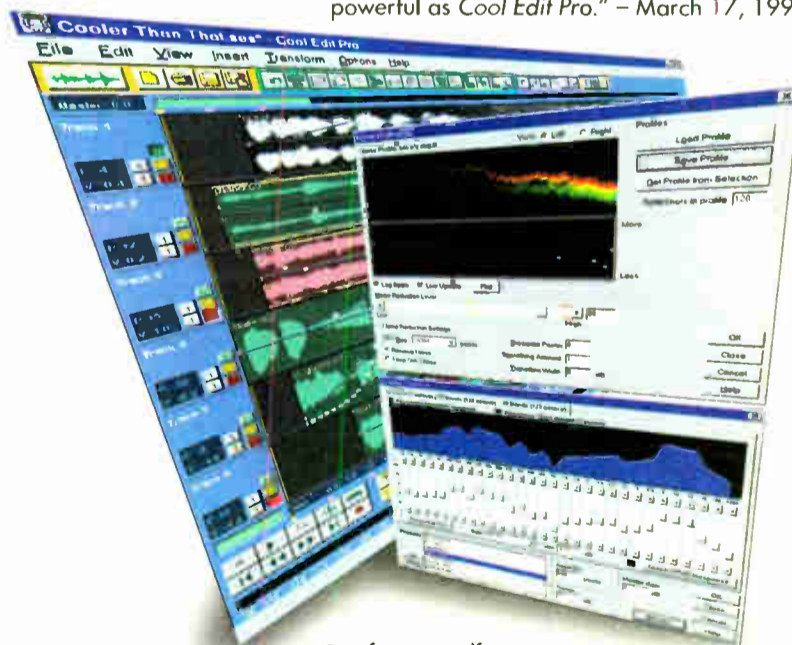
See ARP, page 56 ▶



Perhaps you've heard the buzz around Cool Edit Pro, the complete software multitrack recording studio. Why is it so popular?

It's so easy to use!

As one user said in Radio World, "When it comes to broadcast production, it is doubtful you will find an easier interface that is as inexpensive yet as powerful as Cool Edit Pro." — March 17, 1999



See for yourself.

Download a demonstration version from <http://www.syntrillium.com>, or just give us a call and we'll send you a free demo/tutorial CD. Give Cool Edit Pro a try— you'll be amazed at what you can do!



...good sound stuff!

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PRODUCT EVALUATION

Tascam MiniDisc — Almost Heaven

Bruce Rogow

MiniDisc decks are an intriguing addition to the broadcast world.

For those of us who yearned for the day when tape would not be in the control room, the MiniDisc looked like the perfect solution short of a six-figure automation system.

As leading manufacturers introduced professional versions of MiniDisc decks, broadcasters had to weigh inexpensive consumer models against the significantly more expensive professional decks.

At KPBS-FM in San Diego, we were looking for a replacement for our fleet of DAT machines and the constant service they required. MiniDiscs seemed to be a good candidate for that job.

Because sound quality seemed to be indistinguishable between consumer and pro machines, management at KPBS-FM chose the less-expensive consumer model route to test the format before making a bigger financial commitment.

Balanced audio I/O made quick installation possible, but the lack of a rear-panel remote connector was disappointing.

We started with one Sony MDS-JE520 and now have seven machines in service. After some initial problems with certain brands of the MiniDisc medium used in the Sony, we are now ready to upgrade to a broadcast model.

I got my hands on a Tascam MD-301MKII to test the professional features. At \$499, it is more expensive than most consumer decks, but offers features need-

ed in the broadcast environment.

(To be fair on the cost issue, a Henry Matchbox had been required to wire the consumer Sony deck into the system, which brought the price of that combination close to that of the Tascam.)



The MD-301MKII is a two-track MiniDisc recorder with 20-bit A/D and D/A converters, balanced XLR and unbalanced RCA analog I/O and S/PDIF optical I/O.

Other features include an SRC and a connector for a PC-style keyboard to enter track names and perform some of

the control functions. (To be fair on the cost issue, a Henry Matchbox had been required to wire the consumer Sony deck into the system, which brought the price of that combination close to that of the Tascam.)

It does come equipped with a wireless

remote, which gives the user control of most of the deck's features. But in a master control environment where two or three of the decks may be installed, it would be difficult to isolate the deck of interest using the remote.

Ability to control the deck from a console or recording control system such as public radio's Satellite Operating Support System is important to us.

We would have to build and install a circuit of our own to suit our needs. This is not a preferred solution, as voiding the warranty is an issue.

Into the rack

We installed the MD-301MKII in our master control room and gave it a steady workout for two weeks.

Many MD recorders in analog recording mode will assume that you are recording from a source such as vinyl or CD and will automatically start a new track when there is a short pause in the audio.

Our needs require that we record hour-long programs all in one track, so the "Auto Track" function had to be turned off. With that bump out of the way, we embarked on our trial run.

The MD-301MKII shows record levels in "Record Ready" mode, making level setting simple. The device has a single large input control pot, which is an asset compared to the menu-driven input control found in our Sony consumer units.

We were interested in how well the MD-301MKII would record on various brands of MD media. We found the Sony consumer machine would only make a reliable recording when the most expensive brand of discs was used.

We tested three brands: the Quantegy MDR-74, TDK Blue 74 and Sony PRMD-74.

Previously we had found that with the Sony MDS-JE520 consumer decks, TDK media were unusable — nearly every recording had errors. The Quantegy MDR-74 were about 50-percent reliable and the Sony PRMD-74 were flawless.

Of course, the Sony medium is the most expensive at around \$8.60 each, while the TDK and Quantegy are around \$3.70 each.

Trial run

We made five recordings with each brand of MiniDisc. The Tascam made perfect recordings on every MiniDisc brand every time. The ability to use a less expensive brand of MiniDisc won the vote of my program director.

The front-panel display is large and bright. When attempting to cue an MD from Pause mode with the search buttons,

Product Capsule:

**Tascam MD-301MKII
MiniDisc Recorder**

Thumbs Up

- ✓ Balanced audio I/O
- ✓ Front-panel PC keyboard input
- ✓ Easy to use
- ✓ Works well with inexpensive media

Thumbs Down

- ✓ No rear-panel remote connector
- ✓ Cueing difficult in pause mode

For more information call Tascam in California at (323) 727-4701 or visit the Web site at www.tascam.com

it jumps in six-second increments. If the user puts the machine in Play, then the unit will advance in one-second increments. It makes cueing possible but not convenient.

The sound quality was as good as any I have heard. We typically use MiniDiscs to record voice programs for broadcast and prefer DATs for music. When we recorded music with the MD-301MKII, the sound quality was nearly indistinguishable from the CD source.

I am sure that there are some that can detect the compression algorithm's effect on recorded music, but it fooled me.

With all aspects taken into consideration, I find the Tascam MD-301MKII to be a good value. It is reliable and easy to learn to use by our staff. If it had a remote connector on the back panel, I would consider replacing all my consumer machines immediately.

While not perfect, the MD-301MKII is a good, reasonably priced MiniDisc deck.

■ ■ ■

Bruce Rogow is the chief engineer at KPBS-FM in San Diego.

PRODUCT GUIDE

A-Ware Offers Air-Play

Air-Play is a new, standalone product from the makers of Music Master. Air-Play is a Web content server that works with any music automation system that generates an "as-played" log.

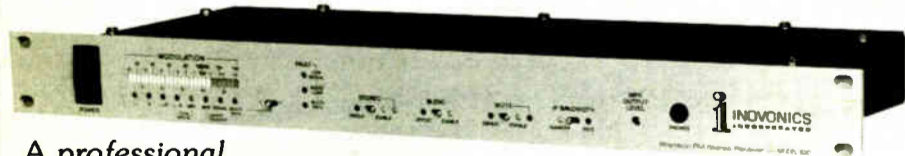
The software reads the log and updates any Web page within seconds of an event going on the air. It also works without an automation system when interfaced with A-Ware's RealTime and Music Master software.

ASC2LOG and LOG2HTML are new modules for A-Ware's Music Master software. ASC2LOG performs log reconciliation and is compatible with major automation systems. LOG2HTML exports Web pages and can format them by the day or hour.

A new Windows-based version of Music Master, which will operate on the Windows 2000 or NT 4.0 platforms, will be available soon.

For information contact the company at (262) 717-2220 or visit the Web site at www.a-ware.com

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PRODUCT EVALUATION

Tascam 801 Restores Confidence

Carl Lindemann

The Tascam MD-801R MKII is a full-featured, top-of-the-line rackmount MiniDisc deck. With a list price of \$2,699, it costs nearly five times what the Tascam MD-301MKII costs.

So I was wondering what upgrades I would get for the additional bucks. I found that some of the extra features make this unit an indispensable part of organizations that are committed to the MD format.

Added digital I/Os

The MD-801R MKII has almost all the same connectors as the MD-301MKII. It offers AES/EBU XLR jacks and S/PDIF RCA connectors in lieu of the S/PDIF optical port found on the MD-301MKII.

Both units have a connector for a word clock and for a PS/2 computer keyboard, but the MD-801R MKII has a jack for an optional wired remote-control panel, plus parallel/serial ports for custom remote-control operation.

in 0.1-percent increments with the wheel. The auto cue alters the threshold level, which aids in finding the beginning of tracks. The default setting is -54 dB, but this can be raised or lowered from -24 to -72 dB.

match the limitations imposed by ATRAC — greater than 101 dB S/N ratio on playback and greater than 94 dB for recording. This is more than a match for cassettes and a reasonable replacement



Other options range from setting the baud rate on the serial port to getting a readout on the number of hours the laser pickup has been used to record. Many of these are appropriate for day-to-day operation, but some — such as head-wear hours — are more helpful for service technicians. The copy-management control is a

for DAT recordings. The real appreciation for the capabilities of the MD-801R MKII came when the unit saved a colleague's project.

Jim Metzner, producer of "Pulse of the Planet," had returned from Istanbul with an MD recording of the Islamic "Call to Prayer." The audio was for a segment for PRI's "Savvy Traveler."

Disaster struck when Jim was adding track names with the portable used to make the recording. The display suddenly indicated a "TOC (table of contents) Error."

Somehow, the disc's table of contents got scrambled. Without a usable TOC, the audio could not be accessed with any

Product Capsule:
Tascam MD-801R MKII
MiniDisc Recorder

Thumbs Up

- ✓ Comprehensive controls
- ✓ TOC restoration feature
- ✓ AES/EBU and RCA S/PDIF I/O

Thumbs Down

- ✓ Complex controls
- ✓ Relative cost

For more information call Tascam in California at (323) 727-4701 or visit the Web site at www.tascam.com

standard MD player. I found out about his problem from an independent producer's chat group.

The MD-801R MKII has functions for rebuilding and un-erasing a TOC. The unit can un-erase deleted files as well as recreating TOC information. Recordings that once were irrevocably lost can be restored with these functions.

Given the high cost of the MD-801R MKII, it may be overkill to have one in every studio. Still, the restore/TOC rebuild capability is valuable enough to have at least one in every broadcast facility dependent on MD.

Carl Lindemann is a frequent contributor to Radio World.



Jim Metzner

The front-panel controls are a bit busy. The 23 buttons, four switches, three knobs, jog/shuttle wheel and a graphic display make for an impressive, and potentially bewildering, array.

Such is the price we pay for the incredible versatility of the unit. Fortunately, the manual is written clearly and includes extensive diagrams.

The more in-depth features utilize the Jog/Shuttle wheel. This control interface allows altering those parameters that are generally considered presets in MD units. Pitch control for ± 9.9 percent can be set

bonus over consumer units. Recordings made on the unit can be free of copy protection, or be set for first-generation only or copy prohibit mode.

The MD-801R MKII excelled at creating exact digital transcriptions of MDs recorded in the field with a Sony MZR-55.

The ATRAC compression was decoded into WAV format through the S/PDIF ports into a Digital Audio Labs CardDeluxe in my PC-based DAW.

It operated flawlessly as a playback device. Record mode also worked fine. It seems that the specs of the MD-801R MKII

PRODUCT GUIDE

CDR 850 Plus Adds Features

HHB Communications USA showed the CDR 850 Plus CD recorder at the NAB2000 show.

The Plus adds a word clock input and a balanced digital output on an XLR connector, which lets the 850 lock up to other digital sources, eliminating synchronization problems.

Dip switches on the back of the unit select the master clock between the word clock input, AES/EBU input, S/PDIF coaxial and optical inputs or the internal clock.

For more information contact HHB in California at (310) 319-1111 or check out www.hhb.co.uk



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3X2B

Active crosspoint switcher with 3 stereo inputs and 2 stereo outputs.



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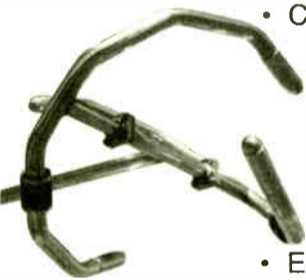
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BUSINESS DIGEST

Sennheiser Opens Facility in N.M.

This spring, Sennheiser opened its new manufacturing facility in Albuquerque, N.M. It is Sennheiser's first manufacturing facility outside of Europe.

The facility is 45,000 square feet, of which 15,000 is for production. Some 10,000 square feet is reserved for expansion.

Bill Jenner, vice president and general manager of Sennheiser New Mexico, said, "Right now we're making printed circuit boards and in a few weeks we'll begin assembling both the new RS99 wireless headphone series and the recently introduced Digital 1000 microphones."

The plant employs 40 people. That number will grow to more than 150 as products are added to the facility's roster, according to Sennheiser.

More than 100 people attended the opening ceremony. Honorary guests included officials from the New Mexico German Consulate and the Albuquerque Economic Development division, as well as U.S. Rep. Heather Wilson.



Rolf Meyer, president, Sennheiser Germany

Guests enjoyed facility tours, a catered buffet and music by a local oompah band that merged German and Southwestern motifs.

— Paul Cogan



Sennheiser's New Mexico facility

PRODUCT GUIDE

Products for Radio Production

Mail info and photos to: RW Product Guide, P.O. Box 1214, Falls Church, VA 22041

Marshall Heralds MXL2003

Marshall Electronics is out with the MXL 2003 cardioid condenser microphone. The mic lists for \$299.95.

Its 1.06-inch capsule with a three-microns-thick diaphragm is coupled through an electromagnetic screen to an FET preamp with a transformerless output.

A three-position switch includes a 10 dB pad and 6 dB per octave roll-off that starts at 150 Hz.

It comes with a MXL-56 shock mount.

For more information contact Marshall Electronics at (310) 390-6608 or visit the Web site at www.mars-cam.com



DPA Delivers Kit Mic

DPA Microphones offers the Type 3541 omnidirectional microphone kit. The kit comes with suspension mount, windscreen, pop filter, cable, case and the Type HMA4000 microphone power supply and amplifier.



The Type 3541 kit comes with two mic preamplifier bodies — the Type MMP4000-T tube body and the solid-state Type MMP4000-S body.

For information contact DPA at (519) 745-1158 or visit the Web site at www.dpamicrophones.com

DJ Dave... I am sorry to bother you at home, but I've detected a fault in spot number 321. It may be missing. Perhaps you should look into it.



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Some Good News, I Think ...

► ARP, continued from page 51
know how to find us.

After all, Internet radio listeners are tough enough to attract: trying to get a cable viewer to stop and listen to radio on a TV channel is murder.

Changes

All of that changed in April when The Boys decided it was easier to yell at one radio guy than two, and made me WEBR's official punching clown.

It's not my first foray into the dark land of research, records and rogue DJs. Like many, I worked up to my first PD gig at my first job, WSGO-AM-FM in Oswego, N.Y. I was given the position because I

was the last one standing at the end of two years. Attrition is a wonderful thing.

The second go-round was in 1984 when owner "Cousin Brucie" Morrow stuck me in the driver's seat of WHMP-FM in Springfield, Mass.

My big task then was to scrap a tape-based automation rig nicknamed Arnie and go from a soft AC format to all-live CHR. We also became the first station in western Massachusetts to go all-CD in the 1980s.

In early 1986, I abdicated my PD ship shortly after the Challenger disaster. At the time, I was married to a teacher who, months earlier, considered applying for the doomed ride. We were both shaken

up quite badly and it affected our work. I needed a break from programming and instead concentrated on my show.

In the time that followed, I decided programming was not for me. So from 1986 on, I built up my production chops and on-air shtick, happy doing what I was doing and not really wanting to take another go-round as the Guy in the Tie.

Fate intervened in April. And while it is easier being a PD in the land of cable and Internet radio, the gig is not without its speed bumps.

It must be understood that WEBR is staffed entirely by volunteers who, for the most part, have little or no actual radio experience. They want to be on our station because, as a public forum, it gives them an outlet to voice their views and make their opinions known.

Or so goes the story. Some just want to get on the radio and play the music nobody else does. Free-form radio for the folks who missed it in the mid-70s.

Imagine if this kind of retaliation was part of the world of commercial radio. Stations could never risk firing a jock for fear of a lengthy court battle over the free speech issue.

This is not to say this happens all the time here. Some take their suspensions and go quietly, while others scream about what a loser station we are (just like in real radio). Happily, the rest keep doing their shows, thrilled that they have a loyal audience that actually seeks out their shows.

PD's decision

So how do we — and perhaps other operations such as ours — deflect accusations of abridgment of free speech and the denial of access? I'm no lawyer, but here is what I understand.

The issues of free speech and denial of access are not inexorably linked. Nothing is stopping one of our jocks from standing on a soapbox in front of the Empire State Building, singing the Rice-A-Roni jingle at the top of his lungs while dressed in a muumuu. That is freedom of speech, albeit a lame example of it.

Trying to get a cable viewer to stop and listen to radio on a TV channel is murder.

Because of the lack of experience, some shows are riddled with dead air, awkward mic technique, false starts on the "cart machine" computer and segues from hell. If turntables were still in vogue, we would be Wow City.

To my ear, it's just the way things should be. WEBR is one of the last places left where a prospective jock can come in, make mistakes and get good. And because our volunteer jocks get to pick the music for their shift (and bring in *their own CDs!*), they get to do a show that they can pour their hearts into. No liner cards here.

Pottymouth

On the other hand, it has led to some abuses. Not the least of which is the secret desire for some volunteers to be shock jocks.

WEBR is not broadcast over the air, but talent must conform to Virginia obscenity laws and our own in-house standards. Should we hear the program shifting to a deep blue, it's time to reign in the jocks.

But get this: When a jock strips a gear in the real world, discipline is often swift and in some cases, brutal. That's the price of taking chances as a performer. Here, if a volunteer jock is shown the door for severe or repeat offenses, the battle cry of, "You're denying me my right to public access!" goes up, and we are all but forced to retreat.

Public access radio and television was formed for the purpose of giving a voice to the community, and the last thing anybody wants to get tangled up in is a free speech issue. Unfortunately, I have seen jocks exploit this.

While the law is generally on our side, there is no shortage of lawyers in the greater Washington area that will come to the rescue of the allegedly downtrodden.

But free speech does not guarantee a free transmitter. The Supreme Court ruled on this one in 1943 and again in 1969. All Americans have the right to say what they want and what they believe in. There just is nothing anywhere that says it must be said over some form of electronic media to be considered valid.

In my own case, all I am obligated to do is give somebody 15 minutes of access to the public over WEBR. After that, our obligation to that person is fulfilled. Anything above and beyond that is our call.

So is being the PD again so bad? I don't know yet. I'm still feeling my way around.

I don't have to sweat ratings or demographics, but I have to fill the video portion of our cable channel with a scrolling bulletin board. I need not worry about commercial spotload or high-priced morning talent, but I do have to be sure our jocks play PSAs and other show promos three times an hour.

I need not worry about format integrity (there *is* no format!), but I do have to keep a RealAudio stream going, write and produce material for the automation system, make sure our BMI and ASCAP licenses are up to date, and be ready to climb under the furniture to "put the smoke back in the box," as my engineer buddies say.

I still think I'm a better jock than I am a PD. Someday I may treat myself to an on-air shift again to actually prove it.

■ ■ ■

Alan Peterson is a technical adviser and columnist for RW, as well as program director/radio coordinator for cable/Internet radio station WEBR, Fairfax, Va.

He says, "No résumés please. All jocks on WEBR are unpaid volunteers."

Reach Alan via e-mail at peterston@fcac.org

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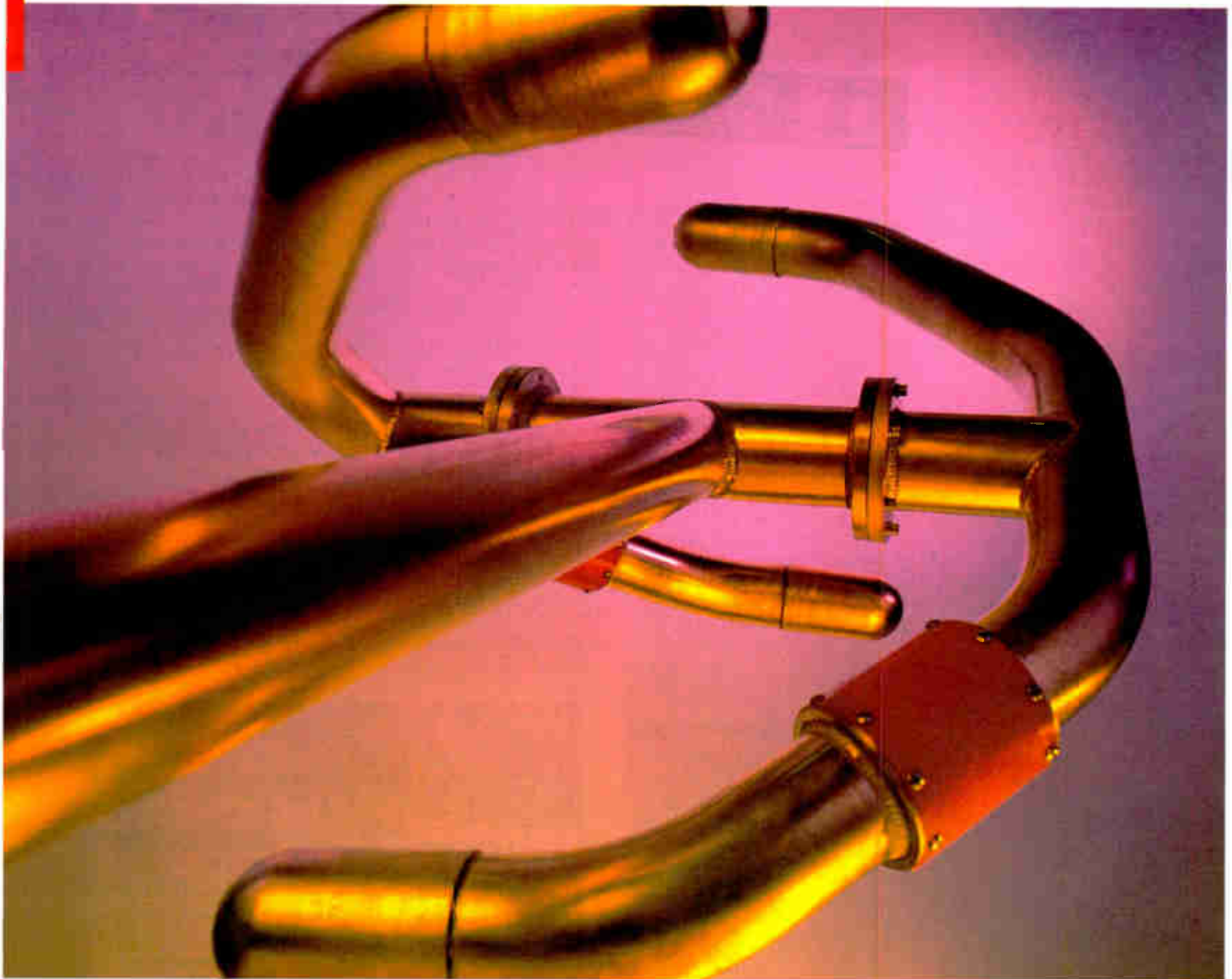
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PRODUCT EVALUATION

Aphex Tube Mic Pre Goes Digital

John Arndt

When I was offered the opportunity to review the Aphex Systems Model 1100 class-A tube microphone preamplifier, I jumped on it.

You see, I love the sound of tube equipment. I maintain an audio system at home with a tube pre-amp and tube active crossover, despite the maintenance costs and other hassles associated with tube equipment. The warmth of the sound, especially vocals, still gives me goose bumps.

Peak performance

In a broadcast environment, equipment must turn in peak performance all the time. I know there is no room for tube equipment that requires a rigid maintenance schedule when solid-state counterparts can run for years.

Add in the cost and dwindling supply of readily available tubes and you see why tube processors have fallen from the graces of broadcasting. I was wondering how the tubes in this unit were going to hold up in broadcasting.

I will start answering that question by discussing the terminology. The 1100 uses *thermionics* technology, which refers to the emissions of electrons in a vacuum tube when the cathode is heated to high temperatures.

Aphex came up with this word for



its tube designs, but in reality there is nothing new to this concept. Later, I will discuss some interesting innovations to the tube circuitry design that Aphex has updated and patented.

Upon arrival, I unboxed the 1100 and was greeted by a real beauty. The side panels/rack ears were chrome-plated and the front panel was thickly anodized.

The unit is a dual unit incorporating two independent channels with separate analog outputs for each channel. When using the AES/EBU digital output, the channels are encoded into one digital stream; channel one equaled left and channel two corresponded to right.

The 1100 has two 12-position controls for gain, one for each channel. The controls are stepped from 21 to 65 dB.

There are two knobs for the low-cut filter, ranging from 195 Hz through off. The soft backlit display has an

LED metering section showing the headroom in dB. Independent output levels are done by a precision three-turn control.

Plenty of push-button functions are available on the 1100. There is a 20 dB pad, polarity of the input source, 700 Hz tone generator, phantom power

to the mics, mute, the patented MicLim function, internal or external clock for the A/D converter and A/D converter frequency when using the internal clock.

With the exception of the clock source and sampling rate buttons, these functions are repeated on each channel.

Dynamic range

This unit boasts a dynamic range of 97 to 101 dB, depending on the setting of the gain control, and a signal-to-noise ratio of 76 dB at a reference level of +4 dBu. The 24-bit A/D converter works at 44.1, 48 and 96 kHz.

Aphex engineers must have spent time in the field. The 700 Hz tone generator cannot be accidentally turned on. You must hold the tone button for one second before the generator will engage. This eliminates accidentally turning on the generator.

See APHEX, page 59 ▶

Jon Barry Loves His 1100

I cannot begin to tell you what the Aphex 1100 in my equipment rack has done for my sound. I am a radio personality for WMXB(FM) in Richmond, Va. I have also been the staff announcer for WWBT Channel 12, and last year became the voice guy for the sister station WBTV in Charlotte, N.C. I also do voice-overs for a number of radio stations as well.

My home studio is small but functional. It is equipped with a Mackie 1402VLZ pro mixer, Sennheiser 416 mic, Valley 401 mic processor, PC with CoolEditPro and a Gina soundcard, JBL 4408 studio monitors, Sony DAT, Crown D75A, Telos Zephyr, plus an Aphex 104 aural exciter, Aphex 109 parametric EQ and now the Aphex 1100.



Jon Barry in his studio

The 1100 is the sweetest, cleanest, warmest, most flattering preamplifier I've ever used. I take the XLR out directly to my mixer and use the CoolEdit plugins for processing and converting the audio to MP3 for sending over the Internet. I tap the 1/4-inch to feed the return to my Valley for purposes of expansion and compression for live feeds via my Zephyr.

With the 1100, I don't need as much processing to make my audio stand out on TV as I used to. It's a different thought process when I ask myself "How's this gonna sound when it hits that crummy TV audio chain?"

I have done voice-over work for more than 30 years and worked with some great mics — but, I

just could not tell you how good this pre makes my Sennheiser 416 sound.

I have always thought I should sound better than what I hear on playback and now I do. That's not ego, that's being a perfectionist. I'm so uptight about my work that now I bring home the copy to do it and take it back to the station on DAT.

I am also pushing the 1100 with the MicLim to squeeze every last dB.

Aphex equipment is innovative, thoughtful, rugged, predictable, consistent, reliable, clever and righteous.

■ ■ ■

Jon has been in radio since 1967 and is the afternoon personality for hot AC station WMXB(FM) B103 in Richmond, Va.

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► APHEX, continued from page 58

The 1100 comes with an owner's manual covering the connections and operations along with a complete white paper from a technical standpoint.

The unit is laid out well, so operation by even a novice engineer can be done with little reference to the product manual.

It is covered by a one-year parts and labor warranty with all the standard exemptions, like if the unit falls off a moving truck. A service manual is available for an additional charge.

Honorable mention

There are several Aphex-designed features in this unit that merit mentioning.

First is the MicLim function. Aphex uses an optocoupler-based limiter on the input. This is combined with a special peak detector circuit monitoring the output that gives it 16 dB of limiting. The mic signal input can be pushed that far above the clipping point before clipping.

The company claims this gives enough thermionics emissions to operate the unit and extend filament life. I believe that reduced filament voltage

I believe that reduced filament voltage to the point of not affecting emissions will extend tube life.

to the point of not affecting emissions will extend tube life, as most engineers with a tube in their transmitter would say.

The manual claims that the tubes in the 1100 should last the life of the unit, except for the possibility a tube becomes noisy or a filament fails from thermal expansion and contraction.

The next operating trick from

built-in A/D converter may want to look into some other Aphex tube preamplifiers.

■ ■ ■

John Arndt is the director of engineering for four Clear Channel stations in Reading and Lancaster, Pa. Reach him in c/o RW.

Product Capsule:
Aphex Systems Model 1100
Class-A Tube Mic Preamplifier

Thumbs Up

- ✓ Exceptional dynamic range
- ✓ Smooth vocals
- ✓ Nearly flawless finish

Thumbs Down

- ✓ Rather expensive
- ✓ Runs hot — needs cooling space between units
- ✓ Digital outputs not available for each mic to feed individual digital inputs on console

For more information contact Aphex in California at (818) 767-2929 or visit the Web site at www.aphex.com



The characteristics of the MicLim circuit are smooth. It resembles the sound of older photocell limiting circuits without the problems those old circuits generated. The soft mute function is also done with an optocoupler for noise-free muting.

Another notable design feature is the tube circuit itself.

Those familiar with tube equipment might believe the best electron tubes available are coming from Russia, Poland, Slovakia and China.

In these countries, it seems that while conversion to solid-state electronics has lagged, the development of improved tube manufacturing has, in fact, continued.

Russian design

Aphex designed this circuit around the Russian 6N1P tube. This is a standard dual triode tube with a 6 V filament, similar to the American 6DJ8 tube.

A unique feature of the circuitry is that the filament voltage is switchable on the pins of the tube socket, which allows for replacement tubes with either a 6-volt or 12-volt filament structure. A list of 10 tubes in the manual show what will work in this unit, and there is a list of 24 tubes that are believed to work.

The reason so many tubes work in the unit is due to the way Aphex designed the tube to be used: Filaments run 20 percent under voltage.

Aphex is the real kicker. The circuit is what the company refers to as Reflective Plate Amplifier (RPA).

With this circuitry, practically no plate dissipation is done in the tube. A very low-plate voltage is used and subsequent low-plate current is produced. Therefore, most of the heat generated by the circuit is only from the filament.

Desired values

The reduced plate current of the tube is then fed into a solid-state current mirror that replicates the tube current at the desired values. It has the characteristics of a tube design without the heat and degenerative issues associated with tubes circuits. This circuitry is another reason why many tubes can work in this design.

A bonus is the 24-bit A/D converter built in — now that's 21st century design and planning, but it still uses tubes.

The bottom line is that the smoothness and sound of the 1100 is superb. Anyone looking to create a warm vocal sound should definitely check this unit out.

At a suggested retail of \$2,495, this unit is not for everyone. However, it is within purchasing reach by many recording facilities, top-notch road production companies and large-market radio stations looking for a unique vocal sound. Those who want the RPA design circuit and do not need the

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Big Production in the Big Apple

► **RATHE**, continued from page 51
Center Jazz Orchestra) will do a show in Alice Tully Hall on Thursday.

We'll attend that show and make further changes based on what happens there. Hopefully, we'll have it nailed by Friday night.

RW: How do you prepare for the unexpected?

Rathe: The key is redundancy. I bring a little extra gear; try to have on-hand an extra mic onstage.

Does this eliminate all problems? No, but it eliminates a good number of them. That extra mic, if need be, can always be used if a solo mic fails or something else happens.

Basically, I have a little more than I think we're going to need — a little extra time, extra tape, extra cable, a couple of extra copies of the mic list and so forth. And that also goes for personnel, too.

RW: What about recording equipment?

Rathe: I always record directly to the multitrack machines and mix from their output to two tracks.

If there's any question about the mixes, if there's any problem, I can always go back into the studio and remix it. The D-88 style recorders are terrific for us. I've been an advocate of the Hi8 format from early on.

RW: The D-88s are less finicky than reel-to-reels?



The Lincoln Center Jazz Orchestra with Wynton Marsalis

Rathe: You don't have to have everything cycled through maintenance and realigned every time you park the truck somewhere.

If D-88s are playing back, they're playing back right. There's a lot of error detection and all that, but nothing substitutes for ears. You still need to listen closely.

RW: What are your picks for microphones?

Rathe: For the overall miking, we use a technique called the Decca Tree. It's an

old Decca Records classical music technique. We use three TLM 50s, which provide a beautiful, very warm, acoustic picture of the whole stage.

These are supplemented with TLM 170s on the reeds. Dynamic RE 20s are used on the trombones, a D-12 on the kick drum and BMKs on the trumpets and on the drums. Pianos are miked with the 414EB and a U 47 for the bass.

Rathe: All the conventional problems — bad patchcords, snake channels, mic connectors and so forth.

I really try hard to get all our mic cables from the same place to be sure they're all wired the same. If they're not, grounding problems and phase anomalies can crop up.

I want to make certain we're dealing with uniform materials all the way through. Some things can be set right if I have to remix later. But a crackly vocal from a bad connector is tough to work around.

RW: How does your strategy change for live concerts when there is no chance to fix it in the mix?

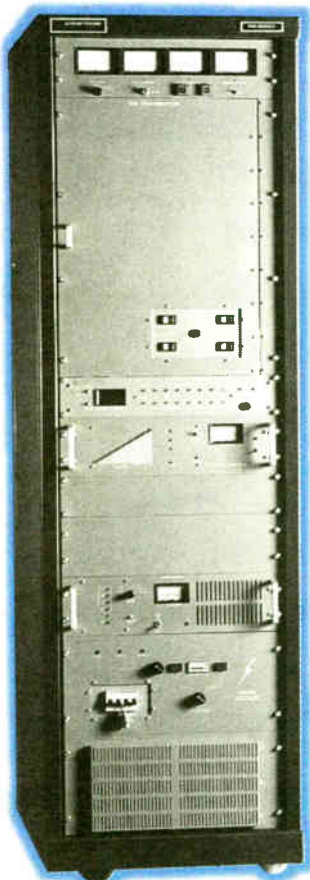
Rathe: There's a little triangle that Francis Ford Coppola uses to explain the fundamentals of production. The top of it says "Good," the left side says "Quick" and the bottom right says "Cheap."

The way it works is that you can connect any two sides of this, but not all three. If it's good and quick, it won't be cheap. Likewise, you can make something good and cheap, but it won't be quick. And if it's quick and cheap ...

RW: With a public radio budget, you aim for good and cheap?

Rathe: The investment is in time. We don't have a huge amount of money to do these things, but we do take the time for preproduction and production meetings and to think about it.

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Shirley Caesar joined the Lincoln Center Jazz Orchestra for 'In His Solitude — The Sacred Music of Duke Ellington'

In a studio, I also use a 451 or a 4007 BMK in the bridge, in a shock mount from the bridge or up on the neck, depending upon the bassist and how much they move. I use 4007 on the snare, 421 Sennheisers frequently for general utility use and sometimes for percussion.

For vocals, I like Beta 58s. I've tried a lot of vocal mics. Vocal microphones all make certain compromises. If I had my choice I'd use 87s on the vocals or 49s, but they don't lend themselves to rough and ready stage work that well. And they certainly don't lend themselves to PA applications.

The Beta 58s are a nice compromise. They help avoid problems with vocalists using monitors. Winton Marsalis hardly ever uses monitors with the band. As a rule, he'll go with no monitors whatsoever on the stage — a most unusual situation.

RW: What kinds of failures are the most problematic?

We make advance contact with the musicians and do our load-ins early enough to deal with problems. When we get there, hopefully everybody knows what he or she is doing. I try to leave a little time after the sound check to make corrections.

With the live broadcasts, I actually try to have a full rehearsal. I record it for a backup and to practice the music mixes.

RW: How do you interface with NPR? Where does this backup come in?

Rathe: With the "Paul Winter Solstice Concert," we have NPR's mobile satellite truck in the parking lot. They beam the signal up to a Ku-band satellite, which is downlinked in Washington, D.C., and uplinked again to the C-band satellite, which serves NPR stations.

RW: Why not go for a hardwire link?

See RATHE, page 61 ►

Saundra Grassi on The Decca Tree

As recording engineer for "Jazz at Lincoln Center," Saundra Palmer Grassi introduced Steve Rathe to the Decca Tree.

She first encountered the technique while learning her craft at RCA in the early 1990s.



Saundra Grassi

"Decca came in and did a recording — a small orchestral ensemble. I was the assistant and wrote down all the exact dimensions. It's three microphones in a triangular array," said Grassi. "There are different formats. Some movie people use a smaller setup than I do."

"I brought over the dimensions that we used when I worked for RCA. I worked with a lot of the guys who did the 'Living Stereo' recordings in the 1950s. They used a Decca Tree with the original Neumann M-50s on those sessions. It was pretty much the whole mix," Grassi said.

For "Jazz at Lincoln Center," the Decca Tree was a major departure from close-miking techniques. It hearkens to old-style performances that did not rely on stage monitors.

This matched Wynton Marsalis' creative direction, according to Saundra.

"The jazz orchestra balances itself on the stage, so why not capture that? We stopped depending on the close mics so much. We put up the tree, then see what we need to clarify," said Grassi.

Aside from capturing the natural sound of the performance, using the Decca Tree makes for a clean and simple production.

"If they are playing in an ensemble — if they're balanced — the tree is the starting point for our mixes," said Grassi. This is also a fairly forgiving setup.

"Usually, if you don't have that one mic up, or if someone doesn't play into a mic, you're lost. Our Decca Tree happens to be three Neumann TLM 50s — a spherical pickup, but they become directional above 1 kHz.

"A lot of people will use a cardioid as the center mic, aiming right for bass and drum kit. Of all the stuff that rings out on stage, the bass will kill you. With that mic, I get a bit more definition on things like kick drums and the top of the bass and cymbals. The piano gets clarified," Grassi said.

► RATHE, continued from page 60
Rathe: We've looked at a lot of different technologies. I have used equalized copper lines, television remote trucks and ISDN, which we still use as a backup to the satellite.

But on a one-off special, overcoming the difficulties of installation, telco setups and bonding ISDN lines to achieve the 256k MPEG2 quality turns out to be substantially more expensive than the Ku-band rig.

Getting back to Coppola's "good, quick, cheap" dynamic, going live forces us toward the quick end of things. It has to happen in real time. This drives up costs; it isn't cheap because it requires redundancy.

For every link that we may not be able to control we have a backup plan. That means having plenty of mics on the

stage, ready to go, backup playback machines and copies of our actualities and prerecords, as well as a backup ISDN signal to Washington.

We even have a backup to the backup. We record our Thursday night rehearsal performance and overnight that to Washington. The rehearsal tape "dead rolls," playing to silence while we have the live satellite feed. It may not be as perfect as the live show, but in case of a disaster, the program material is similar. It's better than dead air or playing records.

RW: What's the order of operations in a system breakdown?

Rathe: If for any reason NPR's System Technical Center (STC) loses the incoming satellite signal, the folks there have instructions to go to ISDN. If for any reason ISDN goes out, their instruction is

to go to the dead roll and feed the backup tape to the system and stand by for a telephone call or try to contact us.

RW: Has this ever happened?

Rathe: You learn these lessons the hard way, of course. No, we haven't had this happen with the "Solstice Concert."

But there are 150 to 200 radio stations out there with an operator who has instructions to switch to this program at 8:00:00 EST. If it doesn't come up, you're going leave a lot of people out there wondering what's going on, and improvising.

Once the chain starts falling apart, once you disconnect those 200 people from the set of instructions, the possibilities for disaster multiply exponentially. So the object is not to break it.

Do More, Spend Less

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Doug Lane, owner and GM of WWDL (FM), WICK (AM) and WYCK (AM), Scranton and Wilkes Barre, PA says he "saves more than \$45,000 per year with Scott Studios' Voice Trax automation. While the investment was major for a small family company like ours, *the pay back was fast and real.* And the savings are year after year after year.

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Doug Lane, Owner and GM, WWDL, WICK and WYCK, Wilkes-Barre and Scranton, PA

Doug's stations have used Scott Studios' Voice Trax systems for many years.

9:23:13 On-Air 2	I Knew I Loved You Savage Garden 11/4-24/F HIT DA3468 7:43 #1 for 2 weeks in March, 2000	Half A Minute Basia L 6:28 2p N 7:10 3p	Hands Jewel L 7:05 5p N 7:13 6p	Hang On Tight Ric Ocasek L 7:02 3a N 7:09 3p
Start 3	Show Me The Meaning Of... Backstreet Boys 17/4-13/F HIT DA5204 7:48	Happiness Vanessa Williams L 7:09 4p N 7:12 7a	Happy Girl Beth N. Chapman L 7:06 11a N 7:18 8p	Harbor Lights Bruce Hornsby L 7:04 2a N 7:12 7p
Start 3	Backstreet Boys Backsell Doug Lane 00/0-13/C VT JU1094 7:52	Harvest Moon Neil Young L 7:07 4p N 7:10 2a	Have I Told You Lately Rod Stewart L 7:02 7p N 7:13 8a	Have You Ever Reminded Me Rod Stewart L 7:01 5a N 7:08 10p
Start 3	Dodge Trucks Q: Your Dodge Dealer 00/0-60/F COM DA2215 7:53	Have You Ever Brandy L 6:30 5a N 7:13 9a	Having A Party Rod Stewart/R. W. L 7:02 8p	He'll Never Leave Kathy Troccoli L 7:04 3a N 7:11 8p
Start 3	Kozy Kitchen Q: Kids Eat Free Tonight 00/0-60/C COM DA1234 7:54	Healing Wynona Judd/M. E. L 7:02 9p N 7:15 4p	Hear Me In The Heart Luther Vandross L 7:02 10a N 7:15 3p	Heart Don't Fall Me Rita Coolidge/Lee L 7:01 3p N 7:13 7a
Start 3	WWDL Fast Jingle Q: WWDL 00/0-13/C JIN DA4315 7:55	Heaven And Earth Al Jarreau L 7:04 10a N 7:12 11	Heaven Knows Luther Vandross L 7:01 9p N 7:20 10p	Here In My Heart Chicago L 7:02 2a N 7:04 3p
Stack	Auto	Here There & Ever Celine Dion L 7:05 8p N 7:13 5p	Here To Love You Belinda Stanchand L 7:05 12m N 7:09 11	Hero David Crosby/Phil L 7:05 7p N 7:16 8a
Auto	Auto	Hero Mariah Carey L 7:03 1p N 7:17 9p	Hero's Dream Jim Brickman L 7:03 7p N 7:12 5a	Hey Girl Billy Joel L 7:05 11p N 7:12 3p
Auto	Auto	High Sierra Trio Harris, Rosal L 7:06 1p N 7:14 8a	Higher Ground Genesis L 7:04 12m N 7:13 3p	Hold On My Heart Chicago L 6:27 1p N None
Auto	Auto	Holdin' On George Benson L 7:09 2a N 7:19 7p	Home Sheryl Crow L 7:02 3p N 7:16 6p	Hooked on a Mem. N. Diamond/Kim C. L 7:01 10a N 7:15 6p
:08				
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z				

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After a year of trouble-free operation, Doug Lane says, "It was fun to get five calls at the studio over the Holidays from out of town PD's and GM's wanting to speak with me because they heard me 'on the air'. Guess what? I wasn't even there! They were amazed at our Voice Trax and Scott's accurate Time Checks too. Actually, they were 'very impressed'!

Doug is now installing Scott's automated temperature announcer. He says, "Scott's features are great. The savings are even better! I wouldn't want to run my stations without Scott Systems!"

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LINE OUT

Problems With CD-Rs and Players

Bruce Bartlett

Recordable CDs appear to be a hot topic for many radio engineers.

For example, Randy Tanner, president of the XL Group Inc., wrote in a letter that, in the Nov. 24, 1999, issue of *RW*, "SBE Broadcast Engineer Bob Henry stated that the blue/green CD-Rs have an expected storage life of around five years. Is this documented? If so, what is recommended as the best long-term storage medium for digital audio?"

That storage life is for blank discs, not for recorded CD-Rs.

The TDK Web site states, "TDK's CD-R media are (rated) as having a lifespan of 100 years in accordance with the competitive industry standard of rating lifespan at a storage temperature of 25 degrees Celsius."

Discussing how long CD-Rs last, www.fadden.com/cdrfaq states, "The manufacturers claim 75 years for cyanine dye used in green discs, 100 years for phthalocyanine dye used in gold discs or even 200 years for advanced phthalocyanine dye used in platinum discs, once the disc has been written. The shelf life of an unrecorded disc has been estimated at between five and 10 years."

The site mentioned that there is no standard agreed-upon way to test discs for lifetime viability. Accelerated

aging tests have been done, but they may not provide a meaningful analog to real-world aging.

Further, it said, "Exposing the disc to excessive heat, humidity or direct sunlight will greatly reduce the lifetime. In general, CD-Rs are far less tolerant of environmental conditions than pressed CDs and should be treated with greater care."



Denon DN-961FA

CD-R looks like a reliable, long-term storage medium if the CD-R storage environment is benign.

Swishing sound

I received a letter from Gordon Carter, CPBE, chief engineer at WFMT(FM) and The Radio Networks.

"We have been fighting an ongoing

problem with CD-Rs. When the CD is playing, we get a noise that sounds remarkably like the noise you used to get on a dirty LP, sort of a swish-swish sound under the audio that is correlated to the rotational speed of the CD," said Carter.

"The noise is modulated by the music, being almost undetectable when there is no audio present. This most frequently happens during the latter part of the CD."

Carter believes that it is due to CD-Rs because that station plays formatted one-hour programs burned on CD-Rs. They are the only type of media played on these Denon DN-961FA CD players. Engineers at the station have gone over the Denon units with a fine-toothed comb to find any mechanical or electrical problems.

"We have not been able to recreate the noise in our shop and have not encountered it with the same model players using regular CDs. Almost all of the CD-Rs that have shown the problem have been played before with no problem and will play again in either the same or another player with no problem," said Carter.

Carter said removing the CD and reinserting it often will eliminate the noise. Tapping the player to cause skipping sometimes works. But usually the noise continues until interrupted.

"We have looked at heat, RFI and every conceivable mechanical or electrical problem to no avail. The problem will come and go and has no predictability or regularity that we can find."

Carter talked with Jim McGinnis at Denon and he claims never to have seen this problem, but admits that the facility is probably using CD-Rs more than anyone else — 24 hours a day, seven days a week. A machine and some of the used CD-Rs were sent to Denon for evaluation.

All the CDs used are Mitsui gold or silver blanks, but were recorded either on a Sony 920 drive from Sonic Solutions software at 2x or on a Marantz CDR620 as a digital copy from a DAT at 1x. Again, no consistency was found.

Not centered

I suggested to Gordon Carter that the CD-R might not be centering consistently on the spindle.

Carter noted that they already checked this but found nothing. The labels are centered well. He also told me that Denon did not find anything wrong.

At Denon's suggestion, Carter moved power plugs to an adjacent rack and turned off as much equipment above and below the CD players as possible. There is a Tascam DA30MKII DAT machine in the rack just below the CD players.

Since those two steps were taken, the problem has occurred less frequently. This could be just the randomness of the problem or a real improvement. Carter said he tried moving the players to another location in the rack, but again, did not completely eliminate the problem.

"We are only experiencing this problem with three players that are mount-



Companies are making more and better CD-Rs. But the format has its own special considerations.

ed side by side in a rack. We have a similar setup in an adjacent rack and have not had the problem there. Due to cable length and rack space, we are unable to move the CD players in question to another rack."

Problem solved

Between writing and publishing this article, the problem was solved.

"We found the cause of the problem," Carter said. "There is a ribbon cable coming from a master clock system above the CD players in question. This cable carries parallel BCD time date (date, hour, minute, second, frame) and is distributed to four other devices that read this data.

We had been suspicious of this cable, but moving it did not seem to do anything predictable.

"We went 'sniffing' for signals with a portable radio. On AM we got a bit, but certainly no more than was coming from the CD players themselves. Then we switched the radio to FM. If we brought it within three feet of the cable, we had lots of noise.

"Further investigation showed me that it was near the IF frequency (10.7 MHz) and was in fact being caused by the sharp rise and fall times of the data bits being combined.

"I then tried to simulate this in the lab. What I found was that the CD players would reject this most of the time. However, when the rotational speed of the CD was just right, we had the exact same problem we were experiencing in the racks.

"Then we found that when the rotational speed of the CD was just right, the RF frequency off the laser was close to that of the signal coming from the cable and the servo circuits would get 'confused.' After this started, the only way to stop it was to eject the CD and start over. We found it would not do this every time, but it was consistent enough to show a pattern.

"After checking this with Denon, they suggested bypassing the remote inputs of the CD players with a 0.1 uF cap. The remote control wiring was routed near the ribbon cable and — if you check the schematic — anything on those pins gets right into the data bus of the control circuit of the player."

As we have seen, running digital data through certain cables can generate RFI. In turn, this RFI can disrupt some CD players. Please be aware of this potential problem in your installations.

■ ■ ■

Bruce Bartlett is a Crown microphone engineer, audio journalist and recording engineer.

Reach him in c/o *RW*.

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Utility 480, 430' tower, 30" face, on the ground, cables, turnbuckles, insulators, Austin transformer, avail 8/1/00, \$12,000; Pirod 4-240' solid rod galvanized towers, excel cond, 18" face, on the ground, avail 8/1/00, \$22,000; Shively 6810 14-bay vertically hor polarized 103.5 freq, on the ground, avail 8/1/00, BO. Ralph Carlson, Holiday Bldg, POB 57760, Salt Lake City UT 84157. 801-262-5624.

Coax patch panel, 3-1/8" - 7 pole, 3 U-clips. Continental Communications, 800-664-4497.

PIROD 42, 253' guyed tower. Tower never erected & in very good condition. Presently located in Rochester NH. B/O, purchaser to furnish transportation. Tower is in 20 sections & includes all guys & beacon lights, complete package. Please contact: Maurice Polayes, ADDELCO, 20 Freeman Pl, Needham MA 02492. Tel: 781-444-4754; Fax: 781-455-8274.

AUDIO PRODUCTION

Want to Sell

Art 20001 stereo limiter/compressor/exciter, excel cond, \$250. Mark Schackow, Mark Schackow Recording, 307 4th Ave E, Lemmon SD 57638. 605-374-3424.

CBS Labs 4500 mono dynamic presence EQ in gd working order, BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

Otari r-r mdl MX505B3-2, new, never used, \$1200/BO/Trade; Timeline Lynx time code controller, new, never used, \$300/BO/Trade. John Workman, WWJ-TV, 300 River Pl, Detroit MI 48207. 313-259-4102 or workmaj@wwjtv.cbs.com.

Yamaha Rev 7 xlr I/O's, gd cond, \$150; Aphex 106 Easyrider 4CH compressor (2), gd cond, \$85 ea. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

Urei 565 Little Dipper EQ, \$700; ADC Propatch 1.4" punchblock patchbays, new, \$600 (many); 1.4" TRS patch cords like new, \$15; ADC TT 144 point patch bays, recond, \$149-229. W Gunn, 760-320-0728.

Want to Buy

Need Yamaha BP-2 bass pedals/gen schematic, would prefer electronics, but will be happy w/owner's manual & schematic. B Meuse, Muse Audio Arts, 191 E El Camino Rea #209, Mtn View CA 94040. 650-969-2433.

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ITC-Delta stereo players (several), \$500 ea; ITC SP w/SWA cards, \$100; Fidelipac CTR-12 stereo players, \$275 ea; Fidelipac CTR10 R/P, \$300; ITC 99B R/P, Elsa, Black case, \$1100; ITC Omega, mono PB, \$100. Joe Sands, Sports Fan Radio Network, 1455 E Tropicana #250, Las Vegas NV 89119. 702-595-2281.

(2) DL-RM Audio Series recorder/reproducer, \$500 ea. Gerald Edwards, Florida's French Broadcasting Network, 4431 SW 64th Ave #14, Davie FL 33314. 954-587-0008 or 954-384-7422.

Gates Criterion cart decks (2), mono, one has stereo record chassis, working cond, BO; IGM mono 48 tray Instacarts, one works, other for parts, BO. Chuck Gennaro, WJMS, 222 S Lawrence St, Ironwood MI 49938. 906-932-2411. chuckg@broadcast.net

ITC Omega 1987 vintage stereo PB, recently refurbished w/new audio card & heads, used very little afterwards, good cosmetics, BO; BE 2100RPS 1983 mdl stereo R/P in very gd cond, w/manual, recently recapped & aligned, BO; ITC 3D mono triple deck cart machine, parts only, missing a card or two, call for details on cond, BO; ITC WP mono PB cart deck, needs some work, or for parts BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

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Collins IC-6 in very gd cond, serviced regularly, \$500/BO; Collins IC-8 in very gd cond, serviced regularly, \$800/BO. Tom Tabback, KAZM, POB 1525, Sedona AZ 86339. 520-282-4154.

Ampex AM10-6x2, excel cond, \$295. J Price, 214-321-6576.

Autogram AC-8 1980 vintage, partially refurbished in 1995, works, buyer must pick up or pay shpg, BO. Joe Vilkie, Great Circle Bldg, POB 397, Meadville PA 16335. 814-784-1111 ext 238.

Ramko Research DC5RA rack mount 5 chnl mixing console in gd cosmetic cond, may need some work, BO; Autogram AC-8 8 chnl stereo console w/mono sum output, power supply, monitor amp inside cabinet, refurbished in 1995, several spare modules included, buyer must pick up or pay shpg, BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

Tascam M2600 24CH/8 subs w/PS (2), gd cond, \$1200 ea. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

Autogram 20 mixer stereo console. Continental Communications, 800-664-4497.

Soundcraft 600, 24x8, \$3900; JL Cooper 16 trk automation, \$1200. W Gunn, 760-320-0728.

Want to Buy

BE 4550A, 4 or 5 channel stereo audio console, old/used, BE, Sparta, Russco, ATI or equivalent. Shawn Zurbrick, LSR Radio Dallas, 9202 Millwood Dr, Rowlett TX 75088. 214-293-7420.

Shure M67 & or M675 audio mixer. Larry Walk, WKTX, 2415 Karen Ct, Youngstown OH 44511. 330-799-4505.

LIMITERS

Want to Sell

Symetrix SX208 stereo compressor/limiter, \$175 incl shpg. John Felz, Music of Your Life, 4605 Lankershim Blvd #702, N Hollywood CA 91602. 310-546-6451.

Inovonics 214 mono limiter, gd cond, BO. Chuck Gennaro, WJMS, 222 S Lawrence St, Ironwood MI 49938. 906-932-2411. chuckg@broadcast.net.

CBS Volumax, \$400/ea: mint Urei 1176LNs, black, \$2300; 1176LN silver, \$1800; 1176 original blue/silver transformer I/O, \$2300. W Gunn, 760-320-0728.

Want to Buy

Teletonix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

Want to Sell

Telex xmtr & mic WT-50, \$125; J Price xmtr & mic WT-200, \$125. J Price, 214-321-6576.

EV 635L mics, \$95; Altec salt shaker mics, \$295/ea. W Gunn, 760-320-0728.

Want to Buy

RCA 77DX & 44BX, will pay \$500 to \$1000. Larry Drago, WELI, POB 85, Hamden CT 06514. 203-230-5255.

RCA 19" rack tran (BR-22B) & guide assemblies for BA-31/C microphone preamps, need 4 guides. Randy Fuelle, Hit Single Recording, 1935C Friendship Dr, El Cajon CA 92020. 619-258-1080, fax 619-258-1558 or email: hitsingle@earthlink.net.

RCA 77-DX, 44-BX, KU-3A's, WE-639's, On-Air & recording lights wanted. 615-352-3456, FAX: 615-352-1922.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA ribbon mics. W Gunn, 760-320-0728.



MISCELLANEOUS

Want to Sell

Orban comp-limiter 424A, EQ662B, Hnat Hindex Clipper ZH-1, Urei EQ 535, CBS Volumax 4001A, CBS Audimax III, Studer & Gentner hybrids, \$200 ea +shpg. Bob O'Neal, WPYX, 800 New London Rd #4200, Latham NY 12110. 518-785-9065.

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IGM EC w/book, cables, remote card, instacart interface, gd cond, BO. Chuck Gennaro, WJMS, 222 S Lawrence st, Ironwood MI 49938. 906-932-2411. chuckg@broadcast.net.

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Roland Jupiter six synth, \$700; Yamaha CS01 synth, \$150; Yamaha DX7 synth, \$500. Art Polhemus, Excalibur Studio, 750 8th Ave, New York NY 10036. 212-302-9101.

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Ampex 351 transports, decks, etc, BO; Ampex 440 stereo w/Ampex AM 6x2 mixer, \$750; Ampex 440C in console, 3.75-30 ips, \$995; set of new Ampex 8 trk 1" heads, \$750; set of new Ampex 16 trk 2" heads, \$350 ea; MCI JH 110 stereo in console, \$750; MCI stereo electr B-C, \$150; MCI power supplies, \$150; Ruslang recorder console, \$200. J Price, 214-321-6576.

Radio World

Otari MX5050 MKIII 8 trk, (5) dbx 150x 2 chnl Type I NR. S Bulman, First Take Recdg, 16128 Orchard Grove Rd, Gaithersburg MD 20878. 301-963-7758.

Scully 280 1/4", roll around rack, above meter bridge, \$180; (2) Tanberg 15-21 Series 15 r-r, \$120/pr; Viking TD-235 w/rack ears, \$20; Wollensak 3M 5000, \$60; 3M M-79 2 trk w/manual, \$750. Will Dougherty Jr, WLD Recording, Rt 1, Mill Spring MO 63952. 573-998-3117 or email: wldrec@hotmail.com.

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Studer Revox PR99 2 trk, 7.5 & 15 ips, like new, \$500. Art Polhemus, Excalibur Studio, 750 8th Ave, NYNY 10036. 212-302-9010.

Tascam DA30MKII DAT in gd cond, needs pinch roller, \$450; Tascam DA-30 (3), \$300 ea. Eric Eshbaugh, WJYJ, POB 905, Spotsylvania VA 22553. 540-582-5371 ext 3.

New MCI 110C-2s, \$1800; Scully 8 trk, \$1500; new short MRL test tapes, \$229 for 2", \$79 for 1/4", all formats avail; Otari MX5050 Mk III-8, \$3k; Otari CB110 remote, \$300; CB116 locator, \$550 (all for \$3.5k); Tascam 85-16 w/locator, remote, dbx, \$1800; MCI JH110B 8 trk w/locator, \$2900; Akai ADAM new, digital 12 trk, \$3500; Ampex ATR102 rebuilt 1/4", \$4900, 1/2", \$6400; Technics RS1500 isoloop recorders, \$695; Otari 5050 2 trk, \$695. W Gunn, 760-320-0728.

Want to Buy

1/2" 2 track head assembly for Ampex 440B. Art Polhemus, Excalibur Sound, 750 8th Ave, NY NY 10036. 212-302-9010.

ITC 3-D stereo triple deck PB, needs capstan shaft & top bearing, BO; Audicord DL mono cart recorder, nice cond, BO; Audicord A series mono cart players, fair cond, BO; Henry Telestor digital R/P units, new in box, BO; CBS Volumax 4000A, BO; CBS Audimax 4440A, BO. Chuck Gennaro, WJMS, 222 S Lawrence St, Ironwood MI 49938. 906-932-2411, chuckg@broadcast.net.

Otari rolling rack for MX5050B11. Michael Harrington, M Harrington & Assoc, POB 250995, Little Rock AR 72225. radcmex@aol.com.

Sony APR-5000 JH-110's A, B, C, working or not, JH-45 autolock. John Bordes, Handbasket Prod, 2909 So Logan Ave, Milwaukee WI 53207. 414-482-8954.

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Want to Sell

HP 201-C tone gen, continuously variable, tube type, needs work, BO. Joe Vilkie, Great Circle Broadcasting, POB 397, Meadville PA 16335. 814-724-1111 ext 238.

Tektronix digital multimeter DM 501A, \$150; Tektronix digital multimeter DM 502A, \$150; BK Precision Dyna-Jet 707 tube tester, \$195; Eico 150 solid state signal tracer, \$100; HP 353 100 DB attenuator, \$65; HP 5308A counter, BO; HP multimeter 5306A, BO; Nuvisitors (assorted), \$25. J Price, 214-321-6576.

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2 KW FM 1996 BE FM 2C Solid State Single Phase	Solid State Single Phase
2 KW FM 1984 Harris FM 2.5K	5KW AM 1984 Harris SX5
2.5 KW FM 1976 Collins 831D Single Phase	5KW AM 1980 Harris MW5A
3 KW FM 1975 CSI FM3000E	5KW AM 1982 Continental 315R-1
5 KW FM 1985 Harris FM 5K	10KW AM 1978 Harris BC 10H
5 KW FM 1989 Harris HT-5 Single Phase	25KW AM 1985 CSI T-25-A
5 KW FM 1978 RCA BTF 5ES2	50KW AM 1997 Harris DX50 Solid State
5 KW FM 1967 Collins 830E	50KW AM 1978 Continental 317C-1
6 KW FM 1994 Henry 6000D	50KW AM 1982 Harris MW-50B
12 KW FM 1996 CCA 12,000GZ	
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20 KW FM 1988 CCA FM 20,000G	
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Energy-Onix Legend 1000, solid state FM xmtr, tuned to 91.1 FM, retuneable, very clean, runs great, w/o exciter, \$6000. J Wilsbach, WMSS/Middletown High, 214 Race St. Middletown PA 17057. 717-948-9136.

Harris FM 2.5K w/exciter, all in gd cond, upgrading power, \$4950. Don Stubbs, KATK, 714 N Canyon, Carlsbad NM 88220. 505-885-2151.

Harris FM2.5, 20 yrs old in very gd cond, \$3500/BO; Gates FM-10B w/new tube, no exciter, old but working OK, \$3000/BO. Dennis Voy, KMAQ, Box 940, Maquoketa IA 52060. 319-652-2426.

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Nautel Ampfet ND1, 4 yrs old, factory tuned to 1570 kHz, perfect cond, avail now, \$8500/BO. Richard Miller, Latitude 21 Broadcasting, 590 Ulumalu Rd, Haiku, Maui HI 96708. 808-572-5534.

Various Silver Mica door knob capacitors, BO. Cliff Bryson, 93 Robinhood Dr, Cranberry Twp, PA 16066. 724-776-5204.

BW25 FM exciter/xmtr, 25W, stand alone unit, 87.9-108, stereo separation 45db, low pass filter, 15 KHz brick-wall, \$950 w/S-H. Gene Whittenberger, Whittenberger Studio, POB 396ER, Mexico IN 46958. 765-985-2224.

Energy-Onix Legend 1000, 1000W FM solid state, tuned to 91.1 FM, very gd cond, \$6000. John Wilsbach, WMSS, 214 Race St, Middletown PA 17057. 717-948-9136.

Gates BC5P2, 5 kW xmtr, ready for pick up, just removed from service, great for spare parts, lots of new parts added this past year, can be used as an auxiliary xmtr, BO. Walter May, East Kentucky Bdcg Corp, 1240 Radio Dr, Pikeville KY 41502. 606-437-4051.

Harris MW-50C 50,000 W AM xmtr, used daytime only at WNWR, 1540 kHz in excel cond & ready to ship immed. \$20,000 FOB. B Edwards, New World Radio, 2131 Crimmins Ln, Falls Church VA 22043. 703-532-0400.

QEI 675 1998, needs work, but complete, BO. Joe Vilkie, Great Circle Bdcg, POB 397, Meadville PA 16335. 814-784-1111 ext 238.

RCA BTF-10D auxiliary 10kW currently in use, to be retired late June 2000. Good cond, Collins 310Z-2 exciter, spare tubes, manuals, pick up in Columbus OH, \$2500/BO. John Marocchi, WVKO/WSNY, Carriage Hill Lane, Columbus OH 43220. 614-451-2191.

Wilkinson FM20,000F 20 kW xmtr less exciter, \$8000/BO. Paul Bossert, KSPK, 516 Main St. Walsenburg CO 81089. 719-738-3636.

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Letter of application and resume should be sent to Office of University Relations, Attention: Sandy Gautier, 315 Burruss Hall(0229), Virginia Tech, Blacksburg, VA 24061. Review date will start June 1, 2000, and applications will be accepted until position is filled. Resumes received by June 30 will receive first consideration. Salary will be commensurate with qualifications. Individuals with disabilities desiring accommodation in the application process should notify Sandy Gautier, Office of University Relations at (504) 231-5396, or 1-800-828-1120 (Virginia Telecommunications Relay Service).

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◆ READER'S FORUM ◆

&\$%#+!! memories

Dear RW,
Alan Peterson's column on Dingbats, "So What the #@%+* Are Dingbats?" (RW, Oct. 13, 1999) reminded me of a time when I was just getting started in the engineering business.

The contract engineer for our radio station was teaching me the how-tos of engineering and had asked for my help in installing a new Gentner telephone hybrid.

Since we were going to be in the studio anyway, we decided to take the station off the air and do some preventive maintenance.

We installed the Gentner and checked to make sure it worked. Afterwards, we continued our work with the station off the air, but the transmitter still on. After an hour or so of cleaning, we decided once again to check the new phone system before we left for the morning.

We answered Line One, which had been ringing for most of the hour. A very nice lady proceeded to explain to us the conversation she had been hearing on the air for the past hour was not something she considered appropriate for the airwaves.

Apparently, after our first test of the phone system, we had left the Gentner on, and our entire conversation was broadcast. And let me tell you, in my younger days, my vocabulary was not as advanced as it is now. Not to mention the vocabulary of a 20-year veteran of the engineering wars veteran ...

Two major lessons were learned that day: No. 1, always disconnect the composite out — if not, turn the transmitter off completely. No. 2, the last thing a GM wants to hear first thing in the morning is that his two engineers re-educated his listening audience the night before with words his mother never taught him.

Robert Combs
Market Chief Engineer
Cumulus Broadcasting - Savannah
Savannah, Ga.

CD sound off

Dear RW,
In regards to the Bruce Bartlett article "CD Players Distort CD-R Sound?" (RW, Sept. 15, 1999):

The only times we have ended up with distortion on a CD recorded for

broadcast was when the sound file to make the CD track was recorded at an excessively high level, which — when copied to a CD — seemed to be transferred at an even higher output level.

One of the independent producers we deal with reported that CDs made on one system and played back on another exhibited clicks, pops and digital mis-tracking.

These may have been aggravated by a broadcast chain with additional A/D-D/A conversions. I believe the "play" CD player was changed and this fixed the problem.

We have found that in-house if we burn a CD at a slightly lesser audio level, the CD always ends up clean and the level can be boosted a dB or two when used (aired) to compensate for any original low levels.

Keith Retzer
Director of Engineering
KRPS(FM)
Pittsburg, Kan.

Survival of the fittest

Dear RW,
In reference to Paul McLane's Dec. 22, 1999, editorial, "How Will Radio Survive?," I have worked all my life in radio. I love radio. Can it survive?

The field certainly has changed in the past 20 years. FM, with its improved frequency response, has made music sound better.

Couple that with the computer's ability to play from hard drive, satellite-delivered music and news — and the owner/manager's dream of a sales staff-only radio station is almost a dream.

The consumer, on the other hand, doesn't share the owner's glee at the ease that "product" is presented.

It seems that the consumer is always fouling up our well-laid plans. We are told by some consultants not to pay attention to the "few" listeners who tell us what they like, but to give them what we want them to like.

We look at statistics, go to our clients and tell them that they want to and must reach a certain demo for their products to sell. The whole scenario doesn't work, and we yell that we can't compete.

I was asked by one of my favorite clients how he was going to be able to compete with satellite-delivered programming. I told him he can't! Dwindling "avails" are not the answer,

Net Radio: Completely Different

Since Arbitron began to rate Internet radio last winter, there has been a consistent appearance of previously unnoticed stations and owners in the top slots of every measure. These Webcasters offer formats not available on many traditional airwaves.

You may not have heard of Pacific Lutheran University, but if you check the Arbitron "Time Spent Tuning" chart on page 31, you'll see that its jazz-formatted www.kplu.com is second in longest time listeners stay tuned. Clear Channel's www.wkdd.com is eighth.

"Americana"-formatted www.kpig.com has ranked in the top three slots in Arbitron's Infostream Top-10 Cumulative Audience measure since the monthly report began. Ranked by owner revenue, BIA Financial Network put that site's owner, New Wave Broadcasting, 133rd.

Clear Channel, which ranks third in BIAfn's revenue ranking, is nowhere on the Top-10 Cumulative Audience chart.

While the total number of listeners measured is small compared to Arbitron traditional radio measurements, it seems that Net radio listeners are bypassing their favorite terrestrial stations' Webcasts and are honing in on Net stations that offer something they can't find on the traditional dial.

Are listeners getting what they want if they skip what they would listen to in their car or on their receiver at home and go to stations that offer something completely different on the Net? Is their favorite radio station really that, or is it just the best of what they can find on the dial?

As wireless Internet devices come to market, and with them portable Internet radio access, the answers to these questions could come back to bite traditional broadcasters.

But they also could help the big and strong in radio plan their Internet future with an eye toward programming diversity.

— RW

nor are "60-minute music sweeps."

At some point, we still have to make money. How? Good business practices. I think, with some real down-to-earth, common-sense approaches, radio will not only survive, but flourish!

Mike Seaver
President
Seaver Consulting Services
Quincy, Ill.

DAT thoughts

Dear RW,
I really got a kick out of Ken R.'s article "Why I Hate My DAT Machines" in your Dec. 8, 1999 issue.

It's frustrating to have a piece of gear you can never quite trust. I own two Panasonic SV-3900 DAT decks I have used extensively with never a problem. But how they — or my Tascam CD recorder — work is always a mystery to me.

I contrast that feeling with the confidence of using Ampex tape decks. I

still have and use daily three ATR-100s, and an AG-440C that is built like a Sherman tank.

Surely very few audio products are as "bullet-proof" as a good old Ampex tape deck.

So I'm "up-to-date" with DAT and CD recorders and a DAW, but, like Ken R., I have never felt quite as confident with all this new gear as when I switch on an Ampex.

Richard Bednar
Champaign, Ill.

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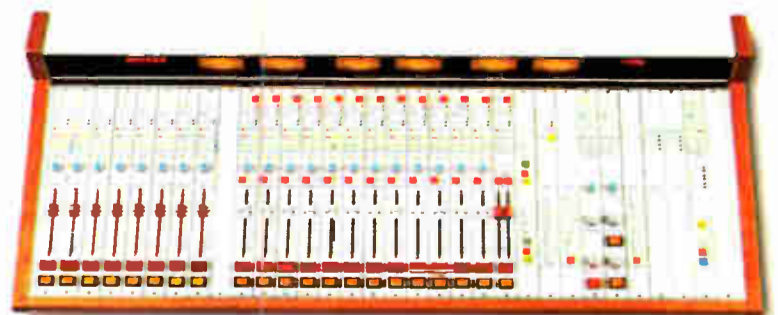


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