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Radio World

**MiniDisc:
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 See Page 12

Vol 22, No 3

Radio's Best Read Newspaper

February 4, 1998

NEWS MAKER

Kennard: A Dual View On Pirates

As new FCC Chairman William Kennard was settling into his job, he talked with RW News Editor Washington Bureau Chief Leslie Simson about pending radio issues.



Photo by Alan R. Peterson

FCC Chairman William Kennard

RW: Let's start with pirate radio. You made some statements recently to The New York Times about looking at the pirate situation, that there are some we should license and others that we should not license.

See KENNARD, page 8 ▶

Pirates Top NAB Board Actions

by Lucia Cobo

LAGUNA NIGUEL, Calif. The Telecommunications Act of 1996 may have set the stage for broadcasting for the next century, but the Communications Act of 1934 and its spectrum management charter must be protected and enforced.

That is the underpinning of a resolution passed by the Radio Board of the National Association of Broadcasters at its semi-annual meeting held here last month. The NAB calls on the Department of Justice and the Federal Communications Commission to step up their enforcement activities against pirate radio operators in the United States (see box, page 7).

Primary purpose

Howard Anderson, president/owner of KHWY Inc., Los Angeles, and chairman

of the NAB Radio Board, said the issue is clear-cut.

"This is an issue of the government carrying out a mandate from Congress in the Communications Act of 1934. If you look at that Communications Act, that is the primary purpose for which the FCC was founded, to create order in the spectrum," he said.

Pirate broadcasters cloak themselves in the First Amendment, said Anderson, but the radio board doesn't buy it. "People are trying to politicize it and make it a free-speech issue," he said, "but the board believes it is not."

Board member Mike McDougald, president, McDougald Broadcasting of Rome, Ga., said the pirate radio issue was very much on the minds of managers in smaller markets.

"We see it as a moral issue. It is not a First Amendment issue. Anybody who wants to stand up and speak can stand

up and speak. The issue is whether you are abiding by the laws of the United States of America. And we feel that the pirate radio people are not even attempting to abide by the law.

"I find it an affront that they (pirate radio operators) would even hide behind the First Amendment to do their work," he said.

Anderson said the board is asking its membership to "report these instances and keep track of them and give the FCC the information they need to enforce this."

He said NAB is worried about cut-backs at the FCC, particularly its enforcement division, which have made it difficult for the FCC to carry out its enforcement activities.

Additionally, said McDougald, although the NAB is not a "police force," it can bring the "weight of the

See NAB, page 7 ▶

Focus on Your Job

See Page 14

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Ron Jones, CRL CEO, Dies at 50

by Dee McVicker

SEDONA, Ariz. Ronald R. Jones, CEO and president of Circuit Research Labs, died from asthma complications on Jan. 1. He was 50.

Jones suffered an asthma attack in his Sedona, Ariz., home and was pronounced dead at 3:31 a.m. after paramedics tried unsuccessfully to revive him. Jones left his wife Royce, daughter Brandy, and an industry full of friends.

Loss of a friend

"It's a professional loss, most definitely. But even more so, we've lost a great personal friend," said Gary C. Clarkson, who founded Circuit Research Labs with Jones in

See JONES, page 6 ▶



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NEWSWATCH

Radio Reaches 96 Percent of Americans

WESTFIELD, N.J. More than 210 million people, or 96 percent of Americans, listen to radio each week. Those figures are steady, according to a report by Radio's All-Dimension Audience Research. The report, based on interviews with 12,000 respondents, showed that stations associated with the 13 networks measured by RADAR reach 67 percent of the population. Of radio's appeal to women: from 6 a.m. to 10 a.m., 24 percent of women who work outside the home are in the radio audience during the average quarter-hour, while 21 percent tune in from 10 a.m. to 3 p.m.

Shareholders OK AAHS Sale

MINNEAPOLIS Shareholders of Children's Broadcasting Corp. voted to approve the sale of all of the company's owned and operated radio stations to Global Broadcasting for about \$72.5 million in cash. The transaction was expected by the end of January.

NRB Honors KIXL

AUSTIN, Texas The National Religious Broadcasters has named KIXL(AM) in Austin, Texas, its Radio Station of the Year. The NRB honors a Christian station each year for the station's contributions, accomplishments and community involvement.

The award was to be presented during the NRB annual convention this week.

Snake Snags Transmitter

SIKESTON, Mo. A dead snake in your transmitter is no excuse for operating out of tolerance of AM directional parameters. That is what the FCC told the owners of KMPL(AM) Sikeston, Mo. when the agency issued an \$8,000 fine in 1994. Station executives told the FCC that the chief station operator checked the antenna calibration readings at the transmitter site, rather than using the remote antenna current calibration, which affected the remote metering readings. "Petitioner also states that actual field strength measurements

were within parameters shortly before the FCC inspection, and that subsequent out of tolerance readings might have been related to a snake's carcass found in the power divider," stated the FCC. The station said the fine was too high for a small market station to afford. The commission agreed, and recently reduced the fine to \$1,000.

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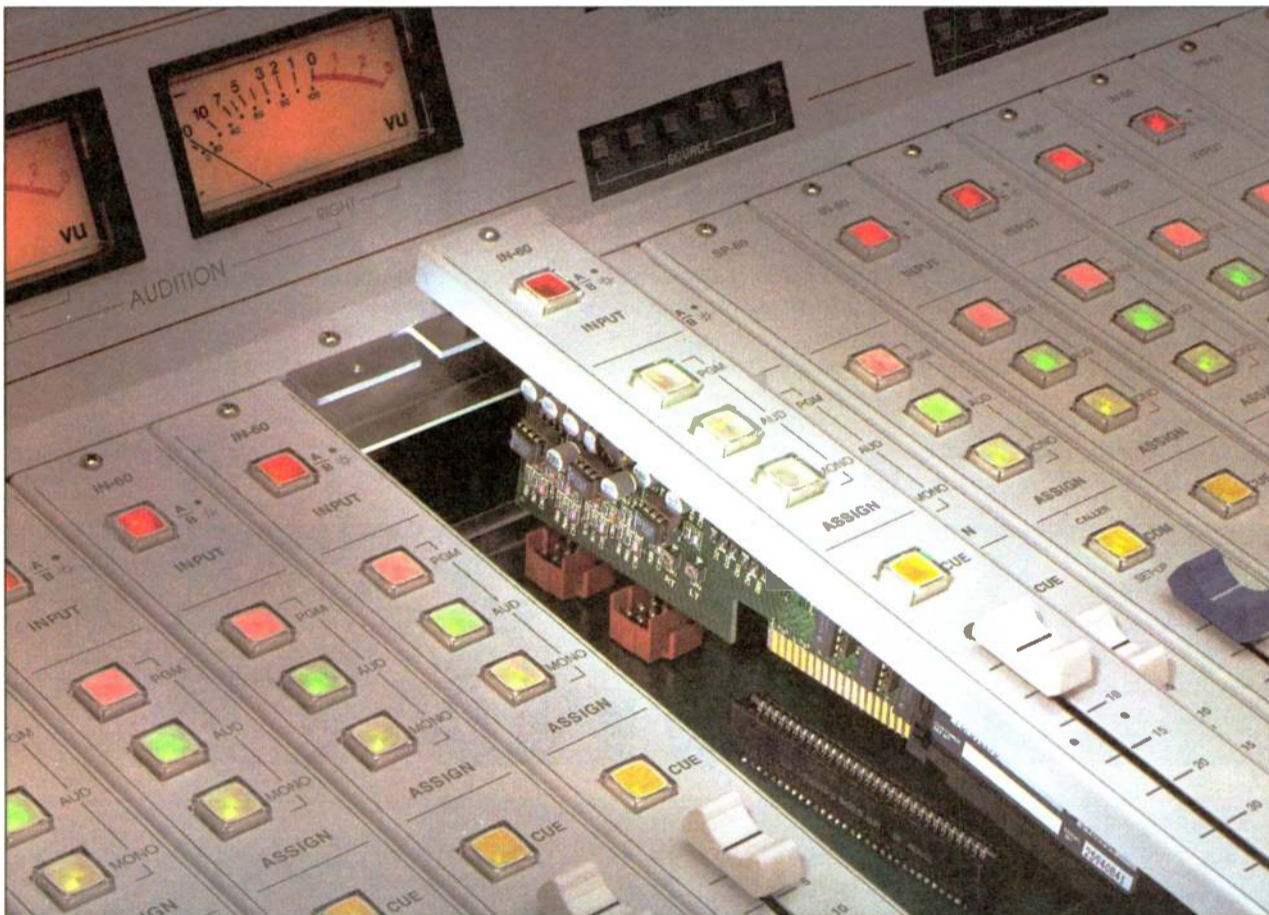
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AUDIOARTS' ENGINEERING

NEWS ANALYSIS

Webcasting: Fast and Profitable

by Peter M. Zollman

ALTAMONTE SPRINGS, Fla. Now that some radio stations are making money with their Internet efforts, and Webcasting is even showing up in Arbitron diaries, what's up for radio stations and the Internet in 1998?

Plenty. Expect "more of everything" when it comes to radio stations and the Internet this year.

1997 was a year of tremendous growth in the number of stations on the Web, the number of stations making money on the Web, the number of Internet-only "radio" stations, and the number of Internet users overall. Experts predict these developments will continue.

"Stations are increasingly getting more and more sophisticated on how to use their Web sites to enhance existing station operations," said Michael Rau, president and CEO of Radio Data Group of Vienna, Va.

"At a minimum, it's another opportunity to communicate and cater to your listeners. Additionally, it's a way to interact with and learn more from your listeners. It's a way for listeners to help themselves get station information," he said,

"and finally, it's a way for stations that are careful about the image they create to refine and further develop that image."

RDG provides one example of the growth curve. The Web advertising and development company, part-owned by American Radio Systems Inc., Clear Channel Communications and Colfax Communications, started 1997 with about 18 clients — radio stations, groups or clusters that operate one Web site. In late 1997, it reported 85 clients, an increase of more than 400 percent. By the end of 1998, Rau said, 200 client sites are projected. About half of the current RDG sites are unaffiliated with its owners, Rau said.

A recent check showed the number of stations "Webcasting" — streaming some or all of their audio signal on the Internet — was 878, up from 56 just 18 months earlier, according to BRS Radio Consultants. BRS figures show 4,508 stations worldwide with a presence on the Internet, either a station Web site or Webcasting, and 30 percent of all stations in the U.S. operating an Internet site. Of those, 430, or only about 11 percent, actually Webcast. Ten percent of all Webcasters are Internet-only, BRS reported.

For streaming technologies, RealAudio from RealNetworks had an 87 percent market share, with Microsoft NetShow at 7 percent and Streamworks at 5 percent. AudioActive, Netscape

1997 was a year of tremendous growth in the number of stations on the Web.

Media, GTS Audio and Radio Destiny each had one station using their streaming format in the BRS Radio report (www.brsradio.com).

Thom Mocarsky, vice president, communications, Arbitron, said research diaries are beginning to show Web listening, some from in-market and some from out-of-market listeners, but "under a fraction of a digit" in percentage terms. He said Arbitron is watching Webcasting for trends, but hasn't seen any substantial usage yet.

"Watch for us to finally make a noticeable dent in the ratings in 1998," said Marc Cuban, president of AudioNet. "We have gotten quite a

few letters from diary-holders telling us how they listen on AudioNet and note this in their diaries, and we expect the number of such listeners to grow considerably. Most of these users have been in-office listeners, and they will have an impact in 1998."

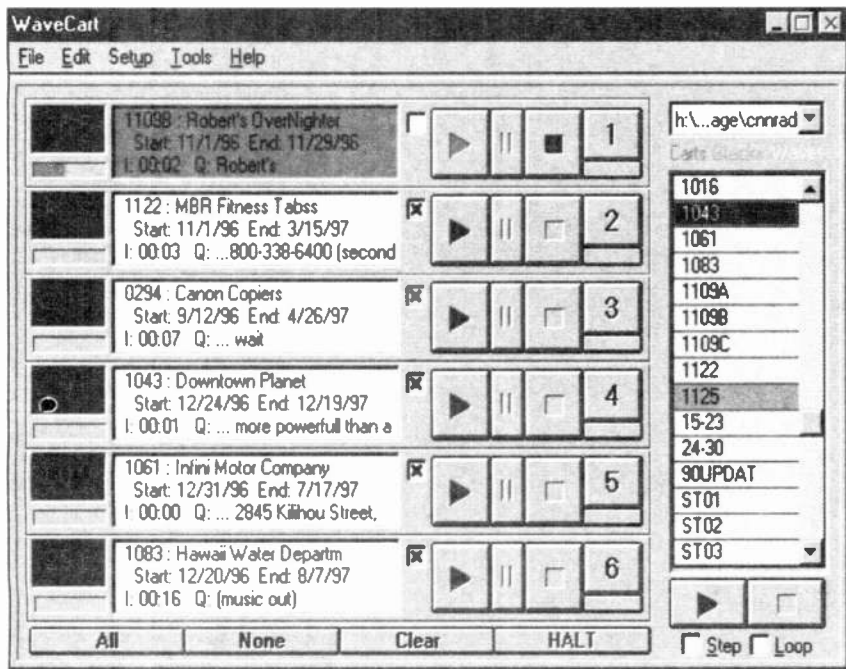
Peggy Miles, president of Intervox Communications of Washington, D.C., and a leader in Webcasting services, predicted that new devices such as multimedia phones, WebTV and other Internet-on-television boxes will have a major impact on the radio users of the Internet and Internet users of radio.

"I think in 1997 you saw the first phase of radio broadcasters simply 'repurposing' their content on the Internet, which is great. The next phase is radio broadcasters and programmers creating 'net-only channels,'" she said. "For the first time, we're seeing radio programmers look at the demographics of the Internet and create niche and specialty programs for it."

With at least a handful of radio stations reporting profitable operations on the Internet, and one, WSOC-FM in Charlotte, N.C. reporting Internet services profits exceeding \$10,000 in some months, the days of radio stations just dabbling in Webcasting and Web services as a "learning experience" may be numbered. Growth, ratings and profits may be within reach now, not some distant myth.

Peter M. Zollman (pzollman@aol.com) is a consultant in interactive services based in Altamonte Springs, Fla.

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Extra! Extra! RW on the Web Come April

WASHINGTON I find it hard to believe that we are now in the second month of 1998. But time does march on and so too does progress.

Look for a sign of our progress on the World Wide Web come April (during the NAB Spring Convention) when we launch the RW on-line service, *RWOnline*.

An electronic supplement to RW (and by that I mean the U.S. edition and the international editions), *RWOnline* will include the RW Newsroom, a directory of

★ ★ ★

As my front page story in this issue indicates, I recently attended the semi-annual NAB Board meeting. I walked away thinking that radio, in many ways, has it so much better than television — not that radio doesn't have some pressing issues. For example, pirate broadcasters are a problem for legally licensed radio operators. I would urge you to document any and all instances of interference from pirate broadcasters and pass that information along to the FCC. The commission

television one (thousands of dollars versus millions of dollars) it will still be a steep upgrade curve for stations that are today struggling to buy a \$2,000 EAS box.

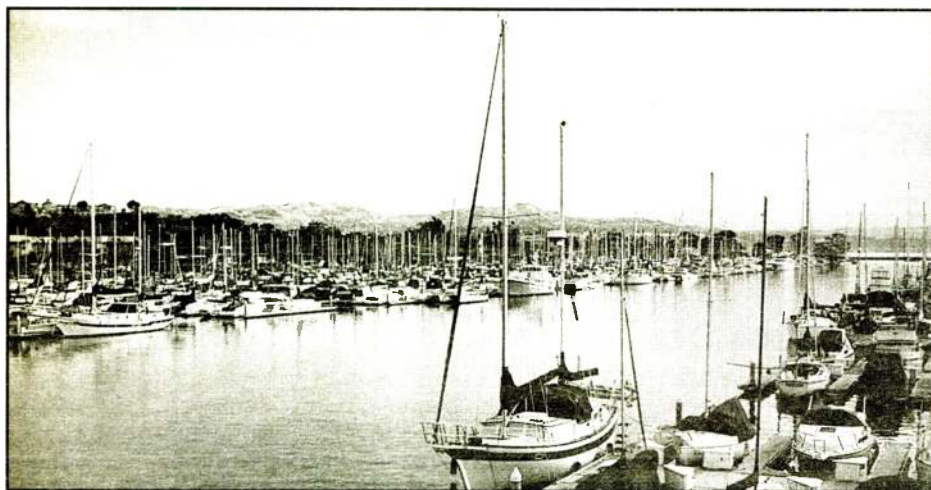
There are a lot of new-revenue generating opportunities being designed into the IBOC systems. I would urge you to stay on top of what those are going to be and to start planning how stations can take advantage of the long transition period from analog to digital to come up with ways to make the upgrade happen for everyone.

I know that is easier for me to say than it will be for it to happen, but the truth is, you have to ask yourself, "How badly do I want to be in the business of radio?" If the answer is, "very badly," then now is

the time to start dreaming up those ideas that will make it so. This is a business of



entrepreneurs (no matter how many huge groups are created) and I believe it will continue to be so. It's time to meet the next challenge.



The serene beaches of the Southern California coast were the setting for the NAB board meeting, held last month.

products and services, a calendar of events, a list of broadcast organizations, RW subscription information and an on-line column that will tackle tough industry issues. I think you will find the latter very intriguing.

Please understand, however, that our Web presence will in no way duplicate what is in the printed *Radio World*. Rather, the Web stuff will serve as an enhancement to what you already receive in print.

Early supporters of the Web site include Broadcast Supply Worldwide (BSW), Cutting Edge, Harris Corp., MUSICAM USA, QEI Corp. and Telos Systems.

Of course, access to *RWOnline* will be free to those surfing the Web. Look for it in April at <http://rwonline.com>

cannot actively go out and police the airwaves. It relies on information and complaints being logged with them directly before it will take action. Make sure that if you know of a pirate broadcaster, you log a complaint against the station with the FCC. It is the only way to do it.

The other issue, one that the NAB is going to study, has to do with FM translators for daytime AM stations. Without making myself a part of this debate, I do want to point out that with IBOC DAB looming on the near horizon, every effort should be made to keep the FM band as clean and uncluttered as possible. You don't want to go digital with insurmountable multipath and adjacency problems.

And that leads me to another small observation. While the radio transition to digital will not be as expensive as the

Stations Fight Ice

Radio personnel throughout New England and eastern Canada fought power outages and towers loaded by ice after a dangerous January storm.



The top third of the 250-foot tower of station WCDQ(FM) in Sanford, Maine, collapsed. According to station management, ice on the guy wires built up until one snapped. The top section — about 80 feet — fell on the transmitter hut, pictured. No one was injured.

"We hooked up the transmitter to the Marti antenna" to keep the station on the

air, said General Manager Russ Dumont. The 3 kW station was operating at 100 W until a temporary replacement antenna from Shively Labs could be installed. High winds hampered efforts to re-guy the tower and install the replacement, Dumont said.

About 20 radio stations in Maine experienced some sort of power outages because of the storm, said Suzanne Goucher, executive director of the Maine Association of Broadcasters. Goucher said "rolling brownouts" were a problem; high winds forced some stations off the air repeatedly and slowed utility crews.

Goucher's advice to station managers: "Get a generator." For listeners fighting power problems, she said, various station help lines have information about "where the generators are, who's got them and who needs them."

The NAB Radio Board, meeting in California, commended New England stations for their lifesaving efforts during the storms and pledged technical and equipment assistance to affected stations.

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Band-Aid

Dear RW,

The article in the Dec. 24, 1997, edition entitled "A New Piece of the AM Action" should have been named "A New Band-Aid for AM."

I'm a big fan of AM. It's great to be able to hear distant stations. My mind tricks me into thinking I'm in that city. It's fun! But AM is a victim of technology — FM plain sounds better. Put an AM and FM in the same market simulcasting the same format, both antenna outputs being equal: you'll find the FM clearly dominates the ratings pile.

The U.S. government, loaded with bureaucrats, dragged its feet on AM stereo, a technological advancement that may have helped AM compete effectively.

A strong FCC commissioner would have gotten with real-life station engineers (not FCC bureaucrat-appointed "experts") and, with a quorum, decided which standard would be adapted, and then encouraged everyone to upgrade with unnecessary regulations tossed in.

The Canadians are doing the right thing with their new digital spectrum. Why aren't we copying their success? This new expanded band of ours simply throws good money into old, inferior technology. Already the FCC is forcing expanded-band stations to cut to 1 kW at night, forcing the stations to lose a big chunk of the audience to which they are entitled. The reason for this power drop is that the FCC will eventually load up the expanded band just as it did with what we consider the "graveyard" channels of today: 1230, 1240, 1340 etc. They've even ruined the signals of the heritage clear channel stations.

The bureaucratic FCC needs to be disbanded. Today's station engineers who know what it's all about should form a committee which will govern the technical end of this vital business — before it's too late. The FCC is in the process of destroying the possibility of station ownership for anyone but the rich. Professional broadcasters must speak up — *now!*

Shel Swartz
Palm Beach, Fla.

Emperor's clothes

Dear RW,

There seems to me to be a major dichotomy between your recent series of articles on emerging IBOC terrestrial DAB, and a heavily advertised new product that offers "compression-free" audio on the aural STL band. The STL product was a major breakthrough because engineers do not want to compromise the integrity of the on-air product: An STL system with audio compression is subject

Driving dissatisfaction

Dear RW,

I am the retired former owner of a 50,000 W FM station in eastern Pennsylvania. I bought a new car in 1997, a luxury car at that. The salesman showed me the radio and pointed out that I could plug in a total of 18 stations on the push buttons, plus the seeker and the scanner. That was fine, but I don't care much about those things anyway — I use the dial.

It wasn't until I got home that I discovered that this crazy thing didn't even have a dial. I simply could not believe it! Try as I might, there was simply no way I could listen to any frequencies I wished. The seeker would skip over one frequency after another until it reached one that had what *it* decided was a strong enough signal for *me* to listen to. I should be the one to make that determination.

I'm a very selective listener and don't care for the run-of-the-mill programming. As a broadcaster, I also like to check out what's going on over each individual frequency, whether AM or FM.

I am thoroughly disgusted. Why would the broadcast industry allow the manufacturers to get away with something like this?



Dave Hendricks
Boyetown, Pa.

Good Hunting These Days

These are weird times for an engineer seeking a job in radio. Anyone entering the industry, or considering a job switch, could be excused for being confused.

Without question, the way engineering departments of U.S. radio stations are run has changed over the last three decades. Budget-cutting, prompted by competition from other media, took its toll first; then

came consolidation spurred by deregulation. Computers have replaced more and more of the traditional, radio-specific equipment, gear that only a radio engineer knew how to service. According to conventional wisdom, all of these trends meant more bad news for career-minded engineers.

Indeed, the job market for general managers, jocks and other radio people is turbulent. But for the radio engineer, work opportunities are much more abundant than you might think.

In this issue, RW takes a look at the radio job market, how it has changed and what you can do to improve your chances of finding the position you want, no matter what department you work in.

RW editors and writers watch the industry closely. Each week, we hear from radio stations looking for qualified technical people. We hear of engineers faced with the enviable choice of moving to another field for higher pay. (That's troubling for radio, but good for the engineer.) Contract engineers report high demand for their time and services. Equipment vendors tell us they have a hard time finding qualified candidates for technical sales positions, and must pay accordingly to attract them. As reported in this issue, the SBE regularly posts many job openings on its Web site; and one prominent engineer writes on page 17 about the trouble he encountered trying to fill a good open position.

We hope you find our special report useful. The moral for radio engineers: If you are willing to keep your options open, don't be too troubled by the prospect of radio downsizing anytime soon. The lessons for all radio people: Keep up with computers. Establish and maintain a personal network of contacts. And don't stop educating yourself.

— RW

to "cascaded compression distortions" when other audio coding schemes are used elsewhere in the air chain. Too, those stations with completely linear signal paths object to having to psycho-acoustically manipulate the "last mile" in order to reap the other benefits of a digital STL, namely noise and overshoot reduction. Hence, the new compression-free STL has been seemingly well received by radio broadcasters seeking to provide their listeners with the best possible audio quality.

Now consider IBOC DAB which *mandates* severe "perceptual coding" (Lucent/USDAR's preferred term for audio compression).

If the compression-less STL product is seen as such a valuable tool in providing a high-quality, hi-fidelity transmission medium, then why are we as an industry willing to consider a universal transmission *standard* that is completely and totally dependent on audio bit-rate reduction? Why is IBOC seen as such a neces-

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sary development for terrestrial broadcasting (as consistently argued in your editorial pages) if the audio integrity — *by definition* — will be compromised? How will mandatory audio compression enable the nation's radio listeners to hear a better aural product than what they're currently getting?

I'm beginning to sense that the emperor has no clothes.

Mike Worrall
Assistant Chief Engineer
KABC(AM)-KLOS(FM)-KDIS(AM)
Los Angeles

Correction

In our article on CBS Radio football coverage (Dec. 24, p. 3), the last name of freelance NFL football producer Bill O'Connell was misspelled.

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February 18, 1998

GUEST COMMENTARY

Jones of CRL Was a Gale Force

by Dee McVicker

The following is a commentary about the late Ronald R. Jones, the president and CEO of Circuit Research Labs, who died unexpectedly last month. Dee McVicker worked for CRL from 1980 to 1988.

Have you ever been lifted up off your feet by a gale wind? Meeting up with Ron Jones was a lot like that for many of us, whether we came by him early in life or later on. He was a hurricane, really, a human dynamo so full of raw emotion that some days his hair would actually stand on end, recoiled as it were, unable to lay flat on his head.

This tumultuous, often heedless, ball of energy lived life on his own terms and then, sadly, died on New Year's morning

from asthma complications. He blew in and out of our lives with great commotion. The industry knew him as the man who started Circuit Research Labs, the audio processing wonderkid with 20/20 ears and an intellectual grip that seized upon — and mastered — the mysteries of audio. He built his first audio processor on his kitchen table in 1973, much to the chagrin of his wife. He took it to the NAB show, set up a similar shop in his hotel room, and hours before the opening exhibits, he changed the sound of radio. He made it louder, crisper, and injected into it that seemingly untamable ball of energy that churned so intently in him.

If there is music in Heaven, you can be sure Ron has put a limiter, or at least a gain controller, to it.

But those who knew him remember well the calm beneath the tempest, the center of the hurricane. He often was poignant, sometimes funny, and always honest. There were Christmas parties in which even the most nocturnal of us could not stay awake through the endless slides he hauled out for such occasions. I can still hear his excited clips: "Here's a picture of the boat from the harbor." Click. Click. "Here's two feet from the boat." Click. Click. "Oh, and here's the three-foot view." Click. Click. Click.

There were the endless technical gadgets he'd parade around the office, and later, the world, some idyllic toys and others quite useful: the nifty carry-around computer (which turned out to be an early Compaq), the calculator watch that he

would tap on for hours, it seemed, and the digital camera that, yes, took pictures and more pictures of his travels and friends.

Ron loved to travel. Ron's wife Royce estimates he circled the globe at least 14



Ron Jones, left, and Jack Sellmeyer work in familiar surroundings in a photo from the early 1980s.

times and traveled to all but seven countries in his lifetime. He was known endearingly as one of the three musketeers: Alex Perchevitch with Jampro and Chuck Kelly with Broadcast Electronics traveled abroad with him extensively. Alex remembers a recent trip to Vietnam in which Ron pulled out one CD player after another from a bottomless bag, Mary Poppins-like, while custom officials stood gaping.

He had many interesting foibles. He often danced and paced when he spoke, his stories were elaborate beyond comprehension sometimes, and he liked to scribble, sometimes nonsensical doodlings, but often circuit drawings that to this day live on as audio processing circuitry at hundreds of radio stations the world over. He loved fast cars and fast computers. Carl Matthusen, general manager of KJZZ(FM)/Sun Sounds in Mesa, Ariz., and a CRL board member who hired Ron as a consultant engineer in the '70s, said Ron still holds the speed record for driving down from the South Mountain antenna farm.

"The only way to go faster is to go straight down," he said. I think he's right: I remember screaming down Camelback Road in Ron's red Corvette — me literally, the Corvette figuratively!

Still, for a man who sped through life, it remains one of life's great mysteries that Ron was perpetually late — to parties, to conventions, even to his own memorial service! By a convoluted twist of circumstances, his cremation ashes arrived two hours into his service. Of course, his wife Royce gave Ron what-for.

But the side to Ron not widely known, indeed he'd scold me for telling you, was that wonderful caring part of him. It was like Ron to fire someone in one breath, and in the next, put him on the payroll until he found a job.

In my house, it's hard to turn a corner and not be reminded of Ron. There are the piles of old floppy disks. The CDs. The papers with his notations and scribbles. And, most of all, there is my husband, Chuck Adams, who knew Ron as a trusted friend and confidant and whose grief comes out in quirky Ron-like ways. I watch him eye the rockets he and Ron used to mischievously shoot off in parking lots, the calendars sent to him while Ron was on some far-off adventure, and the e-mails, the pictures — the lifetime of learning, of exploring, of friendship.

This commentary is for him. And Ron's wife Royce. Ron's daughter Brandy. And Gary Clarkson. And everyone at CRL. And for all the people who were swept away by the kindness of this wonderful man. Ron, we'll miss you.

Jones Remembered

► JONES, continued from page 1

1974. Clarkson will succeed Jones as president and CEO of Circuit Research Labs, as director and chief visionary of the audio processing company.

Clarkson has an associate's degree in engineering and has acted as the company secretary/treasurer and director since its incorporation in 1983.

Faxes, letters and e-mail began arriving at CRL in Tempe after news reached people returning from the long holiday season. Condolences arrived from customers and associates as far away as Hong Kong, Poland, Argentina and New Zealand.

The president of Kapisanan Ng Mga Brodkaster Ng Pilipinas, the broadcasters' association in the Philippines, wrote, "Please convey to his family that we greatly appreciate his contributions to the improvement of broadcast services for the Filipino people. He will surely be missed by us both as a colleague and as a friend."

"I wish you all the best in filling those big, big shoes and I really feel for you over this loss," wrote another.

dBs and dollars

Industry friends and colleagues drove from Phoenix to pay their respects at a memorial service Jan. 5 at Jones' Sedona home.

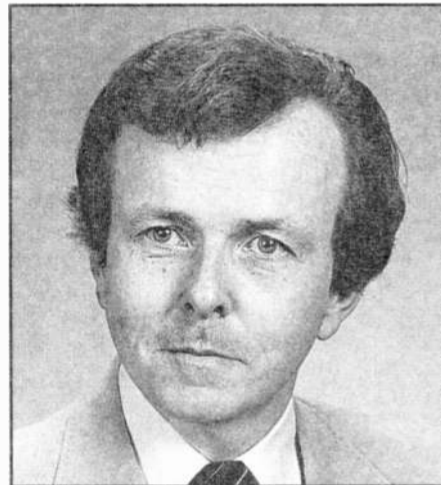
"In an industry where too many are chasing dBs and dollars, it was refreshing to know a man of such high moral character," said Chuck Kelly, the director of international sales for Broadcast Engineering, during the memorial service.

Jones was born in Cottage Grove, Ore., on Dec. 9, 1947. He was a member of the Institute of Electrical and Electronics Engineers (IEEE) and the Audio Engineering Society (AES). He taught courses in broadcast engineering and served as a consulting engineer for radio stations before founding Circuit Research Labs with college friend and fellow engineer Gary Clarkson in 1974.

"We were always trying to do things to make our stations sound good, and so of course we started experimenting with audio processing," Clarkson said of their early years as consultant engineers

for seven Phoenix-area stations.

The duo soon found themselves in the manufacturing business when one of the FM stations under their charge and using their processor became the top rocker in town. In the early years,



Ronald R. Jones

Jones designed and Clarkson developed the products, and hand-delivered them to radio stations. Jones' kitchen table served as a manufacturing bench.

"We used to bake the front panels in his oven," said Clarkson.

Circuit Research Labs was founded in 1974 and incorporated in 1978. In the early 1980s, Jones got involved in one of the more notorious scuffles in radio history: AM stereo. He developed the first AM stereo matrix processor.

Early AM stereo

Jack Sellmeyer, who was involved in the early testing of AM stereo as a consultant engineer for AM stereo proponent Magnavox, said Jones had an almost intuitive understanding of the audible challenges of AM stereo. Days after his first conversation with Jones regarding a matrix processor, he said, "Ron met me at the airport and said he had a system that might work. He actually had a breadboard of what was ultimately produced. This was only four days after we spoke (about AM stereo for the first time). I was astounded," Sellmeyer said.

Jones was involved in the early testing of AM stereo at WIRE(AM) in

Indianapolis, and dedicated long hours to the advancement of AM stereo. "Ron's main concern was that the technology succeed, (not one company)," Clarkson said. "We went public in the hopes that AM stereo technology would take off ... to push product development and get the products on the market." In early 1983, Jones took Circuit Research Labs public on the NASDAQ stock exchange.

With Jones as president and visionary, CRL moved into technologies such as NRSC bandwidth compliance, audio processing for television stereo, digital audio processing and digital test gear. The company purchased the dynafex noise reduction technology in the 1980s; in 1993, it developed digital audio testing technology, which it now licenses to Tektronix.

CRL now manufactures a line of AM, FM and TV gain controllers and limiters, and FM and TV stereo generators, as well as audio analyzers/generators and noise reduction systems.

In recent years, Jones concentrated his efforts overseas and traveled extensively for the company. "Ron felt the United States broadcast community had a lot to offer the international marketplace, especially those European countries privatizing and others improving their broadcast infrastructure," Clarkson said.

Most of the daily operations of the company had been delegated to its employees in Jones' absences. Clarkson said Jones built an organization that allowed him to be on the road traveling, so the transition for CRL after his death would be easier than it might have been. The staff in place, he said, would continue the day-to-day operations of the company Jones helped found.

Clarkson said he would guide Circuit Research Labs with the same principles that served the company in the past. "Ron and I had started this business with one really simple principle. We remembered there were companies who treated us good as engineers, and companies who didn't, and we decided we were going to treat our customers the way we would want to be treated ... I think Ron's life was an example of that," he said.

■■■

CRL has placed a memorial to Ron Jones on its Web site, www.crlsystems.com

Pirates Are NAB Board Priority

► NAB, continued from page 1

public opinion of the broadcasters of America" to bear on decisionmakers.

The pirate radio issue has some overlap into the issue of FM translators for AM stations. Daytime-only AM stations want the FCC to allow them to apply for FM translator licenses, so they can provide nighttime service.

Said Anderson: "We took the issue up in the Small-Market Committee. Mass Media Bureau Chief Roy Stewart was there. It is a low priority item on the FCC agenda. If these broadcasters want to get it considered, the (the FCC) is the first place they should be going," he said.

"There is sympathy for AM broadcasters that cannot broadcast at night," said McDougald, "but ... it is something we are going to look at and that needs more study. We've asked Jeff Baumann, NAB executive vice president and general counsel, to look more into this."

Other issues

The NAB Radio Board worked quickly through its agenda. NAB President/CEO Eddie Fritts reported to the board about the new commissioners.

"The good news is that radio isn't on their radar screen," said Anderson. "That's about it. They recognize that the industry is doing well."

The board discussed the progress of research into in-band, on-channel digital audio broadcasting. Members said they continue to be encouraged by the developments of the USA Digital Radio and the Digital Express projects, Anderson said.

There is sympathy for AM broadcasters that cannot broadcast at night. But ... that needs more study.

— Mike McDougald

"To say that we are interested in their progress is an understatement. It is a very critical issue."

In spite of the costs to be incurred for the upgrade to digital, Paul Fiddick, president, radio group, Heritage Media, said small-market broadcasters would benefit the most from the technology.

"They are the ones that theoretically are going to be impacted the most from DARS (satellite-delivered radio). There is no democracy in this. Sure it is going to cost a small station in Arkansas as much as it is going to cost the big station in San Francisco, and that is not democratic, but (the small-market stations) are probably going to derive more benefit from DAB," Fiddick said.

"Digital audio in our industry has percolated up from the small markets to the big ... for economic and quality control issues," he said.

Howard Anderson believes the small-market operator will find the means for the digital upgrade.

"If the revenue is there," said Anderson, referring to the data trans-

mission revenue-generating opportunities promised in the IBOC design, "the financing is there. It is not a chicken-and-egg issue."

More immediate concerns

McDougald said most small-market broadcasters are not yet confronting the issue. However, he also is optimistic about the upgrade.

"I feel that technology has a way of presenting itself and that the transition period will present new opportunities."

More immediately, radio operators are turning their attention from acquisition to operations.

"There is no question that many of

us in the industry have been focused on acquisitions," Dave Kennedy, president and COO of Susquehanna Radio Corp., said. "Now that we are seeing

Resolution of the NAB Radio Board on Pirate Radio

"The Radio Board of Directors of the National Association of Broadcasters is concerned about the continued proliferation of unlicensed, illegal, 'pirate' radio stations throughout the country. These unlicensed broadcast facilities undermine the Communications Act of

consolidation slow down, the opportunity is here to spend more time on operations."

Fiddick, too, said recent consolidation activity was merely a "means to an end." Operators now are turning to the job of building on their groups through operations.

1934 and often cause interference to broadcast and other radio services, such as air navigation. We commend the enforcement efforts of the FCC and the Department of Justice and urge additional enforcement activities including the creation of a task force within the DOJ. We stand ready to support the government's effort to eliminate unlicensed radio broadcast stations in the United States."

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Kennard: Minority Ownership, Auctions

► KENNARD, continued from page 1
Would you expand on that?

Kennard: You have to look at pirate radio from two perspectives. One is that the FCC is an agency charged with enforcing the law, and it's important that we faithfully discharge that duty. That means that we can not allow people to create destructive interference in the radio waves.

That is what the FCC was created to do. If you look back in our history, it was created to prevent harmful interference. We are not just being unrealistic about this. These pirate radio stations can cause interference not just to incumbent broadcasters, but to air-ground communications involving the Federal Aviation Administration. It can create all sorts of public safety problems. So that is an issue that we can't avoid as the agency charged with enforcing these laws.

However, I have heard and talked to some pirate radio people and some of their supporters. They have a legitimate issue in that there are, in some communities, not outlets for expression on the airwaves, and I believe that is a function in part of the massive consolidation that we are seeing in the broadcast industry.

I am distressed because as a result of this consolidation there are fewer opportunities for new entrants to get into this industry, small businesses and minorities in particular. The statistics speak for themselves on this. We have seen the most dramatic consolidation of radio in history. ... It is very different now than it was two years ago. We are seeing companies proposing to buy 300 to 400 radio stations, a very different business today. So the point is that there is a need to create some additional outlets for expression for people who want to talk to their communities.

RW: That may involve licensing some sort of low-power broadcasting?

Kennard: That is a proposal that some folks have put on the table. It is

something that I am receptive to hearing more about. I've talked to the Mass Media Bureau and have asked them to provide some more information about whether it is possible to create a low-power radio service, but this is very preliminary and we are just starting to look at the technical issues involved in particular.



FCC Chairman William Kennard

RW: Would someone like Stephen Dunifer be a class unto himself as a pirate? Do you see him as almost a legitimate broadcaster?

Kennard: No, he is not legitimate because he has violated the law. We are working hard to make sure that the courts in San Francisco enforce the

broadcaster. He is an illegitimate broadcaster and he is breaking the law. However, he is a legitimate voice. He does have something to say to his community. My concern is that people who want to have outlets for expression have those opportunities. But those opportunities should only be taken advantage of in a lawful way, not an unlawful way.

RW: You should that the Mass Media Bureau is just in the preliminary stages of looking at this. Are they trying to quantify how many pirates are out there? Is that part of it?

Kennard: Well, we have a pretty good idea of how many pirates are out there. Bear in mind that these people come and go, but in talking with our field office bureau we have a pretty good sense of how many of these guys are out there. Well, it is a range, I have heard anywhere from 300-1,000 pirates nationwide.

Minority tax certificate

RW: The radio landscape has changed dramatically after the passage of the Telecommunications Act. You testified before Congress in 1995 against eliminating the minority tax certificate. Is the commission studying any sort of replacement mechanism for that?

Kennard: The tax certificate is a creation of Congress, so the commission

I am distressed because ... there are fewer opportunities for new entrants ... small businesses and minorities in particular.

law. Well, I guess it's in Berkley. Enforce the law because there is no question that the Communications Act and 60 years of precedence are on our side there.

So no, Mr. Dunifer is not a legitimate

doesn't have jurisdiction to reinstate the tax certificate if it wanted to. However, we are looking at lots of ways that we can provide more opportunities for minorities and small businesses to participate in radio.

If you look historically, the FCC first started to address this issue in the late '70s. That's when the FCC adopted the tax certificate program, the distressed sale program, there was more focus on entry opportunities through comparative hearings, and those policies did result in progress. In 1978, about 1 percent of broadcast stations were owned by minorities. At the time the tax certificate was eliminated, about 3 percent were owned by minorities. Now that percentage is dropping again below 3 percent. So the trend is going in the wrong direction.

We have got to find lots of ways to address the problem. One way is what we have proposed in our recent auction notice, where we have proposed measures to incent minority- and women-owned companies to get into the auction process by some sort of incentive proposals within the auction. I very much want to continue a dialogue with the major group owners of radio, to get their assessment of the problem and see what they can do ... Since they have enjoyed this great boom in consolidation, it seems to me reasonable that they should reach back and help some of the new entrants who also want to participate in the radio business.

RW: NAB President/CEO Eddie Fritts says that you are going to make the FCC trains run on time. Will you?

Kennard: Yes, I think I will because it is very important to me. I practiced law before the agency for a dozen years before I came here. I am acutely aware of how frustrating it is to the public and the industry when things don't run on time. So I do want to make that an important goal for the agency. You are probably aware of our biennial review. This is an effort to look creatively at what we are doing to find if there are better more streamlined ways to do our business so that things move faster.

Year 2000, auctions

RW: Experts have warned that in the year 2000, computers are going to malfunction because they won't be able to handle the year change. What is the FCC doing to prepare its computers for the year 2000? Are there potential problems for licensees?

Kennard: We are participating on some government-wide task forces that are looking at this question. It is really important for us to focus on this issue because ... if I am trying to get the trains to run on time, if we don't solve this problem the trains might stop on Dec. 31, 1999. So we are focused on that problem.

RW: The FCC now has the authority to auction off analog spectrum for new licenses and there is a rule making on how to accomplish this. Can you anticipate how many stations really want new analog spectrum?

Kennard: If you look at where the analog spectrum is located, it is outside major markets. It is by and large in small- and some medium-sized markets. So the spectrum we have to auction is probably not going to have a major or dramatic impact on the industry, but it could have a dramatic impact on those markets that are fortunate enough to get new broadcast. That is why it is important that we bring this rule making to a close if we are going to go with auctions, have the auctions quickly. If we are going to go with comparative standards for the pending licenses, clear those out.

I really find a lot of sympathy for the applicants caught in this administrative nightmare, and that is really the only way to characterize it; those who filed applications years ago and have no certainty as to how or when their applications are to be decided, so we have to address that.

RW: Are a lot of people settling their cases?

Kennard: I think the jury is still out. We have a settlement window that I believe is still open (until Jan. 30). I am not sure how many settlements that will yield. The last time we had a settlement window, a third of the applications settled. So that did yield some benefits in terms of bringing some resolution to these cases.

RW: What kind of radio do you listen to?

Kennard: I listen to radio every day. I wake up to either WTOP(AM) or WAMU(FM). On the way to work in the morning I usually listen to WAMU, sometimes WTOP. On weekends and at night I listen to an eclectic mix of music. I'm all over the dial. I listen to classical and new age jazz. If I'm tired, I'll listen to rap to get pumped up.

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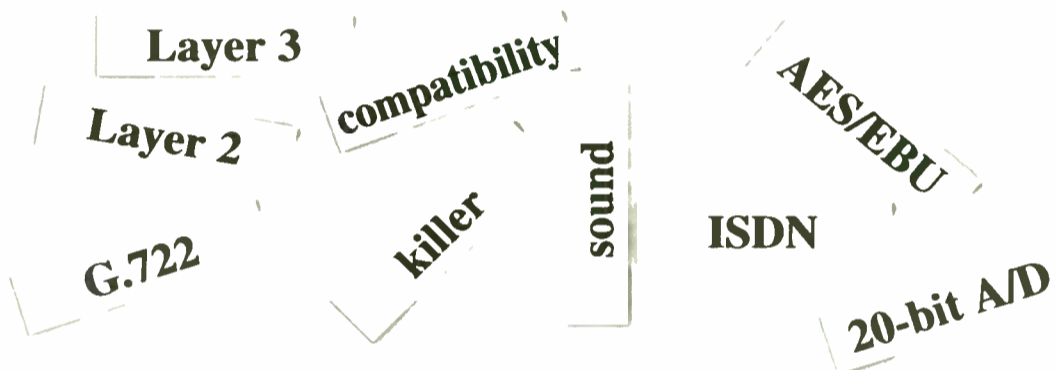
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World Radio History

FCC to Cut Station Paperwork

by Leslie Stimson

WASHINGTON FCC Mass Media Bureau staffers are trying to streamline how they handle paperwork for a variety of application procedures, and modify or eliminate unnecessary rules. The entire Federal Communications Commission is going through this process, to make its work more efficient.

Broadcasters would benefit from faster processing of routine paperwork by the commission, and fewer outdated rules.

Several telecommunications lawyers and the National Association of Broadcasters made suggestions at a forum on these changes in January. Among their suggestions:

• *Electronic filing for minor facility*

modifications. A commenter asked why so-called "minor mods" should be processed twice, first by a station's engineer, then by commission engineers. He also suggested electronic filing of such applications.

Staffers for the audio services division said they are considering electronic filing for several broadcast applications.

Mass Media Bureau Chief Roy Stewart said the commission has improved processing of transfer applications, to about 30 days, down from 90.

• *Electronic filing for call sign assignments.* Citing delays of three to five weeks, one commenter suggested the FCC create an electronic reservation system for calls to speed up the process.

• *Streamlining the EEO forfeiture process.* A communications attorney suggested that EEO fines of \$10,000 or less not go before the full commission for review, but be handled at the bureau level. Such fines can delay a station renewal for up to a year, he said. Stewart suggested raising the threshold to \$20,000.

• *Coordination between the FCC and the Equal Employment Opportunity Commission on filing EEO paperwork.* Stations are doing double work, said NAB Associate General Counsel Steve Bookshester, because the FCC and EEOC require paperwork to be filed in different quarters of the year. He suggested the agencies coordinate when

they want their paperwork.

• *Filing ownership reports less frequently.* NAB Vice President, Policy Counsel Jack Goodman suggested stations be allowed to file ownership reports every four years, instead of annually, if there has been no ownership change. Some attorneys agreed; others did not, including Andrew Schwartzman, director, Media Access Project. "It's just wrong. Ownership information is valuable to the public," said Schwartzman.

Stewart said the bureau staff had discussed changing the frequency of ownership reports and also reducing the number of required exhibits. That would be essential if electronic filing becomes an option to file ownership reports.

Bureau staffers planned to review suggestions offered from the meeting and incorporate them into a future rule making.

Whatever Happened to REMAA?

by S.D. Yana Davis

WASHINGTON REMAA has gone quiet.

A group calling itself The Radio Equipment Manufacturers Association of America purportedly formed in 1997 when one or more equipment makers took issue with the National Association of Broadcasters over issues related to NAB conventions. REMAA distributed leaflets at the spring NAB show, and sent anonymous letters to RW, but would not identify its members.

It complained of what it called confusion generated by the NAB schedule of fall and spring shows. REMAA complained of NAB booth space fees and wanted the radio/audio hall at the upcoming 1998 show to be "TV-free." The group hinted that it might set up a competing show if NAB did not respond.

The NAB has since established exhibitor advisory committees for its fall radio shows; such groups already advise NAB on the spring convention. But nothing further has been heard from the upstart organization.

Messages by RW to the REMAA e-mail address generated a response from an unidentified person claiming to be with the group. The respondent sent back a statement critical of NAB, but said that on the advice of its attorney, "REMAA has stopped making public statements" and would remain silent until the legal issues in establishing a national trade organization are completed. The person also wrote that the high legal costs of establishing the group added to the delay.

A search of the Internet found no Web page for the organization. Queries to several radio equipment manufacturers turned up none who would admit membership in REMAA, and revealed confusion about what it is, or was.

"I think we were members a few years ago, but I haven't heard anything about REMAA lately," said an Intel official who spoke on condition of anonymity.

An official at Broadcast Electronics said her company was not a REMAA member.

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World Radio History

MiniDisc Moves to Center Stage

by Lynn Meadows

WASHINGTON The MiniDisc recorder, still a wallflower in the U.S. consumer market, has found a growing niche in the broadcast industry.

"We use them all over the world," said Chris Berry, general manager of radio operations for ABC news. ABC uses the portable MZ-B3 from Sony for field work. The Sony list price for the MZ-B3 is approximately \$900; like other models mentioned in this article, it generally sells at a discounted price through broadcast equipment dealers.

For the user, Berry said the biggest advantage is that the machine allows reporters to mark sound bites they plan to use in stories easily. For the listener, the MD recorders bring better audio quality. That is important to ABC, which can boast a fully digital radio network from field to affiliate.

Making headway

MiniDisc was first developed by Sony. It uses magneto-optical technology and a data compression scheme called ATRAC to record and re-record digital-quality audio on blank discs of varying capacity.

The MD has not supplanted popular analog cassette machines, like the Marantz PMD-222 and Sony TC-D5, or DAT recorders like the Sony TCD-D8. Those models are used widely, and many new ones are sold each year. In many cases, the

MD is a supplement to the older machines. ABC Correspondent Tim Scheld said he still uses both on occasion.

Tony Brunton, director of Radio Special Events for CBS, said many of his correspondents still use the Sony TCM 5000 cassette deck.

"It's familiar, let's put it that way," he said. "But some reporters do use the MD recorders and some actually carry two with them."

Tim Shears, president of the MNN Radio Network in Minnesota, said his network is considering using the MD players for the correspondents, but any purchases were being delayed while the network updated its 11 newsroom workstations with digital equipment.

At the Associated Press office in Washington, D.C., a spokesperson said a couple of employees use a MiniDisc deck. UPI is not using MDs extensively for field work, but the organization does have a Sony consumer MD model in each of its two production rooms. A UPI spokesman said DAT remains the medium of choice for the field.

Denon National Sales Manager Mark Kaltman said his company originally saw the MD player/recorder as a "direct

replacement for the cart machine." He said the machines now tend to replace reel-to-reel equipment.

Although timing and alternative music media may have stunted consumer growth in the U.S. market, the MD recorder — both rack-mountable and portable — is a desirable item for professionals these days. Outside of broadcast-



ing, Kaltman said, some Broadway theater technicians like the MD machines because they are quicker than a CD player for playing sound effects. Other companies, he said, use MiniDisc for repeating-message applications.

Sony developed the MiniDisc format itself and offers both portable and studio units. Denon introduced its first MD recorder in 1994 and now has eight professional models available with list prices ranging from \$800 to \$3,800. Denon also offers the DN-045R, a MD replicator that makes disc copies 3.5 times faster than real time.

Some industry observers see MD as a transitional medium to segue from carts to hard-drive systems.

"They have found their place in the industry," said Art Reed, general manager of equipment dealer Bradley Broadcast. He cited price as one reason for their success. Many broadcasters use consumer units with prices that run between \$300-\$500. He said the portability of audio is another reason for the success of the medium.

Reed said he knows his customers use them both as cart machines and, to a lesser extent, portable units. He said Bradley Broadcast recently has been selling more of the inexpensive Sony MDS-JE510 than anything else. That unit costs less than \$400.

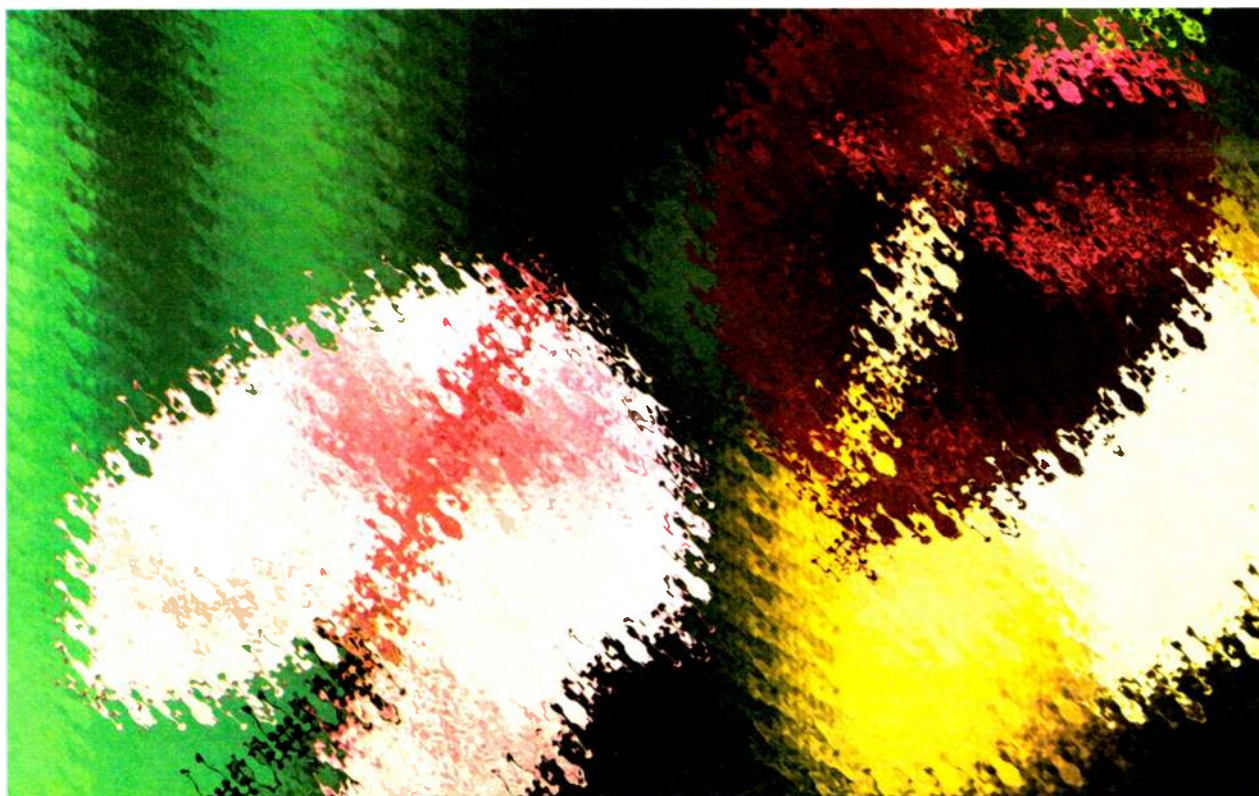
As for the future of the MD, Reed was cautious.

"People want better quality and more storage space," he said. "Hard-disk storage is where the market is at in the long run." One MD holds 74 minutes of stereo audio or 148 of mono. What if you want a different compression algorithm, Reed asked, or want to store five hours of audio?

Kevin Larke, chief engineer of three Michigan radio stations, said one of the stations used MDs to stop DJs from playing CD cuts that were not on the playlist. Three years ago, rock station WJXQ(FM) put its entire music library on MD. Most discs have just one song on them although some have two versions of the same song, Larke said, noting the venture was expensive at the time.

The station is now in the process of
See MINIDISC, page 13 ►

Impressionist Art.



► **MINIDISC**, continued from page 12 going digital with a computer-based audio system. But while WJXQ will no longer be using MDs for music, Larke said it would continue to use them for archiving commercials because they are so small and handy to keep.

Kaltman of Denon said many people do not want to jump to a hard-disk system but do want to get rid of their cart machines. He highlighted MD advantages including portability and "re-recordability." In fact, the 2.5-inch discs can be re-recorded millions of times. Depending on the quantity bought, they now sell for around \$7 to \$8.

Chris Schilling, Otari product manager for digital recording equipment, said he sees MDs being used mainly as a convenient playback medium. Otari introduced its MR-30 professional MD recorder in December, with a list price of \$2,595.

Schilling said he sees the MD as an interim strategy in place of going into a totally digital environment.

"A move to an all-digital environment will leave a lot of these intermediary things behind," said Schilling. As technology moves forward, he said, the MD will be outdated as a mechanical means to move data around in the studio, although he has hopes for the MD in the consumer market.

Craig Webb, account manager with dealer Crouse Kimzey, said the cost of the discs may be another factor in the success of MD. Depending on the quantity ordered, the price could drop as low as \$7. He said superior sound quality

has made the MD an attractive alternative to the cassette.

Proponents of MD are vocal in their support of the medium, and see many ways to use it in the radio environment.

John Lynch, a sales representative for dealer Broadcast Supply Worldwide, agreed that the price of the Sony portable MD player is making it attractive to broadcasters in lieu of the portable cassette deck.

Lynch used a MD player while announcing Seattle Seadogs soccer



ABC News Radio Correspondent Tim Scheld uses a Sony MiniDisc deck at Kensington Palace during coverage of the death of Princess Diana.

games last summer. For years, he had carried a stack of analog cassettes to each game, pulling them out of the recorder after each good play. Now, recording in mono on MD, he can put 148 minutes on a disc and mark highlights as he goes. Lynch predicts the machines will become more appealing to major college and professional sports

remote people as the price of machines drops.

Many do use the machines as cart replacements, Lynch said. Asked if he



The Otari MR-30 is one of several MD machines marketed for radio studio use.

believed the MDs were merely a transitional piece of equipment, Lynch said, "I would say no at this juncture." He said that instead of paying several thousand for a hard-disk system, a radio manager can pay \$300 and get a consumer MD recorder for the studio. Audio storage systems are much more powerful, with many advantages; but the MD format can be attractive where budgets are limited, he said.

Olympic test

ABC's Scheld started using the Sony portable MD recorder during the 1996 Summer Olympics. He found only two disadvantages.

The first was screeching that occurred when the MZ-B3 was held too close to high-frequency radio antennas like those used by the FBI in high-security areas — something he discovered after the Olympic bombing in Atlanta. Second, the pause button that allows the user to cue up a sound bite on the MZ-B3 has a delay that is a

disadvantage in live situations.

Overall, Scheld lauded the little machine. He said the biggest part of the learning curve was simply remembering to press the button to skip to the end of the disc before recording. If that step is forgotten, it is possible to record over other material.

Scheld praised the condenser microphone on the Sony unit as "one of the best" he had ever seen. As an example, he cited his trip to Cape Cod for the funeral of Michael Kennedy. The press was kept behind a rope about 50 feet away from the service. As Scheld described the opening of the hearse door in his MZ-B3, the mic actually picked up the sound of the door swinging open.

Stations that choose MD equipment must expect to spend some time training staffers who are more familiar with analog cassette decks or DAT machines.

For example, the afternoon news talent at country station WXIK(FM), Lansing, Mich. came to Larke to ask why stories she left for the morning news personality occasionally disappeared overnight. She had been recording four or five news stories on MD and leaving the disc in the Sony recorder overnight. During the night, a power outage occurred. The stories were lost. The news person did not know that the table of contents on the MiniDisc was updated only when the disc was ejected.

■ ■ ■

What's your experience with MiniDisc for radio applications? Tell us about it. Send e-mail to radioworld@imaspub.com or write to the address on page 5.

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There's no comparison to the modular design of the MR-40 console manufactured by the broadcast industry artists at Audioarts® Engineering.

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 **HARRIS**

Focus on Your Job



Job Hunting? Check the Internet!

Peter M. Zollman

So last month there were 18 radio stations and 12 owners in your market; now there are 18 stations and four owners? There were 12 chief engineers last month, now there are only four? And you're one of the odd engineers out?

What should you do?

Job searching has changed a lot in the past few years. Some things remain the same, of course, and ultimately you'll get a job based on your skills and your abilities, not based on *how* you hunt for a job. But new strategies can help you *identify* potential job opportunities much faster, and in turn, to land the new job faster.

All because of the Internet.

Stephanie Parrish Snyder knows. She's worked in radio for 10 years, since she was 17, as a radio producer, reporter, network coordinator, DJ and program director.

Snyder was working in San Antonio at WOAI(AM) as a sports producer. Now she's technical director for AudioNet in Dallas.

"I had Internet access both at work and at school while I was completing my master's degree, so when I started looking for a new position, I added Internet job sites to my standard job search," Snyder said. "Since I worked with our radio station Web site, I was on a mailing list for AudioNet. ... I found my current position through a notice they included in the weekly e-mail, not through a listing on a Web site."

Snyder was smart in her job search.

She didn't rely exclusively on the Internet — every expert says that is a giant mistake — but she spent about one-third of her job-search time on the Web and at other job sites. She had several interviews based on postings she found on the National Association of Broadcasters site and the Public Broadcasting System site.

But she also answered classified ads from trade magazines and networked extensively, calling her contacts in the industry.

A crucial component

That, experts say, is the key: Conduct a balanced search, using the traditional methods, but incorporating online elements as a crucial component.

"The Internet can give your job search a tremendous boost," said Susan A. Bach of Bach & Associates Inc., a human resources consulting firm in Altamonte Springs, Fla. "But you'll be limiting your chances if you rely exclusively on an online search. Use all the traditional techniques too."

If you are that engineer who has been laid-off because of consolidation, go to the Internet first.

Why? Because you'll be encouraged by the jobs you find there. Even if

they are not the "right" job at first, you'll see there *are* openings. And that's important in the beginning stages of your search — knowing *there will be another job*:

There *are* radio groups with large sites seeking employees.

There *are* jobs that you might not think of at first.

There *is* a relatively simple way to look for a new job in that far-away city where you've always wanted to live.



And it's (almost) all free.

What more could you ask?

Use the following guide to the Internet and online sources to start your job search, but Bach recommends you limit computer work to about one-third of your search time. Spend the other two-thirds networking, answering classified ads, visiting local stations, hustling for part-time gigs that can lead to full-time work, and doing whatever else it takes to get a new job.

What are some advantages of using the Internet? Encouragement. Speed — you can respond by e-mail, and

find a job within hours or days, instead of weeks or months. Current listings — some sites update daily, others update every time they have new openings. E-mail notice on jobs that fit your "profile." Posting your resume where employers can find *you*, rather than *you* finding *them*.

Working the Internet

Internet job searches can work in different ways: locality-based, if you want to stay where you are or move somewhere specific; company-based, if there are special companies you'd like to work for; through online career hubs, if you have specific skills and are willing to move; through general searches with Web-search agents, or, the best approach, all of the above.

(If you've never used the Internet, by the way, find a friendly 10-year-old to show you around. Seriously. If you don't have regular access to a computer, go to your local library, jobs service or Kinko's — or find a friend who will trade you access in exchange for painting or TV repairs or whatever. But don't conduct a job search these days without the Internet and e-mail. You'll be missing out on a lot of opportunities.)

Look at the jobs site for CBS Radio, www.cbsradio.com/jobs/nph-jobs.cg.

State of the Market: Engineering

Sharon Rae

It's a given that new skills will be required as we approach the new millennium, but what does this mean for engineers in the radio industry? The state of the job market and the face of the field itself are changing thanks to consolidation and new technology.

"It's a volatile time for broadcast engineers," said Ed Miller, president of the Society of Broadcast Engineers. "Consolidation and multiple ownership have put the emphasis on getting the same amount of work done on the shoulders of a few people. Before, you had maybe one chief engineer and one or two assistants for larger markets. Now, we are finding one or two engineers handling a half-dozen stations."

Miller said the lack of manpower may become a problem.

"It's not bad when all stations are working, but should there be a hiccup, it becomes a major concern."

According to Miller, it never hurts to know the foundations of the field.

"I think the old standby always is 'get the basics,'" he said. "Learn the basic electronic skills. Nothing replaces Ohm's Law ... Have the base of information, but be prepared to assimilate."

That assimilation, said Miller, will come in the form of familiarity with networking.

"Local area networks, in-house networks, etc." he said. "Communication any more is not just the spoken word — it's data going from point A to point B. It's essential to be familiar with that type of knowledge."

Louisa Nielsen is the executive director of the Broadcast Education Association, which publishes the Journal of Radio Studies and the Journal of Broadcasting and Electronic Media.

"There will always be jobs for engineers," she said. "Engineers create the cutting edge for technology."

According to Nielsen, radio is turning into an international commodity.

"Programming is becoming very global in its focus," she said.

Few things in your life matter more than your job. In this issue of RW, we focus on employment in the radio industry, from engineering to management, and find out the state of the job market.

Peter Zollman runs through a list of job resources available on the most powerful new employment tool, the Internet. Sharon Rae looks at the engineering side of the business to see how consolidation and new technology have affected the field. Consolidation and its effects also are discussed in Lauren Rooney's piece for general managers, with useful tips for managers at both big groups and standalones.

Alan R. Peterson explores the new skills and attitudes needed to get and keep a job today, and he looks at the darker side: Should the ax fall, is there still a future for you?

Depending on the day you look, you'll find openings for chief engineers, sales executives, promotions representatives, administrative assistants and more. There are openings in major markets and smaller markets. Each opening has a job description, a contact, a phone number, a posting date and more.

Although the CBS Radio site is one of the best for radio job-hunters, it's just one of dozens or even hundreds of company-specific sites with job information. Visit the sites of National Public Radio (www.npr.org/inside/jobs), Metro Networks (www.metronetworks.com/jobs.htm), the Corporation for Public

See INTERNET, page 19 ►

"Companies are beginning to utilize the highest levels of engineering in technology to distribute (their) variety of programming around the world."

Nielsen said students of engineering can look forward to a booming market as countries privatize radio operations that had been run by their governments.

Nielsen also said the radio industry depends on engineers more than it knows.

"Engineers often lead the marketplace because they design the delivery systems which allow programming to flourish," she said. "And they also are involved with legislative and the regulatory issues. Broadcast engineers are an integral part of the fabric of the industry."

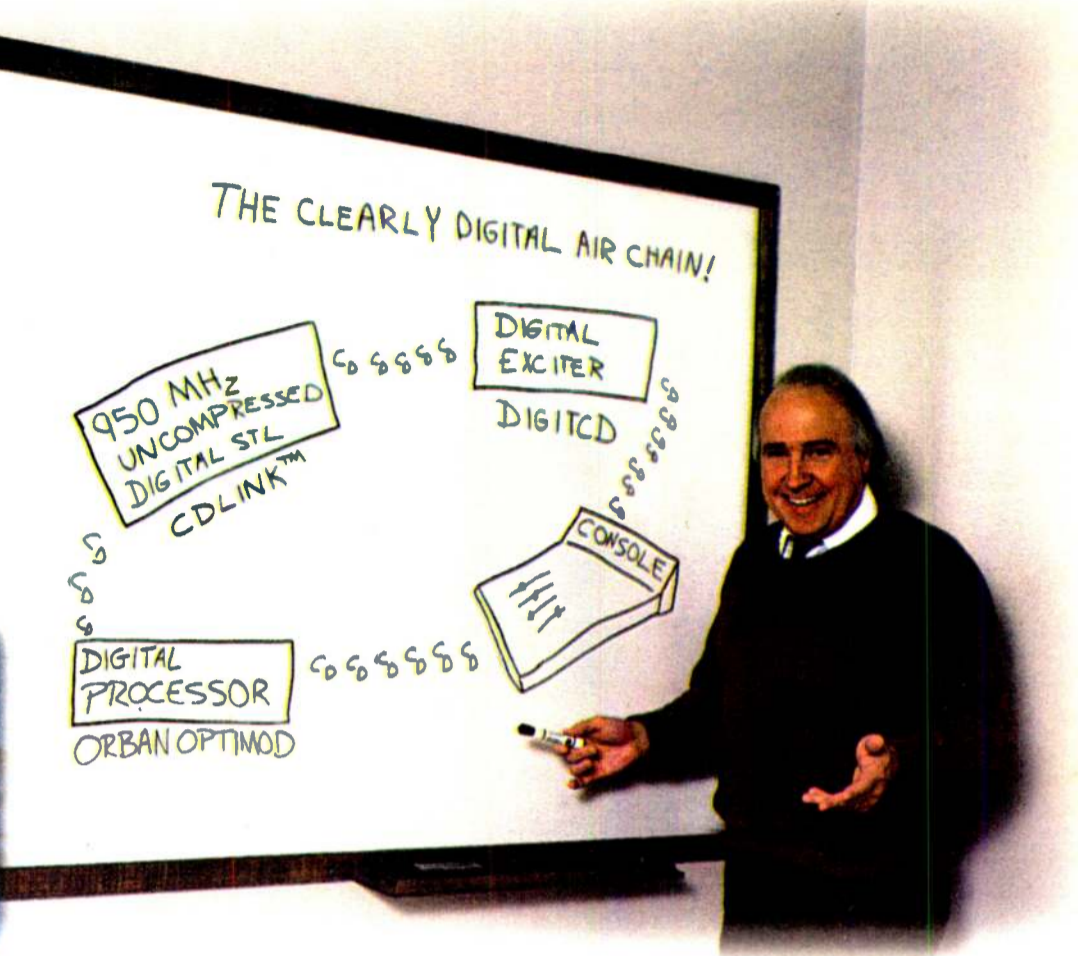
Cha-ching!

Frank McCoy, vice president, engineering for Gulfstar, agreed that the job market looks to be extremely favorable.

"We are going to be looking for (engineers)," he said. "But if you are an

See ENGINEER, page 17 ►

Dave Obergoenner exclaims, "What a novel idea that a manufacturer looked at all the pieces that an engineer has to put together and made a product that actually fits—everywhere!" Dave is the corporate Director of Engineering for the twenty-seven radio stations in the Zimmer Radio Group



The Ultimate Sound In Radio.

By Dave Obergoenner
Director of Engineering
Zimmer Radio Group

Most good engineers and programmers have it in their head, the ultimate sound, quite simply the best sounding radio station ever. Sometimes we think we've been close. We may have gotten our station almost to the ultimate sound, or much worse, our competition may have gotten close (too close for comfort) to the ultimate sound in radio. I too have heard that sound in my head and have never quite been able to attain it.

Oh, I know what it would sound like. Clean, no distortion, big wide frequency response, loud but not sounding too processed, a super low noise floor, perfect separation, in short a signal that will just jump right out of the radio when your listeners and advertisers tune to it. I've been close a number of times.

Suddenly radio, and the whole audio world for that matter, was going digital. I have to admit, I tried a lot of it, and most of it sounded just plain bad to me. Early generation A to D and D to A converters, the sharp filters (before over sampling) and then digital compression, the ultimate insult...digital compression on top of more digital compression! Lets just throw away huge chunks of the signal. We'll trick your ears, they'll never know it...ya right. Sorry not these ears, not on my radio station, not if I can help it at least. It was time to just say NO to lossy compression.

Now we can. Thanks to the fine engineers at Harris and Orban, we can now put together the fully digital, uncompressed digital audio chain for radio. It uses standard types of equipment we are all used to: an Optimod, an STL on your present frequency, and an exciter. Not just any STL, stereo generator and exciter. Harris has introduced *the missing link!*

The Harris CD LINK™, together with the digital Optimod and the DIGIT® digital exciter and its

digital stereo generator, it works to form a flawless, digital audio chain. And it's UNCOMPRESSED all the way.

The system works with your current STL antenna system. In fact, it will work with a lot less signal than you may have with your current STL system. We put the system on the air with what was a noisy composite system, only about 80 microvolts. The CD LINK™ produced a perfect AES/EBU digital output signal. The bit errors were lower than I would expect to find in most CD players. The CD LINK™ even comes with a built-in bit error counter, so you can be sure. What you put in is exactly what you get out. Even with a poor signal. This is the best of digital with none of the drawbacks.

When you combine the CD LINK™ and the Orban Optimod 8200 with its digital I/O card, and the DIGIT® exciter with its digital stereo generator...now you can get there...The Ultimate Sound On The Radio.

I remind you that the idea of all this cool new digital stuff is to make radio sound BETTER. That won't happen if it becomes yet another tool to make the station sound more distorted.

If you have a backup transmitter at your site you may be wondering, if I have all the AES/EBU digital coming out of this new STL system, how do I come up with a composite signal to feed the backup exciter? Good question, I'm glad someone at Harris thought of it before me! The new CD LINK™ STL receiver is available with a built in, good old standard, composite stereo generator. It is an option though, so you should order it with the unit. I didn't think of it, I'm glad Tom Harle our sales guy did.

I must say: I was a little nervous about trusting the reliability of our station to a totally new product. To the best of my knowledge, Harris has never built a real STL system before. I've heard some other digital STL systems lock-up after power failures. There's no way I want to put all

that noise on the air until someone can drive to the transmitter to push the reset button. The CD LINK™ has not let us down. It has been through some killer electrical storms and power failure/surges. The CD LINK™ has been 100% reliable. It comes back up fast, and has made absolutely no unpleasant sounds on the air, only great sounding music.

This is truly a terrific example of great systems integration. It is obvious that the people at Harris did their homework. Even when it came to making the CD LINK™ interface with other manufacturers' equipment (Orban and Burk). We plugged it together, turned it on, and it performed flawlessly. I wish some other broadcast equipment manufacturers would learn from this example.

Well, now I have it. The sound that has been in my head for all these 27 years in this business is finally on the air at one of our stations. It took the combination of the Optimod 8200 (with a tiny bit of pre-processing), the uncompressed Harris CD LINK™, and the Harris DIGIT® exciter/stereo generator to get there, but I finally have The Ultimate Sound On The Radio. And we didn't have to apply for a new STL license, or even call the phone company and try to order a T1 line. That's O.K., I didn't want to put my station back in their hands anyway.

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Jobs, Jocks and Production Rats

Alan R. Peterson

Being a production *artiste* or talented jock alone is no longer enough in today's marketplace. Consolidation and digital technology effectively ended the era of the "specialist," and today's broadcaster must be versatile and adaptable as well as talented.

Anyone who thinks nothing has changed will soon find himself or herself with a new job description: toast.

According to the industry people we interviewed for this article, current-day production directors and air talents who can adapt to consolidation and the new regime will be the winners. But this

also means a willingness on the part of the owners to share the battle plan with the entire team.

Juggler

Today's air/production talent must work harder than ever to juggle all duties within the job description. Pete Salant of Salant Broadcast Consulting calls it "cross-training."

He said, "A person may be the promo voice for one station and the PM drive person on another. Someone else can be the morning jock on one station, then go across the hall and voice-track afternoon drive on the country station. It means working harder *and* smarter —

fewer people doing their jobs better."

"There will be a lot more work for the people still employed," said Dan Vallie of Vallie•Richards Consulting, "but people must be willing to change. It is no longer valid to say, 'The business is changing.' It *has* changed. And since we're not ever going back, we have to adapt."

"You can no longer be a specialist," said Boston consultant Donna Halper of Donna Halper and Associates. "You have to keep an eye on all trends. If you want to stay employed, you must be ready to move on anything."

How does one adapt to these changes, not knowing the direction

these changes may take?

"The winners will be the ones who are the most aggressive and who buy into the changes," Vallie said. "Those are who will be busier than ever. The decisions are happening quicker than ever before, and the corporation cannot always get involved."

According to Salant, the losers will be the "do-your-four-then-out-the-door" types. "These are the jocks who will have no interest in production," he said. "They will not come on a sales call to help clinch the contract,

So you think nothing has changed? You may soon find yourself with a new job description: toast.

and do nothing until they ask, 'And how much more will you pay me for doing this?' They're gone."

Make the V sign

Halper believes in the Three Big Vs: Versatile, Visible and Valuable.

"Take versatility," she said. "You can do killer segues and know heavy metal, but that won't get you the job. Spread out over many musical styles. Read trades, use your common sense. If you're a jock, good production is always welcome. If you do production, you mean more if you can also pull a shift."

Then there is visibility. Air talent who are promotions-conscious put a real face on the station. Appearances and remotes become key events for station visibility.

Finally, value. "Is a jock valuable to the community and to the corporation?" Halper asked. "These three elements are what the modern day jock need to know."

Salant warns that contracts are not much of a safety net anymore for marginal performers.

"I don't see contracts being renewed in their present form, unless you are a superstar," he said. "Larger companies are beginning to protect themselves, and rather than going for a contract, many are asking folks to prove their merit on an ongoing basis."

Share info

Talented people deserve some attention from above, according to Vallie. "If these people are talented, it is worth management's time to work with them," he said. "But in their defense, many don't even know the game plan of the station. I have come in to meetings at stations where I knew more about the plan than the people working there."

Vallie's recommendation to managers: Plan your strategy, then share it with the people that you have charged with actually making it happen.

It is possible to do a good job and be recognized for it through several different corners. Michael Parks is the creative services director for six Dame Media stations in south central

See JOBS, page 21 ►

It's A Natural...

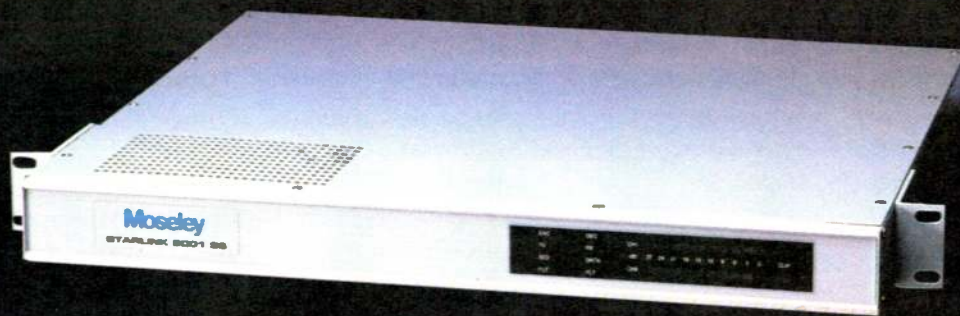
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The Trusted Name In Communications

Engineering Opportunities Abound

► ENGINEER, continued from page 14

engineer at a radio station and you do not have MIS (Management Information Systems) skills ... networking skills, you should get them now. When I walk into an engineer's office and see books on NetWare and UNIX, I know that he gets it. Essentially, there will be two kinds of

jobs at a radio station: all the things we used to do, and MIS. If you can do both those jobs, you can earn both those salaries. Cha-ching!"

McCoy said there will always be a need for engineers.

"It seems like everybody in America has bought a radio station, and they are all fixing them at the same time," he said.

"This is also good for the vendors."

Dave Downing is station manager and advisor for WLNZ(FM), the student radio station at Lansing Community College in Michigan.

"In conversations I've had with owners of stations around this area, there seems to be a need for new people to enter this area of the industry," he said. "I think there needs to be more awareness that (engineering) is a needed area in the radio business."

Downing predicted that it may take a while before we really know what expertise will be necessary in the future.

"There's no question that the skills that were traditionally for an engineer are changing, as is everything else in the business," he said. "It will take until after the dust has settled with consolidation to figure out exactly what skills are essential for the engineer."

Downing suggested the implementation of a mentoring/training program for students through colleges and the local chapter of the SBE.

"Students who want to become engineers would benefit from talking to someone in the field," he said. "We have many contacts with the SBE. I'd steer a student in that direction."

Location, location, location

"We are hoping to provide some well-rounded educational opportunities for engineers, and those who wish to become engineers," said John Poray, executive director of SBE. "We have re-instituted the Leader-Skills Seminar. It's a week-long intensive seminar June 8-12 in Indianapolis." Poray said

anyone interested in the workshop should call (317) 253-1640 for information.

"This is a good place if one is aspiring to become a chief engineer or any kind of management figure at a radio station," he said. "Overall, the trend is there are still fewer jobs today than there were five years ago, but there are still jobs available at every level if you are willing to go to the right location at the right time."

Poray said the SBE's Jobline listings have grown tremendously over the past six months.

"I would say, with radio and TV, there are probably 90 listings right now around the country in broadcast engineering," he said. "We took in 70 new job postings in November alone. Some are corporate, some are network engineering positions. There's a little of everything."

"I think the direction of the game plan for new folks coming into the business is that they are going to have to *not* be satisfied with just learning the basics, which is an impressive amount of information in itself," said SBE's Miller. "There will be a need to focus on upcoming technology ... you must read and research what's coming down the pipe. Going digital opens up Pandora's box for different ways to move data. And data equals communication anymore."

Miller said he also would like to introduce a national mentor program for engineers.

"This is a very fertile and challenging field," he said. "A broadcast engineer is a person with multiple skills, who has to be a visionary, yet be practical. He has to figure out what it is he is doing, and how will it perpetuate the industry."



BEA Executive Director
Louisa Nielsen

Wanted: Studio Engineer

As the editors of RW prepared this Special Focus section about jobs in radio, the following letter was posted on the Internet site broadcast.net by Clay Freinwald, chief engineer Entercom-Seattle. We reprint it here with permission.

Fellow Broadcast Engineers,

Well, it's been almost three weeks since we started looking for someone to fill a studio maintenance opening here in Seattle. I have advertised this in major national publications, Web sites, local and regional newspapers. I have talked to everyone that I know of including vendors and friends in other markets. I've spoken with instructors at schools, colleges, etc., etc. Granted, the holidays are a very, very poor time of year to hire. It's what I've come up with that I want to share with you. First, a review of the opening:

- Radio Studio Maintenance Engineer
- RF experience not required
- Experience with digital and analog studio equipment
- Proven track record
- Self-started
- Highly motivated
- Good competitive benefits
- Salary is open
- EOE

I have received 10 résumés, and only one has any broadcast experience. I would have thought that there would be a number of phone calls and/or applications and résumés from broadcasters in markets (rated) under this one (Seattle is #13) who would view this as their chance to move up to bigger and better. This has simply not been the case. In my quest to find out what happened, here is what I have learned:

Other fields

Many of those who would have jumped at this years ago have gone into other fields: cellular, computers, etc. for a number of reasons — money, benefits, better working conditions, etc.

Many stations no longer have a C.E. Instead, they have contract engineers and these contract guys are simply not interested.

In some cases, stations in smaller markets have had to step up to the plate and pay larger-market salaries to keep their technical people.

No schools in this area are teaching broadcast engineering.

Schools that are teaching electronics for CET are not aware that broadcasting is in need of qualified people.

Everyone is looking. I get this every time I turn around. A relatively small-market cluster in Oregon is reportedly offering 60K/year for an engineer. Let's face it, 60 grand a year is not that bad! Take a look at the SBE job listings. This is a real wake-up call.

I have been looking into other related fields, i.e. home entertainment, equipment bench techs. I figured that we could teach most anyone broadcasting, so let's first find people that know how to repair things. This has resulted in more "we are looking also" messages.

Bottom lines:

If you have a job opening like ours, good luck on finding someone to fill it.

If you have an employee looking to leave for better money and/or benefits, you'd better be prepared to step up the compensations to keep them.

Forget about going to a smaller market with the goal of finding someone with the experience you need and offering them better money/benefits to come to your store. Those days have apparently come and gone.

We need to expand our thinking to include technical people who are working in other fields. In your advertising for a job opening, be prepared to spend a lot of time searching other fields.

When bench techs working on stereos and TVs, etc. are making more than \$20 per hour, be prepared to pay, and pay well.

Look around your market — have broadcast engineers become a Gray Haired or Old Man's Club? Ask yourself what are *you* going to do about it?

Plan ahead. Get your local SBE chapter involved in this process. Get involved with your local electronic schools and explain to them that broadcasting is an area that represents opportunities.

The good news:

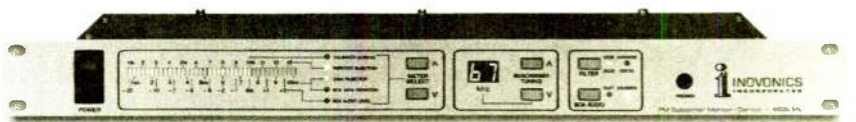
Wages and benefits are going to have to go up ... way up.

Mr. Broadcast Station Manager, what are you paying for someone to come in and repair your LAN or copy machine? You will be doing the same thing in the very near future for your other technical services. In the meantime ...

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A Tale of New General Managers

Lauren Rooney

It's the best of times and the worst of times for radio managers.

John Geary, general manager of stations KRXQ(FM), KSEG(FM), KXOA-FM, KSSJ(FM) and KCTC(AM) in California, said consolidation has hit general managers hard. "I know a lot of people who are very talented and out of jobs because of consolidation." And for those who are left, the responsibility is tremendous.

Geary said general managers must have broad managerial skills and great people skills to survive today.

"With multiple stations you have more employees and a higher degree of difficul-

ty in dealing with people issues," he said.

Geary has been a general manager for almost 10 years. He said the job today is much harder than it was when a manager ran just one FM and one AM. "Revenue is number one. Everything is driven by the amounts being paid for stations," he said. "There's a lot more pressure to deliver a specific return, and that requires driving revenue and controlling expenses."

John Dame, owner and GM of WHP(AM), WKBO(AM), WCMB(AM), WRVV(FM), WRBT(FM), and WWKL(FM) in Pennsylvania, said a good team is essential to running his collection of stations. He sets the policy and then lets what he calls his "station

managers" keep the stations on course. "If you set up policies and procedures correctly, the stations will flow correctly. If not, you will constantly be arbitrating fights, little turf battles that occur."

Family analogy

Carol Logan is president of Forever Broadcasting in Altoona, Pa., and general manager of WFGI(FM), WFGY(FM), WFBG(AM), WMXV(FM) and WALY(FM), all in Pennsylvania. She said running a consolidated group of stations is like running a family.

"When we had one AM and one FM, you focused on that primary station. It was kind of like having just one child.



- Percentage of GMs at commercial stations that are not stand-alones
- Percentage of GMs at commercial stand-alone stations

Data represent 10,535 stations in the BIA database

When you acquired additional stations it was like having two or three children in the family and each one of them requires as much attention as the first."

Sometimes Logan has to deal with sibling rivalries. "Most of the problems have been in the sales office. People who have done terrible things to one another on the streets are suddenly supposed to be brothers and sisters operating under the same facility."

Logan said being a good manager of people helps to quell those flare-ups. Her managers work hand-in-hand with the sales staff to let them know they are all on the same team and that everyone is going to have the same opportunities to succeed.

Logan said consolidation for her programming staff has been a different story. They have learned how to take advantage of their individual strengths in sharing the workload.

"One program director is a whiz at production, so he's taken charge of that. Another is great with promotions and has taken over that area."

Standalone situation

Even the managers of standalone stations have their hands full with personnel and money matters these days. "Keeping all the balls in the air at the same time is the most challenging part of my job," said Ron Giovanniello, general manager of WNNK-FM and WTCY(AM) in Pennsylvania. "There's always an area that needs attention. As soon as you address that, another problem pops up."

Giovanniello gets the job done the same way those managing consolidated stations do: by surrounding himself with a great staff and then keeping them happy.

Keeping people happy seems to be more than a matter of money. "Empowerment is a big part of the job," said Giovanniello. "Everyone wants to have an opportunity not just to share their views and opinions, but to feel their contributions have real value and meaning to the overall success of the operation."

John Geary said he tries to keep that personal touch with his workers. "I make sure I'm connected with the people I'm working with." He talks with them to find out what their goals are and how the company can help them achieve those goals. "If they sense they're working for a manager who gives them the support they need and is there for them, you'll get more out of them."

Geary said radio is very competitive now, and there's always someone across town willing to take care of your talent. When an opportunity arises for one of

See *GMS*, page 19 ►

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► GM'S, continued from page 18

Geary's employees, he helps them decide if it is a good move. "I've had many cases where it is the right time for a person to leave. I'll tell them that, shake their hand and wish them well."

Journey to the top

Giovanniello said those aspiring to be general managers should take advantage of every opportunity. He started at WNNK as an intern at the age of 16. He worked part-time on the air and in the promotion department. "That gave me a bridge to sales, and at age 19 I was selling," he said.

Giovanniello was named general manager last year, at age 29. "My age has always been my biggest obstacle. People say things like, 'You can't sell, you're only 19.'" He said he stays on top by preparing for the future and being flexible.



Ron Giovanniello

"Successful people adjust, conform to what's happening in the business. You have to be open to change."

Logan said her gender in what was traditionally a man's business helped her succeed. She began working in radio sales in the early 1980s, when stations were looking to move women into management positions.

If a person is interested in this kind of career, Logan suggested, he or she should read a lot.

"I tell my people to read. I would like them to focus on books that are going to help them." Logan recommended self-help books on topics such as breaking bad habits and increasing vocabulary.

Reading is an important management tool for Geary as well. "Most managers tend to read a lot, and keep an ear to the ground to see what's working." Geary said managers need to keep an eye on what's going on around them. "Observe people who've been successful and pick up on those traits and use them."

Although consolidation has left good people out in the cold, Geary thinks it will present more opportunities for good people to succeed in the long run.

"For GMs who make it, it will give them an opportunity to function at a higher level than they have in the past." And because the manager of a consolidated group needs more than just sales skills, the doors are now opening for people in other departments to take that step into the big office.

■■■

Lauren Rooney is anchor and reporter for WHP(AM) in Harrisburg, Pa.

Job Resources Available on 'Net

► INTERNET, continued from page 14

Broadcasting (www.cpb.org/jobline/index.html) and many more. If there's a company you want to work for, or a company with a station cluster in a market where you want to work, check its Web site. If you can't find the site, call the company and ask for a site address. Small radio groups often post openings online first, and you'll know before someone else does.

The point of this article, incidentally, is not to show you every site. That would be impossible. The point is to illustrate a few sites and help you realize how many there are, and show you how to find some valuable ones.



Are you in a particular state, or do you want to move to one? Check that state's broadcasters association home page. Many post jobs online. As an example, see the Texas Association of Broadcasters site (www.tab.org). You'll find engineering, management, news, programming and many more jobs. Although most are TV positions,

there are radio openings as well. (That's true of many sites, by the way: more TV jobs than radio. So what? All you need is the one opening that works for you and for your prospective employer.) For links to state broadcaster associations, check www.radio-space.com/orgcom.htm. In addition to state broadcasters' groups, check the National Association of Broadcasters Employment Clearinghouse (www.nab.org/ECH).

Trade organizations and associations also offer Web sites with job openings. The Society of Broadcast Engineers site (www.sbe.org/jobline.htm) lists job openings online, but specifics are available only to SBE members. However, if you spot a couple of potential openings that are right for you, it might be worth spending the money to join.

Trial run

There are a lot of Web-only job sites. Perhaps the best of these is www.radio-online.com, which is primarily a show-prep site but also has 100 to 150 job openings online at any one time. It is a subscription service, but it offers free 10-day trials. Take advantage of the trial offer to see if it

gives you valuable information, and then sign up if you want to keep it. Most of the jobs appear to be for air talent, but there are also jobs for engineers, account executives, production staff and occasional management openings.

Snyder recommends www.tvjobs.com/jobs/radio (despite the name, it includes radio); also www.production.net/classadds/section1.html; and www.broadcast.net, which includes a jobs mailing list. Also check http://broadcast.airwaves.com/HELP_WANTED and the Radio Jobs Board,

www.users.nwark.com/~frye/bbs/wwwboard.htm. Both can be flaky but have postings that may work for you.

Monster opportunities

A number of "career hubs" like The Monster Board (www.monsterboard.com) and CareerPath (www.careerpath.com) have tens or hundreds of thousands of job listings. They can provide opportunity, although Snyder feels many are "almost worthless for any traditional media position." Nevertheless, they offer free "agents" to search their databases and new postings, and notify you by e-mail of any appropriate openings; they offer job-search ideas and information, and they may have positions in related fields. In many cases, you can search a

specific region with the career hubs. And they're free.

Stay away from for-pay job sites. Even if they are supposedly "guaranteed," a guarantee is only as good as the company behind it. And unless it's a big-name company, how are you to know if you'll ever see that money again?

Snyder knows first-hand that the Internet can lead to a job in radio. "I started looking for a job in November of 1996 and accepted my current spot in March of 1997," said Snyder. "I had one to two interviews a week during that time and most of the actual interviews came from responses to online listings ... Turnaround time was a little quicker on the Internet-only ads rather than the ones where

CBS RADIO JOB OPPORTUNITIES

CBS Radio is an equal opportunity employer

print publication ads were listed as an afterthought on their Web sites."

True GRIT

Matthew Flood is another radio person who found his new job online. He bounced around radio in upstate New York and decided he wanted to break into new media, but stay in radio. And he wanted to move to New York City. He sent out about 15 job-search packages a week by regular "snail" mail, and got nowhere. Then he looked at station Web sites on the Internet, and through a chat group he found GRIT Internet Broadcasting, a Webcasting company. Three weeks later, he spotted an opening at GRIT, not on GRIT's site but in The New York Times online classified ads. Flood e-mailed his résumé at 7:30 a.m., got called for an interview the same morning, and had a job offer at noon.

Flood said many of his radio friends are "scared off" by the Web, and he doesn't understand it. "It looks like half the world is set in their ways," he said. And he's the winner because he wasn't.

■■■

Peter M. Zollman is a consultant in interactive services based in Altamonte Springs, Fla. He is author of "Interactive News: State of the Art," published by the Radio and Television News Directors Foundation. Reach him at pzollman@aol.com

Opinions expressed are the author's. RW welcomes other points of view.

Looking for work or workers?

The employment section of the RW Broadcast Equipment Exchange, found in the back of each issue, includes both Help Wanted and Positions Wanted employment listings. Whether you are in production, engineering, management or on-air, this is a useful industry resource, and has been for more than 20 years.

Ad Coordination Manager Simone Mullins said more than 18,000 readers read RW every two weeks. She said companies looking for qualified applicants should look here.

"These readers are just the kind of people you're looking for and need to strengthen your business," she said. "Flip to page 62 and check it out."

Recent Help Wanted listings showed openings for engineers, voice talent and production people.

Positions Wanted listings are free; Help Wanted listings and longer ads are available for a nominal charge.

For more information about the Broadcast Equipment Exchange section, call Mullins at (703) 998-7600, ext. 154.

We took in 70 new job postings in November alone.

— John Poray, speaking about the SBE Jobline

Products & Services Showcase

For more information on the products shown below, circle the appropriate Reader Service No.(s) on the enclosed Subscription/Reader Service card or contact the advertiser directly.

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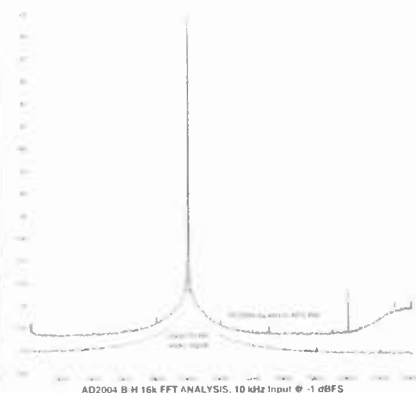
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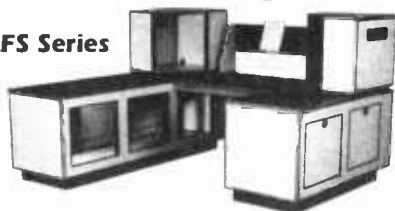
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READER SERVICE NO. 18



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	500W.....\$3,663
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All of the above need just 10W drive

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FOR DETAILS

READER SERVICE NO. 135

65 Years Ago

Reprinted from Radio World in 1933 and 1934.

Editor's note: The RW of old, printed for a time in the 1920s and 1930s, and today's RW are unrelated except in name.

ACE ADVISES ON HOW TO GET IN AS ANNOUNCER

William H. Andrews, chief announcer of NBC's San Francisco studios, epitomizes the requirements of an announcer:

Age: twenty to twenty-five years. Education: college preferred, but not necessary, though basic knowledge of at least two languages is necessary. Voice: trained in both music and drama but NOT theatrical in tone. Experience: artistic and technical, in radio. And—most important of all—ability to sell.

Andrews said: "The announcer is the salesman of every program he presents, particularly on commercials—is this true, for on sponsored programs the announcer not only has to present the entertainment itself but often discuss the product being advertised."

Must Work the Buttons

On a high table in each studio is a box containing channel switches operated by buttons. By pressing the various buttons the announcer standing by connects and disconnects the other stations on a network as the schedule requires. He must do this at exactly the right second, many times a day, with mechanical perfection.

Astonishingly small is the number of applicants who can meet the pronunciation test devised for announcers' auditions. The list includes such words as inimitable, oceanography, cacophony, jugular, sacrificial, inquiry, carburetor, and isolate—all taken out of actual continuities. Not one candidate out of ten pronounces them correctly, Andrews reports. In a recent audition at which twenty men were tried out, eighteen failed on the announcing test and two were barely fair. The final arbiter so far as NBC pronunciation is concerned is Webster's International Dictionary.

Tells How to Start

Auditions for announcers are held only when a prospective vacancy on the staff develops. Applications are then sifted down to those of persons who, inexperience and general qualifications, might do. The position, frequently is awarded to some announcer from a smaller station who already has proven his ability on the air or to somebody employed in another department at NBC.

"This seems hard on young chaps who want to enter radio and have no experience", says Andrews. "But at a big broadcasting station nobody has time to teach a beginner. The wisest action for the inexperienced boy who wants to be an announcer is to get a job at the first small station which will employ him. The all-around work he will do at such a station is the best possible preparation for a specialized job at a big station, later."

CALL IT WHAT YOU WILL!

Radio is becoming quite a racket. The majority of successful radio artists have a manager, publicity man, secretary, chauffeur and coach, and so everybody wishing to get into radio, even the smallest of sustaining artists, must have a manager; every potential radio star—from three years old and up, must be exploited by a publicity man, and mothers, eager to see their offspring in the money, pay out hard-earned cash for a line here and there—and pay out more so that their little darlings may learn to warble hi-de-ho's and wah-wah-wah's in the regular radio manner. Talent doesn't matter so much; in these days it's "Have you a manager?" and "Whom do you know?" So, dear readers, when you listen in to some painfully excruciating voice—don't blame the poor singer; blame the manager, who, after all, must make his own bread and butter, too; but it is a fact that to obtain even an audition is almost impossible unless the artist has someone to speak for him, and the manager is of no use to the artist unless he has good connections—meaning friends at the station or in the advertising agency; yes, it's getting to be quite a racket. A few years ago nobody paid much attention to radio, it was the poor relation of vaudeville and pictures—now it's playing the role of the rich uncle.

What to Do When They Let You Go

Alan R. Peterson

The worst just happened. Perhaps it was consolidation, or budget cuts ... or maybe you just wore the wrong tie to work. You have been shown the door and no longer have a radio job.

Now what do you do?

Forget about the station across town; your former employer now owns it. Musings of becoming a voice-over talent or wedding DJ service cross your mind, as do notions of opening a radio-only ad agency or launching your own consultancy. If you are an engineer, you wonder if you can support yourself with contract work.

Then again, maybe it's time to get out altogether.

The occupations noted above are all extensions of obvious skills honed at the radio station. However, even subtle skills picked up along the way can come to the rescue when you are shifting careers. And if all you know is radio, it is time to learn a few new skills.

Will not go hungry

One common thread surfaced with most of the subjects we interviewed: "Put food on the table." A new job may initiate a complete career shift or simply be a stopgap between radio gigs, neither of which may pay very well at first. While the pickings may be lean, a former broadcaster will always be able to eat. Knowing this may make the ride less bumpy.

Boston radio consultant Donna Halper said, "Anything is better than sitting at home being bitter. Keep active. Go back to school. There *is* life after radio."

When she says "go back to school," she means it: besides being the historian for the Boston Radio Archives and holding two Masters degrees, Halper teaches at Emerson College, widely known for its communications curriculum.

She advised, "Take some courses and think about an entirely different career. Try some freelance writing. Learn more about computers and how to make Web pages. Do some work at

educational stations. Go to community colleges and teach courses in radio."

Another radio consultant, Dan Vallie, asks this question to out-of-work broadcasters: "Are you a good salesperson? Are you a good communicator? Try sales."

Sales

Washington broadcaster Mike Weiner left radio in the mid '80s to launch a voice-over career. "There is hope for someone out of radio," he

If becoming a sales representative does not appeal, Weiner said. "There is always public relations. Managers and jocks alike have gone into PR."

Vallie suggested exploiting your computer skills. "Most broadcasters know how to use computers. It is a necessity in today's radio station. Get a job where you can use your computer skills."

Technical knowledge can pay off in other ways. Experience in audio production could open the doors at video

Anything is better than sitting at home being bitter. Keep active. Go back to school. There *is* life after radio.

— Donna Halper

said. "Sales is often a four-letter word for ex-jocks, but anyone with a trained voice who loves to talk would be a natural in sales. Hey, if I didn't have the ability to sell, I would have never gone into voice-overs. The toughest thing to do is sell yourself."

Backing up his belief, Weiner noted his vice president of sales is also a radio veteran. "Paul Bicknell used to be 'Davey Jones' on WPGC-AM in Washington," he said. "He went from radio to being my VP."

Some broadcasters are convinced they cannot sell or have been soured by "Herb from WKRP" types. But as Weiner put it, "If a jock is out of work and needs to eat so badly it becomes painful, sales becomes a consideration."

Other fields

It need not be radio sales, either. Trained voices make compelling tele-marketers. Sales-savvy managers can move into cable television, magazines or newspapers. Former engineers can go freelance or get into audio or computer sales.

Keeping a Job in the '90s

► JOBS, continued from page 16

Pennsylvania. His method for adapting: keep doing what he does best.

"In four years," he said, "I've been through Gemini Broadcasting, Barnstable and now Dame Media, all at the same station. I'm still here. What has kept me stable is doing what I know I have to do."

While Parks' style has not changed, the technology has shifted beneath his feet. When it did, he was ready for it. "I have to juggle formats. We have three stations that play back spots and promos on computer and another three that still use carts," he said.

Parks said *consolidation* is not necessarily just a pretty word that means "you're fired." The Dame Media acquisition has actually helped him.

"There is more stuff to work

from," he said. "I have other brains that help with ideas. There are more female voices, more male voices. The idea of consolidation is still so new to people, some managers think they must cut staff as a matter of course. The Dames have actually added people."

Parks believes you must know your job inside and out. "You need equipment knowledge," he said. "Digital is here and you have to know it. Practice your writing. Work at doing various voices."

■■■

Donna Halper can be reached in Boston at (617) 786-0666. Vallie•Richards can be reached in Virginia at (703) 802-0700. Salant Broadcast Consulting, also in Virginia, can be reached at (804) 631-0092.

production facilities and at audio-visual departments of hotels and resorts. You could even begin doing major installations for theaters and auditoriums.

Halper said, "Learn how to repair stuff. Do you think everybody knows how to fix a computer? Learn to do this and you can still put food on the table."

Experienced radio engineers have many skills that would be valued in other industries. Many have already made the switch to careers in computers, PCS, telephone companies, teaching and other technical fields.

Even more

There is the other side of broadcasting: where the music comes *from*. "Try the music business," Vallie suggested. "Become a record rep."

If you can write effective advertising, apply to advertising agencies, production houses and trade publications.

For many broadcasters, the desire to perform remains strong, and some have moved into other media. Another WPGC alumnus, Jeff Baker (the "Baker and Byrd" show), is now a busy East Coast stage and screen actor. Following a radio start, Nancy Cartwright made it big in cartoons as Bart Simpson. And after radio shows in New York and Los Angeles, Jay Thomas enjoyed a career in television sitcoms.

Unfortunately, unemployed actors far outnumber broadcasters, and all performers have second careers to pay the rent and, yes, put food on the table.

Further extending the show biz parallel, Halper said, "Nobody hires a starving actor." After several rejections, it is easy to fall into the practice of, "I'm broke and I really need this job," rather than, "Here is what I can do for you," to a new employer.

No matter what new career sounds best, the time to cultivate the necessary skills is now, while you already have a job. This way, the transition can happen with minimal disruption to life, ego and finances and keeps you from sounding desperate in interviews.

Digital STLs Keep Getting Better

Tom Vernon

The march towards an all-digital air chain feeding the transmitter began several years ago. One of the last segments to be "digitized" is the wireless STL link. This overview of the studio-to-transmitter link discusses where it has been, where the technology is and what alternatives you might consider.

From the earliest days of radio through the 1970s, equalized phone lines were the vehicles of choice for routing the studio signal to the transmitter. Although microwave links were available, their use usually was limited to mountaintops or other inaccessible sites. With the breakup of AT&T and deregulation of the telephone industry, costs for copper pair soared. Broadcasters, seeking more control of their signal and their costs, turned in increasing numbers to wireless STL systems in the 950 MHz band.

Weak link

As the industry began to move from analog to digital equipment throughout the radio facility, the analog STL often was considered a weak link. The first use of digital techniques came about 10 years ago, and consisted of adding a digital encoder and decoder to a composite analog STL. Interestingly, this was more of an effort to fix path problems than an effort to reap the sonic benefits of digital audio.

More than 20 dB of additional fade margin is available from a digital STL link. Also, digital STLs facilitate dual or multiple hop links that would not be practical with analog systems. About six years ago, the first digital STLs in one box came on the market. Some digital systems have the capacity for four channels on one frequency, offering a cost-effective, spectrally-efficient solution to duopolies.

In a digital air chain, signals emerging from a digital console typically will be in the 48.0 kHz AES3 data interface standard. Next in line is the digital STL transmitter. Transmitting and receiving antennas are the same as always. The output of the STL receiver is passed on to a digital processor. In this box, digital signal processing (DSP) substitutes for traditional analog processes like filtering, compression and peak limiting. From here the processed AES3 signal may go to a digital exciter, where the AES3 signal undergoes data rate conversion into parallel composite data that represents the digital equivalent of the stereo baseband signal.

The "string" that ties these boxes together is 110-ohm digital AES/EBU cable. The digital audio path really is an RF distribution system, and the use of 110-ohm cable is necessary to maintain the proper impedance match between devices.

Digital STL transmitters have required a data reduction algorithm or "lossy compression" scheme to squeeze the digital signal so that it would pass through the 300 kHz bandwidth of a 950 MHz STL transmitter. Compression ratios average 4:1. Those algorithms include versions of MUSICAM, MPEG, apt-X and Dolby AC-2. These compression schemes rely on psychoacoustic techniques to discard bits without the listener noticing. Compression algorithms have improved over the years, and the better systems have little audio degradation.

Proponents of non-compressed STLs argue that a signal coming out of a compressed STL is not a bit-for-bit replica of what went into it. Among the by-products of

"lossy" compression schemes, they say, are overshoots that can lead to overmodulation, a slight loss of sonic detail and possible problems caused by the use of different, "dueling" algorithms.

Until now, the only practical method of setting up a digital wireless STL system without data reduction was to use the 23 GHz band, which a limited number of stations have done. That band does bring its own challenges, including distance restrictions, rain fades and equipment cost.

Recently, Harris Corp. introduced uncompressed digital transmission using the more-familiar, 300-kHz-wide STL band at 950 MHz. The company says its CD LINK lets a radio station set up a completely uncompressed digital path from the console to the exciter input. A Harris spokesman said the company has shipped "in the hundreds" of that product. Moseley plans to show its new SL-9003Q uncompressed digital STL at the upcoming NAB show, and expects to begin shipping it this spring.

In addition to the greatly enhanced fade margin offered by digital STLs, uncompressed digital STLs have other advantages. With the AES3 standard, equipment connection becomes virtually a plug-and-play procedure. Adjustments for differential gain and phase are gone, as are ground loop hum, phase reversals, and mixing the left and right channels. Half the amount of wiring is required. By eliminating multiple A/D and D/A conversions, we remove a major source of signal degradation in digital systems. Finally, there is that near-distortionless purity of sound, which is what we wanted in the first place.

A digital wireless STL is not the only

option for getting a signal to the transmitter. Today the primary alternative to a wireless STL is a T1 line, leased from the local telephone company. It is a clear winner in congested urban areas where a line-of-sight shot is impossible or available frequencies are scarce.

Prices for T1 lines vary considerably by geographic location. Costs in the southeast, for example, seem quite favorable now. Prices notwithstanding, many engineers are reluctant to give control of part of their signal to a third party. Line outages are not unheard of, although radio engineers say phone companies in general have improved their T1 service.

Other options

A few major-market stations maintain T1 lines as backup for their main STL links; other local stations are using T1 technology for their primary STL feeds, and make wireless STL their standby. These decisions depend in large part other contenders for the broadcaster's studio-to-transmitter signal. ASDL technology delivers T1 performance over ordinary copper pair. Right now, standards are being finalized and remaining kinks ironed out.

ASDL may not be available in some areas for several years. Low-orbit satellites such as the Motorola Iridium may make large amounts of bandwidth available over the next several years, and may be an attractive option to large duopolies with stations scattered over a wide geographic area. Spread-spectrum technology at 2.4 GHz is now on the market as well.

Perhaps the most promising of the new technologies is fiber, where a path for the

cable is available. It is low in cost, bidirectional and immune to RFI/EMI. At least one company already is marketing fiber-optic devices to the broadcast industry.

Thanks to the following individuals for sharing information used in this article: Darryl Buechting of Harris Corp., Dave Chancey at Moseley, and Jim Gottfried and Rick Carpenter of Marti Electronics.

■ ■ ■

Tell us about your STL solution. E-mail us at radioworld@imaspub.com or write to the address on page 5.

Tom Vernon divides his time between consulting and completion of a Ph.D.

Don't be concerned by the term "AES3," which shows up in the accompanying article and in some radio product advertising. Your digital gear is not about to be made obsolete by another new standard.

AES3 is another term for AES/EBU, the shorthand title describing both the familiar digital protocol and means of interconnecting digital devices.

The Audio Engineering Society proposed the AES3 protocol we now call AES/EBU. This was made a standard by ANSI (American National Standards Institute). The European Broadcast Union adopted the same standard with one difference: where the AES proposed optional use of an isolation transformer in the digital circuitry, the EBU made it mandatory.

Beyond this single difference, the internal protocol is identical. And unless the device in question does not include some sort of isolation (most do), there is practically no distinction, so the terms are interchangeable.

— Alan R. Peterson

A Simple Remote-Start Circuit

Mark Parthe

If you have a piece of consumer electronics equipment that you want to start remotely, try using this simple circuit. It helped when I was confronted with the following scenario.

The production department at my station, WCRZ(FM), needed a faster-cueing and better-sounding replacement for our aging reel-to-reel machine. On the bench one evening was a consumer-grade Sony MD player and a note: "Please install ASAP with board start functions."

As with most consumer equipment, this MD deck was built with unbalanced audio and no hard-wired remote control interface.

The audio interfacing was handled with no problem by a Henry Matchbox II, but the remote start-pause was another story. How could I simulate the momentary push of a finger on the "start" and "pause" buttons?

The Sony MD buttons are the short-to-ground membrane-type switch; the traces for them are easy to access. I did not have to remove the button board from the unit to solder the wires on. The trick was finding a cap value that would turn on a closed

contact for about half of a second, simulating a human finger pushing the button.

I used an electrolytic capacitor to kick the relay on, then discharge through the relay and resistor, causing the relay to turn back off.

The resistor will put a float voltage on the relay during the charge cycle and

275-248 relays with the above cap and resistor values and mounted the whole mess on a piece of perfboard inside the unit. I used a five-pin DIN socket mounted in the back of the unit to bring out the wiring. Make sure that everything is isolated from the case of the MD player to avoid ground loops.

Interfacing RL1 depends on your board and how your plant is wired. Any general wiring practices will work. Always use a ground strap when working on the MD player. Be careful not to get solder bridges on the button boards and avoid grounding anything to the MD case.

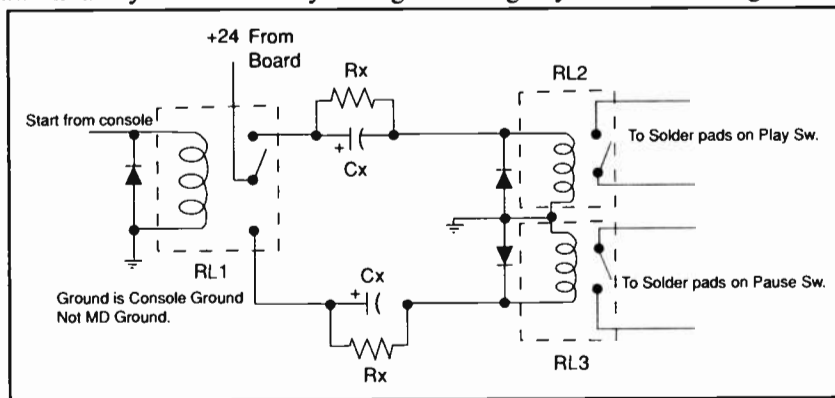
To use the circuit, the MD track to be played must be cued (paused) before pressing the start button on your console. The MD will instant-start once the track is cued.

Pressing "stop" on your board will put the MD into pause. When a new track is selected the MD will put the new track in pause automatically.

I have successfully used this circuit to start and stop other consumer equipment such as VCRs and cassette decks used as skimmers.

■ ■ ■

Mark Parthe is an engineer at WCRZ in Michigan. Contact him at (517) 793-9103.



then discharge the cap quickly to allow another cycle. The value of the resistor cannot be too low or the relay will stay on. If the value is too high, the cap will take too long to discharge.

I found that a 100 mF at 50 V for Cx and a 1.2 kohm resistor for Rx worked perfectly with the 24 V supplied by our Audiotronics board. Relay RL1 can be whatever you choose or have on hand. D1, 2, 3 are 1A general purpose diodes. RL2 and 3 are micro or reed relays available at Radio Shack. Use the type that has a coil rating of half of the voltage that you are supplying to the caps. I used the

HE **DARED** TO GO THERE.



PRODUCT EVALUATION

Glimpse the Future With the Cadet

Lee Harris

Recent years have brought us lots of talk about the inevitable marriage of television and the computer. The melding of the computer and radio has generated considerably less. The Cadet Data Radio from ADS Technologies gives a fascinating preview of the possibilities of such a match.

Now available

This is not "vaporware." The Cadet is available today through major computer stores for about \$70. In addition to receiving AM and FM audio, the

Cadet can receive and display RDS data, providing the user with such information as station call letters, artist names, song titles and other announcements. The "ID Logic" radio interface is a DXer's delight, containing a database of more than 14,000 radio stations, sortable by call letters, frequency, location and format. The Cadet also has a VCR-like "radio on demand" feature that enables users to record songs or programs directly to the computer hard drive in the WAV format.

In addition, the Cadet includes a synchronization feature to take advantage of time signals that can be transmitted

under the RDS standard. If selected, the feature automatically will update the system clock on your computer. The designers thoughtfully have included an alarm clock feature and a CD player interface.

The array of features on this receiver is huge.

Setting up

The Cadet installs like most other PC plug-in cards, with a couple of major exceptions. An audio cable with stereo mini-plugs is run from the

audio output into the line input of your computer audio card; separate AM and FM antennas, provided, are plugged into the appropriate jacks.

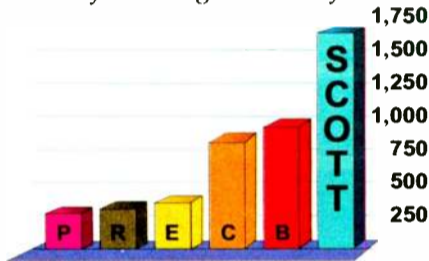
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- 367 years Digital experience and
- 3 systems: Good, Better and Best!

Good Spot Box



Scott's new digital Spot Box triple-deck "cart" replacement delivers true CD quality sound. And Spot Box is the easiest digital system to use! There's only one screen, so jocks always know what's happening. At left, three players count down and flash End-of-Spot signals. Even though Scott uses Windows 95 and NT, Spot Box works like carts, not a computer. At right, there's a "Wall of Carts" that lets you pick and play any recording by number or name. Or, number keys at the bottom load your cut quickly.

Starting at \$5,000, Scott's Spot Box includes a recorder and touchscreen. Options include easy log imports from traffic computers.

Copyright 1997 Scott Studios Corp.

8:15:38A Air 3:57 How Do I Live Leann Rimes :11/4:05/F HIT HM0105 8:15:47 #1 for 3 Weeks in Oct '97	Shotgun Jingle :03 4	Fast Jingle :08 4	Medium Jingle :12 4	Slow Jingle :14 4	Long Jingle :17 4
Start 3 Something About the Way Elton John :17/4:13/F HIT HM2608 8:18:40	Legal ID :11 4	Morning :09 4	Oldie Jingle :08 4	PSA Bed :30 4	Promo Bed :31 4
Start 3 Contest Promo Bed Instrumental :00/0:30/F PRO TO2214 8:22:42	Weather Open :40 4	Weather Close :04 4	Slide Whistle :02 4	Sports Bed :60 4	News Bed :12 4
Start 3 Short Jingle Q-102 :00/0:06/F JIN TO2215 8:23:02	Gong SFX :03 4	Drum Roll :10 4	Rim Shot :01 4	Traffic Bed :31 4	Weather Bed :13 4
Start 3 Help! Beatles :00/2:45/C 101 DA1234 8:23:08	Rooster Crows :04 4	Bugle Reveille :16 4	Woman Yawns :02 4	Contest Bed :59 4	Winner Bed :59 4
Start 3 McDonald's 2 for \$2 Q: ...may vary. :00/0:30/F COM DA4315 8:25:53	Don't Go There :02 4	Gong SFX :03 4	Happy Birthday :32 4	Applause :08 4	Wow! :01 4

Auto, Repeat, Pre-View, Stop, :07, More, SPL, Hot Keys, Songs, Spots

Here's the user-friendly new Scott NT System, with 30 sets of 30 hot keys, phone editor, and all songs and spots on line for instant play! It delivers uncompressed digital audio at compressed prices!

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AXS (pronounced ax'-cess) is radio's premier digital audio system for satellite or news/talk formats and CD automation. AXS gives you instant play Hot Keys, log editing, Power Fill, satellite jock substitution, link to NPR's SOSS, an easy Real Time Scheduler, unattended net catching and an optional production or phone recorder and editor in the air studio.

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Best Scott NT System



The Scott System is the first with a true 32-bit PCI digital audio card that plays four uncompressed stereo channels with overlap from one card while recording! It's radio's top-of-the-line system for digital music on hard drive. Scott's ROM deck digitally transfers 4-5 minute songs from audio CDs in only one minute!

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first reaction will be to want to plug in an amplified antenna. ADS advises against this; the company says it will not significantly improve reception. (I tried it and agree.) A good roof antenna for FM and a standard long wire for AM should provide decent results.

On initial installation, the Cadet will scan the AM and FM bands, logging all local signals above the noise threshold and placing them on your electronic dial. You then can edit and arrange these stations to your liking and make modifications to the station database. The Cadet comes with six user interfaces of varying sizes and complexity. The primary Cadet interface includes the RDS display and the controls for the radio-on-demand feature that allows you to set up recording schedules, and select the sampling rate (the higher the audio quality, the greater the disk space required).

At a glance

The display area for this interface provides an astounding amount of information, including frequency, call letters, station slogan, format, band and any text the station may be transmitting

The Cadet comes with six user interfaces of varying sizes and complexity.

via RDS. There are also indicators showing whether the station is transmitting data such as e-mail alerts, pager messages and weather advisories.

Perhaps the best example of how the technology in the Cadet could change the way radio is used is the "traffic" button. When this button is activated, the Cadet seeks stations that are transmitting an RDS traffic program indicator, or "TP" signal. Once these stations have been located, the Cadet waits for a "TA" or traffic announcement signal. Upon receipt, the Cadet can raise the audio level above that of normal programming. If the radio is muted, it will unmute. If you are playing a CD, it will mute and the radio audio will be played at the pre-set level.

The most impressive interface, at least

See CADET, page 26 ▶

We're the #1 FM music station in Philly, probably because the Omnia completes our all-digital studio. Now, our sound is so loud, so clear... very well-defined with absolutely **no grunge. And the Omnia is the one thing that my PD and I agree on. It's definitely a keeper."**

*Russ Mundschenk, Chief Engineer,
WBEB 101.1 FM, Philadelphia, PA*

Russ dared to go where his competition isn't. Yet.

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*Demo requests must be submitted as a purchase order.
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Cadet Data Radio Shines Light Into 21st Century

► CADET, continued from page 24

visually, is the ID Logic Radio. The ID Logic format allows the user to key in his or her location using a number of methods, including a map device. Clicking on the city closest to yours will bring up additional smaller cities in the vicinity. Select the one closest to you, and the ID Logic Radio automatically programs in the receivable stations in the area. You can then tune up and down the dial, or select stations using the format buttons provided. Of course, with so many format changes these days, the database

might be a little out of sync with reality. Updated databases and other operating software are available from the ADS Web site.

While functional today, ADS plainly views the Cadet as the test bed for bigger things to come. The company even sells a developer's kit for \$500, for users who want to create their own custom receiver interfaces or software for special RDS commercial applications, such as pagers, EAS receivers, data receivers, differential global positioning system receivers or billboard receivers.



The Regular Interface for the Cadet Data Radio

In use, I found the Cadet a bit buggy, and had to install the operating software several times to make it operate at all. Because my computer is not in an ideal radio reception location, my choice of signals was somewhat limited, and I did not find much in the way of RDS signals.

My experience with reception was spotty. I would say reception of both AM and FM bands is comparable to that provided by your average low-

ADS Technologies plainly views the Cadet as the test bed for bigger things to come.

priced stereo and is highly dependent on antenna location and gain.

The "radio on demand" feature also required a great deal of fiddling to make it operational. In addition, plugging the output of the Cadet into my audio card tended to interfere with other audio sources accessing the card. All this aside, the Cadet probably is worth the purchase price, at least for radio professionals. If it does not become your radio of choice, it may at least get you thinking of new ways to keep radio alive and healthy into the 21st century.

■ ■ ■

Lee Harris is morning anchor at 1010 WINS(AM) in New York, and a former station owner. He also is president of Harris Media, a Web site design and hosting firm. Contact him via e-mail at lee@harrisnet.com

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Product Capsule:
The Cadet Data Radio
from ADS Technologies

Thumbs Up	Thumbs Down
<ul style="list-style-type: none"> ✓ Price ✓ "ID Logic" radio interface ✓ Array of features 	<ul style="list-style-type: none"> ✓ Installation of operating software ✓ Difficult to operate "Radio on Demand" feature ✓ Potential audio card interference

For information, contact ADS Technologies in California at (310) 926-1928 or circle **Reader Service 93.**

FEED LINE

Diplexing and the Expanded Band

W.C. Alexander

This is the fourth in a series of articles about constructing an expanded-band AM facility. The previous part appeared in RW Jan. 7.

Many stations that applied for and received expanded-band construction permits already own antenna sites for their existing stations. These sites include some sort of vertical radiator (tower) and a ground system, two very expensive components that will be needed for the expanded-band station.

Because expanded-band wavelengths are shorter than regular-band wavelengths, the existing vertical radiator and ground system are likely to be of adequate length for use on the expanded band. With all the FAA, zoning and building clearance issues resolved years ago, these battles need not be fought again. For these reasons and others, as a rule, it is less expensive to use an existing site for an expanded-band station than to start over with a new site. Not surprisingly, many of the construction permits issued for expanded-band stations specify some sort of diplex operation.

AM diplexing

We will not go into depth on diplexer design theory in this part of our series. Rather, we will look at diplexing from cost, planning and construction points of view. Before we begin, however, we do need to review the basic principles of AM diplexing.

In order to diplex two or more AM stations together onto the same vertical radiator, first they must have adequate frequency separation. Most designers like to see at least 120 kHz of separation between the two stations, perhaps more on the high end of the band. When the frequencies get too close together, filters must be very tight. This leads to bandwidth and isolation problems. Depending on the expanded-band frequency, this may make diplexing impractical for regular-band stations operating on frequencies much above 1500 kHz.

Diplexing requires at least two filters on each side of the operation. On the low-frequency side (in this case, regular band), a series-tuned circuit resonant on the low frequency and a parallel-tuned circuit resonant on the high frequency are needed in series with the low-frequency feed to the antenna. On the high-frequency side, the opposite is true — a series-tuned circuit resonant on the high frequency and a parallel-tuned circuit resonant on the low frequency are needed in series with the high-frequency feed to the antenna. The series-tuned circuits in both cases pass the desired frequency and the parallel-tuned circuits reject the undesired frequency.

Filter installation

In many cases, auxiliary filters are installed upstream (on the transmitter side) of the main filters. These filters are installed from the main filter input to ground and consist of a parallel-tuned circuit on the desired frequency and a series-tuned circuit on the undesired frequency. Such auxiliary filters

often will add a lot of isolation between the two signals, although they sometimes hurt system bandwidth. The



design engineer will decide, based upon the calculated isolation he is able to achieve with main filters alone, whether to use auxiliary filters.

In most cases, common components are used for both the series and parallel filters. For example, in the case of a low-frequency main filter that is series-resonated on the low frequency, a residual inductive reactance will

remain at the high frequency. A capacitor then can be placed across the series combination to parallel-resonate it on the high frequency. The additional component has little effect on the series resonance at the low frequency, and sharing components in this way has several advantages, all of which reduce the cost of the diplexer.

Feasible alternative

It is certainly feasible to utilize one element of a directional array as a diplexed non-directional radiator. In addition to the regular pass/reject filters at the common driven element, undesired frequency reject filters must be placed at the towers that are not used in

the diplexed non-directional operation. Also, some means of detuning the unused towers on the non-directional frequency must be provided. This will likely be a detuning component or network on the ground side of a pass/reject filter, configured in such a way that the detuning is invisible on the directional frequency.

One other requirement for diplexing with a directional station is the installation of pass/reject filters in the antenna monitor. The monitor will have to be sent back to the manufacturer for this modification. After the filters have been installed, its accuracy must be recertified.

We'll continue with our discussion in the next issue.

■ ■ ■

Cris Alexander is director of engineering for Crawford Broadcasting in Dallas. He encourages questions or suggestions for this series of articles. Contact him at (972) 445-1713 or via e-mail at cbceng@compuserve.com

ROOTS OF RADIO

More About Those Midwest Vendors

Ronald Pesha

Early last year, my account of middle America electronics vendors and their catalogs drew more response than any of my other *Roots of Radio* articles. My thanks to all you of who mailed, faxed, e-mailed and telephoned.

Mike Shannon remembers Kansas City's Burstein-Applebee shops scattered across the Midwest. "Being a child of the '70s," he writes, "I was introduced to B-A in their mall locations in Dallas. In those days, the only supplier ... around here was Radio Shack. Imagine my shock when I saw what *real* electronics store carried!"

Mike says the Burstein-Applebee retail outlets in Texas disappeared about 1979, and wonders what became of the company. Did it go out of business? (Think of that closet sale!) Was it absorbed in a merger? Perhaps another reader, possibly someone from the Kansas City area, can shed light.

Don Meno reminds us of Olson Electronics in Ohio, and its newsprint catalogs of 40 years ago. Don remembers the Radio Shack store in New Haven from the very early 1960s. The shop sold most brands, while their own house goods "were very basic."

This means war

Radio Shack also sold the then-ubiquitous "World War II surplus" electronics. BC-454/458 series tank transmitters and receivers sold for \$5-10. The 25-30 MHz (megacycle in those days) FM version converted easily for 10-meter hamming and also to the adjacent broadcasters' remote pickup band. I remember replacing the carbon microphone with a broadcast mic and preamp for remarkably good voice quality.

Unfortunately the accompanying tank with the nice-fitting opening it must have provided for the transmitter was not available. Imagine arriving for the remote broadcast in a tank!

Built like a tank

Dave Schmidtke sends along assorted copies from Radio Shack catalogs showing another war sur-

transmitter capacitors at \$3.75.

While manufactured receivers in the 1940s had used the standard superheterodyne circuit for many years, superegeneratives still saw widespread use, especially in the VHF and UHF bands. Schmidtke also sent along a manual for the four-tube National 1 to 10 meter receiver. (National manufactured in the Boston area rather than the Midwest.) A tiny type 954 tube served as a tuned RF amplifier first stage, followed by a 955 as superregenerative detector. A more conventional 6C5 amplified the audio, with a 6F6 added to drive the optional speaker through an external output transformer.

C1 and C2, the two tuning capacitors, were 15 mmf in value. The associated inductors were plug-in, for six different coils were required to cover the entire range from 27 to 270 MHz. R2, a 50,000-ohm potentiometer controlled regenera-

tion. Note to youngsters: regenerative and superegenerative receivers offered remarkable amplification in a single stage by using positive feedback, but you kept one hand on the regeneration control. You tweaked it for maximum sensitivity without breaking into oscillation. AM band regenerators were popular construction projects for budding broadcasters living their adolescence from the '20s through the '40s.

Apparently nostalgia will always be with us. The message: save today's manuals and Mouser catalogs!

■ ■ ■

Ronald Pesha is associate professor of broadcasting at Adirondack Community College, Queensbury, N.Y. Reach him at (518) 743-2200 ext.567, via e-mail at peshar@acc.sunyacc.edu, or through RW.

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Built like a tank, the BC-645A was a bargain in the 1950s.

plus transceiver, the UHF BC-645. That \$9.95 price was a bargain even in 1950s' dollars. The picture suggests that it was built like a tank ... and it was!

Dave also reminds us of other Midwest catalog purveyors. There was the Henry Radio Shop of Butler, Mo., Wholesale Radio Laboratories of Council Bluffs, Iowa, and Newark Electric Company in the same city as Allied, Chicago.

"Last-minute bargains" in the Council Bluffs catalog in 1944 include Centralab potentiometers at 59 cents and standard bat-handle toggle switches at 75 cents. In 1944 dollars, these are far more expensive than today ...but there was a war on. Newark's 1942 catalog offered nice custom cast-metal call letter plates for \$1.50, and 3000 V, 4 microfarad

NEWS ANALYSIS

PAC: High-Quality Compression

David Moulton

An audio colleague of mine, an older guy with a string of major Motown credits and some seriously well-developed studio chops, includes in his e-mail signature the phrase: "Lossy Compression: JUST SAY NO!" This hostility to data compression is typical of both the professional audio community and the audiophile set, who are hard at work on developing audio systems that use even more data ... lots more.

The present-day CD format (stereo 16-bit, 44.1 kHz) uses 1.4 million bits per second. There is a lurking suspicion among the audio guys and gals that this isn't nearly enough for really high-quality music recordings. So, we audio nerds are looking hungrily at a high-resolution format (stereo 24-bit, 96 kHz) that really chows down on bits, gobbling 4.6 million bits per second!

Perfect audio

Worse, the industry is looking at a 5.1 channel 24/96 format that will chew through about 12 megabits per second!! We are obsessing on resolution, to the max!!!

This obsession arises out of some

painfully learned experience and disillusionment with allegedly "perfect" audio systems, such as the CD. (My same colleague sometimes closes his e-mails with the cynicism, "Expectations are resentments under construction.") We've managed to get the bit in our teeth this time, and we are really egging on the audio manufacturers to build gear that calls for some serious data consumption.

That's all very well, but not all good. Many of the pipelines for audio distribution, such as radio, TV and the Internet, just can't handle that much info, and there's no way they're going to be able to do so any time in the near future. The net result is a kind of isolation. My colleagues in the music recording industry tend not to take broadcast sound very seriously (contempt might be a better description), and Internet audio is ... well, beneath said descriptor.

One of the things I do for a living is test things, subjectively. Last year I was retained by Lucent Technologies to have a go at testing a 96 kbps Perceptual Audio Coder that the company has under development.

Our mission was to determine how much deterioration said PAC (and four

other codecs) caused for listeners. What kind of listeners? Both the general public and also audio pros such as myself.

On what kind of material? Commercial recordings of music in all styles, plus some test recordings of particularly noxious sources like a *cappella* castanets and an earnest but unidentified male speaking in German.

Golden ears

Now, I was sure I knew what we were going to find. When you get into 15:1 data compression, the result has got to be pretty crummy, especially for us golden-eared types. So, I rounded up my trusty listening panel, prepared the double-blind listening forms and ran the tests.

When the smoke (or was it fog?) cleared, the results were both interesting and not what I expected. Some of the codecs under test (we tested them blind; in fact, we knew nothing about them beforehand) really sounded good, which is to say, it was really damn difficult to distinguish them from the reference recording.

To evaluate our data, we used a statistical evaluation process drawn from intellectual testing called the Rasch Model, a process that reliably permits us to determine the probability of any given score for any given codec for any set of listeners (or even a given particular listener). What this evaluation indicated was that 53 percent of the time, expert listeners like you and me will find the Lucent 96 kbps PAC to be inaudible.

Keep in mind, the "threshold of audibility" usually is defined as the point at which 50 percent of the population can't hear it. So, in geek-speak, we can say that the PAC is inaudible — even though I, and maybe you, can hear it. Holy catfish! My audiophile buddies aren't gonna like this at all!

More to the point, Joey and Janie Q. Public aren't gonna hear the PAC 73 percent of the time! Even better, says Rasch, none of us — Golden Ears and Tin Ears combined — are going to find the difference between PAC and CD to be annoying.

To be more precise, 89 percent of the time we're listening, we won't be annoyed by the presence of the PAC any more than we're annoyed by the presence of the CD. (How's that for a weird way of putting it?)

When you compare that to the percentage of time we are annoyed by sales calls while we are listening (as well as the level of annoyance we feel in regard to said sales calls), the PAC is very good. Definitely acceptable, to my way of thinking.

What it means

For me, this is a really interesting new perspective. Not only can I seriously enjoy seriously data-compressed recordings (a possibility I never seriously considered before), it means that there is no longer any reason we can't begin to get those recordings into places where they've never been, like radios and televisions.

Meanwhile, this raises an interesting possibility: high-quality multi-channel music broadcasting suitable for automobiles. I see no reason why a high-quality matrixed signal could not be transmitted via using the PAC at 96 kbps, and decoded in the car for surround playback. To me, such a step is utterly natural, one that will make a huge difference in the sound quality and effectiveness of car systems.

If you want to hear for yourself, send me an e-mail. Lucent produced a CD to show off the PAC and our tests, and I can arrange to send you one.

Thanks for listening.

■ ■ ■

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RW welcomes other points of view.

AEQ Transmits 1998 Olympics Signals

T. Carter Ross
and Mark Hallinger

When the torch is lit to open the 1998 Winter Olympic Games, AEQ equipment will help transmit the signal around the world.

Throughout the 1990s, the Spain-based Aplicaciones Electrónicas Quasar S.A. (AEQ) has played a key role in outfitting the broadcasting centers for several major international sporting events — the 1992 Winter Olympics in Albertville, France, the 1992 Summer Olympics in Barcelona, Spain, the 1994 World Cup in the United States, the 1995 Pan-American Games in Mar del Plata, Argentina and the 1996 Summer Olympics in Atlanta.

Digital commentary

For the 1998 Winter Olympics in Nagano, AEQ installed a new digital commentary system in the International Broadcast Center (IBC).

The system is completely digital and uses a 5.4 Mbps link between the commentator and the commentator control. In addition to the audio channels, eight additional two-way channels carry remote power and telephone signals through the system.

A maximum of 320 positions — including all audio parameters — can be controlled from a single PC. Other features include 80 dB of dynamic range, full bandwidth, real-time operation and the ability to change parameters in real time.

At past events, AEQ has supplied

telephone hybrids, audio codecs, audio distribution systems and other products.


Atlanta setup

At the 1996 Summer Olympic Games in Atlanta, for example, AEQ provided AEQ-218 distributors for radio and TV sound distribution from each of the competition venues. SSR-10 line identifiers were used in that commentary system to check and verify the audio circuits among the IBC and the event venues.

In the Atlanta IBC itself, AEQ installed several hundred ACD-3001 audio codecs, which can transmit either G.722 or ISO/MPEG Layer II audio via ISDN. A special version of the codec that transmitted 20 kHz audio at 128 kbps with a low-encoding delay was used to send signals overseas from Atlanta.

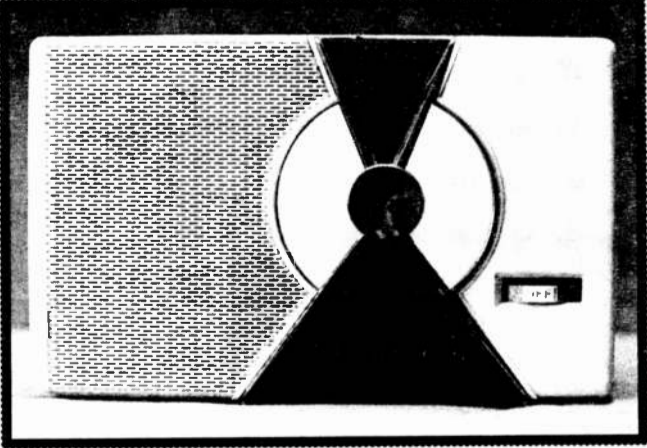
The switching center at the Atlanta IBC was built with AEQ equipment and included 15 racks capable of routing up to 9,600 audio circuits. The center used the same IN-02 intercommunication system that was used at the various event venues.

AEQ also donated some equipment to the Atlanta Olympic Games to create an on-site radio studio that would be open to all broadcasters at the event. This studio included a BC-2500 console, ACD-3001 ISDN codecs and TH-02 EX digital phone hybrids, an AEQ-151 monitor and a MAR System hard-disk storage and playback system.



You Must Remember This

The hourglass dial opening of this radio was considered innovative for its time. The year was 1956, and the Philco



T7-126 was the first transistor portable radio of that year.

The dimensions (4-1/4 inches by 7 inches) qualified as "coat-pocket" sized. Two flashlight batteries

powered the unit.

Philco was not always in the radio business. The company began in 1892 as the Helios Electric Co., later changing its name to the Philadelphia Storage Battery Company. The radio line was launched in 1928.

This is one in a series of photographs in RW featuring classic and less well-known radios. The pictures and descriptions are by collector Bill Overbeck, president of the Delaware Valley Historic Radio Club, who has made every effort to ensure accuracy. Contact him via e-mail at billradio@aol.com or through RW.

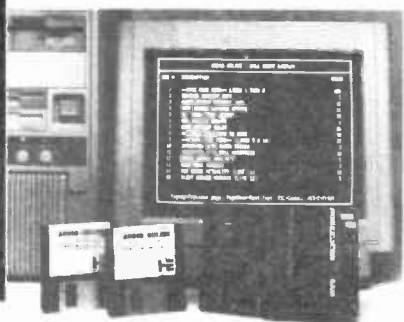
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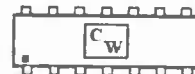
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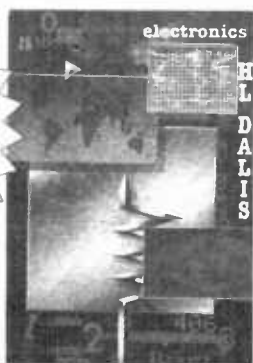
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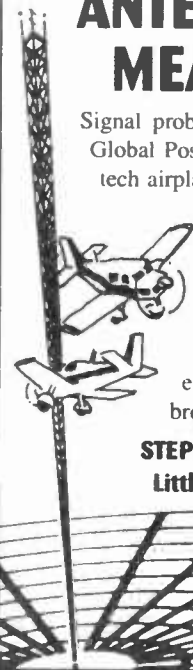
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CIRCUIT THEORY

Solving the 90 Degree T Network

Harold Hallikainen

In an article last year (RW, April 2, 1997), we looked at how a complex impedance can be represented as a magnitude and phase in polar form, or a real part and an imaginary part in rectangular form. Let's resume our discussion.

Table 1 presents the complex impedance of the basic components in both forms. In this table, R is resistance in ohms, and X is reactance in ohms. The letter j is the square root of -1, but for our purposes right now, we just use it to identify the imaginary part of a complex number (the real part has no j, the imaginary part does have a j term).

Component	Rectangular	Polar
Resistor	R+j0	R∠0
Inductor	0+jXL	XL∠90
Capacitor	0-jXC	XC∠-90

Table 1: Component impedances

In the last article we also found that multiplication and division of complex numbers in polar form is quite easy. For multiplication, we just multiply the magnitudes and add the phase angles. For division, we divide the magnitudes and subtract the phase angles. For addition and subtraction of complex numbers, however, it is easier if we go back to rectangular form (R+jX).

To add two complex numbers, add the real parts to get the real part of the result, then add the imaginary parts to get the imaginary part of the result. Subtraction is pretty much the same, but the signs change. Table 2 summarizes these methods.

Addition	$(A+jB) + (C+jD) = (A+C) + j(B+D)$
Subtraction	$(A+jB) - (C+jD) = (A-C) + j(B-D)$
Multiplication	$(A∠B) \times (C∠D) = (A \times C)∠(B+D)$
Division	$(A∠B) \div (C∠D) = (A \div C)∠(B-D)$

Table 2: Complex arithmetic

Finally, we need a way to convert back and forth between rectangular and polar coordinates. Some calculators know how to do it on their own, but we will look at the basic trigonometry here.

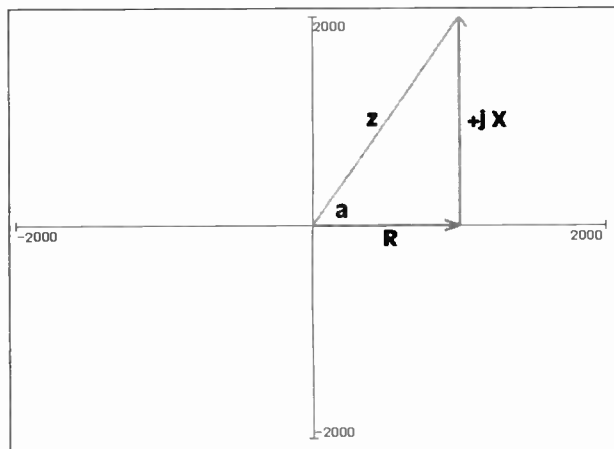


Figure 1: Expressing an Impedance

Referring to Figure 1, we see complex impedance that can be expressed as either R+jX (rectangular form) or Z∠a (polar form of Z at angle a). If we start with rectangular form (R+jX) and want polar (Z∠a), we can determine the magnitude (Z) using the Pythagorean theorem, a special case of the law of cosines first described by Pythagoras about 500 BC.

A right triangle having sides R and X will have a hypotenuse (Z) of $\sqrt{R^2 + X^2}$. From basic trig, the definition of the tangent is "opposite over adjacent." So, the tangent of angle a is X/R. To find a we take the arctangent or inverse tangent (\tan^{-1}) of X/R.

Also referring to Figure 1, we can convert from polar to rectangular by using the trig definitions of

sine (abbreviated *sin*) and cosine (abbreviated *cos*).

The sine of an angle is defined as *opposite over hypotenuse* so $\sin a = X/Z$. The cosine of an angle is defined as *adjacent over hypotenuse*, so $\cos a = R/Z$.

Multiplying each of these terms by Z results in X and R, which we need for the rectangular representation of impedance. Table 3 summarizes the conversion formulae.

$$\begin{aligned} A \cdot B &= (A \cos B) + j(A \sin B) \\ A + jB &= \sqrt{A^2 + B^2} \angle \tan^{-1} B/A \end{aligned}$$

Table 3: Polar-rectangular conversions

Finally, let's apply our knowledge to analyze a 90-degree lag T network, similar to that found at the base of an AM tower.

This circuit is a low-pass filter that is generally used for impedance matching. Its behavior is similar to a 90-degree length of transmission line (which we will look at a little later). As a transmission line, the T network has a "characteristic impedance." If the output is terminated in an impedance matching the characteristic impedance, the input impedance will match the load impedance. More generally:

$$Z_O = \sqrt{(Z_{in}^2 + Z_L^2)}$$

We can use this formula to easily determine the characteristic impedance (Z_O) of a 90-degree network to match a desired load impedance (Z_L) to a desired input impedance (Z_{in}). To make a 90-degree network, we just use inductors and capacitors whose reactance at the frequency of interest is equal to the characteristic impedance.

Figure 2 shows a 90-degree T network that matches 50 ohms to 50 ohms (useful!) while providing a 90 degree lagging phase shift. The reactances were calculated for operation at 1 MHz.

Let's determine the input impedance "seen" by VI. Recall that in this circuit all the reactances

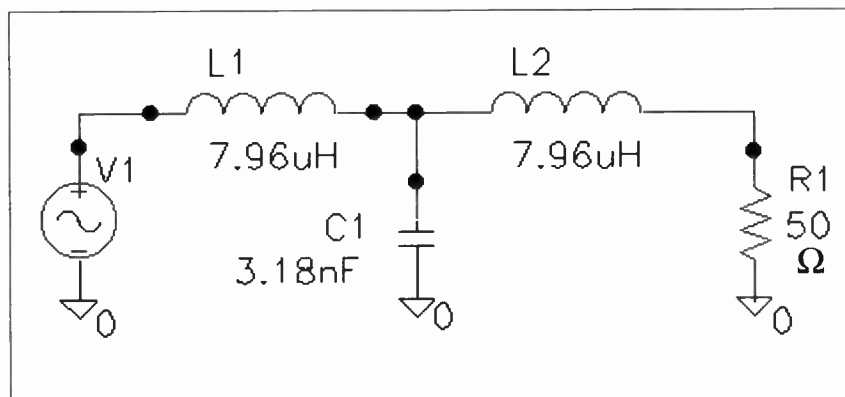


Figure 2: A 90 degree T network

are 50 ohms, so the impedance of the inductors is $0+j50$ or $50\angle-90$. Further, the impedance of the capacitor is $0-j50$ or $50\angle-90$, and the impedance of the resistor is $50+j0$ or $50\angle0$.

Let us do a step-by-step calculation of the input impedance. L2 and R1 form a series circuit, so the equivalent impedance is just the sum of the individual impedances. Recalling that we add in rectangular form, we find the equivalent impedance of L2 and R1 is:

$$\begin{aligned} (50+j0) + (0+j50) \\ 50+j50 \\ 70.71\angle45 \end{aligned}$$

In the last step we converted to polar form because we are anticipating needing to multiply or divide. C1 is in parallel with this impedance. We can determine the equivalent impedance of this series-parallel circuit using the same techniques we used for DC.

We can use either the "product over sum" or "reciprocal of the sum of the reciprocals" methods.

The second method converts each impedance to its reciprocal (its *admittance*), adding the admittances of the parallel components then converting the resulting admittance back to impedance by taking its reciprocal.

This approach works for any number of parallel components. The "product over sum" approach is an algebraic simplification of the two parallel component reciprocal method. My students favor this method even though the reciprocal method is more general — less formulae to memorize — and involves fewer calculator keystrokes; our calculators have 1/x keys.

We will try using the reciprocal method where we start by adding admittances. We determine the admittances by taking the reciprocal of the impedance (dividing the impedance into $1\angle0$).

$$\begin{aligned} Y_T &= Y_1 + Y_2 \\ Y_T &= (1\angle0) \div (50\angle-90) + (1\angle0) \div (70.71\angle45) \\ Y_T &= 20e-3\angle90 + 14.14e-3\angle-45 \end{aligned}$$

Converting to rectangular form to do the addition:

$$\begin{aligned} Y_T &= (0+j20e-3) + (10e-3 - j10e-3) \\ Y_T &= 10e-3 + j10e-3 \end{aligned}$$

Converting back to polar to invert admittance back to impedance,

$$\begin{aligned} Y_T &= 14.14e-3\angle45 \\ Z_T &= (1\angle0) \div (14.14e-3\angle45) \\ Z_T &= 70.7\angle-45 \end{aligned}$$

And converting back to rectangular to do some addition,

$$Z_T = 50-j50$$

The above impedance is the equivalent impedance of C1 in parallel with the series combination of L2 and R1. When we add L1 in series with this impedance, we get the input impedance to the network.

$$\begin{aligned} Z_{in} &= (0+j50) + (50 - j50) \\ Z_{in} &= 50 + j0 = 50\angle0 \end{aligned}$$

So the input impedance is the same as the output impedance. This is what we expect when a 50-ohm 90-degree network (or transmission line) is terminated in its characteristic impedance.

Let us take a quick qualitative look at what happens as the load impedance varies. Assume the load is a short at zero ohms. We find L2 directly in parallel with C2, forming a parallel resonant circuit; the impedance of the capacitor is $0-j50$ and the impedance of the inductor is $0+j50$.

This parallel resonant circuit has ideally infinite impedance. If we then put L1 in series with this infinite impedance, we still have infinite impedance. The network looks like an open circuit when the output is shorted.

What if we do not connect a load to the output and simply leave it open? In that case, L2 can be ignored (since the right half is not connected to anything) and L1 and C1 now form a series resonant circuit whose impedance is zero ohms. Terminating the network in an open circuit results in a zero ohm input, just like a 90-degree transmission line!

We'll play around with this circuit a bit more next time. Until then, stay tuned (to $1/(2\pi\sqrt{LC})$).

■ ■ ■

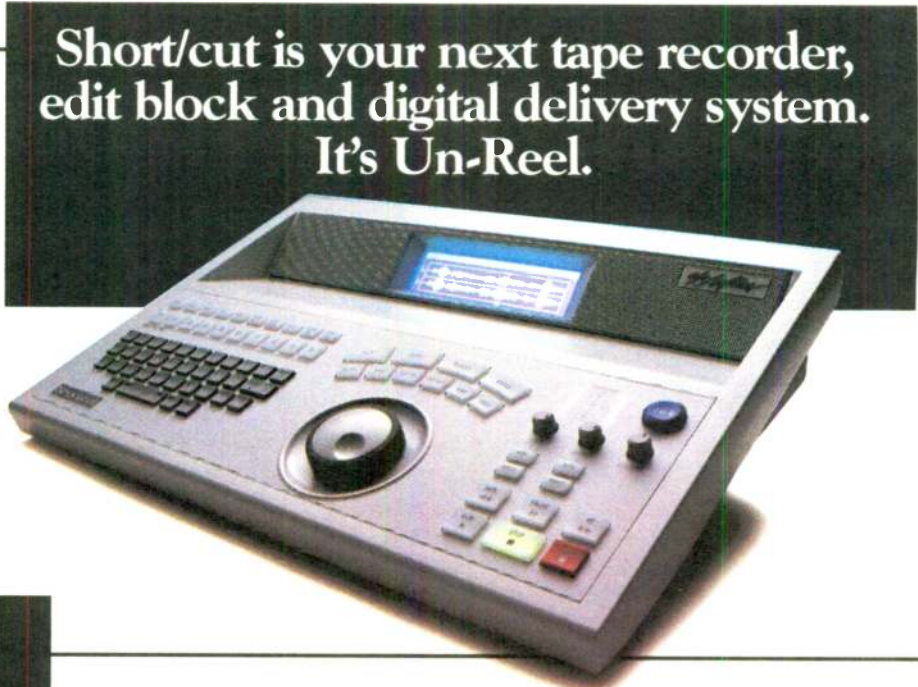
Harold Hallikainen designs transmitter control and lighting equipment for Dove Systems, a manufacturer serving the broadcast and entertainment industries.

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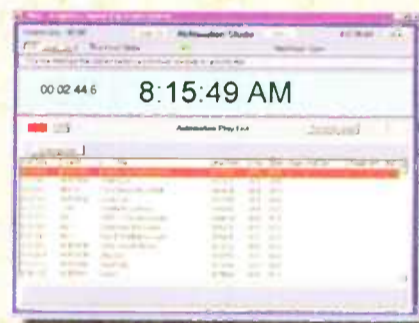
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Radio World, February 4, 1998

Maintenance Prevents Blown Fuses

John Bisset

John Stortz, CE at WKES(FM) in Lakeland, Fla., e-mailed some comments about blown fuses in a Harris FM20H. In John's case, his transmitter was upgraded to a 20K but also included modifications by former "engineers." In John's experience, the front-door piano hinge was bypassed by a short length of braided ground strap that looked "factory-ish." When the fuses blew in his FM20K, he also observed the PA Plate overload and PA Screen overload. The 20K would run fine for about five to 20 minutes; then it would overload and blow the fuses again. John went through about 20 fuses before finding the solution.

In his case, the PA screen bias also comes from the 2 kV supply, passing through two motorized rheostats (for power control). Harris had three power resistors that could be set in series/paral-

lel combinations, to be used as a "coarse power control" to set the generally desired absolute maximum output. This whole series of resistors then has a 2K or 3K, 100 W resistor to ground, serving to make the whole circuit a voltage divider. The one end of this divider is ground and the other end is at the PA screen potential of about 650 V.

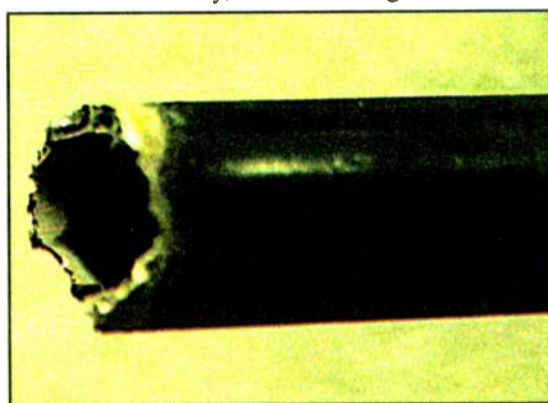
This 100 W resistor looked good and tested okay with an ohmmeter. On examination with a magnifying glass, it was noted that there was a slight greenish corrosion at one end of the resistor. If that resistor happened to open when it got warm, nearly 2 kV would be applied to the PA screen. This would certainly cause overloads and blow the 2 kV supply fuses. John replaced that resistor and the transmitter no longer blew F6 and F7.

Paying close attention to these 100 W resistors is a good maintenance tip. The photo shows a similar resistor that crum-

bled when it was removed from the bracket. It looked fine, but on the part that crumbled away, the familiar "green-

of the building. Not a bad idea!

★ ★ ★



High-power resistors can deteriorate to the point where they crumble when removed.

John stressed the need for clean rags in cleaning equipment. In a previous issue, I mentioned finding a source that provided a box of clean rags for a pittance. The company I used has long disappeared, but another has taken its place. Vince Fiola, of Studio Technology, the custom studio furniture folks, writes that his cabinet shop uses a lot of rags. Vince passed on a vendor he uses with much success. It is a name to add to your *Workbench* Business Card File. They sell 25-pound boxes of rags, for about \$1.50 per pound. They will ship

UPS anywhere in the United States. Buy a box and you are all set for cleaning into the next millennium. A pound of rags is a lot of rags! And if Vince recommends them, they have to be good.

As the consolidation of stations continues, splitting a box of these rags over several stations is a good cost-effective measure. If your consolidation plans include studio furniture, give Vince Fiola a call. Studio Technology does some outstanding studio designs at very reasonable prices. He will work with your budget and give you the customized look and options that your indi-

ish tint" was present.

A periodic inspection of all these resistors is important. This is especially true for the high-voltage bleeders. An open bleeder sets up a lethal voltage scenario. Remember to use the grounding stick, and keep one hand in your pocket!

★ ★ ★

John also commented on the nitrogen-filled scuba tank discussion we've been conducting in *Workbench*: "Seems like a lot of trouble for what you get," he said.

When John cleans his transmitters, he uses the following formula:

1. Vacuum.
2. Blow compressed air into inaccessible areas like tube sockets, while running the vacuum cleaner and positioning the hose so as to catch as much of the liberated dust as possible.
3. Wash the cavity and high-voltage areas with a clean rag and clean water. John only uses about a gallon if done regularly. Purified bottled water can make this step easy. Make sure there are no minerals in the water. This is especially true if you are using tap water.
4. Vacuum a second time to get out anything the rag missed, along with any rag fragments.

The dust that collects inside a properly filtered transmitter is going to consist of very fine particles. John has questioned whether a regular vacuum cleaner is capable of trapping such dirt. Unless a contractor's drywall filter is used, the answer is no. John is thinking seriously of getting a dryer-vent kit from a hardware store to permit venting the vacuum cleaner outlet to the outside

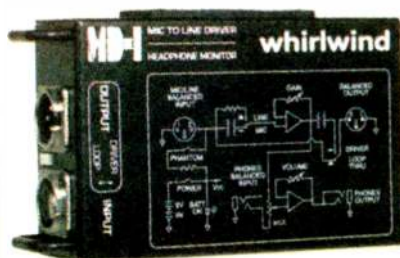
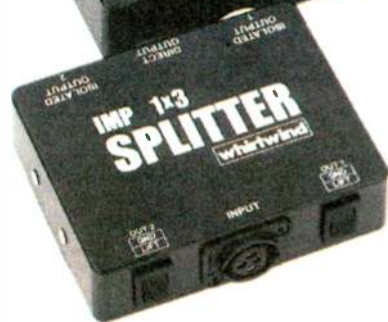
vidual studio requires. Vince has built a number of facilities for our clients, and his portfolio is impressive. If you do not think you can afford custom furniture, you have not called Vince. Studio Technology is near Philadelphia, and can be reached at (610) 640-1229, or circle Reader Service 127.

If you have a vendor that you cannot live without, or a suggestion for fixing or improving a piece of broadcast gear, fax it to me at (703) 764-0751, or via e-mail at wrwbench@aol.com

■ ■ ■

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

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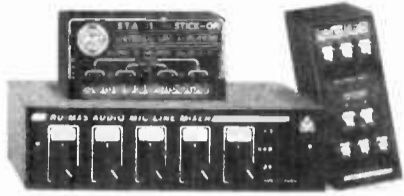
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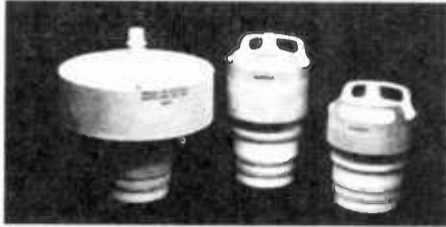


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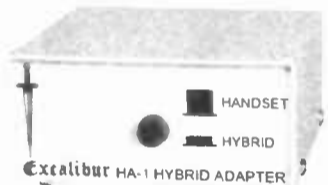
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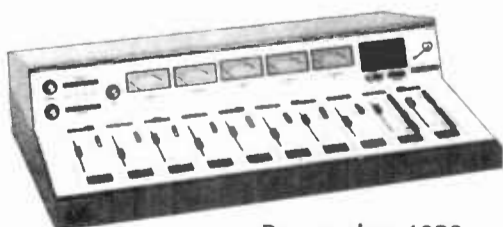
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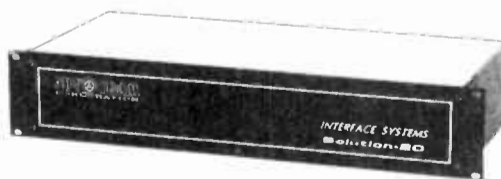
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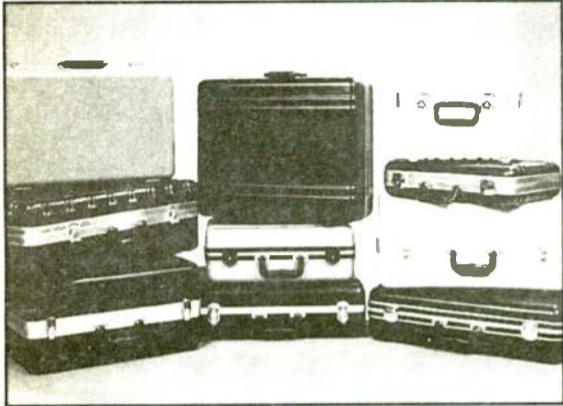
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Mail info and photos to: RW Marketplace, P.O. Box 1214, Falls Church, VA 22041

Caltron Plastic Cases

From the maker of Calzone Cases and Anvil Cases comes Majecal Cases. Caltron Industries recently introduced a new division, Majecal Plastic Cases, which makes a plastic case line that com-



plements the fabricated lines from Calzone and Anvil.

Using vacuum technology, high-quality plastic and heavy-gauge aluminum tongue-and-groove valance, Majecal cases include spring-loaded latches and heavy-duty carrying handles.

The cases come in various sizes, and include a custom line with more than 50 molds of different sizes. The interiors of the cases also can be customized. Customers can choose from foam-lined, foam-filled and die-cut foam inserts.

For information contact Caltron Industries in California, call (800) 359-2684 or (626) 968-4100; fax (626) 968-1703; or circle Reader Service 166.

TFT FM Stereo Modulation Monitor/Analyzer

Offering three major sub-systems in one package, the FM Stereo Modulation Monitor/Analyzer model 844A from TFT Inc. can be used for off-air monitoring of FM modulation levels of an FM broadcast transmitter or for making proof-of-performance measurements. The unit contains a frequency-synthesized RF preselector tuned in 50 kHz steps, base-band demodulator and a stereo demodulator.

The 844A measures positive and negative total modulation, right and left channel modulation, stereo separation, main and sub-channel cross-talk, L+R, L-R, 38 kHz carrier suppression and 19 kHz injection level.

Both high-level and low-level RF inputs are provided to allow direct feed from an antenna or from a

transmission line coupler.

For information from TFT Inc. in California, call (800) 347-3383 or (408) 727-7272; fax (408) 727-594; or circle Reader Service 204.

Princeton Diskette CD Duplicator

A standalone system, the new CDXpress from Princeton Diskette can be used as a stereo component and does not require a computer, although it features a pass-through mode that allows it to be connected to any computer with an SCSI connector for creating or editing. The copier is compatible with Windows, Macintosh and UNIX environments. Insert the master CD to read, and then insert the blank CD to record.

Princeton offers two versions: the 4x write/6x read and the 2x write/4x read.

EEM 1998 Catalog

Wondering where you can find electronic components and products? Available in three formats, the 1998 EEM/Electronic Engineers Master Catalog has been

updated and expanded from previous catalogs to include 4,100 product listings from more than 1,000 manufacturers. Also available is the Manufacturers & Sales Offices Directory, listing more than 5,300 manufacturers with sales information.

The catalog is obtainable in a four-volume printed version, via the Internet at <http://eemonline.com>, or on CD-ROM for Windows. The printed catalog Volume A includes electronic components, such as capacitors, transformers and resistors; Volume B contains electro-mechanical, electro-optical and military components, such as LAN products, displays, readouts and CRTs, keyboards, keypads and protective components; Volume C includes interconnections, packaging and hardware; Volume D contains power sources, instrumentation, computer products and equipment. EEM Online is updated on a regular basis. The CD-ROM contains the entire EEM database on a single compact disc, including the Manufacturers & Sales Offices Directory.

For more information, contact Marie Botta at Hearst Business Communications, Inc./UTP Division in New York at (516) 227-1314; fax (516) 227-1453; or circle Reader Service 128.



The CDXpress copies audio, data, video and photo CDs, and automatically detects the core format. An autoloader or trans/corder can be attached for unattended duplication.

For more information from Princeton Diskette in New Jersey, call (800) 426-0247; fax (732) 892-6186; or circle Reader Service 89.

Otari MR-30 Professional MiniDisc Recorder

Offering 74 minutes of stereo and 148 minutes of mono recording time, the MR-30 professional MiniDisc recorder from Otari presents users with a range of on-board editing and programming functions.

Some of the features offered by the

unit include an automatic recording start function, automatic track numbering and universal table of contents, a capability to allow cue points to be written and edited after recording, basic editing functions, an undo function, instant playback and end-of-track notification.

The unit has AES/EBU and S/PDIF inputs, along with analog (balanced XLR and unbalanced RCA) connectors, for digital or analog input. Output options include AES/EBU and S/PDIF as well as IEC958.

The unit can be controlled via remote control and operated via keyboard.

For more information from Otari in California, call (800) 877-0577; Web site www.otari.com; or circle Reader Service 167.

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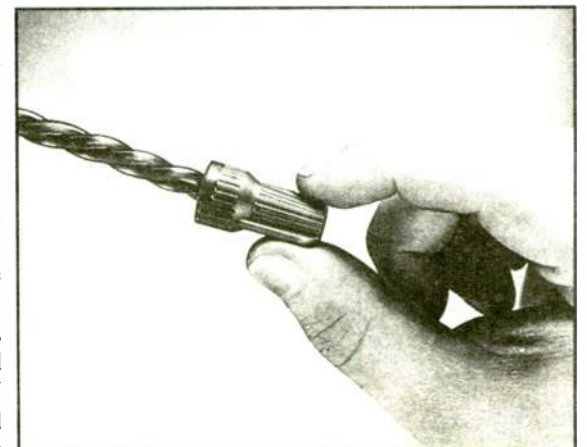
Panduit P-CONN SHARK Wire Connector

Featuring a "live" expanding spring to bite and hold wires securely, the P-CONN SHARK screw-on wire connector from Panduit combines fins with deep contoured ribs for grip and comfort. The three available sizes fit most wires: yellow SHARK PF1 for two #20 wires through three #12 wires; red SHARK PF2 for three #22 wires through five #12 wires and blue SHARK PF4 for one #12 wire plus one #14 wire through one #6 wire plus two #8 wires.

The new design is UL Listed and CSA certified for use as high as 600 V for building wire and 1,000 V for signs, fixtures

and luminaries. The design also includes a nylon housing that resists breakage and provides electrical insulation.

For more information contact Panduit Corp. in Illinois at (800) 777-3300, ext. 2241; fax (815) 485-5839; or circle Reader Service 205.



Studio Sessions



The Little Blue Box That Rocks
See Page 41

Radio World

Resource for Radio Production and Recording

February 4, 1998

PRODUCT EVALUATION

SADiE Performs at Dixie's WMXB

Jym Geraci with
Chris Lawless

Back in 1992, I worked for Scripps Howard station "Variety 104.3," which was then WVRT(FM), in Baltimore, and was told we would be completely digital in about six months.

I flew to San Diego for training on a top-flight workstation — in my opinion, the best on the market at the time because of its easy maneuverability and automated mix capabilities. After mastering this unit, I felt invincible.

Then Scripps Howard decided to get out of the radio business, leaving me where I am now in Richmond, Va.

Just imagine my comedown, walking into a Stone Age production studio with some prototype board in halfway working condition and a four-track tape recorder. Still, the general manager promised a studio upgrade and fully digital facility in six months.

Almost four years and five owners later, the time had come to update the "The New B103.7," WMXB(FM). Like most production rats, I loved the system I had been trained on, so I asked for it. The price tag of \$28,000 was too high for the new company, so I was asked to explore other options.

I was looking for something with the bells and whistles I had grown so fond of. When we were acquired by SFX Broadcasting, I was introduced to SADiE.

Road trip

WMXB Chief Engineer Chris Lawless and I headed north to the nation's capital to visit Washington Professional Systems. There, Colin Smith gave us a demonstration of three systems, including the SADiE system. I had fallen in love with SADiE and knew my production studio was going to be outfitted with one.

I found the SADiE editor to be superb. It did everything my first-choice unit did, but for \$15,000 less. It had 18 levels of undo, compared to the single level used in the popular ProTools system.

Lawless liked SADiE because it is based on Windows 95, it could be networked via Ethernet and it would integrate well with hard disk on-air systems such as the Broadcast Electronics AudioVault. Now that SFX has acquired three more stations in the market, all four soon will be combined in the same facility. Networking and integration with other SADiE and on-air systems has become a top selling point.

After working with SADiE version 2.2, I am impressed with the virtual elimination of pull-down windows. I am not a mouse man, and the less I have to go

looking for, the better. The screen icons are easy to follow and understand.

B103.7 is a modern adult contemporary station, with extremely MTV-ish promos: short beeps and white noise



Jym Geraci is shown at the helm of the WMXB SADiE editor.

breakers, three or four music beds with "real people" sound bites, and voice guy John Pleisse mixed with song snippets. This type of production quickly can fill a mix screen.

The Muting and Solo features, located in two places on the mix screen, make it easy to set levels in a mixdown. A favorite feature of mine is to be able to punch-edit while recording or playing back. This "edit on the fly" feature is more accurate than any system I have used. This is an enormous time-saver, as each piece I produce has at least three music beds in the mix.

A feature that comes in handy is the Trim Window, which I would have called the Crossfade Window instead. With the huge amount of song hooks used in image promos on the station, it is the easiest way to make the hooks blend.

I produced a promo in which Jewel's "Foolish Games" segued into Smashmouth's "Walking on the Sun" without sounding like a train wreck. Being able to adjust the fade and positioning of the clip while in the window was impressive.

Tap the mix

Even better, I was able to tap back to the Main Mix to hear the finished product without having to close the Trim Window. When wrestling with tough crossfades, this makes things very easy.

One handy feature is the number of "Undo-ables," up to 18 levels. Any production person will say, "Just hit the Undo button and it's right back to where you were." How many times have you had to do a promo update and go back to the original pass? With up to 18 Undo levels, just hit that "zipper," and you are on your way.

The Clip Store offers the easiest

method of transferring audio from mix-to-mix I know of. The station has a current-based format which promotes new product in music promos over and over again. Clip Store lets me bounce song

clips and voice parts from one mix to another, making my job a whole lot easier. I cannot remember the last time I had to steal a CD out of the air studio for a promo.

The toys

Filters and flanges are a huge part of station production, a necessity to highlight certain features of a promo. The Processor/Equalizer feature allows storage of settings for different vocal effects. When I need to EQ a phrase, I pop in the Processor/Equalizer, select a setting, and it's in the mix. The jocks love this feature because they can preset the EQ on their voice, each to his or her liking.

The Speech Edit feature comes in handy for numerous "voice guy" takes: just start the tape, leave the room and SADiE does the editing itself. For all of those 62-second spots, I have really enjoyed the "Time Scrunch" feature, which has saved my hide on numerous occasions.

I have found a few disadvantages with the SADiE 2.2. The streams in the eight-track view are tiny. I must open too many windows in order to select stereo or mono, then to the edit and trim windows. The system also is a little too "mousy" for my taste.

Fortunately, these complaints have been addressed and corrected in version 3.

Password protection now is included, which has helped keep wicked part-time jocks from ruining production pieces I had worked on for hours. I also like to name a project before starting it. This was not possible with version 2.2. Another big improvement is being able to edit in the Mix view

See SADiE, page 39 ▶

PRODUCT EVALUATION

Marantz: A Newsroom Workhorse

Scott Rutherford

The Marantz PMD-222 portable cassette deck is such a radio newsroom fixture that a review of one seems redundant. But after several years as a newscaster's choice field tool, this workhorse deserves another look.

I was sent a PMD-222 by RW just about the time my own trusted Marantz needed a much-overdue service call. The battle scars it earned were all in the line of duty.

It had been dropped numerous times. It had been rained on at a hastily arranged press announcement at the scene of a plane crash. It was drenched in the overspray from fire hoses in sub-freezing temperatures, all beyond the daily use it had received for three years, covering political rallies, public hearings and much more.

Now the speaker and mic connections, as well as the volume control, had become intermittent, and an ominous grinding noise was coming from the mechanism.

With machine in hand, I somberly walked to our station chief engineer. I handed it over and explained the problems. He told me he would see what he could do as I turned my attention to the newer PMD-222.

Generic? No way

Considering how the name Marantz is tossed around in radio news, it is in danger of being used generically, like Kleenex or Velcro. ("Hey, grab a Marantz and get down to City Hall!")

Well, Marantz cassette recorders are everywhere, and there are good reasons for that. These machines are versatile. They are equipped to record from virtually any source.

The preferred way is plugging a mic into the balanced XLR jack on the faceplate, but there are always exceptions, such as when you must record from an existing PA system.

Take your pick. There is a 1/8-inch mic input, and the PMD-222 can also accept RCA line-level input. For those times when you can make the connection but the signal is too low or too hot, it is an accommodating machine. Normally, between adjusting the microphone attenuation — adjustable in three settings from 0 to -20 dB — and

See MARANTZ, page 38 ▶

News Deck Still Going Strong

► **MARANTZ**, continued from page 37
adjusting the manual input level, you can find a setting to make almost any sound feed work.

I depend on the Marantz to record a monthly half-hour interview talk show: all I need to do is connect the mic mixer to the 1/8-inch input and go. It also offers a modular telephone plug to let you record phone interviews.

The record limiter and Automatic Level Control (ALC) are both of great help in real-world news gathering. Connect a mic, press Record, and get the story while the Marantz worries about the levels.

The built-in electret condenser microphone will come in handy, just in case the main mic is sitting on the podium 20 feet away and the man seated behind you starts a yelling contest with the mayor. This mic is a great back-up in a pinch.

My only criticism on the built-in microphone is the noise it picks up from the tape transport mechanism. Granted, I have never had to discard a cut because of it, but some better isolation from mechanical noise would be a help.

The next part of the equation is getting everything you have recorded back to the station and on the air. The ability to play back over a telephone line is handy, and I have used it on occasion. In the field, however, finding a phone line to plug into can be a problem.

Unfortunately, few pay telephones or cellular phones offer a jack, though they

are becoming more common in hotel rooms, thanks in part to the proliferation of laptop computers with modems.

More often, the tape I gather in the field is brought back to the newsroom. The Marantz then is connected, via its 1/8-inch output jack, into the board. Cuts can be



Newsroom Veteran: The Marantz PMD-222

pulled directly from the cassette onto cart, thanks to the quick-starting and clean-stopping pause button on the Marantz.

These machines are packed with a laundry list of features that, even though you may not use them often, eventually will prove invaluable. The playback pitch control, for example, is a great way to compensate for batteries that were near death when the tape was recorded.

I should mention that the unit's

low-battery light provides a more than adequate measure of warning. The trick sometimes is to get a hurried newsperson to take notice of it. It is powered by three D batteries or rechargeable power pack.

Similarly, the tape speed setting (standard speed or half-speed) can be invaluable in a pinch. The recording quality suffers with the tape crawling past the heads at low speed, but when you have only 15 minutes of tape remaining and a half-hour of event left to record, well, you get it.

I have not yet needed two settings: the tape setting control (normal, CrO₂ or metal), quite honestly because I don't usually get expensive tape for newsroom use, and the three-position ANC switch, where you can choose between flat, low-cut, or low-and-high cut.

I have not used what effectively is a recording "tone" control, because that can be adjusted as needed on playback via a separate, variably-adjustable control.

If I had to find fault with something, it would be the size of some of the controls. The volume, tone, pitch control and record level knobs are reasonably sized; but the input select, record attenuation and other switches on the sides of the machine are small to the point that they are difficult to

operate with large hands, or even small hands wrapped in winter gloves.

I suspect, however, that the size of these controls is dictated by the compact size of the machine, and I will plead no contest on this one to being nitpicky.

My own Marantz arrived back from repair just as I was preparing to return the loaner machine to RW. I was slightly reluctant to give the new one back, but I'm happy enough to head back out with my scratched and battered Marantz, which after some fairly minor repairs is working like new.

In a line of work where reliability is paramount, it's no wonder these little cassette recorders have become a standard.

■ ■ ■

Scott Rutherford is an anchor/reporter for the news department at WLAD(AM)/WDAQ(FM)/WREF(AM), Danbury, Ct.

Product Capsule:

Marantz PMD-222 Cassette Recorder

Thumbs Up	Thumbs Down
<ul style="list-style-type: none"> ✓ Reliable and durable ✓ Well built ✓ Clear recording and playback ✓ Familiar controls 	<ul style="list-style-type: none"> ✓ Size of controls ✓ Mechanical noise in built-in mic

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Where Does Production Music Come From?

Stephen Wilke

Part I of IV

There are many things that become so familiar to us that they seem to fade into the background after a while, but they are ever-present and contribute to the feel of the environments in which we live.

The music behind commercials and broadcast television is very much like this.

When you turn on the radio or TV, you constantly are presented with information. One commercial segues into another, then fades back into regular programming. All of these elements use music to dress up their messages.

After a while, you stop noticing all nuances and design of the presentation but take in the information and the attitude anyway. Consumers think all of the sound, music and camera angles are part of the linear moment that they are experiencing at the time.

But be real. When was the last time you actually heard a full orchestra swell to a crescendo while trying to express yourself to a lover in a restaurant?

With this in mind, I am beginning a series of articles on the behind-the-scenes activity of music production for broadcast.

This first article will be an introduction to the process of commercial creation and what music would be appropriate for a project. This will be followed by a real-life example of the

compositional process, then the recording process and eventually the business side of commercial music.

Make them listen

As you know, everybody has something to say and wants it said in a way that will make everyone listen. In advertising, this usually starts with a list of required input and sales goals from clients. They then put a team of creative people on it to come up with a strategy and approach.

Depending on the product, this approach can be serious, humorous, informational, high-stimulus or any other emotional genre. Ultimately the commercial will find itself a personality and a style.

A writer writes the copy. Creative directors help focus the efforts. Account representatives make sure client needs are maintained during the creative effort. An engineer records voice talent and mixes all elements, including music.

In television, there are also people who create computer animation and creative titling; editors to combine and juxtapose images; art directors to decide what images would be best and a director to add styling and manage the production process.

Now, in the world of music production, your job will be to pre-score or post-score the commercial.

In many cases they will want a music track before they actually shoot the pictures and do the editing. This is called

See MUSIC, page 39 ►

► MUSIC, continued from page 38

pre-scoring and usually is done when the music is the foundation of the spot. The attitude and style of the music track usually drives the feeling of the spot, and the editing follows the rhythm of the music track.

Music houses often love this approach. Unfortunately, this is the case for only a small percentage of spots.

Most often, the dialogue, acting and information drive the spots. The focus is on the production, acting and editing to pull off the message, which means the composer waits in the wings for everything to settle before he or she can figure out what contribution to make.

Clients often have no set idea for the music. At last, this is where a composer begins the creative process.

Da-da-da-dum

Most people do not know how to communicate in musical language, so I try to get them focused with a few questions.

What is the commercial trying to say? What words would you use to describe the feeling you want to get across? Do you have a particular musical style or instrumentation that you hear? Is there a piece of music that already exists that you can use as an example?

What impact points do you want emphasized? What is your budget? With these questions and your own instinct you usually can begin to solve the puzzle.

It is important to secure creative agreements and thus accountability along the way. If you get off the track, a lot of tensions and conflict will occur later in your deal.

A budget quickly establishes both limitations and processes. You can decide the balance between live musicians and MIDI synthesizer work and what size studio you will use. If a client has a small budget, tank the full orchestra.

The composer will try to find a style of music, then look at how to apply rhythm, harmony, pitch, melody and instrumental color in a way that will support the dialogue and, in the case of television, picture edits of the spot.

The composer must write original music, arrange a previous piece or secure the rights to another artist's music.

There is also the time constraint of 30 or 60 seconds. This can be quite a challenge. Many times, I did not know how to begin.

At other times, I was excited to find the musical solution, only to have the client make new suggestions. When you think you have no room for compromise and new invention, you find a new solution.

This truly is a creative music journey that must move with all of the individual concerns of the spot and the multi-dimensional concerns of an advertising agency.

My next article will give real-life examples of the compositional struggles of specific spots. Stay tuned.

■■■

Steve Wilke is a sound engineer at Swell, a post-production facility in Chicago, and writes music for commercials with his company Open Sky Music Productions. Contact him in care of RW.

In the Sunny South With SADiE

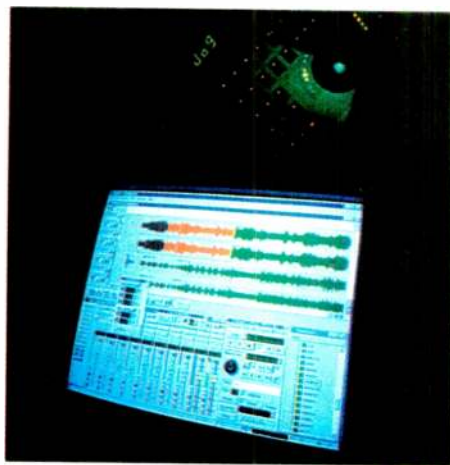
► SADiE, continued from page 37

without having to open an Edit window.

Version 3 also has 32 preset buttons on the dedicated control panel and 11 additional hot key functions, making it virtually a mouse-free operation. And furthermore, give me a jog wheel over a mouse any day!

Finally, being able to place a space between words when identifying a clip or mix really helps when trying to remember what the clip is at housecleaning time. This way, "VORemot" now becomes "VO Remote."

I never believed I would find an



The SADiE Trim Window in Operation

editor I would like better than the one I learned on. But after some searching and a saving of 15 grand, I find the SADiE system to be a fine system for both novice and experienced production people and would recommend it highly.

Do I have a complaint? Okay, bring back the "zipper" icon.

■■■

For information, contact SADiE in Tennessee at (615) 327-1140 or circle Reader Service 206.

Jym Geraci is the imaging director for WMXB(FM) in Richmond, Va. Chris Lawless is the station chief engineer.

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Digital Audio Delivery systems are now recognized as a must for every broadcast facility. But few systems provide the features, flexibility or reliability required to maintain profitability in this demanding and fault critical application, nor the support mechanism to maintain them.

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- Powerful Production and Call Processing capabilities, including Graphic Cut & Paste Assembly Editing. Automatic Recording features are included for catching network feeds.
- Interfaces to all Music and Traffic Scheduling and Billing systems.

- Features full 32-Bit Processing and True Multitasking capabilities. Many third party programs, such as Multitrack Editors, Wire Capture systems

and Word Processors may be directly embedded into DAD, or operated on the same Workstation.

- Inherent support of Global Wide Area Networking, for sharing of data between multiple facilities. Ancillary products are available for Store Forward operations and remote management of unmanned downlink sites.

- Operates on commonly available "off-the-shelf" computer hardware and network architecture, utilizing any of a wide variety of redundancy configurations.

- DAD is an outright purchase, and there are no monthly licensing fees. Free software upgrades are provided for the first year. ENCO technical support is legendary as the best in the business.



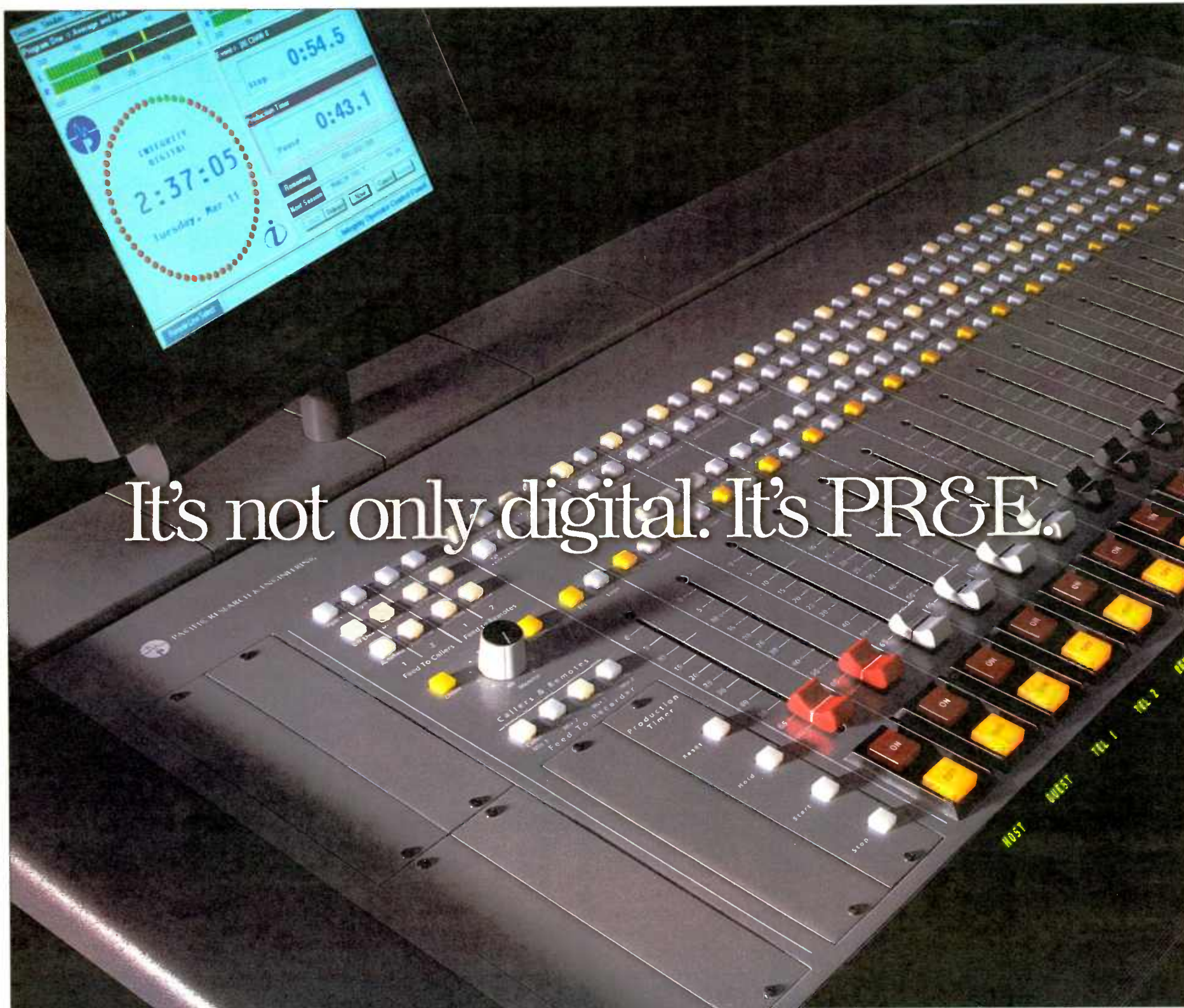
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For a brochure, call us at 760-438-3911, visit www.pre.com or e-mail sales@pre.com



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



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



PACIFIC RESEARCH & ENGINEERING

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World Radio History

PRODUCT EVALUATION

Blue Max: Dial Some Compression

Tom Vernon

Blue Max: The very name conjures up images of pilots wearing World War I flying garb, blasting Newport and Sopwith Camels from the skies while laughing with twisted glee. Fortunately, the 1990s reality is a bit different.

Today's Blue Max is a smart compressor manufactured by PreSonus of Baton Rouge, La. By "smart compressor," I mean this is a processor with a mind of its own.

Why the blue face, chum?

The first thing you notice about the Blue Max is its blue face plate. The next is its small size. This 8-by-5-inch box even includes the power transformer. No wall warts are necessary.

The rear panel also contains unbalanced tip-sleeve (TS) input and output connectors, with the left channel being a dedicated mono input. A sidechain tip-ring-sleeve (TRS) connector is used to interrupt the signal.

With no plug inserted, the control signal goes directly to the compressor. With a plug in place, the input signal is routed to an external piece of equipment. This means you can do lots of useful things to the signal, like equalize it to reduce sibilance of the vocal track. The processed signal is returned to Blue Max via the plug's sleeve.

Another application is to route the

vocalist directly into the sidechain, and have automatic "ducking" when the vocalist sings. The potential for special compression effects is limited only by your imagination.

A +4/-10 level switch allows this box to be compatible with semi-pro and pro-

controlled by a 16-position rotary encoder. As the knob is rotated, a set of parameters is digitally selected for attack, release, ratio and threshold. There are 15 of these presets, plus the Manual position.

The input control adjusts a preamplifier with a range of -20 to +40 dB. This input control is always active, even in Manual mode. The ratio control adjusts the compression slope in the range of 1:1 to 20:1. The ratio control only works in the manual mode.

Attack time refers to how quickly a compressor acts on the input signal. The Blue Max is adjustable from .01 to 100 ms. A slow attack time will allow the initial transient to pass through uncompressed, while a fast attack time immediately subjects the signal to processing.

Release time is variable from 10 to 500 ms. This control sets the amount of time the compressor takes to return the gain reduction to zero. If the release time is too fast, a choppy sound can result; too slow

and you may get an overprocessed, AM radio sound. The Attack and Release controls are active only in the Manual mode.

A switch-selected eight-segment LED input/output meter allows you to check pre- and post-processing levels. A meter reading of 0 dB is referenced to the input level switch position — either -10 dBv or +4 dBu. A second eight-segment display indicates the amount of gain reduction taking place.

An Output Level control and Process In/Out switch round out the front panel. The in/out switch works differently than a bypass switch. In the Out position, the signal level is still controlled by the Blue Max's input level pot.

The 'smart' switch

The presets lift Blue Max out of the "just another cute limiter" category. Many musicians and creative types struggle with basic equipment setups and consider electronics to be black magic.

Give some folks a compressor with attack, release, threshold, and ratio controls and their eyes will glaze over. With this smart box, all you have to do is dial in the type of application on the preset knob, and a set of carefully chosen parameters is selected, with no electronics or recording degree required.

The 15 presets in Blue Max cover many recording applications. Three Vocal presets allow soft compression for live mixes, where the vocalist is "in the track"; medium compression with a narrower dynamic range and the vocalist is more up front in the mix; and a

See MAX, page 43 ▶



Blue Max: The Dial Makes the Difference

fessional gear. It is also possible to set the switch for -10 dBv and use it with +4 dBu gear to create hard-hitting "over-compression" effects.

The front panel of the Blue Max is divided into three sections: Presets, controls and meters, and Output.

The presets for the Blue Max are

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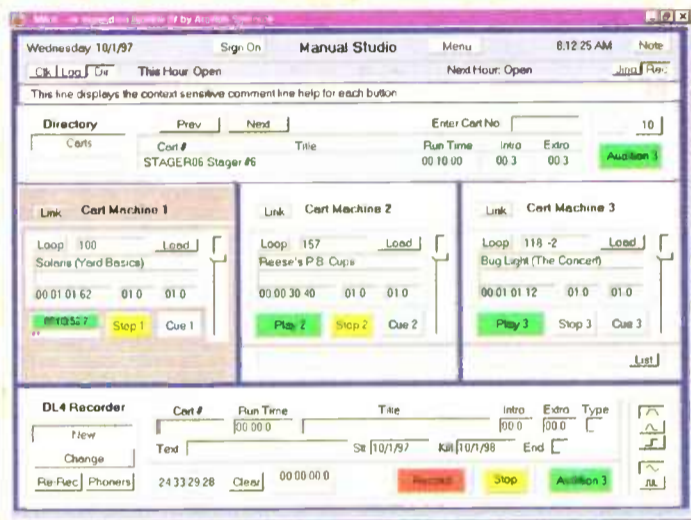
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You can replace your old, worn out Cart machines today with a digital audio workstation that is both reliable & as easy to use as a Cart machine. The simple triple deck display makes it easy to load 3 carts from the on board digital audio library into the three cart LCD display. You can begin or end cue 5 seconds of any cart and then play it On Air with the push of a button. The workstation even features console logic control so that your console can start playback just like your old cart machines.

Not a complex and often unreliable PC computer, the DL4 is an audio appliance that stores your audio library on hard disk with 3 playback outputs and a record input, simultaneously from one common library (expandable to 96 Play and 32 record events). Unlike fussy carts and cart machines, the DL4 needs no routine maintenance and the hard drive has a 20 year typical life.

For production, you can record your audio material directly into the DL4 (while On Air) or even produce it on your favorite PC editor (such as SAW™) and transfer it in perfect digital to the DL4 audio library!!! If you need Automation or sophisticated Live On Air, an optional Windows 95 software program gives you all of the bells and whistles, such as a Phoner Editor, Voice Over Editor, and much more.

Call today for details on the DL4 from Arrakis Systems, the #1 digital workstation manufacturer in Radio!!!



Single Knob, Simple Compression

► MAX, continued from page 41

"screamer" setting for, well, vocalists that scream. This one puts the vocals right in your face.

There are two Percussion presets. Snare/kick lets the beginning envelope pass through and then squashes the rest, giving a hard slap with a longer release. The Overhead setting gives a low ratio and threshold for a "fat" contour to even out the sound from overhead drum mics. Low end is enhanced, and the overall sound is more present.

Three Fretted presets handle guitar applications. Electric Bass provides a fast attack and slow release time to give more consistent levels. Acoustic Guitar emphasizes the attack and helps to keep it from getting lost in the track. Electric Guitar has a slow attack time to add more punch to the signal.

Three presets are assigned to Keyboards. Piano is designed to even up the loudness of the top and bottom end of an acoustic piano. Synth provides fast attack and release times for horn stabs and bass lines played on a synthesizer. "Orchestral" is for string pads or other orchestral things that come from your synthesizer. Blue Max decreased the overall dynamic range for a better placement in the mix.

There are two presets under the heading "Stereo." The first is a good old basic brickwall limiter for processing a final mix to a two-track recorder. "Contour," the second position, is used to fatten out the mix.

Finally, "Effects" provides a squeeze preset for solo work, and "Pump" is a useful position for snare drums, as it brings up the signal after the initial spike.

The manual position restores the ratio, attack, and release controls, so that Blue Max can be used as a conventional limiter.

Published specs for this box are quite good. Frequency response checks in at 10 Hz to 50 kHz, signal-to-noise ratio is better than 95 dB and THD+Noise is less than 0.03 percent.

Dynamic range is better than 115 dB and headroom is +24 dBu.

It did not take me long after the unit arrived to disassemble the Blue Max and check out the construction. I was curious how they could fit a power transformer inside such a small chassis along with an intelligent processor.

The answer is largely surface-mount technology construction. The processor contains two circuit boards: one for the LED meters, the other for everything else. All in/out jacks and controls are PC-mounted.

The quality of the circuit boards, mechanical engineering and paint job are all

good. And the blue front panel is extremely spiffy. I suspect the Blue Max easily could handle the rough-and-tumble life it would receive on the road with a band.

The warranty covers you for material and workmanship defects for one year.

A 24-page user manual covers all aspects of the Blue Max, and includes pictorial diagrams of typical applications, a detailed description of all the presets and a discussion of controls and their functions.

Unfortunately, there is not enough room on the front panel to describe the preset functions adequately; the legends only say "Keyboards 1, 2, 3," and so

on. It might be nice if some additional information about presets was silkscreened on the top cover where it would be available readily.

PreSonus has done a fine job integrating some new digital switching technology into this processor and has created a compressor that can be used easily in the field by those who may be technically challenged.

■ ■ ■

For information on the Blue Max or other products, call PreSonus in Louisiana at (504) 344-7887; visit the Web page at www.presonus.com or circle Reader Service 90.

Tom Vernon divides his time between technical consulting and completion of a Ph.D. Reach him at TLVernon@aol.com or at (717) 367-5595.

SHORT TAKE

Vocoding Software Brings Back the '70s

A popular analog effect rides again in the digital age, thanks to Opcode Systems of Palo Alto, Calif.

"Fusion: VOCODE" brings the classic sound of the analog vocoder to computer-based recording in the form of cross-platform software. The program fuses the qualities of one sound onto another, emulating the sounds of Peter Frampton's talk box, Electric Light Orchestra's song "Mr. Blue Sky," or the talking computer in the movie, "Colossus: The Forbin Project."

Opcode has included features not normally found on analog vocoders, including controls for resonance, level, depth and overall mix, in addition to five-band tonal control. Where a conventional vocoder needs to see two separate inputs — carrier and modulator — Fusion: VOCODE includes an on-board synthesizer to generate the carrier signal, shown as the keyboard in the upper

right corner of the screenshot.

The program also can accommodate two different inputs, as on a conventional analog vocoder, so users are not

sequencing software. A TDM version is in the works, allowing compatibility with ProTools.

Fusion: VOCODE is the first in a series of effects being created by Opcode. The second product, Fusion: VINYLIZE, is a vinyl record simulator that adds turntable characteristics such as motor rumble, fidelity and speed (33/45/78), as well as attributes of the vinyl surface itself: wear, dust, static, warp and dirt.

Original analog vocoders made in the 1970s by Moog and Bode are scarce and command high prices. In contrast, the Opcode Fusion: VOCODE carries a suggested price of \$149.95 and probably can work in the computer you already own.

For information, contact Opcode Systems in California at (415) 856-3333 or circle Reader Service 129.

— Alan R. Peterson

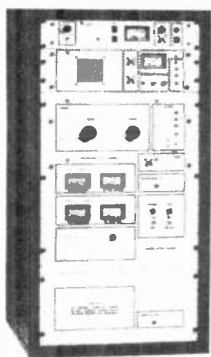


limited strictly to the on-board carrier oscillator.

The effect is compatible on both Mac and PC platforms, Adobe Premiere, Audiosuite and DirectX Media, allowing it to integrate with most popular recording and

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◆ PRODUCT GUIDE ◆

Products for Radio Production

Mail info and photos to: RW Product Guide, P.O. Box 1214, Falls Church, VA 22041

Sonic Solutions DVD Authoring

Sonic Solutions introduced DVDit! software for desktop authoring and production of DVD. The package converts multimedia productions and presentations into DVD discs and has a suggested price of \$899.

The company said DVDit! will bring full-motion images and high-quality audio to inexpensive media that radio stations can use for archiving, promotions and sales presentations.

DVDit! is designed to work in conjunction with desktop applications such as Microsoft PowerPoint, Apple HyperCard, Adobe Premiere and Web authoring tools. DVDit! lets the user create content in an environment familiar to users, then convert the data to a DVD disc image.

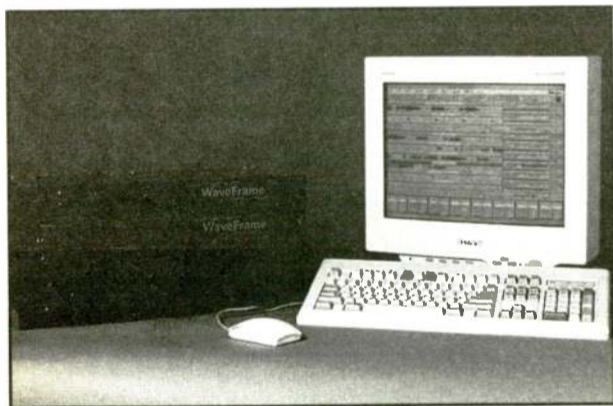
The company projects that 15 million DVD-equipped PCs and 5 million set-top players will be in the market at the end of 1998.

For information, contact Sonic Solutions in California at (415) 893-8000 or circle Reader Service 168.

WaveFrame Workstation

Version 6.2 of the WaveFrame and StudioFrame workstations is now out.

The new software includes enhanced support for file interchange, improving import and export of WAV, SDII, AIF and OMF 2.0 files. The new version also offers faster waveform redraws and displays, improved network support for interchange of dialog files and sup-



port for multichannel digital I/O, via AES/EBU pairs.

The new software will run on all variants of the WaveFrame system, including the WaveFrame/StudioFrame 401, the DAW-80, the 408 and the DCS. The complete package is supplied on an Iomega ZIP disk and

includes "Here and Now" software for access to Macintosh disks.

For information, contact WaveFrame in California at (818) 843-7004 or circle Reader Service 207.

JBL Midfield Monitor

The new JBL LSR 32 monitor system is designed for modern monitoring environments comprising multi-channel playback of audio for music and broadcast, providing consistent reproduction in a wide field.

The LSR 32 uses Dual Coil Drive, which places the magnetic gaps of two voice coils 180 degrees out of phase with each other. The result is twice the power-handling capability of each driver and less distortion at higher power levels.

The high-frequency element is a 1-inch composite diaphragm with a 60-by-100-degree dispersion waveguide. The midrange element is a neodymium 5-inch driver with a woven Kevlar cone. The woofer is a 12-inch neodymium element with a third coil between the drive coils acting as a dynamic braking device to reduce audible distortion.



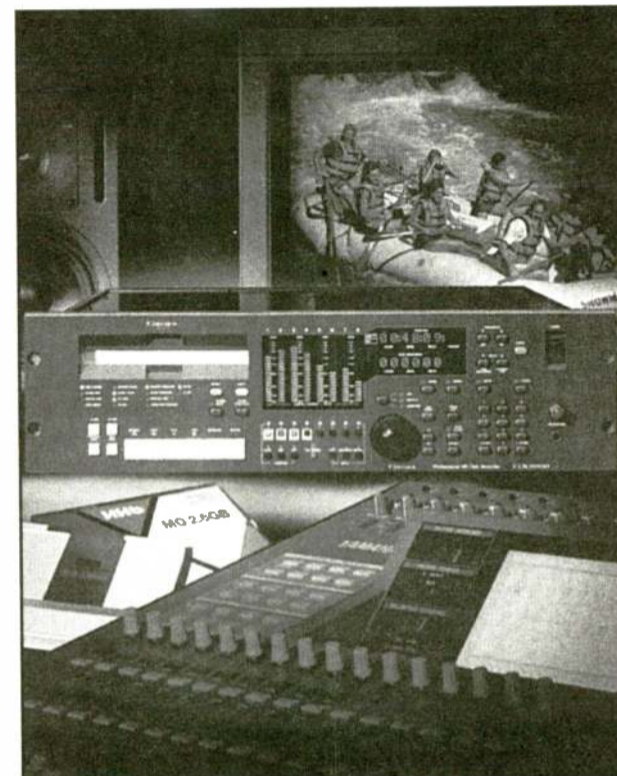
The construction of the LSR 32 is in anticipation of 24-bit/96 kHz audio with its wider dynamic range.

For information, contact JBL in California at (818) 894-8850 or circle Reader Service 52.

HHB Genex MO Recorder

The Genex GX8000, distributed by HHB, is an eight-track digital recorder that uses magneto-optical (MO) media for recording up to 24-bit/96 kHz resolution.

The unit occupies only 3RU, contains complete tape-style transport and indexing controls on the front panel



and includes a built-in eight-channel digital mixer with gain, phase and pan for each track. Recordings are made to standard 2.6 GB MO disks; Genex is planning on 5.2 GB and 10.4 GB drives for future products.

The GX8000 is available with an all-analog I/O back panel and AES/EBU interfacing on a 25-pin D connector; or all AES/EBU XLR digital I/O. Eight GX8000s can be chained together for fully synchronized 64-track recording.

For information, contact HHB in Ontario at (416) 867-9000 or circle Reader Service 130.

See PRODUCTS, page 45 ▶

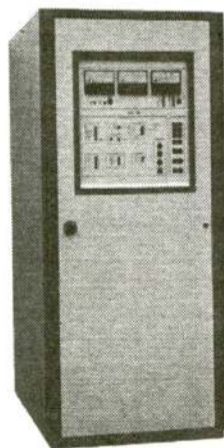


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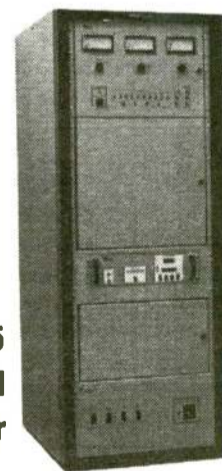
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For a quotation or additional information about our solid state AM and FM transmitters and digital FM exciter, please contact Jack or John today.

▶ PRODUCTS, continued from page 44
Arboretum Noise Reduction

Arboretum Systems has a new low-cost noise-reduction software package for the Mac platform. Ray Gun was released at the AES show in September, and is based on the more powerful Ionizer package also available from Arboretum.

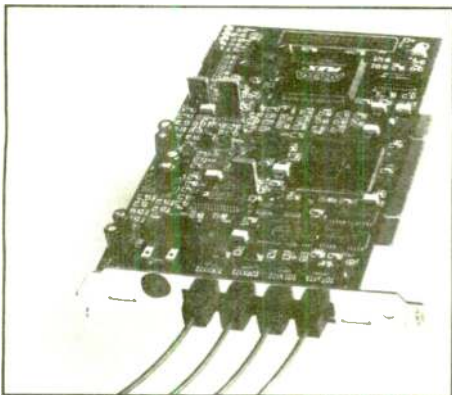
Ray Gun is a high-performance noise-reduction program that selectively removes hiss, hum, pops and other unwanted audio while leaving the original signal intact. Pop and click detection is combined with complex spectral analysis and notch filtering to make the process powerful and easy to use.

A handful of on-screen sliders and buttons controls all functions in Ray Gun. All noise components selected for removal automatically are located and eliminated. Offset, Threshold and Gain controls are used to fine-tune the process.

For information, contact Arboretum Systems in California at (415) 626-4440 or circle Reader Service 91.

Sonus STUDI/O Interface

Forming a link between PC platforms and the Alesis ADAT, the STUDI/O from Sonorus is capable of interfacing 16 channels of digital audio over standard fiber-optic cables.



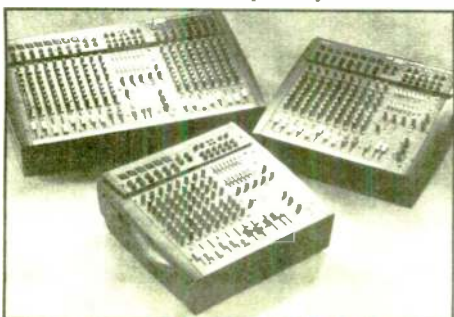
STUDI/O allows production engineers to transfer files digitally between computers and ADAT-compatible machines to maximize their recording, mixing and mastering capabilities. Because the software drivers are compatible with existing Windows audio devices, STUDI/O works with most popular DAW editing software.

STUDI/O includes two eight-channel, 24-bit optical interfaces and an 18-bit stereo analog monitor output. One or both ADAT interfaces can be software-configured for S/PDIF optical input/output. Suggested price is \$989.

For information, contact Sonorus in New York at (212) 253-7700 or circle Reader Service 54.

Spirit PowerStation Mixers

Following the original series of PowerStation mixers, Spirit by Soundcraft



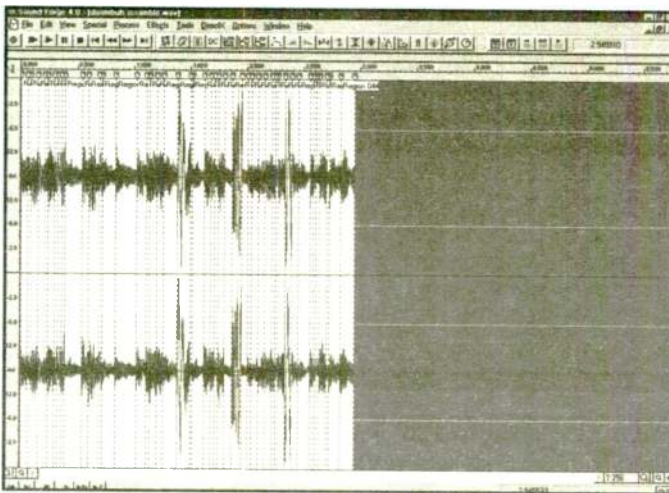
SHORT TAKE

Scrambling Sound the New-Fashioned Way

If you are a fan of the older, “knob-style” Eventide Harmonizers, you probably remember a front-button feature called “Time Scramble.” This would take incoming audio, cut it up into little pieces and reassemble the slivers in a seemingly random order. The resulting effect sounded part Swedish, part Martian. It was a lot of fun to use.

While the effect is not available readily on many computer-based editors, a feature found in the popular Sonic Foundry “Sound Forge” comes close.

According to Tom Hamer of the Sonic Foundry technical support team, the Sound Forge “Region Scrambler” (a.k.a. the Egg Beater) can be used to create some interesting rhythmic patterns. Hamer describes the process here



Audio File Divided Into Random Regions

as applied to a music track, but it is worth trying out on a voice track or effects passage.

Hamer explained, “Open a file with a drum pattern. Run the Auto Region tool

using the Drum Beats preset. Some minor tweaking may be necessary. Now, in the playlist, randomly rearrange the regions. The fastest and most fun way to do this is to randomly drag and drop each

region up and down the playlist. Do this for about 10 seconds or until the regions are completely scrambled.”

At this point, Hamer suggests stopping to listen to the rearranged regions in the playlist.

“Another thing you can do,” said Hamer, “is raise or lower the play count in some regions. Do this with the plus or minus keys on the numerical pad of the computer keyboard. Then keep randomly rearranging the regions as you did earlier.

“Do this until you are positive you have created the most complex rhythmic pattern known to humanity,” said Hamer. “Finally, create a new file from the playlist by using the ‘Convert to New’ function.”

Sound Forge also has a feature called Gapper/Snipper, but this causes periodic — rather than random — insertions of silence or deletion of material. The effect, while interesting, does not behave the same way as the scrambler.

If you are a Sound Forge user and wax nostalgic for this old Harmonizer trick, try it out and see what you come up with.

— Alan R. Peterson

Got a favorite effect or trick you do in your production room? Let us know. Send an e-mail to apeterson@imaspub.com describing how it is done.

launched a new range of portable powered mixers, appropriate for sound reinforcement at broadcast remotes.

The PowerStation 350 combines a 175 W per channel stereo amplifier with a six mono mic/line and two stereo input mixer. The PowerStation 600 adds two additional mono inputs and a 300 W per channel stereo amp. The top-of-the-line PowerStation 1200 has two 600 W amplifiers and 16 mic/line inputs.

All three mixers include a specially designed Lexicon effect processor for chorus, reverb and delay. A third Aux line has been added to the PowerStation mixers to send a dedicated feed to the Lexicon processor. Global +48 V phantom power is standard on all mixers.

Prices for the PowerStation line range from \$1,099.95 to \$1,999.95.

For information, contact Spirit by Soundcraft in California at (916) 630-3960 or circle Reader Service 169.

New Frontier Surge Protection

Three new products join the Surge-X line from New Frontier Electronics.



The SX115R, SX115RT and SX115RL surge protectors are housed in magnetically shielded, 1RU enclosures. Each provides eight standard grounded AC receptacles and improved EMI/RFI filtering circuitry. Two outlets are left permanently on while a rocker switch operates the remaining six.

The SX line offers 15 A protection, stops surges of up to 6 kV and produces no ground contamination. A set of high-speed snubbers react quickly to fast-rising

surges generated within the building.

The basic unit is the SX115R. The RT model includes remote turn-on capability while the RL model includes a pair of front-panel connectors for Littlite goose-neck lamps.

For information, contact New Frontier Electronics in Pennsylvania at (215) 862-9344 or circle Reader Service 132.

Sony Cassette Duplicators

Sony has the economical CCP-1300

cassette duplication deck for dubbing three mono cassette copies at once.

The CCP1300 runs at 16 times normal cassette speed; 10 units can be cascaded for runs of up to 43 copies at once.

The CCP-1300 is appropriate for mass dubbing of sales presentations and demos for radio station sales departments. A stereo version, the CCP-2310, also is available.

For information, contact Sony in New Jersey at (800) 472-SONY, extension CCP, or circle Reader Service 171.

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COLE'S LAW

Radio and the New FCC Auctions

Harry Cole

Acting on the direction of Congress, the Federal Communications Commission has proposed to use auctions to dole out new broadcast channels. As matters now stand, it looks like the earliest we might see any such auctions is the end of 1998 — but see them we will. The question is not whether the commission will use auctions, but rather when the auctions will happen and what the process will resemble.

For decades, the FCC simply handed out initial construction permits for free (not counting the relatively minor filing fee). When more than one applicant sought a particular frequency in a particular community or area, the commission resolved that mutual exclusivity through the ordeal known as the comparative hearing process.

In 1993, the comparative process got trashed by the Court of Appeals, which found certain elements of the process arbitrary and capricious. For the next four years, the commission repeatedly said it would come up with an acceptable alternative. But by mid-summer 1997, with no new standards on the horizon, Congress passed a new law forcing the commission to scrap any comparative processes and to utilize instead an auction, with the federal government taking home the loot paid by the successful bidders.

In November of 1997, following the

direction of Congress, the FCC issued its proposal for the auction process. As 1998 got underway, no final decisions had been made on the details of the process. But the FCC proposal strongly suggests it will resemble the following:

Foremost, all new and major change applications for any broadcast service have been frozen as of Nov. 26, 1997.

community to be proposed. Applicants for AM stations, by contrast, probably will have to include a full technical showing. All the short-form applications will be filed electronically.

The commission then will process the applications, determine which applications are mutually exclusive with other applications, and issue public notices

These FCC auctions raise many immediate and long-term questions for radio licensees.

At some point, the FCC will announce the end of the freeze and will open a "window" for the filing of new stations (possibly allowing major changes to existing stations). Anyone interested in filing for a new station will have to do so within that window period by filing a short-form application, providing sufficient information to permit a determination of mutual exclusivity with any other application(s) filed during the window.

For FM applications, it might suffice simply to state the channel and the

identifying the mutually exclusive applicants eligible to participate in an auction.

The commission claims it is open to suggestion on the matter, but it appears that prior to the auction, the FCC is leaning toward not undertaking any significant review of any of the applications' specifications or qualifications.

Mutual benefits

If an application turns out not to be mutually exclusive with any other applications filed during the window, that application will not be subject to auction. Rather, the applicant will be required to submit a long-form application.

For all situations in which mutually exclusive applications are filed, the FCC will issue a notice of the auction, setting forth the time, date, method of bidding and other relevant details. Such details probably would include the amount of deposit (or "upfront payment") required of bidders and any minimum opening bid or reserve price that the commission might specify. (A "reserve price" is a price below which the license will not be awarded.)

See AUCTIONS, page 49 ▶

RADIO ADVERTISER

Jingle Helps Fill Coffee Coffers

John Montone

You start with the jingle: "Chock Full o' Nuts is that heavenly coffee, heavenly coffee, heavenly coffee."

No matter what else you try, people want the jingle. "Chock Full o' Nuts is that heavenly coffee ..." Even decades later, people just start singing it. "Better coffee than a millionaire's money can buy."

Chock full o' Nuts®
The Heavenly Coffee

This is an era when a truck driver can belly up to the local java bar and order a cafe latte. Today, if you want to sell more coffee, and you have a jingle with words familiar to most people, you spruce it up and keep on playing it.

Jingle lingo

From her office in midtown Manhattan, Chock Full o' Nuts Vice President of Marketing Andrea Bass said, "Radio is a very effective medium for us because we have such a well-known jingle and we can use it to our advantage in on-air promos." Those promos include: Wake up to the Chock Full o' Nuts jingle, sing the Chock Full o' Nuts jingle or answer trivia questions about the Chock Full o' Nuts jingle.

Judy Carlough, the executive vice president for marketing at the Radio Advertising Bureau, believes Chock Full o' Nuts is making the right decision.

"It's very smart marketing," she said. "That way they're getting more mileage out of their advertising investment."

See HEAVENLY, page 47 ▶

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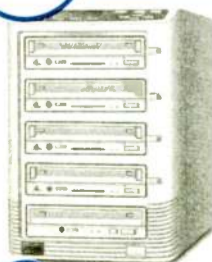


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Time-Temp Thing



'Heavenly' Coffee Ads

▶ HEAVENLY, continued from page 46

Carlough also agreed with the emphasis on the jingle. "It's simple, memorable and singable. It stays in people's minds." Also, she said, radio is the perfect medium for a popular jingle. "It's an audio thing, you don't need pictures."

Competing for its share of the estimated \$3 billion market for ground roast coffee, Chock Full o' Nuts spent more than \$2 million on national spot radio in 1996, and Bass does not expect that to diminish in the future.

Chock Full o' Nuts has been buying time on a broad spectrum of radio stations in some 40 markets. "We go with



all news, country, soft rock, jazz, adult contemporary," Bass said. "Anything except stations that appeal to very young teenagers." She said the company also stays away from certain talk show hosts who are "too controversial."

Bass works with two New York-based ad agencies to reach her target audience, which she describes simply as "heavy coffee drinkers." This encompasses older men and women, as well as "a new generation of young coffee drinkers." The Lord Group handles creative work and media planning for Chock Full o' Nuts, and Media Inc. buys the time.

"Our market share is up well over two points in the markets where we are advertising and that makes us very happy," Bass said.

Back to the jingle. Chock Full o' Nuts got away from it for a number of years, but Bass says it never really went away. "All of our focus groups brought it up. A dozen strangers would spontaneously burst into song." But nothing ever stays exactly the same in the world of radio advertising.

The original Chock Full o' Nuts jingle was taken from a song called "That Heavenly Feeling," written by the duo Bernie Wayne and Bruce Silbert, who also penned "Here She Comes, Miss America." The coffee company changed the lyrics from "heavenly feeling" to "heavenly coffee" and adopted the tune as its own. Page Black, a balladeer and

the wife of company founder William Black, sang the jingle.

Double shot

Today there are two versions of the jingle. One is sung *a cappella*, in a 1950s doo-wop style. The other version has an upbeat big band sound. But the melody remains the same, etched into the minds of two generations of coffee drinkers.

The company, which is now the nation's fourth-largest coffee roaster, actually was founded as a "nut shop" in 1932 but quickly changed products, selling its coffee first in restaurants and then in supermarkets.

In the financial year ending in July, Chock Full o' Nuts posted net sales of \$33.9 million, up \$4 million from the

previous year. Its most popular product is still its "Premium Vacuum-packed All Method Ground Coffee," but in keeping with the insatiable American appetite for specialty brews, Chock Full o' Nuts has added a line of "Cafe Blend Coffees." Company financial statements and plans for growth can be viewed on the World Wide Web (www.chockfullonuts.com).

Advertising plans for Chock Full o' Nuts definitely include radio, which Bass called "affordable and targeted." Carlough of RAB said radio allows the company to place its message during the times of day when people are deciding which cup of coffee to order and which can of coffee to buy.

"For a high-impulse buy like coffee, the closer your message (is) to the decision-making time, the more likely you are to influence the buyer," Carlough said.

Chock Full o' Nuts

Mission Statement: "To support Chock Full o' Nuts brand equity by increasing consumer awareness, loyalty and brand value with effective marketing programs."

Radio Expenditures: Approximately \$2 million in national spot ads in 1997

Address: 370 Lexington Avenue, New York, NY 10017

Ad Contact: Sari Frey, Media Inc. in New York, (212) 262-4141

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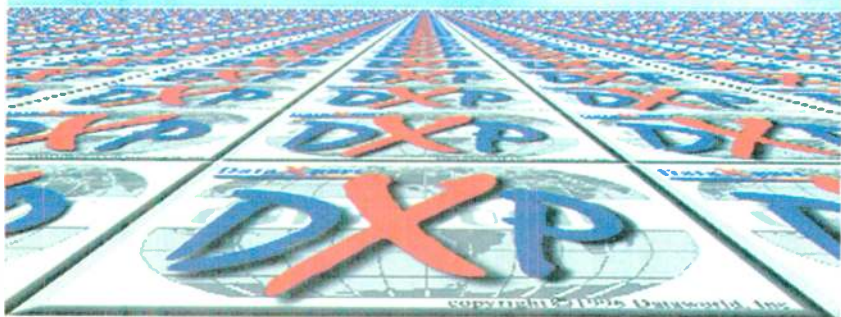
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Stronger First Quarter in 1998?

Brian Galante

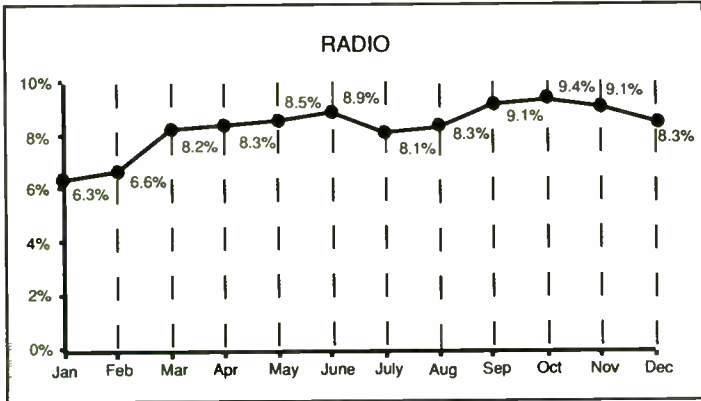
New advertisers to radio may provide a boost during the first quarter this year, according to a recent Interep report.

The Christmas season usually is an adverse influence on radio advertising in the first quarter, as retail advertisers regularly cut spending. The same goes for other traditional radio advertisers, including the automotive, beer, movie and soft drink industries, Interep stated.

But Interep found that advertisers new to radio may help balance the traditional first-quarter losses this year. These advertisers represent packaged goods, drugs and recruitment advertising — categories that already tend to be strong sellers throughout the year.

"A more diverse advertiser base will

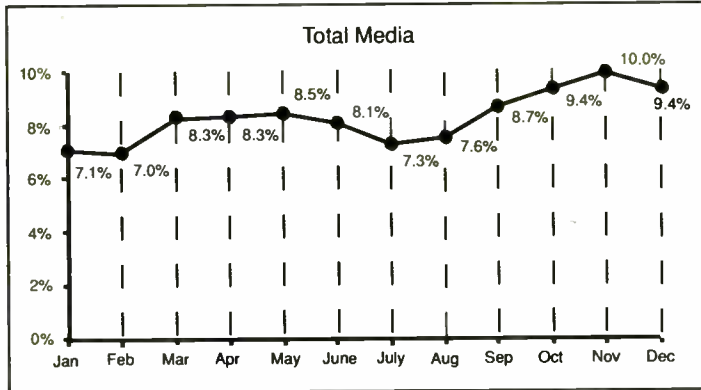
not only mean increased activity, but also more balanced activity," said Michele Skettino, Interep director of marketing communications. "One category's lull may be another's peak advertising period. Many of our sellers are reporting brisk first-quarter activity from new accounts



Monthly National Advertising Expenditures

that were not in radio last year."

Radio is seeing a large increase in advertising from the travel, hotel and resort category. Drugs and remedies also do well as people catch winter colds or try to take off the holiday pounds.



Monthly National Advertising Expenditures

The Interep analysis of Competitive Media Reporting data seems to support the perception that ad spending in general, and radio advertising in particular, is below average in the first quarter. It shows that the first quarter generally accounts for approximately 22.7 percent of annual total media advertising expenditures, and for 21.1 percent of national radio's annual income.

RADIO BUMPERS

KMHM(FM), in Lutesville, Mo., welcomes you with its own version of southern hospitality.

The bumper sticker for this southern gospel station shows "an old-fashioned

Manager Doug Apple.

Apple made the dial location the largest element when he designed the sticker, to "enable potential listeners to see it and tune in as easily as possible."

What message does your station bumper sticker convey? Send the stick-



country church, with white light shining around the church, reaching out into a dark world," according to General

er, and a 100-word explanation, to: RW Bumper Sticker, 5827 Columbia Pike, Third Floor, Falls Church, VA 22041.

FCC Wants 'Sincere' Bidders for Auctions

► AUCTIONS, continued from page 46

Any eligible applicant wishing to bid would have to pay an "upfront payment" in order to qualify to participate. The FCC thinks this is a "useful tool" to ensure that "bidders are sincere." Presumably this upfront payment would be refunded to unsuccessful bidders.

The FCC then holds the auction, and issues a public notice identifying the winning bidder. Within 10 business days of that notice, the high bidder will be required to plunk down a "down payment" which, combined with the previously paid "upfront payment," equals up to 20 percent of the winning bid. Within 30 days (or thereabouts) of the notice, the winning bidder then must file a long-form application. That application will be put on public notice, and petitions to deny will be permitted.

Once the application is processed fully, all petitions have been reviewed and rejected, and the application is deemed grantable, a public notice to that effect is issued. The applicant then has 10 business days to pony up the rest of the winning bid, and the permit issues within 10 days of full payment.

Many questions

There obviously are about a zillion practical questions that have to be resolved before the auction process — in whatever form it ultimately may take — can be implemented. How will the commission determine what the "upfront payment" should be for each auction? How about the "reserve price"? If FM applicants are not required to specify a transmitter site when they file their initial short-form

application to get into the auction, what happens if the successful bidder's long-form application specifies a site that is not consistent with the rules? Will "bidding credits" be made available to certain types of bidders (e.g., small businesses, minorities, women), and if so, how will such bidding credits be calculated and implemented? How will qualification for such credits be established?

Over and above all these practical questions, there are broader conceptual questions. For example, does a permittee which has paid for its permit through the auction process get anything more than does a permittee who lucks out and files an application that is mutually exclusive (and which, therefore, is not subject to auction)? What about at renewal time? Might the commission (or a future Congress dead-set on generating additional revenues to balance the federal budget), by then accustomed to charging for authorizations, decide that it might be justified to assign some value to license renewal and expect that amount be paid at renewal time?

That may sound far-fetched (and unlikely, in view of the NAB's recent record of successful lobbying), but who would have thought, five years ago, that we would be looking at any auctions of broadcast authorizations?

If you have questions about the commission's auction proposals, you should contact your communications counsel.

■ ■ ■

Harry Cole is a principal in the Washington law firm of Bechtel & Cole, Chartered. Reach him at (202) 833-4190 or on the Internet at coleslaw@erols.com

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'Amazing Aaron' Airs Adventures

Cartoonist Aaron Warner Is So Full of Action, His Name Should Be a Verb!

Sharon Rae

A throng of scantily-dressed frantic female fans waits outside the studios of WKFR-FM in Kalamazoo, Mich., waiting for Aaron Warner to wrap up his Friday gig with the "Morning Zoo" ...

"I thought it would be a good chance to put (his character) in a different environment," Warner said. "He had primarily always been in his parents' house and the jokes revolved around him living with his parents and him having bad dates, so I thought it would

care about but him," lend a unique element to the show.

"We've given away his used socks on the air," Michaels said. "It's an ongoing bit in his cartoon; his socks come alive.

"I wish he'd go away, or else I'm gonna have to pay him pretty soon."

Warner compared his work as a cartoonist to radio. "In some ways it is

exactly like doing a comic strip, where you are preparing material and performing it, but you don't get an immediate response. You have no idea if people are even getting it, because obviously you can't hear people laugh on the other end."

Warner, who severed publishing ties with Tribune Media Services last year, is self-syndicating "Adventures of Aaron" and distributes the strip to about 20 newspapers nationwide. They have a combined readership of approximately 6.5 million.



News: Are You Ready to 'Go Big'?

Paul Kaminski

Here's the scenario: A breaking news event occurs out of town. You are called into the office and told to get moving and get on the air as soon as possible. Classic "top-down" guidance.

It is time for your news operation to "go big," or to perform what I call a classic contingency news operation. It is not the time to ask, "What will we do now?" That question should be addressed before your news, engineering, sales, marketing, promotion and administrative departments need to react to a big news situation. Failure to plan here means loss of station image and money. A severe loss of both results in a loss of jobs.

The general response to this kind of coverage involves doing something more than you would for "everyday news broadcasts." It also likely involves equipment you do not use every day.

Contingency questions

Here are the nuts-and-bolts general questions a news director or manager must answer when planning or executing a contingency news operation.

Where is this location, and how do I get the reporter there and back safely?

How will the reporter get reports and sound back to the station for broadcast? How will coverage be coordinated?

What equipment and resources do we have in-house and/or available to support

this operation and the field reporter?

How long will this operation go on?

Only after answering these broader questions can you answer the specific

Don't forget your laptop computer. It can give you a reporting edge.

coverage questions of whether the reporter will go live at 10 minutes past every hour, on the hour, or whether the coverage will involve Q&As, wrapped reports, straight voice reports or a combination of these. The answer to these specific coverage questions also depends on the prevailing attitude of the station about commitment to the news product.

Every moment spent planning can make the difference between meaningful, profitable, salable and perhaps (if you're into such things) award-winning coverage, and coverage that sounds as though it is produced by rank amateurs. No advertiser in his or her right mind would pay for the latter.

Please excuse this aphorism: If you fail to plan, you plan to fail. When there are image, money, careers and perhaps lives on the line, "winging it" does not get it done.

Roger Nadel, general manager of all-news KFVB(AM) in Los Angeles, suggests another planning model. "In a perfect world, the idea to send someone to

the scene comes from the bottom up," he said. "An editor, or enterprising reporter, suggests it and the idea is floated up the chain of command.

"At some point, the news or program director will have to make the compelling argument to the GM that the benefit outweighs the cost. At that point, all department heads should be involved: engineering, to see about logistics and getting feeds back; finance, to see what this unbudgeted expense will mean to operating costs; promotions, to see if there is a way to maximize the exposure (could your reporter go live on a sister radio or TV station from the scene, or do a newspaper interview?); and sales, to see whether you have created opportunities for clients to tie-in for either imaging or sales purposes, or to offset costs.

"If you have not brought everyone into the loop, you risk missing out on making this something special."

Prepare your reporter

The first contingency news operation question seems simple enough: Is the reporter ready to go? If you do not travel a lot, remember the basics: health and comfort items, appropriate clothing and sturdy luggage with a tag. If you ever have slogged through snow or mud in penny loafers chasing a story, you know exactly what I mean.

If you send someone overseas, consider this: Unless you live near a U.S. passport office, you cannot just decide to get someone a passport in one day. The visa problem (specific country entry documents) can be worked in a day, if necessary, with help. Passports are good for 10 years and are absolute legal identification.

The second of the contingency operation questions involves the transmission of reports and coordination of coverage. In most cases, the plain old telephone system, with a back-up from cellular, must suffice. The news culture at your station may dictate something more, which could be an ISDN basic line or a standard line with a POTS codec. The time and fluidity of the story may not allow that. How about local phone calls on site? As an event develops, other newsmakers may not be available for an in-person interview, but may be available on the phone.

Don't forget the laptop computer. Jim Cameron is an award-winning veteran network radio reporter and news director. Cameron said the laptop can give you an edge in the field when you go big.

"Using CompuServe, I can read all the news wires, have stories clipped for me, chat with experts in thousands of fields through its forums, check the weather and any number of things that might affect my coverage, including

how much time my story will warrant if all hell's breaking loose elsewhere," he said. "Most importantly, I can do quality research of newspaper archives, magazines, niche newsletters and encyclopedias," Cameron said.

Proper feeding

The third question deals with some of the specifics of the coverage, and the care and feeding of the reporter. To answer this question, you must answer these corollary questions.

From where might the reporter file? Phone booth, press center, hotel room, back of the car? The reporter must be able to file what is necessary from any of these locations.

How will the reporter file? Is equipment available that will allow a reporter to file wrappers over a regular phone? Cell phone? POTS codec? ISDN codec? Audio subcarrier on satellite? INMARSAT satellite phone? Edited sound file e-mailed to the station news computer system? (See where the laptop can make life easier?)

How would the reporter gather actualities? Face-to-face interview? Telephone interview? Line-level dub from another source? All of these?

Will the reporter have enough equipment, spares and adapters to do the job? Is the equipment tested, organized and ready to travel? (If you use a laptop for editing, e-mail and online research, remember the spares, adapters and a surge protector for it as well.) Portability and versatility are key.

How will the reports be processed back at the station? Will the reporter call the control room or newsroom and go live, or will submissions be recorded? What happens if the station is equipped for automation and events develop during the time the station is automated? Is there break-in capability? If not, can the reports be recorded easily by an unattended recording device?

How will the reporter handle lodging, meals and incidental expenses at the location?

Working hours. Is the reporter salaried, on a straight shift or working a straight work shift and overtime?


Does your station workers' compensation policy cover sending reporters into natural disaster areas, foreign and domestic hostile fire zones, etc.?

The fourth question involves the end strategy and probably depends on your boss and the resolution of the event. The boss may think it is time for the reporter to come back, or she may want the reporter to stay until the event plays itself out.

Sending a correspondent to cover a contingency news operation is not a task which can be taken lightly. "Any decision like this should be made with the expectation that it will accomplish one of the following objectives: generate revenue, generate audience, generate employee morale or protect the license," Nadel said. "Hopefully you can accomplish more than one. If it does not accomplish any of these, you're wasting your time and money."


■ ■ ■

Paul Kaminski is news director for the Motor Sports Radio Network. He served as the last news director for the Armed Forces Desert Network in Dhahran, Saudi Arabia, during the Operation Desert Storm. His e-mail address is motorsportsradio@compuserve.com








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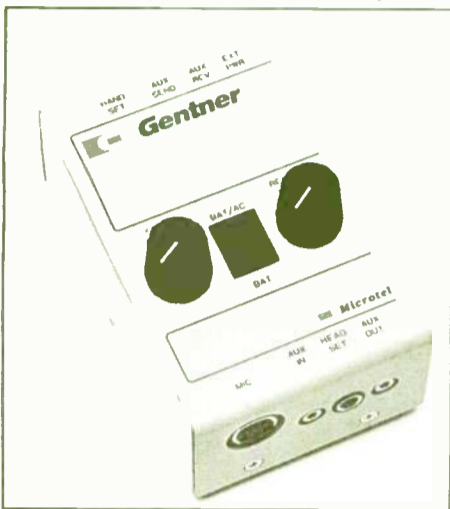
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What's in My Bag and Why?

Paul Kaminski

This is a checklist of the items that go where I go when reporting in the field. (See related story, page 50.)

- Marantz PMD-222 mono cassette recorder with AC adapter and six D alkaline batteries (three installed). It survived a drop off my shoulder, and still put out



Gentner Microtel

quality audio. Hint: if you have a 201, 221 or 222 series recorder, use chromium dioxide tape and that setting. These tapes do not get eaten as much as less-expensive tape. I take five cassettes with me, one in the machine and four extra.

- Shure SM-77 directional and Shure SM-63 omni dynamic mics, stand adapters and two 3-foot XLR to XLR cords. The SM-77 is the short-barreled version of the 57, with its same frequency response and directivity. I use it for field voice work. The SM-63 is an extended range omni with a short barrel that I use for field interviews.

- AKG KM-231 folding mic stand. It beats hand-holding the 77 and knocks off handling noise.

- Gentner Microtel, with AC adapter and four 9V alkaline batteries (two installed). Mixes a mic and recorder sound and can feed a telephone-level signal down the dialed up telephone line and a 50 Hz-5 kHz line-level signal simultaneously. Can act as an off-air IFB cue amp and a recording interface for telephone audio.

- Small telephone with detachable handset and two 7-foot RJ11 (standard telephone modular jack/plug system) line cords, plus two-to-one RJ11 jack and female-to-female RJ11 jack. It can replace other phones and accommodate the Microtel. I also carry a "grab bag" of telephone connectors: RJ11-to-4 prong, in-line RJ11s for an old-style telephone system (1A2); an extra handset cord; and a VoiceAct V for a Western Electric handset.

I have an RJ11 male plug line cord broken out to alligator clips. With the RJ11 female-to-female adapter, you can clip to wires on a telephone block, get dial tone and still be able to use the RJ11 Microtel-equipped phone. An unintended salutary benefit: these devices also make it easier to hook a laptop computer to phone lines.

- Shure 50AC acoustic coupler. If the only phone available is a coin phone without a data jack, a hard-wired wall phone with a hard-wired receiver or a cell phone without an adapter, this will

allow you to feed sound from either the Microtel or Marantz down the line, albeit with limited fidelity. It straps over the handset microphone. This is a last resort, but sometimes necessary.

- Connectors and adapters. The Marantz will record at line level through its RCA jacks. I make dubs with RCA male-to-male patch cords and record telephone sound in the field with the Microtel, using a male mini plug-to-RCA plug patch cord. I use the 1/4-inch male-to-mini male patch cord for Marantz playback. The alligator clips can be used to connect the Microtel line out to a number of sources.

- Telex Earthin receiver with 1/4-inch plug cord and 1/8-inch plug cord. With an earmold, it beats a set of headphones for portability.

- Sony ICF SW-20 AM/FM/7 band shortwave radio with indoor antenna wire and 4 "AA" alkaline cells (two installed). I use it for monitoring and general listening. It also comes in handy if you need to set your watch to the exact time (WWV, 5, 10 and 15 MHz). In a pinch, you can record from the radio on the Marantz, through the line-in RCA jack.

- I carry a Leatherman-style pocket tool, small jeweler's screwdrivers (these fit XLR shells nicely if they

need field-stripping), two reporter's notebooks and pens, administrative sundries including traveler's checks for walking-around money in foreign countries, a clear plastic long credential holder, disposable ear plugs, an AA Maglite, organizer-dialer-calculator, and a small U.S. road atlas.

Comfortable fit

All this adds about 8-1/2 pounds and fits comfortably in one side of my soft-sided computer case/briefcase. From time to time, I augment this basic equipment with Shure M267 mixers, Comrex frequency extenders and a Comrex HotLine POTS codec.

I am continually looking for items that will help me file and produce from the field more efficiently, without diminished quality or versatility.

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Back to our Routes

Rediscover what American music is about with the latest dose of nostalgia from Public Radio International.

"American Routes" is exactly that: a two-hour weekly excursion into America, showcasing the eclectic musical styles of the nation. Launching in April, the program is the brainchild of Nick Spitzer, a music veteran for public radio. Spitzer will treat listeners to the familiar American sounds of roots rock and roll, blues, country and jazz, as well as a sampling of more unfamiliar genres, including zydeco and

AMERICAN ROUTES™

klezmer. Though music is the driving force of the program, "American Routes"

also will feature interviews with the artists who have made American music what it is. Spitzer has a history of delighting his listeners with dynamic interviews. His long list of celebrity interviews include Dr. John, Carl Perkins and The Byrds.

For information from PRI contact Janet de Acevedo in Minnesota at (612) 330-9230; fax (612) 330-9222; or circle Reader Service 208.

Product Augmentation

When people mix two of their favorite things together, it usually means failure, sickness or complete chaos. Radio Computing Services, on the other hand, has taken two widely used radio software products and fused them into one new product.

SelectorReach combines Selector music scheduling from RCS with Arbitron Maximizer radio ratings to create a tool for radio station management. The new product adds reach and frequency data to Selector directly from the Maximizer product.

"SelectorReach matches the music rotation of Selector to the listening patterns of Arbitron," said Andrew Economos, RCS president. SelectorReach can determine how long it takes for a loyal listener to burn out on a song, as well as how often listeners hear the songs they want to hear.

For information from RCS contact Tom Zarecki in New York at (914) 723-8567; fax (914) 723-2258; or circle Reader Service 131.

Steve Forbes Hits the Airwaves

Steve Forbes, president and CEO of Forbes Inc. and editor-in-chief of Forbes magazine, launched a daily 90-second radio commentary program.

"One on One with Steve Forbes" debuted in January. Forbes will write

and voice the programs himself; the syndication will be handled by H & H Communications.

"I welcome this opportunity to get more Americans involved in the national debate over tax cuts and tax simplification, our foreign policy and

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national security, as well as cultural and human interest events," said Forbes.

Harry O'Connor, who produced and distributed similar daily commentaries by Ronald Reagan in the 1970s, is responsible for bring the Forbes radio series idea to the surface.

For information on the program contact Joel Rosenberg at Americans for Hope, Growth and Opportunity in New Jersey at (903) 781-5111; fax

love for the music. The weekly five-hour program targets an affluent, mature market and features a variety of music, listener interests and celebrity interviews with entertainers of the previous 50 years. The show can be customized to either three- or four-hour

programs.

For information on the program contact Bill Miller in Kansas at (800) 556-7641; fax (913) 782-5567; or circle Reader Service 53.

He Did It His Way

The standards never sounded so good. Longtime broadcaster Bill Miller

the Bill Miller Show
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hosts a syndicated program, "The Bill Miller Show."

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(908) 781-6001; or circle Reader Service 170.

A Barrel of Laughs

If your station is lacking comedy in its programming, there is a new humor service waiting in the wings.

"Say Somethin' Funny!" is a new prep service that is delivered exclusively through e-mail. This daily, market-exclusive service is heard in more than 40 markets in the United States, Ireland and Australia. Sent out five days a week, the program contains a topical Top Five List, trivia, comical news stories, the Fun Web Page of the

Day and much more.

"By utilizing the Internet to deliver 'Say Somethin' Funny!,' we're able to keep our subscription price low," said publisher Bob Andorfer. "Air personalities save time because they don't have to wade through pages and pages of off-color jokes looking for usable material."

Interested stations are eligible for a free, two-week trial subscription. After that, the service costs \$10 per month, a sure fit for the budgets of most stations.

For information on the program contact Bob Andorfer in Michigan at (517) 663-4116; or circle Reader Service 209.

Dateless in America

Dating services on the radio, such as "Dateline" from Spark Services, are a trend these days, as radio managers look for ways to make money beyond the traditional sales of time.

"Dateline" is a computer-driven dating service used by more than 300 radio stations nationwide. More than 1 million people have enrolled in "Dateline" programs. The membership at some

stations has reached 25,000.

For information on the service contact Spark Services in Illinois at (847)

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475-9955; fax (847) 475-9961; or circle Reader Service 92.

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Incentive Travel: Know It, Use It

Mark Lapidus

At this time of year, I get a lot of questions about incentive travel. Managers who would never even consider a sales incentive trip drop their guard during the cold weeks of winter. They realize that there are satisfied tanned clients in their market who have just spent a week in the sun with the competition. Suddenly, incentive travel doesn't seem like such a bad concept after all.

Unfortunately, this enthusiasm rarely lasts until the month of March. Why? Because to do great incentive trips you must plan exten-

sively! For the uninitiated, here is a brief primer on what it takes to make money and have fun with incentive travel.

Plunk down, pack up

What is incentive travel? I define it as selling clients additional advertising to air during lackluster weeks when a station has lots of open spot inventory. Clients who plunk down a certain dollar figure get a free trip for two.

Why do this? When properly executed, these programs can generate money you would never get any other way. A tremendous bonus is that top managers

and winning sales people can form unique bonds with clients. Go on vacation just once with a client and your relationship will never be the same. You will meet their mate, learn about their families, hopes, dreams — all the stuff you would never get to find out over the telephone or at their busy headquarters.

Don't stations just trade money to do this? This is the first argument used against incentive travel. The logic is that a station would have received most of the spot buys that air anyway, and therefore wasted time and money in giving clients free trips. This can and does happen when a trip is con-

structed poorly. Exacting rules must be conceived, written and followed by salespeople and clients.

The advertising money spent to receive a trip must either be new dollars or additional to dollars spent during the same time period in the previous year. Even when done properly, there will always be a small percentage of clients who scam you.



Photo by Frank Kelly

Say you work with a beer distributor that spends half-a-million dollars a year with you. If the company demands a free trip and threatens to pull its buy, you may not have much of a choice. On the other hand, because the company really wants the trip, you may be able to wrangle other concessions out of them before agreeing.

Maybe you can get a guarantee that the company will at least keep your business the same for next year or give you

See TRIP, page 56 ▶

Follow these tips to make your radio excursion a success:

- Always scout out your location in person months in advance of putting out a package. Hotels in warm climates can turn bad in just one short year.
 - Save money on fancy brochures, videos and so called "sales tools." Clients get the concept through sample videos created by the hotel or chamber of commerce; you can obtain tour books, pictures and other items inexpensively.
 - Attempt to trade part of the hotel (and food and beverage). To do a trip next year, you must start now.
 - Realize that upon arrival, clients will be tense and fussy about rooms, how close they are to the pool and other trivialities. This passes within hours, especially if there is a fun icebreaker scheduled that evening.
 - Budget money for taking clients out to eat several times and for at least one big event during the week. Do not plan too much. Clients want free time, away from you!
 - Check with your attorney to find out who pays taxes on the trip. Some lawyers say the client has to pay for the "prize." Others say it this is not necessary.
- If clients are required to pony up to Uncle Sam, make sure they know in advance! Major groups do many stations at once, but even small operators with one or two properties can do incentive travel.

— Mark Lapidus

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World Radio History

Broadcast Richmond Hires Warner

Darrin Warner joined Broadcast Richmond as manager of the Experienced Equipment division. Warner previously head-



Darrin Warner

ed up the used equipment division of then-Harris Allied.

The Broadcast Richmond Experienced Equipment division debuted in January. The division promises to offer used analog



and digital equipment at one-half to two-thirds of what new merchandise would cost.

Back Bay Broadcasting Appoints President/CEO

Back Bay Broadcasters Inc., the parent company of Rhode Island radio stations WWKX(FM), WAKX(FM) and WLKW(AM), named John Maguire president and chief operating officer. Co-founder Peter Ottmar will continue as chairman and chief executive officer.

Maguire spent the past two years as vice president of WEEI(AM) and was involved in Boston broadcast

management and sports marketing. Prior to these duties, Maguire was a consultant with Boston Bloomberg Radio and was instrumental in creating the business news format in Boston.

New Office in New York for MUSICAM EXPRESS

MUSICAM EXPRESS opened a New York office in November headed by Fred Rogers, regional sales manager. Rogers, a native of New York City,



Fred Rogers

brings five years of

East Coast sales and managerial experience to the company.

MUSICAM EXPRESS is a joint venture of Star-Guide Digital Network, CBS Corp. and Westwood One.

Eklund Joins NBG Radio Network

Mark Eklund accepted the position of production manager for the syndicated radio network of NBG Radio Network. His new duties include coordinating production and distribution of syndicated programs. Eklund is former guitar engineer for the band Everclear.

NBG Radio Network syndicates national radio programming delivered on four different networks: Entertainment, Nostalgia, Sports and Financial.

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Smart Promo Travel Ideas

▶ TRIP, continued from page 54

first heads-up on additional money that becomes available. Even if a worst-case scenario plays out and you are forced to acquiesce to the trip, at least you spend some fun time with the client, relaxing and getting to know the client a little better.

What's a typical trip? There is no such thing. Some are huge trips with hundreds of people. With others, you may just hand over certificates to be redeemed at leisure.

My favorite trip is a big one-week excursion to an exotic location. Maybe you charge \$15,000 for the package. The client gets spots to air in January and February and a non-transferable trip for two.

Who goes? The general manager, sales manager and the salesperson who sold the most trips all attend with spouses. If you want to cut costs, the GM and salesperson stay home. Fight the temptation to cut spouses out, which makes clients very uneasy. They know you are focused solely on business, and they will not want that on their vacation. In fact, avoid the subject entirely until they bring it up (which they will, given time).

Who does the work? Hire an incentive professional. This is not something you want your promotion director to execute. It is helpful, but not vital, if the company you select has experience doing broadcast incentives. The incentive pro probably also will contract a travel agent to do the ticketing.

Check out the accompanying box for more tips to make your project a hit.

I have one warning: This is addictive. Once you organize one successful trip, you will do it again and again for two reasons: money and fun.

Mark Lapidus is president of Lapidus Media, now launching "UPCOUNTRY," an uptempo '90s hits niche as an alternative to mainstream country. Call (703) 383-1805 or e-mail: lapidus@erols.com

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HH Scott 299B amp, 335 multiplexer, 310D FM, \$400; Harmon Kardon Citation 12 pwr amp, like new, \$250; Sansui 500A w/wood case needs output tubes, \$50. C Collins, Crunert Sound, 1977 S 74th St, West Allis WI 53219. 414-327-4141.

Marti MA-10 monitor amp; Stanton 310 stereo preamps (4), all worked when removed from service. G Manning, WARK, 880 Commonwealth Ave, Hagerstown MD 21740. 301-733-4500.

McIntosh MAC-1900 solid state stereophonic FM/AM rcvr w/papers, superb cond, \$575 +shpg; HH Scott 350-B tube stereo FM multiplex tuner, dial has small fractures, w/knobs of later vintage prod, \$100. R Links, Links Sound, 1656 California St, Berkeley CA 94703. 510-845-5557 aft 7PM PST.

Bryston 3B, as new, \$500. M Shea, Precision Rcdg, POB 1651, Nyny 10276. 212-989-2684.

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Dolby 363 2 chnl A/SR NR w/cat 330 card, \$850; Dolby 361 frames w/cat 22 cards, \$300. F Lanzer, Underground Sound, 77-74 76 St, Glendale NY 11385. 718-821-1427.

Harris CB-1200 TT's w/tone arms (4), fair cond. G Manning, WARK, 880 Commonwealth Ave,

Hagerstown MD 21740. 301-733-4500.

SAE 5000-A click & pop device, \$150 +shpg. R Links, Links Sound, 1656 California St, Berkeley CA 94703. 510-845-5557 after 7PM PST.

Valley Micro FX Series NR units (6), vgc w/rack adapters, \$40 ea. C Yengst, WAWZ, Weston Canal Rd, Zarephath NJ 08890. 732-469-0991.

Aphex Compellor, as new, \$500; dbx 760X stereo mic preamp w/phantom, new, \$150; Stanton 310 record TT preamp, as new, \$150; ATI M-1000-2 precision dual mic preamps, \$200; Drawmer M500 stereo lim-comp-gate-expandpan & fade, as new, \$750. M Shea, Precision Rcdg, POB 1651, Nyny 10276. 212-989-2684.

Sonomag 350/450, 8 Carousels in gd operating cond, BO. E Stokes, WCVR, POB 249, Randolph Center VT 05061. 802-728-4411.

Tascam DA-88 (2), one w/SY-88 sync card, great cond, \$4800/pr; Tascam M-2524 8-bus rcdg console w/phantom pwr & talkback, 2 stereo returns, 2 mono returns, MIDI automated, w/travelling case, perfect cond, \$1800. Phil, Production Block Studios, 906 E 5th St, Austin TX 78702. 512-472-8975.

Want to Buy

Neve, API, Gates, Langevin, Collins, Lexicon & other mic preamps, EQs, reverbs, delays. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Telos Zephyr 9202 stereo codec. J Block, Production Block Studios, 906 E 5th St, Austin TX 78702. 512-472-8975.

AUTOMATION EQUIPMENT

Want to Sell

THE AUTO-MATE: Low cost digital automation for your P.C. Interface with existing automation or use stand-alone. Proven DOS reliability. Easy to use. More info/demo: 503-769-2886. Website: www.wrl.com/~automate

Air Century automation controller, \$700. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Arrakis Digilink GEM-600 Gemini System w/1.2 gig + network board & software w/cart wall; Arrakis TS-8C Trak Star workstation w/270 MG w/network board & software, units are 1 yr old, currently on air & working, \$8,500/BO. L Zeve, WHYL, Box WHYL, Carlisle PA 17013. 717-249-1717.

Digilink CD multiplay controller w/3 used PD-TM3 18 CD players, new PD-TM3 18 CD player; (4) PDM-501 6 CD players w/magazines, no manual, \$1500 FOB here. B Dixon, WAWC, 219-457-8181.

Revox A-77 r-r (3-4) in fair to poor cond, some for parts; Circuit Werkes DTMF-16 tone decoder, new cond; MEI 100MP programmer, may need work; Spotmaster TP-1B cart winder w/counter, fair cond; Tapecaster 700P cart decks, one could work, the other for parts. G Manning, WARK, 880 Commonwealth Ave, Hagerstown MD 21740. 301-733-4500.

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IGM monaural, \$75 +shpg. R Links, Links Sound, 1656 California St, Berkeley CA 94703. 510-845-5557 after 7PM PST.

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ITC triple deck, \$900; ITC Delta, \$875; (3) SMC 712, \$200 ea. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

BE 3000 stereo PB, gd cond, \$175 +shpg; BE 5300 triple deck cart deck, mono w/triple tones, gd cond, \$350 +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Want to Buy

BE Phase Track 90 stereo players, dead or alive, any cond. Kevin, 212-613-8964.

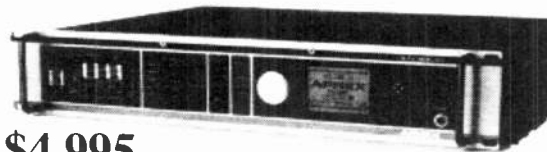
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Denon 950FA (3), \$500 ea; (18) Technics SL-PG-300, \$50 ea. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

COMPUTERS

Want to Sell

Motorola 5208-R Codex (2) for leased line applications, 4800 BPS, \$25 ea +shpg. R Links, Links Sound, 1656 California St, Berkeley CA 94703. 510-845-5557 aft 7PM PST.

Ensoniq EPS 16 plus sampler keyboard w/software, \$450. JL Gill, Autumn Hill Studios, POB 316, Otto NC 28763. 704-524-9602.

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McMartin B-501 5 chnl, mono, dual line feed out, complete w/mon & cue amp, gd cond, \$275 +shpg; **McMartin B-502** (2), 5 chnl, 10 input, stereo w/dual line output w/mon & cue amps, gd cond, \$375 +shpg; **BE 4 M 50 4** chnl 8 input mixer w/cue & mon amps, mono, easy quick connect w/1/4" & RCA jacks, gd cond, \$400 +shpg; **Sparta 2001** 5 chnl 10 input, xtra 5 input aux buttons, mono, \$350 +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Wheatstone SP-5 8 bus, 10 mic/line inputs, 8 dual line inputs, 2 stereo dual line inputs, all w/EQ, gd cond. Audio Concepts 1853 Merriman Rd, Akron OH 44313. 330-670-9100.

MCI/Sony 618, 24x24, \$6.5K; **Quantum 24x24**, \$4.5K; **Soundcraft 600**, 32x16, \$5.5K, like new; **Model 30**, \$295; 512, \$950; 520, \$1450. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.

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Orban 8000A stereo gen \$1000; **Microcon Flexmod** composite processor, \$750; (2) **Dorrough 610 3** band processors, \$300 ea. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Want to Buy

Teletronics or **UREI** (LA 2, 3, 4, 1176) Gates, RCA, dbx (160-165), Altec, Collins. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

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AGC 310 peak limiter, Discriminate Aud Proc, \$325; **CBS Lab Volumax 400** auto peak controller, \$125. C Boswell, Boswell Bdctg, POB 1546, Orangeburg SC 29116. 803-536-1710.

Teletronix LA-2A's, **UREI LA-3A's** & **LA-4's**, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

Orban 418A stereo limiter, vgc, \$250. JL Gill, Autumn Hill Studios, POB 316, Otto NC 28763. 704-524-9602.

Orban 8000-A Optimod, \$1500 +shpg; **Aphex Compellor**, \$650/BO +shpg. J Bahr, WVIS, Box 6556 Loiza Sta, San Juan PR 00914. 787-728-0364.

MICROPHONES

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EV RE20, perfect, \$295; **EV 309A** mic shockmount, perfect, \$65; **Telex V220** sports-caster headset w/cord, XLR plug, excel, \$145; **OC White M2MDUR** mic arm/R, excel cond, \$65; **RCA BK53**, \$50; (2) mic crane light duty, \$20

ea. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Luxo LM-1 41" mic arm, mint cond w/clamp & mount, oyster color, \$50 +shpg; **Conquest (Belden) 2-B** mic cables, (4) 25' lengths, factory m/f XLR ends, low-Z, brand new, \$15 ea or \$50/all +shpg. R Wertime, 207 Leitersburg, Greencastle PA 17225. 717-597-2213.

Neumann TLM-163 (little U87) voice-over condenser mic w/windscreen & shock mount, mint cond, \$995; **Symetrix 528** mic processor, \$350. JL Gill, Autumn Hill Studios, POB 316, Otto NC 28763. 704-524-9602.

Sony ECM 33-P electret condenser mics (2), like new, \$125 ea or \$225/both. D Meyer, D Meyer Prods, 1123 Del Mar, Santa Barbara CA 93109. 805-962-8273.

Neumann U47, \$3900; **U67**, \$3300; **U87**, \$1800; **KM83** or 84 pairs, \$1400; **KM88s**, \$950 ea; **RCA 77DX**, \$1200; **BK5**, \$700; **BK1A**, \$300. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.

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Broken EV mics, **RE-20**, **PL-20** for parts, any cond. D Rumble, 2918 N 47th Dr, Phoenix AZ 85031. 602-272-4724.

RCA 77 & 44 or other ribbon mics, dynamics & tube mics. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

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RCA 77-DX's, **44-BX's**, **WE KU-3A's** On-Air lights, recording lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.

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Eventide BD500, perfect, \$1795; **Gentner TS612** 6 line/exp, w/screenware pkg, excel, \$200; **Gentner TS 612** network interface, excel, \$275; **Gentner TS612** control surface, excel, \$275; **Telos One 120-1** hybrid w/rack mount, excel, \$410; **Best UPS L1 3KL**, \$1275. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

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Mars Radio sound effects, full set & music, 33-1/3 discs; full set Tanner Sound effects & music, 33-1/3 discs, BO +shpg. P Mueller, KUTA, 2575 N Radio Hill Rd, Blanding UT 84511. 435-678-2261.

Phase Linear 1000 dynamic range recovery system, \$100; Sony SQ2020 decoder, \$50. C Collins, Grunert Sound, 1977 S 74th St, West Allis WI 53219. 414-327-4141.

Phasemaster T-5000-A2 230V rotary phase converter; Moseley TRC-15A remote control, worked when removed from service. G Manning, WARK, 880 Commonwealth Ave, Hagerstown MD 301-733-4500.

RCA rack 7' x 19-1/2" deep brown, tapped equip, \$175; Gates rack 78" x 17" deep gray, tapped equip, \$150; Gray rack, 28" x 15", deep gray, tapped equip, \$50; rack, telephone relay, tapped, gold, \$20; Thunder Bay effects

library LP's, \$50; Gorman Redlich CD EBS decoder, \$25; (2) Symetrix SC-203 telephone hybrid, rack mtd, \$150 ea. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Sony CDK-3600 jukebox (auto disc loader), gd cond. J Vobbe, WLEW, 935 South Van Dyke Rd, Bad Axe MI 48413. 517-269-9302.

TC-4 digital delay, \$800; Illbruck white acoustical insulation, \$1/sq ft; Pelican cases, \$50. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Bedford Instruments Anemograph wind speed & direction instruments uses paper charts, complete large commercial unit, \$200/trade. B Kelly, WMKG, 4237 Airline Rd, Muskegon MI 49444. 616-733-4040.

Electr training course, 11 vol book set parts design console & DMM meter, \$700/BO. R Chrysatis, C&M Comm, 809-

1/2 Mulberry St #1, Williamson WV 25661. 304-235-2292.

17A Metal equip rack, 6' w/door, \$125; phasing cabinet for AM freq 1150, BO. C Boswell, Boswel Bdctg, PBO 1546, Orangeburg SC 29116. 803-536-1710.

Philips 22RH567 electr crossover 3 way speaker system w/built in pwr amps, motion feedback system, 22"H, 13"W, 11"D, matched pair, \$500. S Barker, KAK Prod, 1994 Sillick Terr, Santa Rosa CA 95404. 707-528-4055.

Simpson 260 Series 5P AC/DC voltage & ohm multimeter, complete w/manual, test wires & carry case, mint cond, \$160. S Barker, KAK Prod, 1994 Sillick Terr, Santa Rosa CA 95404. 707-528-4055.

ADC TT (Bantam) Patchbays, \$149; TT or 1/4" cords, \$10; new short MRL test tapes, \$229 for 2", 1/4", \$79; Gates dual stereo tube limiter, \$1200; Gates top level, \$595; Allen & Heath GL2 rack mixer, mint, 14x4, \$795; CBS Labs Audimax, \$400 ea; tube pre-amps, \$300-400; MX10 mixers, \$795. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.

Want to Buy

UTC transformer A, HA, LS Series A 16, 17, 18, 19; HA 100, 101, 104, 105, 106, 107, 137; LS 19, 21, 25, 40, 55, 56, 57, 61. M Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

Old radio tubes: 2 & 3 number digit types 27, 201A, 45, 56, 76 etc, new & used. Craig, 1-800-398-1146.

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Recdgs, 228 East 10th, NNYN 10003. 212-674-3060.

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Moseley TRL-1 telemetry return link rcvr, vgc, BO. C Yengst, WAWZ, Weston Canal Rd, Zarephath NJ 08890. 732-469-0991.

Sinclair V150-20S filter duplexer TX 161.900, rec 157.300, can be returned, \$150/BO; Motorola marine phone system, rec & transmit on ch 16 & 26, phone patch & duplexer, lots of spare parts, \$1500. B Kelly, WMKG, 4237 Airline Rd, Muskegon MI 49444. 616-733-4040.

SW Radio Hallicrafters's S-40B gen cov, \$200/BO; Motorola Mostar 16 chnl 35 W synth, 2-way, \$350/BO. R Chrysatis, C&M Comm, 809-1/2 Mulberry St #1, Williamson WV 25661. 304-235-2292.

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Ampex 440C FT mono w/2 Inovonics head amps, \$500; Otari 5050B 2 trk w/dbx NR, \$1000; Otari 5050B 8 trk w/dbx NR, \$1500; Otari 5050B 4 trk w/dbx NR. J Hill, Earmark Audio, POB 196, Vashon Island WA 98070. 206-463-1980.

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Ampex AG440B 4 trk 1/2" r-r R/P in custom console in gd cond, \$1000; Ampex AG350 mono r-r w/Ampex Solid State electr, in custom console, in gd cond, \$500. A Baker, Bdct Productions of America, 804-E 38th St, Indianapolis IN 46205. 317-925-7371.

Marantz PMD-222 pro mono cassette rcdr w/XLR balanced input, new in box, 3 avail, \$250 ea. B Petrucci, A-Z Music, 5132 Pebble Beach

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Studer B67 2 trk in Studer rolling cabinet, 7.5/15/30 remote & varispeed, \$1500. F Lanzer, Underground Sound, 77-74 76 St, Glendale NY 11385. 718-821-1427.

Studer B67 2 trk rack mount, 3.75/7.5/15 remote & varispeed, \$1000. F Lanzer, Underground Sound, 77-74 76 St, Glendale NY 11385. 718-821-1427.

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Tascam 58 OB w/roll around Tascam stand, excel cond, \$2500. H Fenster, Universal Rehearsal & Recdg, 17 W 20th, NNYN 10011. 212-929-3277.

Webster wire rcdr w/spools, working, \$200. C Collins, Grunert Sound, 1977 S 74th St, West Allis WI 53219. 414-327-4141.

Otari ARS-1000-C (3) stereo automation decks, \$500 ea +shpg; Belar FM RF amp, \$250; Schafer 800-T, \$800/BO +shpg. J Bahr, WVIS, Box 6556 Loiza Sta, San Juan PR 00914. 787-728-0364.

Otari MX-5050 2 SHDT, 2 trk r-r w/remote control & shpg carton, mint cond, \$725. D Meyer, D Meyer Prods, 1123 Del Mar, Santa Barbara CA 93109. 805-962-8273.

Otari MX5050 BII w/floor stand, never used, excel cond, \$2000/BO. C Singleton, WFUV, Fordham University, Bronx NY 10458. 718-817-4560.

Revox A-77, stainless deck plate, in oak cabinet, vgc, \$275 +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Ampex 4 trk tube deck, \$2500; stereo 351 (recond), \$1800; Akai Adam, new, digital 12 trk, \$3500; MM1000-16 w/new heads, \$4500; Otari MTR10-4, \$3500; Ampex ATR102s, search to cue, \$495; Ampex locator for ATR or 1200, \$895; MCI 110C-8, \$3.5K; Tascam 85-16 recond w/dbx, rc & loc, \$3K. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.

New & used Ampex 350 style tape transports, motors & parts, various prices. M Crosby, 408-363-1646.

Want to Buy

Scully 280 8 trk, 4 trk or 2 trk for parts, will buy as is. M Hughes, Fresh Start Music, 13500 Vandalia Dr, Rockville MD 20853. 301-962-6823.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

Ampex PR10 tape recorders. W Gunn, POB 2902, Palm Springs CA 92263. 760-320-0728.

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Want to Sell

Adtran ISDN interface ISU2X64-5, new, \$945; Ascend ISDN router, new, \$10,000; Circuit Werkes AC12 coupler bay w/3 cards, \$700. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Belden 9192, 1000' new 14 awg dbl shield 75 ohm stranded coax; 1000' new 12-4 plus ground pwr cable on spools, BO. Stephen, KWVA, POB 3157, Eugene OR 97463. 541-782-2901.

WE RENT
TELOS ZEPHYR
CCS "Prima" Coders
COMREX 3-line extender
Frank Grundstein Audio/Video Consultants
610-642-0978

Comrex Codec Buddy, perfect, \$1200; Comrex DXP.1 G.722, excel, \$950; Comrex TCB-1A telephone coupler, excel, \$95; Marti subcarrier gen STL data SCG-10, \$400; Marti subcarrier demod STL data SCD-10, \$400; Marti subcarrier gen 67 kHz SGC-10, \$400; Marti subcarrier demod 67 kHz SCD-10, \$400; Moseley subcarrier demod 110 kHz, \$200; Marti 67 kHz amp in mini box, \$20; Marti RMC remote control, \$500; Marti RR30/45D/30000 rcvr, 450.02 MHz, \$750; Racom 1300AP Morse identifier, \$50. J Coursolle, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

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Moseley MRC-1600 RCUs (2), vgc w/manuals, BO. C Yengst, WAWZ, Weston Canal Rd, Zarepath NJ 08890. 732-469-0991.

Motorola UDS UTA220K ISDN desktop terminal adapter, like new, \$450; CDQ 2000 ISDN codec encoder, like new, \$1500. D Cowley, KYXS/KJSA, 114 N Main St, Weatherford TX 76086. 817-594-9509 or 817-589-7312.

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Marti STL-10; Moseley MRC-1600 remote control. T Toenjes, KWIC, 800 SW Jackson, Topeka KS 66612. 785-437-6549.

Moseley TRC-15, BO. C Boswell, Boswell Bldg, POB 1546, Orangeburg SC 29116. 803-536-1710.

Telos Zephyr 9100 single chnl V.35 version w/updated software, layer 2 & 3 compatible w/Adtran 128 terminal adaptor & cabling, \$2850. JL Gill, Autumn Hill Studios, POB 316, Otto NC 28763. 704-524-9602.

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Want to Sell

1 kW daytimer, upstate NY. 315-891-3110.

10K AM in North Central AZ. 520-774-0864.

tridges, \$1 ea. J Coursole, WPKR, 2040 Waukau Ave, Oshkosh WI 54904. 920-236-4242.

Microtran table top tape degausser, handles 1"-2" tapes, \$150/BO; mechanical tape timers, Lyrec & Seike/Spotmaster, new & used. M Crosby, 408-363-1646.

Want to Buy

AM stereo rcvrs for home or studio use, working cond. T Peterson, WTKA, Bodx 300, Ann Arbor MI 48106. 313-930-0107.

TEST EQUIPMENT

Want to Sell

Sencor SL750I UHF/VHF/FM signal level meter w/case & charger, excel cond, \$600. AJ Anello, WFLA, 1809 E 4th Ave, Tampa FL 33605. 813-241-2217.

Tektronix 475 dual trace oscilloscope 200 MHz, extra clean, \$550. C Dollard, LKR Comm, 4608 Radio Tower Rd, Van Buren AR 72956. 501-474-2156, between 3-5PM CST.

Philips PM 3263 100 MHz oscilloscope w/dual delay timebase & built-in freq event counter, calibrated, w/full operation/service manual, mint cond, \$500; Phillips PM3215 50 MHz dual trace scope w/o built-in counter, \$300. M Shea, Precision Rcdg, POB 1651, NUNY 10276. 212-989-2684.

Tek 585A o-scope w/type, B, 53/54G, (2) 82, 81A, 1A4 plug-in's & plug-in adapter, various probes & access, 202-1 scope cart, excel cond, manuals, \$4000/BO. R Chrysatis, C&M Comm, 809-1/2 Mulberry St #1, Williamson WV 25661. 304-235-2292.

Want to Buy

Potomac FIM-41 AM field strength meter; Delta RG-3 or RG-4. R Sweatle, Sweatle Bldg, POB 7172, Kennewick WA 99336. 509-586-8627.

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Want to Sell

EIMAC, RCA, AMPEREX, 3-500, 3CX1500A7, 4-400, 4X150A, 4CX250B, 572B, 807, 833C. Westgate 800-213-4563.

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3CX2500H3	4CX3500A	EF86
3CX3000A7	4CX5000A	EL34
3CX3000F7	4CX5000R	EL509
3CX4500F3	4CX7500A	SV83
3CX6000A7/YU148	4CX10,000D	SV300B
3CX10,000A3	4CX12,000A	SV572-3
3CX10,000A7	4CX15,000A	SV572-10
3CX10,000H3	4CX15,000J	SV572-30
3CX15,000A3	4CX20,000A	SV572-160
3CX15,000A7	4CX20,000B	SV6550C
3CX15,000H3	4CX20,000C	SV6L6GC
3CX20,000A7	4CW10,000A	SV811-3
3CW20,000A1	4CPW10,000R	SV811-3A
3CW20,000A7	4X150A	SV811-10
3CW20,000H3	5CX1500A	SV811-10A
3CW20,000H7	5CX1500B	TH5-4
3CW30,000H3	572B	TH5-6
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4CX250BC	6AS7G	TH6-3A
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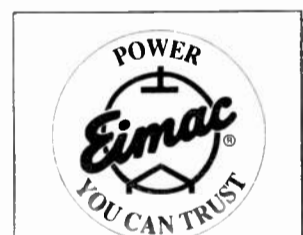
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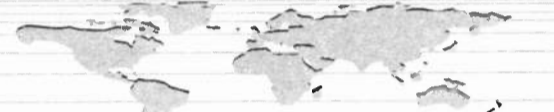


Circle (228) On Reader Service Card

Want to Buy

Jennings CADC-30 10 kV variable vacuum capacitor. J Bahr, WVIS, Box 6556 Loiza Sta, San Juan PR 00914. 787-728-0364.

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Circle (231) On Reader Service Card

TAPES/CARTS/REELS/CD'S

Want to Sell

Assorted cart racks, all in gd cond, many brand new, BO; Fidelipac Gold & Grey carts, varied lengths, gd cond, \$1 ea. C Yengst, WAWZ, Weston Canal Rd, Zarephath NJ 08890. 732-469-0991.

Audiopak Black, 4-6 min carts, BO +shpg. Stephen, KWVA, POB 3157, Eugene OR 97463. 541-782-2901.

Dynamax ESD-10 splice locator, \$500; cart rack Carousel holds 200 carts, \$150; cart rack wall blk plastic 36 slot, \$10; (2) cart rack, wall, wood, 84 slot, \$50 ea; (3) cart rack, wall, wood, 108 slot, \$50 ea; AA-3 tape car-

ACTION-GRAM

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Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations and recording studios only. All other end users will be charged. Simply send your listings to us, following the example below. Please indicate in which category you would like your listing to appear. Mail your listings to the address below. Thank you.

Please print and include all information:

Contact Name _____
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 Company/Station _____
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I would like to receive or continue receiving Radio World FREE each month. Yes No

Signature _____ Date _____

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 - K. Radio Station Services
 - B. Commercial FM station
 - G. TV station/teleprod facility
 - C. Educational FM station
 - H. Consultant/ind engineer
 - E. Network/group owner
 - I. Mfg. distributor or dealer
 - J. Other _____

II. Job Function

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- G. Sales
- B. General management
- E. News operations
- C. Engineering
- F. Other (specify) _____
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 Brief Description: _____

 Price: _____

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

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- 5 KW AM 1982 Continental 315F
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- 50 KW AM 1978 Continental 317C-1
- 50 KW AM 1981 Continental 317C-1
- 50 KW AM 1981 Harris MW-50B
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TURNTABLES

Want to Sell

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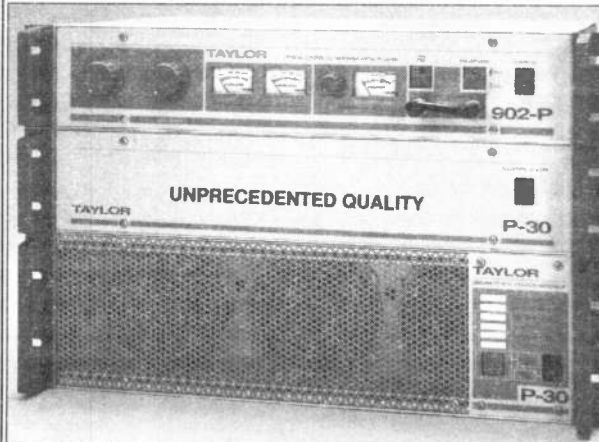
Gates BC-250-GY 250W AM, \$900/BO; Harris BC-10H 10 kW AM, \$14,000; Gates FM-1-C, 1 kW FM, \$1000/BO. T Toenjes, KWIC, 800 SW Jackson, Topeka KS 66612. 785-437-6549.

Gates TE-3 FM exciter on 104.1 w/Orban card, \$450; Harris MX-15 FM exciter on 106.1, \$1300 +shpg. J Bahr, WVIS, Box 6556 Loiza Sta, San Juan PR 00914. 787-728-0364.

Marti M-30b RPU tuned to 161.730 w/spare 6252 tube w/receiver (tube type), cond unknown on rcvr but xmtr works fine, \$400. JL Gill, Autumn Hill Studios, POB 316, Otto NC 28763. 704-524-9602.

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2KWatt	\$38,900		

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Want to Buy

McMartin AM/FM xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

BROADCAST EQUIPMENT

USED: FM/AM Transmitters, RPU's, STL's, FM Antennas, Consoles, Processing, etc. CONTINENTAL COMMUNICATIONS, 3300 Chippewa, St. Louis MO 63118. 1-800-664-4497 FAX: 314-664-9427.

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1-9 col inch (per inch)	1x	3x	6x	13x
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Distributor Directory	\$70	68	65	58
Professional Card	\$115	113	110	99
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Classified Line Ad	\$175			
Blind Box Ad			\$2.00 per word	\$16 additional

To compute ad costs: Multiply the number of ad inches (columns x inches) by the desired rate schedule for your per unit cost. Example: a 3" ad at the 1x rate is \$225, at the 3x rate \$219, at the 6x rate \$210, at the 12x rate \$189, etc.

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Denon Electronics, a leader in Professional Audio products is looking for a Technical Support/Sales Assistant person. Minimum requirements include: Resourceful, technical problem solving skills; Excellent oral and written communication skills; Operational and technical exposure to any segment of the professional audio industry; Basic understanding of electronics; Windows and/or Mac experience. Sales experience a plus. Travel required. Willing to relocate. Contact: Mark Kaltman, National Sales Manager, Denon Electronics, 222 New Road, Parsippany NJ 07054. Tel: 973-882-7469 Fax: 973-808-1608.

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Support station's current and future Local Area Networks (NetWare 4.1/MS Mail 3.5) and related systems. Provide studio and high power AM/FM transmitter maintenance. SBE certification and or major market experience is required.

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Setup and operate remote broadcast equipment (some travel required). Ability to troubleshoot and resolve basic technical problems. Knowledge of basic studio and transmitter maintenance procedures. SBE certification a plus.

Send Resumes to: WABC/WPLJ Radio, Linda Wnek, 2 Penn Plaza NYC, NY 10121 or Fax (212)947-9510 or jobs@plj.com

ON AIR PERSONALITY/ DISC JOCKEY:

Jersey's Rock Radio is looking for a few good local part-timers. Wanna rock with the best? Union Shop, cool working conditions. T&R to Lenny Bloch, PD, WHDA, 55 Horsehill Rd, Cedar Knolls NJ 07927. Minorities encouraged. WDHA is an Equal Opportunity Employer.

CHIEF ENGINEER

For a large Los Angeles audio production facility. Must have extensive experience in studio maintenance, digital work station operation and maintenance, as well as computer network skills. Position requires experience in designing and building new studios and familiarity with all building support systems i.e. air, power, etc. Strong people skills and work ethic a must. Full benefits, moving costs and a very competitive salary discussed upon formal inquiry. Send resume to: Radio World, POB 1214, Falls Church VA 22041. Attn Box #97-10-15-1RW.

THE UNIVERSITY OF TENNESSEE SEEKS CHIEF ENGINEER

for WUOT FM. Must hold a valid FCC license, two or more years formal electronics training (or military equivalent) with four years field experience, one year of which must be at a broadcast station using high power FM transmitters (20,000 watts or more). Must have strong computer skills including, but not limited to a word processing package, technical packages; internet access; ability to manage WUOT's LAN (special sysop training will be provided); ability to troubleshoot professional electronic audio equipment; exercise good judgement in an emergency situation; have a thorough knowledge of operation and maintenance procedures for 40,000 watt transmitter plants (applicant will be asked to demonstrate knowledge by making or recommending certain adjustments to transmitters, either or both auxiliary CCA 15 kilowatt or twin Harris 20 kilowatt main transmitters.); ability to adjust to a flexible work schedule that includes non-standard days and periods of on-call transmitter watch which may include weekends and holidays; and have a knowledge of safety procedures needed while working with high-powered transmitting equipment. Must have good communications skills and be in good physical health in order to access and perform direct inspection of antennas. Professional references required. Salary: \$31,500-38,500 DOQ&E. Excellent benefits, including drive-home use of four-wheel drive vehicle. Contact Regina N. Dean, WUOT, 209 Communications Building, University of Tennessee; Knoxville, TN 37996-0322. (423) 974-5375. Respond immediately If interested. The University of Tennessee is an EEO/AA/Title VI/ Title IX Section 504/ADA/ADEA

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Interactive Hot Mix DJ avail for remixes, mix shows & custom mixes, formats include House, Techno, R&B, Hip Hop & Top 40, disco/retro, 9 yrs radio/prod & club exper. Dave, POB 7237, Ann Arbor MI 48107. 888-981-5321.

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<p>1 Type of Firm (check one)</p> <p><input type="checkbox"/> D. Combo AM/FM stations</p> <p><input type="checkbox"/> A. Commercial AM station</p> <p><input type="checkbox"/> B. Commercial FM station</p> <p><input type="checkbox"/> C. Educational AM/FM station</p> <p><input type="checkbox"/> E. Network/group owner</p> <p><input type="checkbox"/> F. Recording Studio</p> <p><input type="checkbox"/> K. Syndicators/Radio Station Service Providers</p> <p><input type="checkbox"/> G. Audio For Video (TV Station/ Teleprod Facility</p> <p><input type="checkbox"/> H. Consultant/Ind Engineer</p> <p><input type="checkbox"/> I. Mfg, Distributor, or Dealer</p> <p><input type="checkbox"/> J. Other</p>	<p>4 Equipment/Services Purchases in the Next 12 Months (Check all that apply)</p> <p><input type="checkbox"/> A. Transmission, STL/RPU</p> <p><input type="checkbox"/> B. Antennas, Towers, Cable</p> <p><input type="checkbox"/> C. Audio Procession Delays</p> <p><input type="checkbox"/> D. Telco, Codecs, Remote, Field, Audio</p> <p><input type="checkbox"/> E. RDS/RBDS & Subcarrier Equipment</p> <p><input type="checkbox"/> F. Delivery Systems & Satellite Equipment</p> <p><input type="checkbox"/> G. Digital Editing & Production</p> <p><input type="checkbox"/> H. Live Assist, Automation</p> <p><input type="checkbox"/> J. Consoles, Mixers, Cabinetry</p> <p><input type="checkbox"/> K. Headphones</p> <p><input type="checkbox"/> L. Microphones</p> <p><input type="checkbox"/> M. Monitors/Speakers</p> <p><input type="checkbox"/> N. Studio Audio Sources & Switching</p> <p><input type="checkbox"/> O. Syndicated Programming</p> <p><input type="checkbox"/> P. Test, Monitoring & Remote Control</p>
<p>2 Job Function (check one)</p> <p><input type="checkbox"/> A. Owner/President</p> <p><input type="checkbox"/> B. General Management</p> <p><input type="checkbox"/> C. Engineering</p> <p><input type="checkbox"/> G. Sales</p> <p><input type="checkbox"/> H. Programming/News</p> <p><input type="checkbox"/> J. Promotion</p> <p><input type="checkbox"/> F. Other</p>	<p>5 Equipment Budget For Next 12 Months</p> <p><input type="checkbox"/> A. Less than \$25,000</p> <p><input type="checkbox"/> B. \$ 25,000 - 99,999</p> <p><input type="checkbox"/> C. \$100,000 - 249,999</p> <p><input type="checkbox"/> D. \$ 250,000 - \$499,999</p> <p><input type="checkbox"/> E. Over \$500,000</p>

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