

Vol 21, No 19

Radio's Best Read Newspaper

Blum Out After 50 Years

by Sharon Rae

ANNAPOLIS, Md. Wanted: buyer for legendary Annapolis AM radio station. Interested parties must be "technically, financially and morally qualified."

"I'm not letting this thing go to razzlers and dazzlers or people who've got gimmick ideas or dirty stuff," said Morris H. Blum, president and general manager of WANN(AM). "When you've been in a place 50 years, you owe your public something.'

After 50 years, 5 months and 26 days of broadcasting under the same ownership, Blum signed off on WANN for the last time July 6. The 88-year-old Blum cited personal reasons for his decision to shut down the station.

(W)hile age is somewhat a factor in my decision," he said, "I'm not the youngest guy in the world, but thank God I do have a lot of drive left yet. But it has to go in other directions ... I've been married to the same girl for 52 years and my wife is extremely ill. It's really the major factor that led to my decision to retire."

Blum said he has all intentions of staying on to continue his "35-someyear" tenure as Maryland's State Emergency Communications Chairman.

Blum, a retired lieutenant commander with the U.S. Naval Reserve, founded WANN in 1947.

'The idea for (the station) was born in the Mediterranean on the way to the invasion of Salerno in World War II," he remembers. "I knew we were going to

One of the many awards Morris Blum, right, garnered with WANN was the Silver Patrick Henry Medallion for patriotic achievement 'for

his distinctive leadership over many years in developing better relations among the citizens of the greater Annapolis area.

win the war, and I said 'if I live through this one, I'm going after radio."

Before the war, Blum worked for the Federal Communications Commission in the Radio Intelligence Division. working with the mission: "Detection,



Girde (1) On Reader Service Card

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location and suppression of subversive activities using radio to communicate with the enemy." Blum also served in the merchant fleet as a ship's communications officer using "spark-gap" transmitters and sending Morse code.

WANN, a 10-kilowatt daytimer,



signed on at 1190 kHz in 1947 as an ethnic station. According to Blum, WANN was one of the first 37 stations See WANN, page 8 🕨

In Step With NAB Chairman Ferguson

Richard Ferguson, formerly of NewCity Communications, now Cox Radio, recently became chairman of the joint board for the National Association of Broadcasters, where he also has served as chairman of the radio board. Editor in Chief Lucia Cobo spoke with Ferguson for RW.

RW: Tell us about your early career in radio; how you started and what kept you here.

Ferguson: I got into radio when I was 14 years old and won a contest on the radio. I went into the station to pick up my prize and I saw the disc jockey and thought it was really neat. I started hanging around the radio station, and when I turned 16, I was able to get a job there in the summer time.

RW: On the air?

Ferguson: My first job on the air was doing the last newscast of the day on a daytimer. ... They let me do three See FERGUSON, page 6

SFX Broadcasting Deals **Direct for Equipment**

Major Group Owner Buys From Manufacturers, Eliminating Dealers From the Process

by Bob Rusk

LITTLE ROCK, Ark. SFX Broadcasting will save over \$1 million this year by making all major equipment purchases directly through manufacturers, according to SFX Vice President of Operations and Director of Engineering Stephen McNamara.

That is good news for SFX, but not for the dealers that McNamara will bypass. He is convinced other radio station groups will follow suit, as they buy more and more stations.

Touchy subject

"If you have groups with a couple of hundred stations - and I think that's what it's going to be — there will be eight or nine people like me," said McNamara. "That's going to be the vast majority of the business.'

This is understandably a touchy issue. Many long-established companies could potentially be squeezed, if McNamara's World Radiprediction comes true.

McNamara's prediction comes true.

"A lot of little people may get hurt in this," McNamara acknowledged. "But that's the way the business is going. I have to get the lowest prices; the best way to do it is to go right to the manufacturers and say, 'Listen, I'm big and I have a lot of money. We're going to spend a lot of dough. I want to give you my business, but you're going to have to give me your absolute bottom-line price."

While buying equipment direct. particularly big ticket items, is nothing new, other engineers note there are times when a dealer charges less than a manufacturer. Susquehanna Radio Corp. Vice President of Engineering Charles Morgan said his company splits purchases between manufacturers and dealers.

"It's wherever we get the combination of the best price and the best service, after we determine the quality of the product we want," Morgan said.

Morgan, who was previously a partner See PURCHASING, page 20

Newswatch

AMs Still Fighting for Parity

WASHINGTON The American AM Community Broadcasters Association (ACAMBA) asked the FCC to begin a rulemaking to allow AM programming to air on FM translators in some instances.

"One great disadvantage faced by AM stations is their ability to compete as a result of weak nighttime signals," wrote ACAMBA in its petition to the FCC. Giving AM stations the ability to deliver their signals over FM translators would cure this "discrepancy." Traditionally, the FCC has only allowed AM signals to be aired on FM transla-

tors in limited cases, usually in isolated areas (see RW, July 9)

The FCC has not yet made a decision whether it will begin a rulemaking on the issue. NAB has opposed the change in the past, but had no position on the new request.

FCC Begins Process to Easier **Tower Zoning Restrictions**

WASHINGTON The FCC has begun a rulemaking procedure to ease tower location restrictions. The point is to make it easier and faster for broadcasters to get new towers built or modify

existing towers, so that TV stations can meet the 2006 target date for digital broadcasting. (The changes would affect radio stations on those towers as well.)

The FCC has asked for comments on circumstances where state and local tower zoning restrictions are cumbersome so that eventually the commission can decide when to allow federal rules to supersede local tower rules. Both NAB and Maximum Service Television (MSTV) asked for the change. NAB and MSTV have proposed requiring state or local action within 21 days on a tower modification request, and within 30 days for a request to move, consolidate or increase height of an existing tower. Comments on MM Docket 97-182 are due Oct. 30.

RTNDA Seeks Appeals Court Action; FCC Deadlocks on Personal Attack, Political **Editorial Repeal**

WASHINGTON The Radio-**Television News Directors Association** (RTNDA) was preparing to ask the U.S. Court of Appeals for the D.C. Circuit Court again (in late August) to force the FCC to repeal the political editorial and personal attack rules. RTNDA and NAB want the rules eliminated, calling them vestiges of the Fairness Doctrine, which was abolished by the commission See NEWSWATCH, page 3

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AUDIOARTS' ENGINEERING

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News.

Associate editor

RW Editor in Chief Lucia Cobo announced the appointment of three new editors to the staff of Radio World.

News editor

Leslie Stimson has joined **RW** as News Editor/Washington Bureau Chief. Stimson has 17 years of news experience, including work for WMAL (AM) and WAMU(FM) Washington, the Voice of America, the former Maryland News Network and

Public Minnesota Radio. She worked in print as an editor for McGraw-Hill. and NAB's RadioWeek and NAB Daily News. As senior editor/Washington bureau chief for Radio Business Report. she covered radio regulatory issues, including passage of the Telecommunications Act of 1996.

At **RW**, she will coordinate news coverage and report on radio

Assistant editor that Susan Gary has assumed the position of assistant editor, responsible for the Buyer's Guide section of RW. A graduate of George Mason University, she joined IMAS Publishing in 1996 as editorial assistant. for ways to hone this important section of

Leslie Stimson

Newswatch

NEWSWATCH, continued from page 2

10 years ago.

The FCC was under court order to "make significant progress" in resolving whether to repeal or change the personal attack and political editorial rules before Aug. 7. Because the FCC deadlocked (2-2) in a vote on the issue, the RTNDA intends to ask the court to take action again.

Under the political editorial rule, stations must notify a candidate's representative within 24 hours of airing an editorial either for or against that candidate and offer free time for a response. The personal attack rule comes into play when an identified person's character or integrity is attacked during a discussion of a controversial issue that's important to the public. In that case, the station must notify the attacked person or group within a week and offer free time to respond.

Outgoing Chairman Reed Hundt and Commissioner Susan Ness supported launching an inquiry. Ness, the only current member who will remain on the commission, said the current record didn't justify repealing the rules or provide enough information to decide how they should be changed. This issue, she said, as well as reviewing digital TV public interest obligations will be one of the "first major responsibilities" of the new commission.

Outgoing Commissioners Rachelle Chong and Jim Quello opposed Hunt and Ness. Quello was "disappointed" there wasn't a final resolution to the issue, as a repeal was first proposed 14 years ago. Chong said the rules do not promote "robust public debate," but instead, have a chilling effect on broadcasters who want to express political views.

issues at the FCC, DOJ and Capitol

Chris Hamaker joins RW as

Associate Editor, overseeing the

Features and Running Radio sections

of the newspaper. He joined IMAS

Publishing in 1996 as Special Projects

Coordinator, ushering the NAB '96

Daily News, the 1996 World Media

Expo News and the NAB '97 Daily

Cobo also announced

"We continue to look

RW to inform our

The Clinton Administration opposed repeal. In a letter to Hundt, National Telecommunications and Information Administration (NTIA) Director Larry Irving argued that rather than getting rid of the rules now, the commission should wait and consider the rules in a broader context when it reviews broadcasters digital public interest standards.

Possible Sale for ARS?

NEW YORK American Radio Systems (ARS) is considering steps 'to maximize shareholder value,' including a possible sale, the company said in late August. ARS CFO Joseph Winn told the Wall Street Journal that ARS had engaged CS First Boston "to explore options at this point and not simply pursue our growth" through acquisitions. Winn said natural suitors would include CBS Radio and the soon-to-beformed Chancellor Media, the number one and two radio group owners, respectively.

ARS owns about 100 stations and analysts expect the company to report about \$440 million in revenue this year. That figures includes an estimated \$40 million in revenue from operating communications towers. ARS entered the tower business in early 1996 and owns about 650 towers in the Northeast, mid-Atlantic, Texas and California.

World Radio History

readers of trends in the equipment and technology of radio," Cobo said. "These appointments are part of the

growth of Radio World and its commitment to the engineers, owners and



Susan Gary

Laurence Norjean Named President/COO Of Inxsys Broadcast

Laurence Norjean has been named president/COO of Inxsys Broadcast Networks, the crreator of RadioDate, a new voice personals interactive-matching service.

Norjean will continue to oversee the distribution of RadioDate as well as develop other "innovative" products for the company.



Chris Hamaker

already have in place.

managers who run radio stations. Our

new editors complement the team we

Managing Editor Paul McLane has

extensive experience in the radio equipment and vendor side, as well as broadcast journalism. Technical Editor Al Peterson covers technology and the special problems of the production studio. It's an excellent team."



3

WMZQ Duo No. 1 in Country

It is a rainv Wednesday morning and the rush hour is twice as bad as usual. You're sitting in your car, keeping the nose of your car firmly glued to the spot two inches behind the rear bumper of the car in front of you. If you don't, the car that's trying to work its way illegally into your spot will pounce on that valuable blacktop real estate and push you 20 feet back in your forward progress.

They are the kind of ambassadors radio needs in all the communities it serves across the country.

You begin to feel like one of those aggressive drivers you hear so much about in the news. Ah, the news. Turn on the radio and flip to your favorite station. If you are in the nation's capital, chances are that your favorite station is WMZQ(FM) on 98.7 MHz. Formerly a Viacom station, WMZQ is in the process of becoming a Chancellor Media station (it probably happened as this was printing).

Gary Murphy and Jessica Cash are talking comfortably about something and news and traffic updates aren't far behind. You begin to relax and settle in for some favorite Country tunes. Traffic doesn't seem so bad anymore ... things must be moving up ahead. Gary teases Jessica about her training for the Marine Corp Marathon. It seems the rigors of training 42-plus miles a week are taking their toll on her toenails. You're laughing so hard by the time the car in front of you moves that the offending driver slips in ahead of you. You don't care, in fact you wave it in.

And so another morning goes by in Washington and another show for WMZQ's "Murphy and Cash."

What makes them so good in a button-down town like D.C.?

As we journalists would say, they work the beat. As Jessica Cash says, "About our favorite thing to do is get out into the community. That makes a big difference in Washington." Gary Murphy chimes in: "Then they can put a face to the voice.

"And it helps us against the competition because of all the syndicated shows now," he says. "Imus can't be here, Stern can't be here, Joyner can't be here. But we are here and it helps us a lot.'





Gary Murphy

A look at Gary and Jessica's record reveals that they are too modest. They first teamed up in February 1995 and in their first full ratings period went to No. 1 in the 25-54 age demo for Spring 1995. Besides helping drivers live through their morning commute on the mean streets of the Washington metropolitan area, the morning team is part of the fundraising efforts for the St. Jude Children's Research Hospital (to the tune of \$2 million in the two years), the American Red Cross, So Others Might Eat, the March of Dimes, The American Heart Association and other charities.

Technical Editor Al Peterson and I spent an hour with the duo in the studio while the were on the air recently. They are as nice in person as they sound on the air. Professional, fun, genuinely funny and oh so friendly! And I'm not just saying that because they are part of one of my favorite radio stations, they really are nice. They are the kind of ambassadors radio needs in all the communities it serves across the



WMZQ's Gary Murphy and Jessica Cash parlay an obvious friendship into a comfortable on-air sound that draws Washingtonians to their morning radio show.





so. Gary Murphy and Jessica Cash will accept the Country Music Association Broadcast Personality of the Year Award (major market) on Wednesday, Sept. 24.

CMA Executive Director Ed Benson stated it best when he wrote: "The judging process for the CMA broadcast awards makes them the most respected and coveted in the industry. ... Radio is such an integral part of our industry and we are proud to recognize the excellence these stations and personalities have exhibited."

The awards ceremony will be broadcast live on CBS and will be hosted by Vince Gill.

Congratulations to both of them for

OPINION-

If you have comments for Radio World, call us at (800)336-3045 or send a letter to Readers Forum (Radio World, P.O. Box 1214, Falls Church, VA 22041 or e-mail 74103.2435@compuserve.com or MCI Mailbox #302-7776). All letters received become the property of Radio World, to be used at our discretion and as space permits.

Cut the static

Dear **RW**.

I am happy to read of the formation of the American Community AM Broadcasters Association, or ACAMBA (July 9, pages 5 and 13). I hope they will give some thought to the following:

I worked after school at a radio sales and service shop in New Hampshire, back in the 1935-37 period. Interference from electric machinery of all sorts was a problem for AM reception. It was called "static," a word hardly used today.

My boss told me then that a law or regulation was passed to force manufacturers of electric equipment to filter out radio interference at the source.

Back in those days, one could ride through the country and listen to every milking machine, for miles. Nearer to a



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town, the spinning mills contributed to the cacophony. One knew when one was nearing a doctor's office or hospital, as the diathermy and other machinery chewed up the AM signals.

Manufacturers of vacuum cleaners, mixers, toasters and other light household machinery began filtering out the interference. Gradually, AM listening became a pleasure. However, in the past 10 years, I have noted the return of unfiltered machines, causing havoc again with AM, especially a little distance from the radio transmitters. I think AM broadcasters should take note and reinforce the regulations that cleaned up the airwaves back in the '30s.

I have written twice to the FCC about this, but assume the letters were lost in Washington's Foggy Bottom. The prob-lem is getting worse. This is one reason FM has lured more listeners, as its signal is clearer. AM is in real trouble, out in the countryside away from the transmitters. Flashy studios, digital equipment, satellites and push-button operation are worthless in the face of our old nemesis "static.'

> George Michael "Antiques with George Michael' Merrimack, N.H.

Don't put away your vacuum

Dear RW.

I found the idea by Frank Folsom, mentioned in the July 23 Workbench, quite interesting, but I must put in a few words of caution.

Although there is a valid use of compressed air inside a transmitter, let's not forget the reason we do routine maintenance inside of the transmitter cabinet: to clean out dirt, dustballs and dead insects, not just to blow them around to another part of the cabinet.

A vacuum cleaner is an essential piece of equipment in transmitter maintenance, and should not be replaced with a diver's tank. If you can't find an AC outlet nearby for the vacuum cleaner, buy an extension cord long enough to do the job.

Tom Patterson, KB6COP Maintenance Engineer CBS Radio KNX(AM)/KCBS-FM Los Angeles

Implications of WDCU

Dear RW.

Regarding your recent coverage of the proposed sale of WDCU(FM) in Washington to a group affiliated with Salem Communications:

This sale raises questions, all right, but primarily about the ripple effects of consolidation caused by the Telecommunications Act of 1996. Jazz is not the only niche format being threatened.

An example is the sale of WCIE in Lakeland, Fla., last year to Moody Bible Institute. Its up-tempo Christian music format appealed to young people and families into their 40s. Its signal reached both the Tampa Bay and Orlando metropolitan areas. WCIE had 30,000 people on its mailing list. Its last fund raiser

World Radio History

Put AES In Your **Budget**

Radio production personnel continue to be at a disadvantage when it comes to education on the latest equipment trends. Many stations do not even subscribe to the audio production magazines and do not send their production staff to the trade shows. You usually can find the chief engineers and the managers at the spring NAB convention. And at the fall NAB Radio Show, you can find the programmers and again the managers, but not

many production technicians.

That leaves the Audio Engineering Society (AES) annual convention. This large show can be the conclusive one for production personnel. After all, companies are showing the latest versions of digital audio workstations, processors, hard disk recorders, DAT, compression boxes, cart replacement, amplifiers, consoles, monitors, and microphones. In short, everything a radio station uses and plenty of it.

Traditionally, attendance at the AES show reveals few radio station badges.

Yes, the production staff is always busy, but not including at least one station representative from the department in trade show plans seems unwise. Who better to know than the person who uses the gear as to what features make the department more productive (within the station's budget, of course)? Although the chief engineer can do a good job of selecting equipment and reporting back from the NAB show, there is no substitute for direct, hands-on tryouts by the production folks.

Do not let decisions to purchase multi-thousand dollar workstations occur without informed input from the production staff. The combination of good audio and good creative will have an impact on your bottom line. The ads, liners and IDs can enhance your image and help reduce tune-out.

To complete the equipment education process, at the very least, station or station group production directors should be sent to the trade shows along with the chief engineer, so they, too, can get an idea of the trends. After all, an enlightened production staff enhances the bottom line; a station will get better quality commercial spots, jingles and on-air audio. -RW

generated more than \$800,000 for its 1996 budget.

Yet the highly successful WCIE was bought out. Why? Because Paxson Communications was allowed to own more stations in the Tampa Bay area after passage of the Telecom Act.

WKES (now WILV) in the Tampa Bay area has a powerful signal on the commercial part of the band, and was owned by Moody Bible Institute. Paxson offered Moody a substantial amount of money for the frequency, and they sold. Moody, wishing to maintain a presence in the area, went shopping for a bargain, and unfortunately targeted

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WCIE. They did this without regard for the tens of thousands of teenagers and young families who loved and depended on WCIE.

The WCIE owners were offered so much money by Moody that they quickly sold. The result is one more generic soft rock station, and the loss of a very popular niche format in the Tampa Bay area. Former WCIE listeners are not served by Moody Bible Institute programming, which is targeted toward a much older, much more conservative audience. The two formats are as distinct as classical and rock.

The Telecom Act is allowing large conglomerates (including religious) to absorb smaller stations wholesale, creating ripple effects that eliminate all kinds

of niche formats. What results is a homogenous blend of X percent rock, Y percent country, and Z percent talk, with all other formats deemed "unprofitable." The needs of niche format fans are ignored ruthlessly, even by religious organizations.

If you dig far enough beneath the surface in the WDCU sale, you will probably find the ripple effects of the Telecommunications Act of 1996 somewhere, as they were in the WCIE sale.

Bruce Carter Holly Hill, Fla.

EDITOR'S NOTE: The WDCU sale to Salem has fallen through. There is now a deal in place for the purchase of WDCU by C-SPAN.

Happy birthday to Sorenson

Dear RW,

I was very happy to see your article (Aug. 6) on the 25th birthday of Sorenson Broadcasting! I have been with the company for about four years, and can say this is the best group to work with. Dean not only cares for the stations themselves but for the people that work there as well. I am proud to be in the radio business, and to work with Sorenson Broadcasting makes it even better.

Here's to another 25 years. Keep up the great work, Dean!

> **Robert** Pfund Evening Announcer/Music Director KYNT(AM) Yankton, S.D.

Correction

In our Aug. 20 issue, part of the story "How Healthy Is Your RF Plant?" was omitted inadvertently. We reprint the conclusion of the piece on page 50 of this issue.

Ferguson Sees Radio's Promise

FERGUSON, continued from page 1 minutes of headlines and then they played the national anthem. There was very little risk involved. I also sold time and just learned the business.

Later, I worked my way through college, in the summertime as a disc jockey at a station called WPTR in Albany and I got to do more than the last newscast before the national anthem.

I went to school in Schenectady New York at Union College and I also ran the college station. ... That was a great experience and I went into college thinking that I really liked radio but I would have to get a job in a profession that would make my parents happy. I left college ready to tackle the radio world.

That's what I wanted to do. I realized I would have more outlets for my creativity if I was in a position where I could work on the sales side, and improve other people's businesses. I like working with clients. I like the whole notion of trying to solve their business problems.

And as I progressed in my career, I saw the opportunities that radio had to make things better for its listeners, the community and for the advertisers. We can do a lot.

I don't think I realized all of that at the time, some of that is retrospective. That's the reason I've stayed in it.

RW: Can you talk about NewCity?

Ferguson: At NewCity we worked hard to build a very cutting edge radio company that was built on the premise of focusing on people: Listeners, advertisers, and employees. And the people that we served in our communities. That was a winning way and we basically produced a lot of great radio.

We have an expression in our company that you not only get work done through people, but that you get people done through work.

We had a great run, and as the consolidation process started recently, we at NewCity kept thinking and still believing that it was the right way for radio to go.

One of the things NewCity did was to provide a platform for some very talented broadcasters who went on to other companies.

One of those people was Bob Neil, who left NewCity and joined Cox, and rapidly became head of all of Cox's radio stations. Bob used a lot of what he helped create and learn at NewCity from the other team members, incorporated all that into Cox radio



Richard A. Ferguson

So when we had to make a decision as to whether or not to remain independent and try to grow the company by finding new sources of capital to buy radio stations or join somebody else, we took into account that a lot of the vision and value of our company existed at Cox.

RW: Let's talk about consolidation. As an entrepreneur, your thoughts on radio? Does the new structure of the business allow for people like yourself to come in now, and grow in the business?

Ferguson: There are different levels of entrepreneurship. I think it would be fair to say that Mel Karmazin is an entrepreneur. Scott Ginsburg is an entrepreneur, Steve Hicks is an entrepreneur. So, maybe it is entrepreneurism on a grander scale. Randy Michaels is an entrepreneur. You have a generation of radio entrepreneurs who are going to the next level.

RW: Is there an opportunity for a starstruck kid to get into radio and rise through the ranks and build his or her own group?

dous need right now in the business for talthere are fewer jobs for general managers. That is true.

But there is a whole new job of headplace. And you need different people runsales jobs that were not there before. that really want to expand their horizons and they don't have to leave the industry to do that.

I think that the opportunities are there, they are just different. Is the opportunity there for someone to build a radio company in the same mold that I and some other people did in our time? Probably not as great, no. But is it extinct? By no means.

I see and hear stories of people now radio stations that have gone up dramatiactually get something out of.

One of the reasons people went for this consolidation is that they felt it would equip radio to compete better in the wild and woolly, highly deregulated, new industry telecommunications sector.

on if they didn't have this kind of major



Ferguson: I think so. There is a tremenented people. Some say that with clusters

ing up a cluster of stations in the marketning operations, there are new director of There are bigger opportunities for people

building small market radio groups ... and as entrepreneurs they want to build these businesses and then sell them to somebody. Now there are a lot of small market cally in value. ... What people overlook a little is that for some people, particularly small market broadcasters, what they worked for all their lives they now can

As a broadcaster, I am delighted that CBS/Westinghouse has a huge investment in terrestrial radio. They are the major player in underwriting in-band, onchannel digital audio radio. I just don't believe that they would have taken this



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And that is going to benefit all of us.

The people who decide that they want a career on the talent side of radio, now have the chance to become national.

RW: Does this lend wings to the efforts to market the medium? Particularly RAB's national marketing outreach?

Ferguson: Absolutely. An effort that RAB started with Gary Fries a number of years ago was to have group heads out there calling on clients directly. That has resulted in a lot of business for radio and a much better profile for radio - it puts the heads of companies in contact with their customers in a way that they weren't before.

People have to remember that to us, this is about working with people to develop value for them by using our very special medium to make it happen. And if we create value for people, then we should be able to charge for it. The reality of it is, if we don't they will use other stations and other media, including the new ones.

Are there bad things about consolidation? Yeah. Is there is disruption and loss of jobs, Yeah. People have to be retrained and that is not fun and a lot of radio companies have tried to take good care of their people but a lot of them have not.

What I try to live by and what I tell my employees is that they have to look at themselves in terms of independent little businesses. Are they training themselves for the future? People need to be looking at changes and kind of embracing them and asking: How can I stay on top of this?

RW: As chairman of the joint board at NAB, what will you be focusing on?

Ferguson: Let me tell you about my biggest concern about consolidation and the focal point of what I hope to do as chairman of the joint board of the NAB --the public interest standard.

Our industries, both radio and TV, were born, raised, and nurtured on the public interest standard, That is a concept that has not been lost by many, many broadcasters. But it is a concept that can be lost in an industry that has become enamored by and enamored with Wall Street.

The financial industry has taken a big equity stake in our business, pounding down on people all day about earnings. ... they call public radio companies every week and ask, "Hey what is going on?", and in effect, they keep the company focused on an important part of their business which is earnings.

But who is keeping people focused on the public interest standard? It ought not to be the FCC, it ought to be ourselves. If I can do something over the next two years, it will be to talk about the public interest standard. It is a very important thing.

There are so many important things tied to this. Economic things. If we are not serving our communities, meeting the needs of those communities we will be less able to get advertising to run on our stations. So, the arguments that take place in Washington about the freedom of press and our freedom to use the spectrum because of what we give back — if people lose sight of that, the argument is eroded somewhat. That can have tremendous financial consequences, way beyond whether you sold a \$200,000 schedule last month.

Internet's 'SportsLine' Moves On the Air

by James Careless

WASHINGTON Internet-based webcaster "SportsLine Radio" has taken to the old-fashioned airwaves. SportsLine, in which CBS Sports has a minority stake, signed a terrestrial distribution deal with Washington, D.C.-based syndication company American View Inc. (AVI).

"We feel like we've got a good shot to get 100 stations or so by the end of the year," said SportsLine USA Vice President of Marketing Kenneth Dobson. "That may sound aggressive, but we feel the programming is good."

Live feed

The programming SportsLine sells is the live audio feed from its "CBS SportsLine" website at *http://www.cbs.sportsline.com*

The site is aimed at sports fanatics, with a wide breadth of sports information, including some data that are available to subscribers only.

"During the week, we have eight hours of regular programming," said Dobson, "the highlight of which is an afternoon sports talk show called 'The Drive.'

"Then we also have a show on Saturday, 'College Football Today,' a show Sunday, 'Around the NFL' and those things last almost all day, from before the first game starts until after the last game's over; (it's) just sort of a wrapup of everything going on."

SportsLine also features a regular evening program, "Fantasy Fever," which caters to fans of so-called 'fantasy football' and 'fantasy baseball.'

Dobson is hoping that the SportsLine ability to deliver a steady stream of celebrity interviews, including the likes of Michael Jordan and Wayne Gretzsky, will convince AM stations to give his programming a try. He's also hopeful that the past year spent ironing out the format on the World Wide Web has produced a polished product capable of taking on the competition.

Question raised

All of this begs an interesting question, namely: What does SportsLine's move to terrestrial radio say about the viability of webcasting? Answers vary. It depends who you ask at the company.

For his part, Dobson appears to pitch the move as an expansion of the service's core business. On the Web, "we developed a nice following," he said. "We started having a lot of celebrity interviews, breaking news, various things. It just became apparent to us that there was an opportunity for us to take that programming and syndicate it out on the terrestrial airwaves.

"(That's because) we felt like the programming compared favorably with a lot of the other sportstalk radio programming."

However, SportsLine USA President and CEO Michael Levy was more blunt when asked if the audio service was able to make money on the Internet. "No, we actually felt all along that the money was to be made if we could get national syndication. We don't think it's a money-making opportunity on the Internet for a couple of more years."

However, this doesn't mean that the Web didn't offer SportsLine major advantages, because it has, Levy added. For the programming, it was "a way to tune it up, get it moving, do it inexpensively, and really develop the personalities and the people we have involved. A lot of good testing."

The real test bed for SportsLine Radio is going to be the conventional airwaves, rather than the newfangled world of cyberspace. This, plus the fact that the company isn't offering any Web tie-in for its affiliates, puts the commercial viability of cyberspace in perspective: the Internet's a good place to polish a product, but the real action remains on the airwaves.



The Drive' crew is pictured from left to right: Sidney Rosenberg, Scott Kaplan and Tom Alexander.



World Radio History

Pioneer Puts Station on Block

► WANN, continued from page 1 in the United States to do so.

"We were pioneers," he said. "Blacks weren't heard in radio at that time. Over the years we met many wonderful people and had an opportunity to do a lot of public service."

Blum received many state and local honors and awards commending his minority involvement efforts.

WANN stood by the urban format up until 1988 when it switched, reluctantly, to country.

"The demographics of our area all changed," said Blum. "Many of our old customers ... retailers, the little guys, died. The huge shopping malls were replacing the small merchant. People started leaning on agencies. So with demographics changing and our old sponsors gone to heaven we sadly said we had to make a change in the format."

Rick Barnes, former assistant chief engineer at WANN, said Blum came into work every day, managing the station himself.

"He served as president and general manager, as well as owner, and he took care of operations," said Barnes. "He ran the station much like a ship ... he had a very formatted procedure on how you turn the station off at night. Which power switches get turned off, which ones left on, where you place the log for the next day's programming and so on. Even how to place the chair that the DJ sits in. I got a call one night at home from Mr. Blum ... he said 'Mr. Barnes, I came through to check up on things and I see that you didn't properly place the chair. Please get that correct tomorrow.""

Barnes also recalled WANN studios as spotless.

"He might not have had the best equipment in all areas, but it was the cleanest and best-kept of any place I'd ever seen. And similar to how officers of a ship refer to each other by rank, in Blum's presence, the staff addressed each other by last names ... Mr. Barnes,

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Is the final sunset sign-off of WANN a sign of the times? Another casualty of AM euthanasia? Dwight Weller, principal of Weller Audio-Visual Engineering and chairman of the Baltimore SBE chapter 46 thinks so.

Viable property

"Unfortunately for many AM standalones, such as WANN, the land that the towers stand on ... the real estate that they occupy, is much more valuable than the license," Weller said.

Blum called this a "unique problem." "The majority of broadcasters don't buy land," he said. "AM broadcasters years ago ... bought some property which to locate the towers and in many cases that has appreciated considerably.

Over the years we met many wonderful people and had an opportunity to do a lot of public service. — Morris Blum WANN(AM)

In our case, we are on a beautiful site in a beautiful section of Annapolis where you would never again get the zoning to put up towers. My land is far more valuable than the station. But broadcasters don't buy land — they want to buy facilities."

Weller warned of what he called a "closed loop."

"AM is on the horizon of becoming superior to FM with DAB," said Weller. "But if (DAB) takes too much longer in implementation, all these stations are going to collapse because of the price of real estate. People that hold out are going to be winners in the long run. But without DAB yet, nobody is going to wait for what's going to happen at the turn of the century for money they can have now."

Despite what appears to be a portion of radio spiraling downward, Blum said he does not "look with despair on anything in this industry."

"There is so much going on, so many changes," he said. "There will be directions taken that might not meet with the approval of everybody but we will work it out. Eventually I'm sure we'll be selling this facility because ... this has such a great future in this area, great possibilities ... we have an application in for nighttime for a tremendous power increase."

Barnes called the shutdown of WANN unfortunate. "Another bit of diversity departs from our heavily formatted business ... and a great deal of history comes to a close."

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CBC Wrangles for FM Slots

by James Careless

OTTAWA Officially, Canada is on the verge of entering the digital age of radio.

In major cities like Toronto, both commercial broadcasters and the Canadian Broadcasting Corp. (CBC) are about to begin Eureka-147 DAB broadcasts.

But at the same time, the publicly owned CBC is also pushing ahead with plans to move some of its major AM stations to the FM band.

Multiple moves

In 1978, CBH in Halifax, Nova Scotia, went from AM to FM; in 1991 it was CBO in Ottawa that made the move. More recently, the Canadian Radio-television and Telecommunications Commission (CRTC) approved a bid to move CBM(AM) in Montreal, which is on 940 kHz, to 88.5 MHz.

And, in Toronto, the corporation just won the right to move CBL(AM) 740 kHz to 99.1 MHz, a victory that came at the expense of eight private bids for the frequency.

All these band switches on the eve of digital radio begs a fairly obvious question: When private broadcasters are clinging to their AM slots as they wait for the transition to DAB, why is the public broadcaster chasing the FM band?

The answer, said CBC Spokesperson Alberta Noakes, is that the corporation cannot afford to wait for DAB. "CBC is going to be the first into digital, but it is also going to be the last out of conventional systems."

For this reason the CBC is chasing FM slots in certain key markets.

"It was particularly important in Toronto to apply for FM, and also in Montreal, licenses because of the general decline in the AM listenership," Noakes said.

During the Toronto application, for instance, the CBC produced a survey conducted by the Bureau of Broadcast Measurement showing that AM listenership in the Toronto market declined from 43 percent in 1992 to 30 percent in 1996. In same period, FM listenership increased from 53 percent to 67 percent.

But the most disturbing fact for AM broadcasters is that 46 percent of listeners 18 or younger in Toronto do not listen to AM.

For a broadcaster that relies on tax dollars to survive, not building a loyal audience among future taxpayers could amount to eventual station suicide. As Noakes said, "by the time we are ready to move to digital, there would be a very tiny audience to migrate with us."

Poor audibility

There is another reason the CBC wants an FM frequency in Toronto. Right now, its current slot, clear-channel 740 kHz, is badly impaired.

Noakes noted that one listener wrote the commission complaining that the only way to receive CBL at home was to put the radio in the bathroom.

Still, the corporation took no chances when approaching the CRTC. Using data compiled from 189 listening sites, the CBC quantified just how serious its AM reception problems are. Using CBC-supplied receivers, and measuring using the five-point CCIR scale, 22.1 percent of all homes tested rated the CBL signal as either poor with annoying impairment or bad with annoying impairment. With the listeners' own receivers, this number climbed to 43.5 percent.

Meanwhile, in the mobile environment, the CBL signal did not fare much better. A 1994 BBM/Conquest survey showed that 32 percent of all car listeners "often" or "occasionally" have trouble receiving CBL. In the urban core, this number climbs to 39 percent.

Faced with these facts, the CRTC

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ruled on July 29 that "the use of the frequency 99.1 MHz by the CBC to broadcast the programming of CBL in Toronto is the most appropriate and efficient solution to CBL's difficulties."

Flawed solution

The decision was not unanimous, however. Two commissioners dissented, not because they disagreed that CBC was having problems with FM, but because they wanted the CBC to use 740 kHz in combination with one of its existing out-of-city FM frequencies instead. If this had been done, wrote Commissioner Gail Scott, 99.1 MHz could have been used by the city's "multicultural and aboriginal markets."

However, the majority of CRTC commissioners thought this solution was flawed, in particular because it would force mobile listeners to "tune their radios back and forth between AM 740 kHz and FM 93.5 MHz to ensure continuous quality reception." Therefore the CBC got its wish, and what many have called "the last good FM frequency in Toronto."

In the end, the CBC considers the quest for an FM license in Toronto a fight well won. Not only will it help save the corporation's audience, Noakes said, but money-wise it makes sense, because the new FM transmitter will cost "about half as much" as the AM transmitter costs to operate.

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FCC Files Request to Shut Down Pirate

by Sharon Rae

ADRIAN, Mich. The man who calls himself the "Rosa Parks of Radio" temporarily shut down his low-power, unlicensed radio station in southern lower Michigan in August because of technical difficulties. But the government may try to keep him off the air permanently.

Pastor Rick Strawcutter, who runs Radio Free Lenawee out of the Church of the Lord Jesus Christ in Adrian, said he expects to be back on the air within the month.

"We have shut down temporarily to

reconfigure the antenna," said Strawcutter, who claims the move is to silence a "contrived" complaint of interference from a Toledo translator operator.

Strawcutter stopped transmitting his anti-government themes, the New World Order and government conspiracy theories on 95-watt 97.7 FM a day after court documents were filed charging interference.

In the meantime, the Federal Communications Commission has filed a request in federal court to allow the U.S. Marshal's office to seize Strawcutter's broadcast equipment. According to Pat



Pastor Rick Strawcutter

Edwards, Strawcutter's attorney, a hearing will take place by early September. "There are all kinds of problems with

the FCC's case," Edwards said. "I'm not



certain if the federal prosecutor even wants to continue on with this. I think they realize that this is an open First Amendment question ... and I don't believe that the federal prosecutor is willing to just follow along with what the FCC said."

Strawcutter contends that Radio Free Lenawee is "absolutely constitutional and lawful" and is outside the parameters of FCC regulation.

According to Edwards, the FCC doesn't want to have to deal with all the headaches of establishing rules and regulations for stations that are less than 100 watts. "It's a giant hairball for them." he said. "There is an incredible amount of interest in local, small-time radio broadcasting. ... We believe they serve an important interest. Compare First Amendment rights with the reasons the FCC has for instituting their 100-watt rule and the FCC loses."

John Winston, assistant chief of the FCC Compliance and Information Bureau, would not comment on the case now that it is in litigation.

Strawcutter said there's nothing he'd like more than to be in federal court. "We want to once and for all get a decision that will show the entire U.S. that there is no basis for the control of licensure or the harassment of anyone in this country who wants to broadcast and use the airwaves in a constitutional manner."

Rules are the rules

Bruce Goldsen, general manager of Friends Communications, runs three Adrian-based radio stations.

"Everyone should play by the same rules," he said. "If somebody ... thinks that the rules should be different ... that a station under a certain power shouldn't have to deal with licenses, then the rules should be changed to reflect that. ... (I)f the rules right now say that if you have a radius of more than a couple of blocks you should have a license, then you should have a license! If that's not the way it's going to work, then change the rules!"

Goldsen said he's gotten mixed messages from the FCC. "On the one hand, the commission has told licensed broadcasters who have inquired about this that it's illegal and they'll shut (unlicensed broadcasters) down." he said. "On the other hand, what the field offices have been telling us is that unless there is an interference complaint, there's really no harm."

At the recent Michigan Association of Broadcasters annual meeting, FCC Mass Media Bureau Chief Roy Stewart encouraged broadcasters to bring pirate stations to the attention of the FCC.

"I know the general counsel is very much concerned about the operation of these stations," said Stewart. "The problem is that we need in part the help and the assistance of the U.S. Attorney's offices in the various parts of the country to go in and See UNLICENSED, page 18

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Matt Phillips, Paragon Of Public Service, Dies

Matt Phillips, 63, owner and operator of WRIX-AM-FM and WANS(AM) in Anderson, S.C., died on Aug. 15, after suffering a heart attack.

Phillips had been on the air continuously for 38 years in the Piedmont region of South Carolina. In 1959, while employed as a sign painter for CocaCola, he successfully auditioned for a weekend announcing job at WHPB(AM) in Belton, S.C. From there, he launched a lifelong career in local broadcasting.

Co-host of a popular morning talk show, Phillips was a strong advocate of public service radio and a powerful community leader. His efforts of finding lost pets, helping fire victims and bailing out distressed families were legendary.

"No matter how big or small the cause, he always did fundraising," said WRIX station manager John Woodson. "But he always credited the listeners. He was a very humble man."

Attending his funeral were South Carolina Gov. David Beasley, Lt. Gov. Robert Peeler and a host of local political and civic leaders.

"He was a hero to a lot of people in

Anderson County," said Bev Brandon, Phillips' co-host on popular WRIX program, "the Matt and Bev Show."

The Anderson Independent-Mail newspaper, in a front page headline story on his death, called Phillips "a community philanthropist, a hugehearted man who took pains to alleviate suffering in the community."

"Small town radio is my life," Matt Phillips told this reporter with enthusiasm at a lunch last December in South Carolina. He was especially proud of the public service work his stations had accomplished over the past year. This, he said, is the stuff of



Matt Phillips

local radio, connecting with the people in the community and giving them a voice. Phillips, however, was distressed over the accelerating trend of non-local, absentee ownership of radio stations. He was an old-fashioned kind of guy. He

> Phillips was a strong advocate of public service radio and a powerful community leader.

passionately believed that broadcasters owe the public a debt in exchange for the free use of the public's airwaves. He didn't see how that debt could be repayed if the station ownership was detached from the local community.

The thing that made Matt Phillips so special was the deep love he had for community radio. He knew his listeners personally and cared deeply for them. Out in public, Phillips was constantly approached by listeners who just wanted to say hello to a friend. Such a bond does not come easily.

— Frank Beacham



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Expanded Band Less Than Ideal

by Lynn Meadows

WASHINGTON AM stations eligible to move to the expanded band may get less than they bargained for. This should come as no surprise to engineers who are well aware of the differences in coverage between the same wattage at 550 kHz and 1700 kHz.

WSVA(AM), for instance, slotted to move to 1700 kHz per the current allotment plan, would lose significant amounts of daytime listeners at the new frequency. Dataworld Inc. did an analysis on the station move and found it would lose coverage in pieces of more than 25 counties (see map) at 1700 kHz.

Hank Brandenburg, executive vice president of Dataworld, said that stations should take a close look at what their expanded-band coverage would be before making the move.

The expanded band is a "doubleedged sword" for many stations, said Brandenburg. He pointed out that the 89 stations slotted to move to the expanded band will be given non-directional signals which will mean less maintenance on their antennas. The downside to that, he said, is that stations will not be able to contour their patterns.

"It's such a case-by-case thing," said Brandenburg.

WSVA is an extreme example of how coverage could be affected because it would migrate from 550 to 1700 kHz.

"We are continuing to look at this as an option," said Susanne Mowbray, station manager. The station filed its application, Mowbray said, and will have an 18 month window in which to begin construction.

Morgan Burrow of R. Morgan Burrow, P.E. & Associates, P.C. has long been a defender of the AM band. To achieve the coverage a 1 kW signal has at 540 kHz, he calculated a station would require 117 kW at 1700 kHz. That was using a conductivity of 4.

"It's a loaded gun," said Burrow. Stations need to talk to their engineers and find out how big a risk they would be taking. Stations, he said, will "get more skywave and ambient noise at higher frequencies."

Even those stations with directional antennas need evaluate the move, he said. Some stations would do better to optimize their directional antenna than move to a non-directional antenna in a higher frequency.

Stations with a low-power, post-sunset authorization in the upper end of the band will probably benefit most from the expanded band, said Burrow. Stations with low power on a clear channel, he added, "will do well to move."

"I'm not migrating," said Brad

AM Expanded Band MARYLAND WEST CREATER WEST CREATER WEST CREATER WINNER CREATER CREATE

Leggett of Leggett Broadcasting. Leggett's AM station, KBZS(AM) in Grand Junction, Colo., was authorized to move to 1680 kHz based on the third expanded band allotment list released in March. Unlike the management of WSVA, Leggett did not file an application to hold the frequency.

Migrating stations will be allowed a 10 kW daytime signal and a 1 kW nighttime signal on their new frequencies. KBZS is authorized for 5 kW daytime and 80 W at night on 620 kHz. Leggett said he studied the move from both a coverage and monetary standpoint.

The only reason to migrate to 1680 kHz would have been for a better nighttime signal, said Leggett. Because the nighttime is not a heavy advertising time, it was not worth the \$30,000 to \$40,000 he estimated it would cost to upgrade.

Leggett also said that because AM skews a little older, he was concerned about how long it would take listeners to buy new radios that reach 1700 kHz.

"It's a function of receiver penetration," agreed Dutch Doelitzsch, chairman and CEO of Clearly Superior Radio. One of Doelitzsch's stations, WDDD(AM) in Johnston City, III., is eligible to move to 1690 kHz.

Doelitzsch is familiar with the time it takes for receivers to penetrate a market. His first station was an FM he bought back in the 1970s. Still, he said, if you program something worthwhile, people will listen.

Doelitzsch plans to take advantage of the new frequency for WDDD. The sports talk station is currently maintaining two transmitter sights. WDDD is authorized for 250 W non-directional daytime on 810 kHz and switches to a four tower directional array at night.

Still, as Doelitzsch noted, stations with expanded band frequencies have the option of keeping their old frequencies and turning the expanded band frequency back in. Stations who do take the plunge will have five years to decide if the coverage differences are worth the move.

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Quick Pick Screen



ElectricVillage Buys World Wide Radio

by James Careless

ElectricVillage, which bills itself as "the first and largest syndicator of Web site content for radio stations," has purchased World Wide Radio, which provides website design and Internet ad sales for individual broadcasters.

The purchase was made in order to transform ElectricVillage into a single full-service Internet company, said Carl Kopple, president and COO of ElectricVillage.

Larger than the sum

"We were each tackling a slightly different part of the market," said Kopple. "And when you put the two companies together, we end up with one-plus-one equaling three."

"I totally agree," added Doug Francis, co-founder of WWR and now executive vice-president for sales in the newly combined company. "We've been doing this since 1995, and the one thing that we

> ElectricVillage excelled in content, very expensive content that stations need.

lacked ElectricVillage excelled in, and that was content, complex content; very expensive content that stations need as part of their overall websites."

By consolidating, the two companies have created a substantial affiliate base. "Between World Wide Radio and Electric Village we now have a network that's just a few stations short of 200," said Kopple. "And that's a fairly significant size of network to have in this stage of the development of anything on the Internet. Long term, I believe, it's the size of the network that we build together that will give us the best vehicle and the most attractive vehicle for delivering advertising and transaction sales."

The expanded ElectricVillage also hopes to attract clients by saving them money on Web site development.

Save money

"When we were with companies like ABC, for example, what we noticed when we were building their station site is that they were duplicating efforts and energies in all their markets," says Francis. "They were actually spending a lot more than they needed to, because each station was developing the same kinds of tools and kinds of special things that they wanted to promote. It dawned on us very early on that if we tell ABC that they can do it as a group, rather than as an individual station building a website, they'll save 50 percent of the money they're spending on that on a per-station level

Asked for her take on the deal, Intervox Communications President Peggy Miles told Radio World that "it is an indication that, to be successful on the Internet, it is not only just the placement of Web pages without rhyme or reason (that makes the difference); that there needs to be a strategy in it."

Miles also noted that Microsoft is planning to boost its Internet advertising budget by up to 70 percent in the next fiscal year, an increase worth \$41 million. That's proof that there is money to be made in Internet advertising, if stations are well-placed to deliver it.



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World Radio History Circle (122) On Reader Service Card

Radio World

You Must Demember This long as it was red or dark b

The Toshiba TR-193 recalls Eisenhower, Alan Freed, rock 'n' roll and the trend toward miniaturization in receivers. The year: 1958.

The radio was 4 inches by 2-1/2 inches, perfect for a shirt pocket. The AM dial was clearly marked, and the power and volume dial turned with the flick of a thumb. You could choose one in your favorite color, as long as it was red or dark blue. Inside, Toshiba used a four-transistor reflex circuit design.

But the most notable physical feature of the TR-193 was the lovely piece of fine lace mounted under the clear plastic grille on the front. Did Toshiba have its eye on the lady listeners?

Another version had a stamped metal grille.

Radios like this helped Toshiba



capture market share and gain a reputation for attractive products in the late 1950s and early 1960s.

This is the second 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 billoradio@aol.com or through RW.

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Strawcutter Turns Signal Off, for Now

▶ UNLICENSED, continued from page 12 close those stations down. It is unfair for us to tell you to operate within the parameters ... and then to have you competing against people not authorized by the commission."

Goldsen said he's frustrated by the lack of action on the part of the FCC. "(Strawcutter) is quite brazen about the whole thing," he said. "He's not moving around, he has bumper stickers, and a declaration of principles. He's very visible ... (T)his long road started last November when he went on the air. Yet the commission seems to have been fairly powerless until very recently, (when) they filed the motion to shut them down based on interference."

Renegade radio

Licensed or unlicensed, competition remains the name of the game. Strawcutter sells airtime on his renegade station. Advertisers, according to the Reverend, range from "a really nice pizza place" to a garage in Adrian. Strawcutter also distributes, via mail-order, a wide range of materials; his latest project is a package on how to start up a low-power radio station.

"We'll send a package: a videotape and about 100 pages of paperwork," said Strawcutter. "Everything you need and away you go. ... It includes information on where you can get your equipment. ... We don't sell it but we steer people in the right direction."

Strawcutter claims he's had a barrage of requests for his kit. "I am sending out packages every single day, as many as three, four and five a day. There is a hemorrhage of interest in this country in free speech and doing something quickly before it becomes too late. People are afraid something is coming down, and they don't want to be caught without the ability to speak up."

Strawcutter estimates there are some 1,000 new low-power broadcasters in the United States.

"We're on our way," he said. "There's already at least a thousand low-power broadcasters out there, and all kinds of people that want to, but have this question what will happen if I do? We're in a country where we claim this is the land of the free. Let's act like it."

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18

Tower Registration Proceeding 'Smoothly'

by Lynn Meadows

GETTYSBURG, Pa. More than 28,700 antenna structure applications have been filed with the Federal Communications Commission as part of its tower registration program.

The program to register all towers is proceeding smoothly according to FCC Supervisory Engineer Edward DeLaHunt of the Audio Services Division of the Mass Media Bureau.

"I think it is going very well," he said. As of mid-August, the commission had received 28,716 applications and Lisa Stover at the FCC Gettysburg office, said that there was a backlog of 2,165 applications pending.

Window open

The filing window for tower owners in Florida and Indiana is currently open and ends on Sept. 30. DeLaHunt said there are approximately 7,000 existing structures in those two states that must be registered.

The brainchild of Robert Greenberg, an FCC senior supervisory engineer who died in March, tower registration is intended to simplify the process for registering all towers. Instead of each individual bureau requiring different information from their licensees, all can use the one-page form 854.

Greenberg put together a cross-bureau team that coordinated with the Federal Aviation Administration to start the tower registration program. He wanted a database created that industry, government and the public could access

"The database has the potential to tell you who owns the tower and who most of the licensees on the tower are by tower number," Greenberg told RW last year.

Although 10 months remain until the last filing window closes, the FCC does have the half-filled tower registration database on line. Anyone interested can review previously submitted applications using the database for \$2.30 each minute. Free information about viewing the database is available on the world wide web at www.fcc.gov/wtb

23 states to go

There are 23 states remaining in which tower owners must file applications to register their existing structures. However, any tower that requires painting or lighting changes or any other modification in any state must be registered before the change is made. Likewise, any new structure that was proposed after July 1996 and meets the registration criteria, requires tower registration.

DeLaHunt stressed that changes in ownership information or the dismantling of antenna structures already registered also require the filing of an 854.

All existing towers that require registration should be registered by June 30, 1998, said DeLaHunt.

Plenty of information on tower registration is available at the FCC website mentioned above. The NAB also pro-"Radio duced an informative TechCheck" at the mid-point of the program in July.

Top of mind

In a nutshell, however, here are some things to remember.

It is the tower owner's responsibility to register the tower using form 854. This can be done by hard copy or electronically. DeLaHunt said it is considerably faster to register electronically.

When it comes to information on tower height and coordinates, tower owners must not simply copy the information on their FCC license. Instead, they should verify the information for accuracy While not necessary, DeLaHunt said many tower owners have conducted surveys or used GPS to verify the accuracy.

Once the form is filed, the FCC double checks the information with the FAA and issues an 854-R CARD to the tower owner.

Tower owners must then get a copy of 854-R to all tenants on the tower. The copy should be displayed next to the station license. DeLaHunt said the FCC is no longer issuing permits/licenses with tower heights or painting and lighting requirements on them unless the tower is less than 200-feet tall. All painting and lighting requirements and tower height information is obtained from the 854-R.

Tower owners are also required to display the registration number in a readily visible conspicuous place at the base of the tower.

Some discrepancies have occurred between licensee information on tower height and coordinates and what the registration indicates.

If the tower owner finds the coordinates for the tower are in error, said DeLaHunt, he or she should first get FAA approval, then register the tower. Each tenant must get FCC approval for coordinate changes and any height errors which alter the technical facilities by filing forms 301 and 302. If the discrepancies result in short-spacing or other problems, the FCC will consider them on a case by case basis.

The tower registration program is intended to improve upon the day when



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all tower users were responsible for lighting and painting. That responsibility falls on the owner now. But DeLaHunt

pointed out that it remains the responsibility of every licensee to make sure what needs to be done is getting done.

Window	States/Territories	Approximate # of Filings ¹	
Jul 1-31, 1996	MI, MT	3,041	
Aug 1-31, 1996	AZ, HI, NC	3,188	
Sept 1-30, 1996	AK, NM, NY	3,612	
Oct 1-31, 1996	MA, MO	2,994	
Nov 1-30, 1996	IL, WY	3,053	
Dec 1-31, 1996	NV, OK, PR	3,167	
Jan 1 - Feb 28, 1997	CA, OH	6,737	
Mar 1-31, 1997	IA, VA	3,273	
Apr 1-30, 1997	AS, GA, GM, GU, MP, VI	3,141	
May 1-31, 1997	LA, ME, RI	3,077	
Jun 1-31, 1997	CO, MN	2,993	
Jul 1-31, 1997	NE, PA	3,022	
Aug 1 - Sep 30, 1997	FL, IN	6,946	
Oct 1-31, 1997	DE, KS, WA	2,961	
Nov 1-30, 1997	NH, OR, WI, WV	3,096	
Dec 1-31, 1997	AL, DC, MD	2,953	
Jan 1-31, 1998	AR, ND, UT	2,943	
Feb 1-28, 1998	ID, MS, SD, VT	2,996	
Mar 1-31, 1998	KY, TN	3,149	
Apr 1-30, 1998	CT, NJ, SC	2,930	
May 1 - Jun 30, 1998	TX	8,331	

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19



Groups Look for Economies of Sale/Purchase

PURCHASING, continued from page 1 in an equipment dealership that counted Susquehanna among its customers, added that Susquehanna has "had discussions with manufacturers (that want) to be a onestop shopping center ... but we have made no decisions yet."

Lynden Williams, Lotus Communications Director of Engineering, thinks any move to eliminate the middleman would be detrimental to the industry.

"We just keep crowding and pushing. Pretty soon there's going to be one person pulling all the strings. I'm not happy about Williams said. it,"

"Does it ethically makes sense to do that?" he wondered. "I suppose economi-

We just keep crowding and pushing. Pretty soon there's going to be one person pulling all the strings. — Lynden Williams

Lotus Communications

cally it does, but we've already done a lot to ruin this industry (with) the deregulation of ownership. Why don't we just make one big company that owns every radio station and eliminate the suppliers all together and buy direct and be done with it?"

Williams said he can sometimes get "a much better price" by going through a dealer. As an example, he pointed to the purchase of a transmitter and antenna. When he bought the combination from a dealer, the price of the antenna was "better" than the manufacturer's, said Williams.

Tim Schwieger, President of Broadcast Supply Worldwide, said one way dealers can do that is by purchasing equipment in



BSW President Tim Schwieger

huge quantities and passing the savings on to customers.

"We do that to obviously sell merchandise," said Schwieger, "but it's added-value that we bring to the industry. That's typical of what dealers can do. We can bring hundreds and hundreds of units into our warehouse that sit here until they are sold. They can never go back to the manufacturer. We own them, so we take that liability. We pay for product within 30 days, even though it may not sell for 60, 90, or 120 days. We have no guarantees that any of it will sell.'

As one example of its clout as a dealer, Schwieger said BSW (where business is up 14 percent this year) was able to have the Sennheisser HD414P headphone custommade with a durable cable. "I had to buy

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thousands of units in order to do that," he stated.

"We brought the industry a \$99 headphone for \$59. It cost us dearly to do that. It will be a while before we sell all the headphones. It's an investment that we made. We do this day-in and day-out."

Another major dealer. Harris Corp. (which is also a manufacturer), stressed the value that dealers add to a sale is a vital link in the purchase process. "That includes having product on hand, issuing credit, and being able to service product," said Jim Woods, Vice President of Radio and Studio Products.

"We have a very large shop here and actually service more products than some of the manufacturers we sell for."

Woods acknowledged that "our industry



Harris Vice President of Radio and Studio Products, James Woods

is going through a very important transition." In order for dealers to thrive, he believes, they must grow at the same rate as the radio groups they serve. "If you're not getting bigger, you're actually shrinking — and you're shrinking faster than you were a couple of years ago," he stated.

There are manufacturers, of course, who don't sell through dealers, including Continental Electronics Corp., which has its own sales force.

"Our sales people are highly technical people,"explained Sales Manager Nelda Hendon. "Most of them have been engineers at radio stations, so they are quite capable of helping in any aspect of (the sale)."

Antenna manufacturer ERI sells through dealers and also directly to radio stations, according to company engineer David Davies. But, he said, "we have a long-standing relationship with the vendors. Our policy has always been that if the vendor brings the project to us, we will bid it through the vendor and not directly (to the broadcaster)."

He said that some group owners "have somewhat eliminated the need for the technical service" that dealers offer "because they have staff that do the research. Therefore, price and quality have become more of a driving factor in determining the sale. So of course that's driving them away from the vendors and to the manufacturers.'

SFX's McNamara, who has signed confidentiality agreements with the companies he buys from, said he has also "made a deal with a major distributor" to buy small items such as microphones, headphones, and CD players.

"SFX has seen the light," McNamara concluded. "You may do an article a year from now saying how wrong I was about the future, but I see several very large groups doing their own direct purchasing."

\$2.1 Billion Deal Combines Three Groups

NEW YORK Hicks, Muse, Tate & Furst, Capstar Broadcasting Corp. and SFX Broadcasting signed a definitive agreement in which a company newly formed by Hicks, Muse and Capstar will acquire SFX Broadcasting, the seventh-largest radio broadcasting group based on revenue, in a transaction valued at approximately \$2.1 billion. Hicks Muse expects to invest

approximately \$400 million of equity capital, the firm's largest investment in terms of total transaction value since its formation in 1989. Capstar, with 243 radio station acquisitions previously completed or announced since its founding approximately one year ago, has become the largest operator (in terms of number of stations) of stations in the United States.

BIA's Top 10 Radio Owners Ranked on Aug. 25, 1997 by Estimated Revenue From BIA's MasterAccess Radio Analyzer

BIA I	Est. 1996	No. of	Est. 1996	No. of
Revenue Gro	ss Revenue	Owner	Gross Revenue	Operated
Rank Owner Name (i	in \$000s) S	stations	including LMAs (in \$000s)	Stations
1) CBS Corp.	\$1,010,250	0 76	\$1,010,250	76
2) Chancellor Media Corp	* \$808,000	98	\$808,000	98
3) Jacor Communications	\$435,300	151	\$445,800	157
4) Clear Channel	\$405,150	169	\$408,850	171
5) ARS License Corp.	\$381,750	96	\$383,850	97
6) ABC Radio Inc.	\$306,250	26	\$306,250	26
7) SFX Broadcasting**	\$279,250	71	\$280,050	72
8) Capstar Broadcasting*	\$216,250	175	\$293,250	243
9) Cox Radio	\$214,025	48	\$216,525	49
10) Emmis Broadcasting	\$140,250	14	\$140,250	14

owned by Hicks, Muse, Tate & Furst **being purchased by Hicks, Muse, Tate & Furst



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CUTTINGEDGE

Circle (3) On Reader Service Card World Radio History

GUEST COMMENTARY RDS: Now It Is Radio's Move

Scott A. Wright

There have been many articles recently in a number a magazines and newspapers regarding the state of RDS in North America. Some already have written off RDS to the same graveyard that includes headstones like FMX or AM Stereo. I would like to offer a differing opinion: RDS is on the way to acceptance.

Recently both General Motors and Ford announced that RDS will be available in certain car models this year. Many in the industry for years have said that it would take an introduction of RDS by domestic auto manufacturers to break the chicken and egg cycle. Granted, the introductions this year are limited, but that typically is the case in the automotive industry. New technology is introduced in the luxury segment, then makes its way down the line until all models offer the feature.

What took so long?

New radio technology is introduced when a new radio line is offered. Typically,



1998 Seville Radio Data System

this happens every four or five years, when the instrument panel of the vehicle is redesigned. This is the soonest that domestic manufacturers could have begun to offer RDS.

RDS is standard in all Porsches as well as in the Audi A4. Look forward to many new offerings, but it may be several years before new radio designs can be introduced.

In the past several years, much activity has surrounded RDS. The home, portable and after-market manufacturers of RDS now include Pioneer, Kenwood, Denon, Blaupunkt, Becker, Clarion, Onkyo, Bang and Olufson, Mondial, Grundig, Sangean,

> RDS is not like FMX or AM Stereo. AM Stereo suffered without a standard

Each year, new models are introduced at the Consumer Electronics Show. You can count on more models being introduced this year, especially since the domestic auto manufacturers have introduced RDS.

In addition to co-sponsoring the introduction of RDS in the top 15 radio markets last year, the Consumer Electronic Manufacturers Association (CEMA) also sponsors the RDS Advisory Group. This group addresses the consumerrelated issues surrounding RDS and offers free membership to anyone. The group developed a brochure to help educate consumers about the technology.

The National Radio Systems Committee (NRSC) RBDS subcommittee is in the process of updating the standard. This has been done in conjunction with upgrades to the European RDS standard. The latest drafts have been issued and are to be

voted on this month. The upgrades will introduce new features such as the open data application (ODA). The ODA allows new features and services to be introduced without requiring changes to the standard. Once adopted, the new standard will make it easier for the 500 European RDS models to be converted for use in North America.

We have an adopted standard, and it is being modified to ensure a long life.

RDS is not like FMX or AM Stereo. AM Stereo suffered without a standard for 10 years. Broadcasters were reluctant to invest in equipment without a standard, and manufacturers dropped the feature when little broadcaster interest developed. FMX was mired by technical questions as to its viability.

RDS is proven, with more than 50 million receivers sold throughout Europe. The High Speed subcarriers being evaluated by the NRSC are compatible with RDS. RDS will continue to serve a niche for many years simply due to its low cost (under a buck for a demodulator!) and compatibility

RDS is just coming to life, not dying. Support RDS now. Broadcasters can ensure a growing listener base armed with a growing choice of receivers and services. Automation systems brought on-line for RDS can be used in future systems as well.

with other SCA services.

Most important, consumer manufacturers and broadcasters must continue to coordinate efforts. Through popular publications, service groups, the Internet and shows and exhibits, we must communicate to ensure our joint success.

Scott A. Wright is a project engineer at Delco Electronics and is the NRSC RBDS Subcommittee chairman. He is the author of "The Broadcasters Guide to RDS," published by Focal Press.

RW invites other points of view.

Checklist for success

It is time for broadcasters to make a move. This is critical to ensure the continued support of manufacturers and the introduction of new models. If broadcasters do nothing, RDS - or any new technology - is doomed to fail. I ask that the following be done:

If you have an RDS encoder, put it on the air with the correct data. Many of the 700 stations that appeared in the last RDS roll call in RW are not on the air. Other stations have errors in the programming of their data as well. If you need help, contact the manufacturer of the encoder, NAB or CEMA for assistance. Several books are available as well to help answer your questions.

At least another 10 percent (another 700) stations must get on the air. Growth is important at this point. You can buy an RDS encoder for less than \$400, allowing you to make a point with little risk.

Work with local retailers of RDS equipment and sell RDS to your listeners. Many retailers advertise on your station and could be interested in a joint promotion. Education of your listeners also is important. Consumer surveys show great interest in RDS features, once consumers are aware of the technology.

Request RDS features from your automation suppliers. RDS is best when dynamic. Supply your listeners with such automated features as

Music selection: artist and song title automation, dynamic program types, and program-type name feature.

Advertising traffic automation: Automate advertiser supplemental information such as store hours, address and phone number.

Traffic reports: Work with your supplier to automate the traffic announcement feature as an added convenience to your listeners.

Emergency alert: Get some real benefit from your EAS encoder by automating the RDS emergency alert feature. Tell your listeners!

Cruise the Web and learn more. Here are a few sites to get you going (type http:// before each):

European RDS Forum: www.rds.org.uk/

CEMA RDS site: www.cemacity.org/mall/product/audio/audio.html NAB RDS site: www.nab.org/scitech/files/standard.html Dungeon (public) site: www.dungeon.com/~start/rds.html



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A Radio 'Cavalcade' of History

Richard W. O'Donnell

Former President Herbert Hoover, a Republican, reportedly was a regular listener of "The Cavalcade of America" after he left the White House, and tuned in as often as his schedule allowed during its run from 1935 to 1953. The show had plenty of Democratic fans, too.

"Cavalcade" embraced the true spirit of the United States. It was filled with red, white and blue gusto, and made you proud as punch to be a citizen.

It probably was the most patriotic show ever beamed our way on radio, and on television too, for that matter. The show tested TV, but never became

Literary heavyweights were hired to turn out scripts that were far superior to the subject matter of lesser programs.

too involved with it.

It had stars galore to attract listeners. They included Paul Muni, Charles Laughton, Loretta Young, Edward G. Robinson, Dick Powell, Tyrone Power, Spencer Tracy and Bette Davis. "Cavalcade" was a top-drawer pro-

"Cavalcade" was a top-drawer production from its start on CBS, and later, in 1940, when it switched to NBC. Much effort was made to make details of the dramas historically accurate. A panel that included Yale scholar Frank Monaghan and authors Marquis James and Carl Carmer searched through the



'Cavalcade ' performers included Edward G. Robinson ...

history books, especially the asterisks, for authentic, less-familiar slices of American history.

Literary heavyweights Carl Sandburg, Thornton Wilder, Maxwell Anderson and Robert Sherwood, among others, were hired to turn out scripts that were far superior to the humble subject matter of lesser programs. Once in a while, American history was left waiting in the wings while something special aired. During the Christmas season in 1942, for example, a drama called "A Child Is Born" was penned for "The Cavalcade" by Stephen Vincent Benet, no less. It retold the story of the birth of Christ. Who were the stars? Alfred Lunt and Lynn Fontaine, the king and queen of Broadway.

Strictly history

The following week, it was back to Valley Forge again. "Cavalcade" was strictly U.S. history. Raymond Massey was heard several times playing Lincoln on the radio show. He owned the part after his great Broadway performance in "Abe Lincoln in Illinois."

Originally, the emphasis of the show was on Washington, Lincoln, Franklin, Jefferson and the other big names in our history books. Later, the programs were updated into the 1940s and featured modern-day stories. Those were the World War II years, and the patriotic theme had to come through clearly. "The Cavalcade of America" was

"The Cavalcade of America" was sponsored by DuPont, famous as the source of "better living through chemistry." The sponsor spent an estimated \$10,000 a week on the half-hour show, a high price in those days.

Eventually, despite its claim of historic authenticity, "Cavalcade" did loosen up. Its writers were able to use a bit of poetic license.

Purists may not agree, but twisting the facts ever so slightly did make the show more enjoyable. "Cavalcade," at times, was on the stodgy side, a bit of a bore. History can be like that, as any person who has read a weighty tome on bygone matters knows well.

In later years, "Cavalcade" stretched the truth a bit. Take a drama called "The House Near Little Dock Street," broadcast in the spring of 1949. Ginger Rogers starred in a production that was more Hitchcock than history. Still, it made for great listening.

See HISTORY, page 25 🕨



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- FEATURES -

Here's Your Web Radio Passport

Tom Vernon

MIT media futurist Nicholas Negroponte has made a startling prediction for broadcasters. In what is known as the "Negroponte Flip," he predicts that by the year 2015, technologies that were once wireless will become wired, and vice versa. But don't plan on tearing your tower down anytime soon. There's bound to be some overlap between wired and wireless broadcasting, and the technology for Internet broadcasting hasn't been perfected yet.

Still, enough stations have already ventured into webcasting that the publishers of "Passport to World Band Radio" decided it was time to create a guidebook. Like its shortwave cousin, "Passport to Web Radio" is not only a complete listing of what's out there, but also a compendium of information on how to get started, and lots of background information on the personalities and stations that are webcasting.

Are you streaming yet?

Anyone with a fairly robust PC or Mac, streaming software such as RealAudio 4.0 or StreamWorks, a sound board, and an unlimited-service ISP account can jump in. A modem rated at 28.8 or 33.6 kilobits (kb) per second is best, although you may be able to get by with a 14.4 kb unit. If you have an ISDN line, you can receive reasonable stereo reception. The neat thing about Web radio is that once you're connected, you can use your computer just as you always do, for word processing, e-mail, or surfing the Web.

There are really two types of Web programming: streaming and on-demand audio. Streaming is essentially a live program feed. You hear the same material as those listening to their radios, allowing for the slight buffering delay. On-demand audio allows you to select a pre-recorded program from a menu on the broadcasters website. Radio on demand has the advantage of allowing you to listen to a specific program or newscast at your convenience. It has the disadvantage of making you wait for the file to download.

The history of Web broadcasting is relatively short, and begins in the mid-1990s. Hackers came up with the novel idea of sending sound and pictures over the Internet. This was no mean feat, because the Internet's protocols and standards are intended for packet switching of data. Pioneering efforts included videoconferencing programs such as CU-SeeMe and MBONE, and audio streaming software such as RealAudio, developed by Progressive Networks.

By 1995, a small number of stations had licensed the software from Progressive Networks to stream their audio on the Internet. These early efforts left a lot to be desired. The audio quality was somewhat worse than AM radio. There were frequent disconnects, and gaps much longer than the buffering could cover. Station management blushed. People laughed.

Undaunted, the folks at Progressive Networks regrouped and worked on the next generation of software. At the same time, the de facto standard 14.4 kb modems gradually were being replaced by 28.8 and 33.6 kb units, doing much to enhance the flow of Web audio. Today, we are at the level of reliable, good-quality AM radio, with the promise of better things to come once improved software and 56 kb modems are in place. Industry experts predict reliable video streaming within two years, hinting at an explosion of Web TV broadcasters, and giving further credence to Negroponte's predictions.

A booming business

There's a wide spectrum of broadcasters on the Web, and their numbers are growing rapidly. As reported in **RW** Sept. 3, Intervox Communications at last count found 586 webcasters — stations, syndicators, networks and Web-only "broadcasters" — transmitting from more than 50 countries. Their ranks have been growing by 7 percent each month.

Many domestic stations in the United States are streaming their regular programming, thus augmenting their audience. Also, this type of activity appeals to listeners who have moved away from their hometown, but want to keep up with local news and events. For them, Web listening is more immediate and cheaper than subscribing to the local newspaper.

The international broadcasting community is well represented on the Internet, with many stations in Europe, Asia and South America. Passport not only lists all known stations and their URLs, but gives the conversion from World Time, briefly describes their programming, and gives an e-mail address and other useful information. Icons beside each listing indicate whether the station is using RealAudio or StreamWorks software to air their signal. Listings are organized geographically, starting with North America, and continuing with Canada, Latin America, Europe, and Africa, Asia and the Pacific. Listings are subdivided further into international, national and local broadcasters.

Perhaps one of the most popular formats on the Web is sports, and Passport gives it a separate chapter. Much of the appeal is to expats who want to follow the local team from a continent away. There are three major pioneers of sportscasting on the Web: ESPN, which rebroadcasts much of what it airs on its network; AudioNet, which puts local sports on the 'net for the benefit of distant fans; and SportsLine USA, which is unique because it broadcasts exclusively over the Internet.

An excellent way to start

An interesting phenomenon is the apparent rise of pirate webcasting. "Pirate" in this context refers to webcasters using illegally-obtained streaming technology.

Progressive Networks publishes a list of stations licensing its software for Web broadcasting. It's a good bet that stations not on this list may have obtained their transmitting software illegally. There seem to be a growing number of these bootleg "broadcasters" in both the former Soviet Union and Africa. Another form of questionable broadcasting is occurring in Indonesia, where licensed broadcast stations are being received by listeners who then rebroadcast them on the Web with Real Audio software.

In nine chapters and 144 pages, "Passport to Web Radio" is an excellent introduction and comprehensive guide to webcasters worldwide. Its light and breezy style is supplemented by numerous color photos of broadcast sites and personalities.

Keeping up with the growing number of stations may be a challenge to its proposed yearly update schedule, and it is an open question whether this or any printed volume will be able to hold its own.

For the moment, "Passport to Web



Radio" not only informs and entertains, but also furthers the cause of Internet broadcasting by exposing it to those who might otherwise not be aware of its existence. Perhaps in another year or two we can review "Passport to Web TV."

The publisher is International Broadcasting Services Ltd. Reach them at (215) 794-8252, or visit their website at www.passport.com or circle Reader Service 127.

When he is not consulting or pounding the keyboard for **RW**, Tom Vernon is finishing up his Ph.D. at the University of Pennsylvania in Philadelphia. Reach him via e-mail at tlvernon@aol.com

tually she got through. She delivered her warning, and the British military maneuver fell on its face.

Place of honor

As for Rogers, she returned to her inn on Little Dock Street carrying a bag of flour. That proved to the British she really had been on an important errand when she was out roaming the countryside during the wee hours. Ginger even whipped up a batch of biscuits with the flour to prove her good intentions.

The program was produced by Jack Zoller; Robert Pryor and Paul Stewart were the announcers. Donald Voorhes and, later, Robert Armbruster were the musical directors. Radio legend Homer Fickett was the long-time director of the show.

In any serious volume about radio, "The Cavalcade of America" deserves a place of honor. It represented American patriotism at its best and was a class product, start to finish. It went off the air March 31, 1953.

Dick O'Donnell is a freelance writer and old-time radio buff living in Florida.

Tell us about your radio memories. Drop a letter to RW.

Radio 'Cavalcade': History About History

HISTORY, continued from page 23 Ginger operated an inn down Philadelphia way, and she catered to

cers plan a raid, one that might have made a mess of things for the patriots freezing at nearby Valley Forge.



... and Bette Davis

British officers who loved the place because of the great meals served there. By chance, as she stood listening near an open door, she heard the British offiRogers took off to warn the patriots. She was really on our side. There was a blizzard, bitter cold and a lot of other unpleasant obstacles, but even-

The World Standard

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World Radio History

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This product is useful for both news and production rooms. The Merriam-Webster also will assist in developing better copy. A quick click and the dictionary becomes a thesaurus, listing synonyms, antonyms and related words, allowing you to sharpen (or hone!) your writing.

For further information on the Encyclopaedia Britannica CD, call (800) 747-8503 or visit *http://www.eb.com*. Reach Merriam-Webster at (800) 828-1880.

Bookshelf

As more stations set up their own sites on the World Wide Web, they learn that trying to make everything look nice can be exasperating. Even if you get your pages looking right in one browser, the layout can change dramatically in another browser, or at another resolution. Finding answers can be difficult and time-consuming. Two packages put answers and resources at your fingertips.

The Professional Web Development Kit, from Sams.net, contains a wide assortment of Web development software, several complete books on the CD-ROM, plus an overall book, the WebMaster's Resource Library. You will be able to build a range of tools, from Web pages to Java applications, by using this integrated package.

Sams.net's parent company, Macmillan Computer Publishing, also has a complete set of reference works in one package. Supplied on CD-ROM are 14 different books, all searchable by keyword or phrase. Also included is the print volume "Web Publishing Unleashed." Covering all facets of Web construction and maintenance, the "Web Publishing Electronic Resource Kit" deserves a place on your webmaster's desk.

Barry Mishkind is a free-lance writer based in Tucson, Ariz.

Sources for the Information Age

Barry Mishkind

The foundation of the broadcast industry is communication. When people want to know what is happening, they turn to broadcasters. Radio and television are the acknowledged primary source of news and information for a large part of society.

That creates a responsibility to be accurate that many broadcast journalists take seriously. They are the important link, digging out a story and conveying it to the home audience in a clear, under-

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all over the country. Stations usually had a good dictionary Sitting next to the teletype.

'Pronouncers'

Among the reams of paper that issued forth were news, headlines, weather, sports scores, features and "pronouncers" — a list of current names and locations so the reader would know the proper pronunciation. This didn't stop a lot of announcers from giving the current "tempichur" or speaking about "vetrin athaletes" but at least they would However, the Internet also contains a lot of misinformation. Sometimes it is just lack of knowledge on the part of the source; other times it is an intentional hoax. The speed of the Internet can compound the biggest problems.

Great lines

Recently, a message was posted on the Internet that contained an MIT graduation speech attributed to writer Kurt Vonnegut. The "speech" contained some great lines, suitable for reuse. E-mail zipped around the world several times,

and some organizations reported Vonnegut's words. There was only one problem: Vonnegut never said any of it. It wasn't even a speech. It was a newspaper column written by a woman for the Chicago Tribune.

Maybe you recall the "report" circulated on the Internet "proving" that a "friendly" missile caused the TWA Flight 800 disaster. Spread around the world on the Internet, including some websites devoted to conspiracy theories, it was picked up and broadcast by at least one news organization until it was denounced as a fraud.

In fact, there are so many "urban legends" that there are now several sites on the



Internet with information debunking them. At the same time, sites like http://www.snopes.com/ often can provide clarity about the stories that get passed around.

The bottom line: Be sure of your facts and the source of those facts. All it takes is one spoofster to change a couple of words, and if you don't look closely, it can lead to on-air embarrassment.

Reliable sources

Some sources have earned respect, and you can depend on them for accuracy. One is the Encyclopaedia Britannica. Do you ever wish you had a full set of the Encyclopaedia on hand for research on some news story or talk show topic? If so, you'll want to add the Britannica CD 97 to your reference set.

Containing the complete 32-volume set of the Encyclopaedia — 65,000 articles, 44 million words, 4,200 graphics and illustrations — the Britannica CD 97 allows you to search in seconds to learn about virtually anything in the world. You don't have to log in to the Internet, worry about delays on the World Wide Web, or question the



standable way. In order to present accurate information, the newsroom needs the best possible resources, including reference books. Even talk show hosts can benefit from having good resources from which to research program themes.

In the beginning was the news wire. Originally a telegraph line, it eventually took the form of the teletype machine, clattering in the newsrooms of stations know how to pronounce the names of foreign leaders and disaster spots. The 1990s have brought a bounty of

resources to the newsroom. With computers, CD-ROMs and the Internet, newsrooms can connect, virtually instantly, to resources all over the world. Many facts can be checked and verified in minutes, allowing the broadcast to sound more accurate and authoritative.



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Radio World, September 17, 1997

\$25 Mod for a Favorite Timer

John Bisset

Saving money has become our middle name, it seems; and Barry Walsh from KWMT(AM) in Fort Dodge, Iowa, has a great way to rejuvenate old ESE timers.

Barry writes that a few years ago, he tried to order the DR-2000 display element for the ES-400 and ES-510 timers. ESE informed Barry that the DR-2000 was no longer available, but another company offered a cross match to the DR-2000 for \$75 each. Another alternative was a replacement timer for \$179.

The ES-400 and ES-510 have always been excellent timers, and Barry couldn't see shelving them as junk. After doing some minor research, Barry purchased some numeric displays (catalog number LN518YA) from Digi-key for \$4.35 each, a PC board (catalog number 276-158) from Radio Shack, and a few 10-ohm resistors.

To begin the modification, remove the old DR-2000 elements from the timer circuit board. Solder a 10 ohm resistor to pin 2 of each of the DR-2000 circuit board sockets, then solder a wire about 5 inches in length to the resistor, and also a wire to each of the other pin sockets except pin 3. (Pins 1 and 3 are connected via a trace on the PC board.)

Cut the Radio Shack PC board in half, lengthwise, and mount the new displays, providing a wider gap between the "minutes" and "seconds" digits. Solder the wires to the display elements as shown in Figure 1. On the numeric display, pins 3, 5, 6, 7, 8, 10 and 14 are tied together. Tiewrap the wires of each display separately. Bend the wires to form the wire harness so the PC board is in the proper position. There is no need to mount the PC board, as the stiffness of the wiring harness holds the display in place.

The ESE timers have operated flawlessly for a couple of years with the new numeric displays, and for less than \$25 in





feed for The two easily removable 9V batteries

also provide switch-selectable phantom power for condenser mics.

The Qbox is a battery powered audio line testing system that includes a built-in mic, reference tone generator, speaker, headphone amp,

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week. Our goal is to make your job a little easier.



parts, you've rejuvenated your timer! Reach Barry at (515) 576-7333.

$\star \star \star$

I recently asked readers for comments about Sage ENDEC EAS equipment. First on the list is Edd Monskie, the vice president of engineering for Hall Communications in Lancaster, Pa. Like many engineers, Edd has two FMs operating from one building, and each is a part of a different operational area. Edd opted to run two Sage ENDECs to make EAS easier, because one FM is an LP1, and the other is not. Edd wanted to shut off the inboard printer in the Sage ENDEC and print out everything on an old printer, but wanted both units to print onto one printer.



Through Quill, a mail-order office products company, Edd purchased a setup called the "Max-A-Laser" printer sharing system. It allows both ENDECs to print from one printer. The system also allows other computers or satellite receivers to be added to the printer sharing system.

The Sage ENDEC has a serial output, and serial printers are hard to find. The Max-A-Laser system has transmitters available in either serial or parallel configurations. The serial transmitter just plugs into the back of the ENDEC. The parallel transmitters would plug into the parallel port of your computer, if used. The units interconnect, in daisy-chain fashion, using modular cable, with a small receiver module that plugs into the back of the printer.

Edd adds one warning: The modular cable must be the "straight-through" type, and not the home-style modular cable in which the wires reverse end-to-end.

Reach Edd Monskie at (717) 653-0800. Your comments about EAS equipment from any manufacturer are welcome.

 $\star \star \star$

World Radio History

an eighth of an inch at a time. Then button the rig up, turn it on and retune the IPA for maximum screen current. Keep moving the strap until you get sufficient drive into the final to make your power.

Ed Miles chiefs KTEP(FM) in El Paso, Texas. He writes that El Paso is considered a "Gates" town, with a number of stations using the Gates FM-20-H3 transmitter.

For engineers facing insufficient IPA

plate loading into the grid of the PA final,

preventing optimum power output, the fix

begins with the schematic. L-8 is connect-

ed between the PA neutralization flag and

the PA control grid ring. This is the IPA

If you look at the IPA box, under the

neutralization flag and to the left of the PA

socket, you will see an S-shaped copper

strap, about a half-inch wide and 2 inches

long. This strap runs from C-23 to the PA

fully, moving it up closer to the PA deck.

Moving the strap closer to the deck

increases loading; bending the strap further

away decreases the loading. When making

adjustments, make small bends - perhaps

Ed adjusts it by bending the strap care-

grid ring, and is the IPA loading control.

loading control.

Ed's original factory spec sheet called for 115 mA of screen current and -425 PA grid volts, to produce 20 kW output power. (Ed operates at 88.5 MHz.) The originally measured screen current with the problem transmitter was 40 mA, which wasn't anywhere near enough.

Ed suggests calling Harris Corp. if your transmitter doesn't have this strap. It may be omitted depending on your operating frequency. L7 and L8 are not listed in the parts list, either!

Ed is at the University of Texas, El Paso campus. His number is (915) 747-5152.

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



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



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



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

World Radio History



AES Convention Observes Golden Anniversary

Alan R. Peterson

When a record goes gold, it indicates successful sales figures. When a convention goes gold, it is a milestone; especially a convention dedicated to the making of records.

The Audio Engineering Society (AES) "goes gold" this year - observing its 50th year as the Global Forum for Professional Audio - with the 103rd Convention at the Jacob K. Javitz Convention Center in New York City, Sept. 26-29.

The AES is commemorating the event with 16 special workshops, 140 technical papers and a keynote address delivered by Grammy-winning producer George Massenburg.

Two names familiar to RW readers are also participating in the convention. Bruce Bartlett of Crown International and author of Line Out will be featured in the technical paper session "Microphones and Applications," while Judith Gross, now head of JG Communications, co-chairs the "Broadcast Forum on Digital Audio Broadcasting" with David Bialik of DKB Broadcast Associates.



New Hafler Powered Monitors to Debut in New York

The semi-annual convention is the showplace for new equipment as well as papers and conferences on leading-edge technologies, popular topics and the latest in audio perception. The Audio Engineering Society boasts more than 12,000 members worldwide, and the last New York convention in 1995 drew 18,000 visitors.

Traditionally, the AES conventions have been geared more towards professional audio for recording, sound reinforcement and film/video than for radio broadcast. However, the content of the show as well as the new technologies being introduced are of interest to broadcast engineers and producers.

Especially the main floor of the Javitz Center, with all that lovely new audio equipment.

Digital audio is still the big buzz, with powerful systems in all price ranges being rolled out from a number of companies. Microphones for any purpose and speakers sized for desktop production all the way up to auditorium

clusters will be in abundance. Signal processing continues to be a mix

of classic tube technology updated for the '90s as well as

AES Keynote Speaker George Massenburg

the latest artistry in silicon, with acronyms such as RISC, SHARC and VLSI leading the charge. Expect to see familiar names such as Yamaha, Rane. Aphex, Alesis, Peavey and

Watch for new, moderately priced digital consoles from Tascam and

the classic monster boards from Otari, AMS, Harrison and others. See the latest in tape-based multitrack recorders from Tascam and Alesis alongside disk-based products from Fostex and E-mu, MiniDisc and DAT recorders from Sony, HHB, Denon and others will be up against the Nagra ARES PCMCIA-card recorder and the SADiE Mobile. Definitely something for everyone.

Forum for broadcasters

While not usually known for radio-specific topics, the AES Convention this year is featuring a special forum on digital radio. "The Broadcast Forum on Digital Audio Broadcasting" will commence on the convention's opening day, Friday, Sept. 26 at 2 p.m.

The forum will be co-chaired by Judith Gross and David Bialik.

'Six years ago, Bialik delivered a controversial talk on DAB at the SBE Conference in New York. Definitely one of the more informative sessions on DAB," said Gross.

The idea of the forum is to provide an update on the present state of DAB to audio experts outside of the radio indus-

"We are doing this at the AES show to provide an open discussion on DAB around the world," Gross said. "The AES how draws global attention and an international audience. And one way or another, audio pros will eventually have to interface with whatever system is chosen."

The issues of terrestrial digital broadcasting versus satellite digital delivery will provide the momentum of this forum. especially given the participants on the panel: representatives from Westinghouse Wireless, USA Digital Radio, Canada's CRC, CD Radio, The European Eureka Consortium, Lucent Technologies, the NAB and the Electronic Industries Association (EIA) will be part of the discussion.

And the discussion is bound to get World Radio History

lively. "Now that the FCC gave the go-ahead for satellite radio," Gross said, "companies like CD Radio may be in competition with the terrestrial broadcasters."

"The industry is in the throes of choosing a standard for a worldwide network," said Bialik. "There is great interest, both economic and technical, in the evolution of DAB. The AES Broadcast Forum will shed considerable light on this crucial issue.'

Keynote speech

Producer/engineer/inventor George Massenburg will deliver the keynote address on Friday at noon, as part of the Awards Presentation and Founders' Reception.



The new HHB CD Recorder at AES

Massenburg's career includes Grammy Awards for his work with Linda Ronstadt on a children's record and her "Cry Like a Rainstorm" project. He has also wellknown for the invention of the parametric equalizer and third-generation console automation, in addition to his production work on countless other recordings by popular artists.

"We've come a long way and have made great progress in 50 years," said Massenburg, "but with the growing complexity of ... recording technology in particular, we may be losing sight of that goal."



Telex debuts a new wireless mic at AES.

Massenburg will stress the importance of recordings that survive "because the strength and the transparency of the technology allows the beauty of the art to come through."

Users of smaller radio production studios and home recording spaces should be aware of "Guerrilla Acoustics,"

Saturday, Sept. 27 at 9 a.m. This session features studio designer John Storyk and Dr. Peter D'Antonio of RPG Diffusor Systems, among others.

Ice zone

Producing audio for the Internet will be addressed in "Internet Audio Server Setup and Operation" on Sunday, Sept. 28, at 9 a.m.

Doing audio production via ISDN lines over shared systems comes under "ISDN/Wide Area Production," also on Sunday at 2 p.m.

And there are indeed talks on topics you simply would not expect. For example, Friday morning will include a paper on development of an ice-zone microphone meant to faithfully pick up and reproduce the sound of an ice skater.

Tours on the town

The AES shows are also known for technical tours of some notable facilities in and around the New York City area.

This year, the AES doubles up its popular tour of the Thomas A. Edison National Historic Site in West Orange, N.J., by making trips on Saturday and Sunday.

Other tours include a visit to The Hit Factory recording studios, the Metropolitan Museum of Art and a look behind the scenes at the sound system of a to-be-announced Broadway theater.

Finally, two tours will be made of WQHT(FM) and WRKS(FM), New York. These are the first major market radio stations in the United States to send audio from CD to FM transmitter completely in the digital domain.

No need to flip a coin to decide what professional show to attend the weekend of Sept. 26. With a little good timing, it will be possible to attend both the SBE annual convention in Syracuse, N.Y., and the 103rd AES Convention in New York City, missing only a handful of workshops at the latter.

The two cities are approximately 350 miles apart and connections are possible via Amtrak, major buslines and several airlines; Syracuse is serviced by all three transportation platforms. By car, the trip could take about six to seven hours. A plane ride obviously takes the least amount of time, but the train and bus are less expensive.

The SBE show concludes on Friday evening, leaving all day Saturday, Sunday and Monday to catch the AES show in the Big Apple.



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AES PREVIEW

Exhibitors Scheduled to Be At the 103rd AES Convention

At press time, the following exhibitors were scheduled to be at the 103rd AES Convention:

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DSP Digital Studio Processing, Ltd. Digital Theater Systems, Inc. **Dynaudio** Acoustics E-mu Systems, Inc. Earth Works Eastern Acoustic Works, Inc. Ensoniq Equi=Tech Corporation **ETA Systems** Euphonix / Spectral Inc. Event Electronics Eventide. Inc. **EVI** Audio Fairlight USA FAR Fundamental Acoustic Research Ferrofluidics Corporation Film-Tek & Associates, Inc. Five Towns College Focusrite Audio Engineering Fostex Corp. of America Fraunhofer Institute Integrated Circuits

Full Sail Center for the Recording Arts Furman Sound Inc. **G PRIME Limited** Galaxy Audio, Inc. also dba Valley Audio Gefen Systems GenelecOY Gepco International, Inc. Giltronics **Glenn Electronics Glyph** Technologies GML / Overquality Products Gold Line Gotham Switzerland Grace Design Groove Tubes Group One Ltd Hafler Professional Harris Grant Associates Ltd. Harrison by GLW, Inc. See AES, page 37 🕨

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AES, continued from page 35

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103rd AES CONVENTION DETAILS:

Show: The 103rd Audio Engineering Society Convention Where: Jacob K. Javitz Convention Center, New York City When: Sept 26 — 29, 1997 Cost: Advance registration fee \$225. Single admission on-site for a workshop \$35. Registration Information: Registration on-site; online at www.aes.org or by phone (212) 661-8528; Fax (212) 682-0477

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Radio-Related Papers at SBE

Alan R. Peterson

At press time, 13 technical paper sessions, were being prepared for the 25th Annual Regional SBE Convention in Syracuse. Of these, seven will be of interest to radio broadcast engineers. All presentations will be delivered Friday, Sept. 26, from 9 a.m. to 5 p.m., in Rooms A and B of the Four Points Convention Center.

At 9 a.m., Room B will host "The Pros and Cons of POTS Codecs with Live Demo," tentatively featuring John Andrews, technology development manager of Comrex Corp. and Tom Ray of WOR(AM), New York.

Cable on the table

Room A will be occupied at 9:45 a.m. for "The Future of Wire and Cable," delivered by Stephen H. Lampen, technology development manager of Belden Wire and Cable.

Lampen told **RW**, "My talk will be in two parts. First, the progress from analog to digital and the move to new types of cable and connectors to accomplish this."

A working knowledge of multimedia for the radio broadcast engineer is appropriate.

Lampen refers to the second part as the death of coaxial cable.

"Don't get me wrong," he said. "There will always be coax, but it will no longer be the cable of choice in installations. Coax has already died in the computer industry and there is now a television station running completely on twisted-pair."

Coaxial cable will remain a necessity in the RF chain, but according to Lampen, "Where we are moving signals, we are moving more towards networking and away from point-to-point wiring."

Also at 9:45 a.m., "Real Time Automatic Audio/Video Time Reduction" will start in Room B, featuring William B. Hendershott III of Prime Image. While of obvious importance to television engineers. the audio aspects of the presentations should be noted by radio broadcasters.

Later at 10:30 in the same room, "ENG Safety — Broadcasting's Revelation of the 90s" will feature Mark Bell, president of Battle For Safety.

Across the hall back in Room A, "Current Issues in Deploying the Digital Microwave STL" begins at 11:15 a.m. This session will be conducted by David E. Glidden, director of fixed radio systems for Microwave Radio Systems.

Following a noon lunch, the sessions resume at 1 p.m. in Room A with "A Closer Look at the New Multimedia Newsroom System." This paper will be delivered by David Schleifer of Avid Technology, Inc.

Again, while primarily a video session, a working knowledge of multimedia for the radio broadcast engineer is appropriate; especially if the station maintains a Web presence. Repeating his appearance from previous years, Resident FCC Agent Dave Viglione travels in from Buffalo to deliver the "FCC Update" in Room A at 1:45 p.m.

Voluntary inspection

"We'll be talking about the Alternative Broadcast Inspection Program," Viglione said. "This is where stations are inspected by an entity other than the FCC. Inspectors are trained in what to look for, and are paid by the station to inspect a facility."

The incentive to pay for a voluntary inspection is well worth it to most stations. Viglione said a station that passes



Syracuse, N.Y. Site of the SBE National Convention

such an inspection will not be visited by an actual FCC inspector for a period of three years. "If they don't pass," Viglione said, "there is the potential for fines and forfeiture."

Other developments Viglione will discuss include the case of one man sending false "Mayday" broadcasts over a marine band radio from inside his townhouse. The false broadcasts sent the Coast Guard off on a rescue mission into choppy, unsafe waters, jeopardizing the lives of all involved.

Viglione also will deliver the FCC position on the pros and cons of EAS and the touchy topic of FM pirate broadcasters.

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A unique capability of Digilink III is its ability to operate two studios from a single workstation. The most common application would be to use one workstation for both on air and production studios. The DL3 is placed in the production studio while a PCAT computer running Arrakis remote control software is placed in the on air studio.



The 99 button Gem-6CC control panel places hundreds of carts at your fingertips for only \$1,195

The production studio has complete single play-record-edit capability while the on air studio can independently use dual play for on air. While not a redundant system, it does provides a dual studio workstation solution for under \$11,000.

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Modulux studio furniture systems

Complete systems...

As illustrated in the Sony Worldwide Networks master control studio on the right (one of seven Arrakis studios in the Manhattan, New York complex), Arrakis can provide complete major market studios with Arrakis consoles, digital workstations, video-audio switchers, furniture, and system prewiring.

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> Sony Worldwide Networks Manhattan, New York



(Inde (13) On Reader Service Card

Alan R. Peterson

"It is the longest-running continuous regional show in the U.S.," is how SBE Executive Director John L. Poray described the Chapter 22 Regional Convention and Conference in Syracuse, N.Y., Sept. 26.

"It's their 25th anniversary, which made it a natural for us," he said.

With the discontinuation of the World Media Expo and its combined conventions, the Society of Broadcast Engineers (SBE) is now "dovetailing" its national meeting and associated events in conjunction with regional shows around the nation. First stop: the crossroads of upstate New York: Syracuse.

The actual conference for attendees, including manufacturer exhibits and workshops, is Friday, Sept. 26. But other SBE business takes place around that date

'We meet first on Thursday the 25th," said Poray. "This is when we have our SBE Annual Meeting. We are also going to get in our Board of Directors Meeting for the National Organization during this weekend."

Certification

And Saturday morning, after the attendees leave, the Certification Committee meets.

"This is where we have discussions about certification test questions," said Poray, "to find out if any questions should be eliminated or changed. We also discuss educational matters and re-evalu-ate the SBE-approved technical schools."

Fittingly enough, the hotel where the SBE Convention will be held is on 'Electronics Parkway.'

RECORDERS

STACK

These are schools and facilities that, in the view of the SBE, meet the requirements for technical education that earn member certification.

Awards to hand out

One of the advantages of having the national conference team up with a regional show is the additional pomp and ceremony brought into town. Usually at the end of the Chapter 22 show, it is time to drink up and swap business cards at an informal cocktail hour.

"This year," Poray said, "the involvement of the national office means the Annual Awards Dinner will take place here. Our guest speaker is going to be Bernard Wise, the founder of Energy-Onix."

The Awards Dinner is also when the society recognizes its Engineer of the Year, the Educator of the Year and makes a special Lifetime Achievement Award.

This year, we're giving the award posthumously to Philo Farnsworth, credited with being one of the developers of television and the holder of hundreds of patents for other technology," Poray said.

Poray has invited the widow and son of Farnsworth to travel to upstate New York for the presentation of the Lifetime Achievement Award and to receive an Honorary SBE Membership.

Future plans

When the Syracuse show ends, where to next?

"That is one of the things we will be discussing at the Board meeting," said Poray. "We have invitations from Seattle and Madison, Wis., to host the National Conference. We have also heard from Texas and the new chapter in Louisville. So we'll discuss it."

The Chapter 22 show is to be held at the Four Points Hotel and Convention Center in Liverpool, N.Y.; a suburb of Syracuse.

Fittingly enough, the hotel is located off the New York Thruway on "Electronics Parkway."

Exhibitor List at Chapter 22 SBE Conference and Convention, Sept 26, 1997

LIST IS SUBJECT TO CHANGE

Sony Electronics / Tape and Media Shively Labs Microwave Radio **Tape Services Dielectric Communications** Brit Audio & Video Prime Image TAE REP Odetics Audio Precision Armstrong Transmitter Wolf Coach (remote vehicles) Canon USA (video only) Systems Wireless Tektronics Harris Beers Assoc. **Panasonic Electronics** Philips-BTS Sigma Electronics RCS

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Circle (124) On Reader Service Card World Radio History

September 17, 1997

- FEATURES -

Webcasting on the Fast Track

Frank Beacham

When the history of Internet broadcasting is written, the summer of 1997 may well be remembered as the time when the new medium finally got its act together.

Once again it was the deep pockets of Microsoft that made it happen. In July, the computer giant announced a licensing agreement and minority investment in Progressive Networks, the inventors of the RealAudio and RealVideo streaming media technologies. Next came word that Microsoft would purchase VXtreme, another key multimedia player on the Net. Then a flurry of other dominos began to fall.

The bottom line: The Internet is on the fast track to a single, universal broadcast multimedia standard. In the end, a user will only have to flip the computer "dial" to the program of choice. The days of fumbling with various proprietary players and plug-ins will be over soon.

A viable medium

Microsoft's moves have given the fledgling new broadcast medium credibility.

ty. "We believe the Internet will become the next broadcast network," said Jim Durkin, product manager of Microsoft's NetShow streaming technology.

While the string of webcasting technology announcements dominated the summer news, webcast programming was the topic of an excellent two-day conference in New York City. Sponsored by the Center for Business Intelligence of Burlington, Mass., and moderated by Peggy Miles, president of Web consultant Intervox Communications of Washington, the conference brought together a who's who of major webcasters.

Perhaps the most interesting part of the event was the quick realization that webcasting is so new and primitive that no one — including the largest media corporations — really knows yet how to use it. For the moment, at least, broadcasting over the Internet is a level playing field where anyone with the right stuff can still be a successful participant.

Ironically, it was webcasters from the largest companies, in off-the-record chats, that expressed the most frustration in creating successful on-line media. One major executive told a group of attendees at lunch that having to deal with many egos promoting personal agendas on the website was the most difficult challenge in her organization.

"The lesson I learn over and over again: No matter how smart we think we are, we're not," said Patrick Seaman, chief technology officer of AudioNet, a major webcaster that now re-transmits the feeds of more than 250 radio and television stations. "We are constantly surprised at what is popular and what's not."

One of the things that surprised Seaman was the success of PoliceScanner.Com, an AudioNet web spin-off that offers live police scanner feeds from New York City, Los Angeles and Dallas. Coming soon: Web audio feeds from airport and fire department scanners.

Many websites offered by media companies fail because they are unfocused, unclear and vague, several new media executives told the conference. A key consideration for those planning a presence on the Web, they urged, is to know what the site is about before it is built.

"If you are going to take your website out to a dinner party, how would you introduce it?" asked Tom Regan, supervising on-line editor for the Christian Science Monitor. "If you can't summarize for someone what your website is really about in 25 words of less, then I don't think you know what your site is about."

There also were examples of combining elements of old media to create new media. One successful new Web enterprise combines radio drama (RealAudio), visuals and the traditional text of a novel to create a new form of interactive entertainment. Called "Digital Dramas," the series of multimedia stories about witchcraft is from Lifetime Television (www.lifetimetv.com).

"Before we started "Digital Dramas," we were averaging 2 million hits a month. In two weeks, it went up to 7 million hits," said Brian Donlan, vice president of new media at Lifetime Television. "The audience had to know it was getting something extra, different, better."

Another site, this one from Comedy Central (www.comedycentral.com), found success by offering "absolutely nothing of practical use" to its audience. "We know every single one of our (9 million) customers," said Larry Lieberman, vice president of strategic planning for the comedy cable channel. "They are goofing off. They are at home avoiding chores or they are at work getting paid while they goof off. We give them what they want."

To keep users on the site, Lieberman said his company uses a "bread crumb" approach to lure 'net surfers. "For every piece of content, we have a teaser to get you to the next piece of content," he said. "That's why we average about 12 minutes per viewing session."

On the technology front, AudioNet's



Seaman predicted that multicast — the ability to reach large numbers of listeners simultaneously — will become an important factor within six months to a year. "Things are changing very, very fast," he said. "We are negotiating (multicast) agreements now. By the end of this quarter, we expect to be able to reach 250,000 simultaneous listeners. By the end of the year, we'll reach at least 500,000 listeners via multicast."

The wireless way

Another fast-emerging technology for Internet broadcasting is wireless transmission, said Seaman. "This is a tremendous growth area because so much bandwidth has been freed up," he said, noting that AudioNet already was in discussions with several companies about offering such a service.

"I'm personally looking forward to the day when I can replace my car radio and listen to AudioNet while driving," he said. "I don't think that day is that far away."

Want to know more about webcasting? Here are two useful e-mail lists: For general webcasting info, send an e-mail to *majordomo@broadcast.net* and type "subscribe webcasting" in the text field. To join a list on upcoming webcasting events, send an e-mail to the same address with the words "subscribe webcasting-events" in the text field.

Frank Beacham is a writer and producer based in New York City.





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Radio World

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September 17, 1997

Don't Gamble Away Your Station

John Montone

Casinos, slot machines and other gambling enterprises are in the news these days. Radio managers should understand the special problems associated with those advertisers. The NAB Radio Show, being held this week in New Orleans, offers a



panel of interest. Moderator Steve Bookshester of the NAB will lead a panel that includes Chuck Kelley, the chief of the FCC Media Mass Enforcement Division, and several broadcast attorneys. They

Steve Bookshester

will talk about the pertinent rules and regulations during "Casino Gambling Spots, Contests and Promotions — What's Legal?"

The aim: to help keep stations out of trouble when they use games, lotteries and casino commercials to increase audience and revenue.

Bookshester, the NAB associate general counsel, said, "Except in Nevada, you can't run ads promoting casino gambling. So the question is, what can you say about casinos?

"What we will talk about is how to do interesting advertising promoting those activities in which a casino engages other than gaming," he said.

case challenging the constitutionality of the statute barring casino gambling spots.

"I think there's a better chance than not," Bookshester said, "that if the case gets to the Supreme Court, the justices will find it unconstitutional."

To complicate matters, the federal law applies to commercial casinos, like those in Atlantic City, but not to casinos on Indian reservations. Commercial gaming houses have charged race discrimination, and complained that the FCC is aiding their competitors.

In one case, Bookshester said, "A non-Indian card room, which under federal law can't advertise, was basically being

Sometimes radio people can forget how magical their medium can be, how

powerful the experience of walking into

a studio for the first time and sitting

down in front of a microphone. But one

station has turned that powerful magic

WVUD(FM) at the University of

Delaware in Newark, were able to fulfill

their broadcasting fantasies and at the

same time help out in the station's annual

spring "Radiothon." The WVUD "Dream

Hour" was a success for both the station

and the listeners. For \$60, an individual or

Several enthusiastic listeners to

into an effective fund raiser.

creamed by its competitors who were on an Indian reservation; and in that particular case, the court enjoined the FCC from enforcing the law."

The ultimate rule is not as obvious as it might first seem.

Bookshester promised to explain the web of statutes and judicial logic. "We're

Station Manager Chuck Tarver said

the student volunteers and paid personnel

at the block-formatted station agreed that

the event was a great experience. Tarver

said he would recommend it to any sta-

ed with DJ Chris Rewa, who hosts a one-

hour slot of folk music from the 1960s.

She thought it might be interesting to

have listeners participate actively in her

show by giving them the opportunity to

choose the music and host the show

This idea was introduced into other

along with her.

The idea for a "Dream Hour" originat-

tion seeking ideas for a fund raiser.

this," he said. Managers often ask the NAB if they can advertise contests that are planned by the

going to have a wonderful time doing

stations or their advertisers. Although laws are in place that cover such matters, Bookshester said, "The ultimate rule is not as obvious as it might first seem, so there are a number of exceptions."

Most station executives know that a lottery consists of a prize, chance and consideration. But, Bookshester said, the meaning of those terms can be unclear. For instance, does a test drive constitute consideration? Also, FCC regulations draw distinctions between contests run by stations and those run by advertisers, differences to be discussed by the panel ...

91.3 WVUD

ing groups and individuals worked with DJs at the station, choosing music and introducing it on the air. For individuals who wanted to take part in the "Dream Hour" but could not because of schedule conflicts, the station invited them to send a list of their favorite tunes, aired them and sent a tape of the broadcast.

Among the various "buyers" of a "Dream Hour" were a couple who used the "Dream Hour" to celebrate their anniversary, and an enthusiastic group of campers who share a passion for folk music

WVUD managers expect to repeat the "Dream Hour" next year, and are already taking names of prospective volunteers.

The WVUD Radiothon raised approx-

— Stephanie Muller



— RUNNING RADIO —

Creativity Meets the Budget

Mark Lapidus

"I really love that promotional idea, but we just can't do it. We don't have the budget."

I've heard this mantra repeated by promotion directors, program directors and general managers in markets of all sizes. It often is timed to kill any creative concept laid on the table. Once uttered, further discussion about creative concepts just dies. This is how the majority of stations winds up doing things like the standard music marathons and client-driven promotions.

There is a simple way to avoid the "We don't have the budget" trap: Don't ever think about budget when you're in creative mode!

This is not to say that you eliminate fiscal responsibility. But it comes later, after you've determined your best shot at attracting and entertaining an audience.

'Yes' men

Middle managers too often attempt to protect the boss from having to say "no." They imagine that the top gun is not a gambler, so they don't want to bother her with wacky ideas. But the truth is, many folks at the top get there through taking risks.

The best promotion and marketing concepts come from two sources. The first is a file kept by someone in promotion or programming. Every time you come across a successful event, contest, marketing campaign, specialty show or stunt, it should go into that file.

The people at your station are the other creative source. Once per quarter, hold a promotion/programming brainstorming session. And no, don't limit it to those two departments. Ask a few salespeople, the receptionist, traffic manager and sales assistants to drop by. They think differently than you and may generate atypical, superior broadcasting ideas. Don't forget, they also have a vested interest in the success of your station and will appreciate being asked for their input.

Update plans

Quarterly meetings allow you to update your annual plans constantly. The most successful stations think 12 to 13 months (not weeks!) into the future.

If you've never been involved in brainstorming, you may wish to track down reading materials. Entire books have been written on the subject! Check

Public Affairs Programming From AP and Newsweek

WASHINGTON Ever run out of timely ideas for your public affairs

programming? Do you have too many ideas and not enough resources to execute them? Either way, AP has a new program that may be of interest to you.

"Newsweek On Air" presents your audience with an exclusive, advanced look at Newsweek magazine. A coproduction of Newsweek and AP, the program offers interviews by Newsweek correspon-

dents of top newsmakers from House



whi

Speaker Newt Gingrich, R-Ga., to Microsoft's Bill Gates to Humorist Dave Barry to entertainers Tom Hanks and Bill Cosby. The program is anchored by Newsweek Senior Editor David Alpern and AP Network News Correspondent Warren Levinson.

The syndicated hour is designed to be entertaining, issue-oriented programming.

For more information, contact John Folger at (202) 736-9629 or circle **Reader Service 156**.



out the box on this page for some hints. Still wondering about the budget for marketing and promotion? It's true that the easiest outside marketing takes cash. But, as one of my clients regularly tells me, "Any fool can spend money."

There is a trick to marketing without a budget: relationships. Few stations allocate the time for a promotions department to develop relationships with television stations, direct mail companies and even sports, music and arena managers.

You're not going to get your message on the scoreboard at the next big sports event in your town if you don't have the connections to do co-promotions. There's no way your next big contest is going into that quarter-million distributed mail coupon envelope if you don't know the direct mail company.

Aside from regular trade, television stations are willing to do radio promotions. They advertise on radio regularly, but just like radio, most TV stations are too busy to develop relationships and put together promotion/marketing campaigns.

The best promotions don't cost money.

They either self-liquidate or make money. I know this because I've worked with many successful stations with small promotional budgets.

It takes smart people to dream up promotional ideas, and talented, energetic salespeople to sell them. If your station depends upon a team of transactional salespeople, you're not ready for the next century or even the next bad book.

Leave it to the pros

Before owners and general managers start cutting out this article and circling the "We don't need a budget" parts, please allow me to state the obvious: Those who invest wisely in professional people are the winners. Don't expect high performance from inexperienced personnel who have not been properly trained to do their jobs.

Working without a budget takes a pro. You can either find that special someone or provide the necessary training for your current staffers. The good news is that creativity and proactive execution can be bought. An investment in a great staff can make a limited budget go a long way.

Mark Lapidus is president of Lapidus Media. For marketing and programming consultation, call him at (703) 383-1805, or e-mail him at lapidus@erols.com

Basics of Brainstorming

- Write all ideas on a blackboard. Don't eliminate anything.
- Do not criticize at the initial stage.
- Pay no attention to titles. Nobody has more power than anyone else.
- Steer the discussion to another topic when you get stuck. For example, if you're brainstorming winter promotions, you might have people talk about winter vacations they've really enjoyed. This will probably ignite an idea from someone listening to a fun description.
- Choose the best idea from a board full of ideas. Copy to paper and save all ideas. Now is the time to apply common sense. Many of these ideas will be impossible to execute, but a few of them will be realistic, and most of all, attention-getting.



Circle (220) On Reader Service Card

– RUNNING RADIO -

Time to Grow the Radio Pie

Sharon Rae

How can radio broadcasters, who are experiencing all-time high profits and advertising, capture more of the advertising dollar?

Growing the radio pie was the focus of the Radio Advertising Bureau Breakfast at the Michigan Association of Broadcasters Annual Meeting and Management Retreat at the Shanty Creek Resort in Northern Michigan.

"It's not even close ... how many advertising dollars are shown in the newspaper and how much money is spent in radio and TV combined," said Karole White, president of MAB. "It was almost double spent in print. How do you focus and go out there and get that extra percentage ... not to sell against one another when you have a huge pile of money ... going completely out of the industry?"

The three ps

"A fundamental mission of what we do is expanding the money that's available for all radio operations to share in the advertising pie," said RAB Executive Vice President George Hyde. "There has been a tremendous focus this year on addressing the

Rank	Media	1997	1996	%Chg
1	Network TV	\$3,713.0	\$3,404.4	9.1
2	Newspaper	3,331.9	3,173.6	5.0
3	Spot TV	3,027.9	2,987.0	1.4
4	Consumer Magazine	2,637.0	2,347.1	12.3
5	Cable TV Networks	1,176.0	979.8	20.0
6	Syndicated TV	582.8	584.2	-0.2
7	National Newspaper	361.9	305.5	18.5
8	National Spot Radio	329.0	275.7	19.3
9	Sunday Magazine	248.1	240.0	3.4
10	Network Radio	209.4	199.6	4.9
11	Outdoor*	208.8	252.4	N/A
To State State State	Total	15,825.7	14,749.4	7.3

Notes: Dollars are in millions. Source: Competitive Media Reporting. *Two-year data not comparable.



declining performance of newspapers as an advertising medium and what opportunities radio advertisers may have as a result of that."

Hyde encouraged patience, persistence and perspective on the part of salespeople.

"While everyone wants this to move along quickly ... moving the needle up a little bit from whatever our true percentage of total advertising is and generating more ... I urge you to have a longer attention span and be focused," he said. "This is not going to happen immediately. Newspaper has been around since Gutenberg and we are not



Skip Essick (left) of Clear Channel Radio, With MAB Staffer Emily Horvath

going to make a sizable dent in it overnight." Hyde said many advertisers are much more comfortable with certain elements of newspaper.

"They may have been dealing with the same person at a newspaper for a lot longer. ... In almost every case they've been dealing with a newspaper a lot longer than they have any individual radio station," he said. "It takes some time to overcome those concerns. ... We just urge that while we move forward with all deliberate speed, we understand that there's not going to be some quantum leap in radio advertising at the expenditure of newspapers in any time frame that can be measured in months. It's going to take a while to do it." Skip Essick, general manager of Clear Channel Radio in Grand Rapids, Mich., agreed that radio does not get its share of the advertising buck and that growing the revenue in the market is his main focus.

Print problem

Essick said being a part of a big conglomerate has its advantages.

"We are able to offer a wide range of products and services to our customers, the advertiser," he said. "Like K-Mart. I've got my country department, rock, news talk, and AC."

Essick said technology trends in the industry translate into an opportunity to be more creative.

"That will benefit the advertiser as well."

Charles Frey, general manager of WAOR(FM) and WNIL(AM) in Niles, Mich., said he is concerned about the number of dollars it takes for radio to equal or exceed newspaper.

"Radio only gets 7 percent of the advertising budget," he said. "Newspaper is far and away the leader ... despite the

fact that newspaper keeps raising (advertising) rates while circulation keeps going down. It can't be that great a buy."

Hyde again stressed patience in waiting for the advertiser to come around.

"When you say reach, radio does not pop to top-of-mind awareness among major newspaper advertisers. ... When you say frequency, radio pops up, newspaper doesn't," he said.

Sharon Rae is a radio news director in Lansing, Mich., and principal of Rover News Services. She reported on a controversial billboard in Kalamazoo in our Aug. 20 issue.



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Gentner DH22 Dual Digital Hybrid

The DH22 provides two digital hybrids in a single rack mount unit. It is ideal for conferencing two lines or VIP applications with an out-of-station guest or host. Plus, it has selectable caller control, auto answer/disconnect, selectable call progress disconnect, and auto mix- minus. Get the features and benefits you want and need. The DH22 provides not just one, but all of the following:

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- RUNNING RADIO —

The Day the Cheerleading Stopped

A Laid-Off General Manager Ponders Success, Failure, as He Starts a Job Search in Today's Climate

Dick Taylor

Question: What is the primary role of a general manager? Answer: To be a cheerleader.

Every great organization has some form of leadership. Sometimes it's domineering and dictatorial, which is the old way of doing things. Today, leadership is participatory, providing passion and enthusiasm. It builds trust. It's not really just being a great leader that gets the job done, but being a great cheerleader. In sales, we talk about positive mental attitude. Every sale begins in the mind of the salesperson. Before you can sell anything to anybody, a salesperson must first believe they can make the sale. They must believe in themselves and they must believe in their radio station.

Positive attitude

But it doesn't stop in the sales department. This same positive mental attitude must permeate the entire radio station staff. Everyone must understand the goal and want to attain it.

A janitor working at NASA once was asked what his job was. "My job is to put a man on the moon," he said. Now that's a positive mental attitude.

Recently I've found myself looking for a job as a radio station general manager. I have been in radio for 29 years. I spent the first third of my career on the air and in programming. Then I was in sales and sales management. For the past 13 years I have been general manager of radio stations in Atlantic City, N.J.

These stations didn't always lead the market. It took years to build the

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*Rate is for a representative Space configuration. Individual requirements may vary, resulting in a differing rate.

Circle (77) On Reader Service Card World Radio History

property into the market ratings and revenue leader. But the thing that made the station so successful was the organization's mental attitude. I had assembled a group of talented, dedicated individuals.

My natural passion and enthusiasm for the radio business is contagious. The trust I developed with my team was unquestioned.

New owners recently hired a general manager to take over their Atlantic City radio stations. They want to take the properties to the next level. All along

> To everyone's surprise, the new owners announced that they would be changing general managers.

they assured me and the staff there would be "no changes."

After only five-and-a-half weeks, to everyone's surprise, the new owners announced that they would be changing general managers. Leading the line of the surprised was me.

The search begins

I know that I will find another company that feels as I do about the radio business. I know the radio stations I previously worked for won't go out of business because I'm no longer there. But what I now realize is that the trust between the new managers and their employees has been breached. The mental attitude of the staff has changed.

I was often told by members of the team that I was the glue that held things together. I usually pooh-poohed that



Dick Taylor

sentiment. Now I realize, as I go through interview after interview in search of my next general manager job, that nobody seems to be asking the question that matters most in a winning operation: Can you be a good cheerleader?

The will to win is not as important as the will to prepare to win. And to get the will to prepare to win, you need a positive mental attitude. It all starts at the top. It all starts with the radio station general manager. Do you have a cheerleader at the top of your organization?

Dick Taylor is the former general manager of WFPG-AM-FM in Atlantic City, N.J., and WKOE(FM) in Ocean City. Reach him at (609) 652-6625.

STATION SERVICES

Companies with announcements for Running Radio Station Services should send them to: Radio World, c/o Managing Editor, P.O. Box 1214, Falls Church, VA 22041

May the Force Be With You

If you're out driving and you see Thelma and Louise, tell them to turn away from that cliff and turn on their car radio. Things are better than they seem.

The award-winning "51%," from National Productions, promotes "women's intellectual force" and encourages "women's sense of themselves as independent doers and survivors."



"51%" is a four-time national award winner, most recently recognized by the National Women's Political Caucus and Radcliffe College with a 1996 Exceptional Merit Media Award for "Best Radio Feature/Large Market." The EMMAs honor outstanding coverage of women's issues.

"We highlight women, their accomplishments and the inequalities that women face worldwide rather than putting down men," said co-host Beth Engeler.

The program received its first EMMA in 1991. The American Women in Radio and Television and the American Legion Auxiliary Heart of America Committee also have honored the program.

For information contact Mary Winans at National Productions, (800) 323-9262 (ext. 104); or circle Reader Service 105.

Healthy Sales

A radio personality has crossed over to the publishing world with a best-selling book — and it's not Howard Stern or Don Imus.

Dr. Robert Atkins wants to make your life better, rather than write about his life. Atkins hosts "Your Health Choices," nationally syndicated by Complementary Communications Inc.



Atkins' book "Dr. Atkins' New Diet Revolution" has been a New York Times and USA Today paperback best-seller for more than a year.

For information contact Al

Herskovitz at Complementary Communications, Inc., (888) 781-9025; or circle Reader Service 129.

Turn to the Right

Contemporary Christian Music (CCM) continues to cross over to the secular marketplace, as evinced by the enormous



success of Bob C a r l i s l e 's "B u t t e r f l y Kisses," the first CCM album to top the Billboard Top 100 album chart. United Stations Radio Networks Inc. recently acquired pro-

duction company Right Turn Radio, producers of three CCM programs: "American Christian Music Review," "Face-to-Face," and "Face-to-Face II." United Stations already produces and distributes the weekend CCM program "SONRISE," making the company a major player in syndicated Christian music programming.

"There is a tremendous station demand and consumer appeal for the positive weekend music mix," said Nicholas J. Verbitsky, CEO and president of United Stations.

For information contact Julie Harris at United Stations, (212) 869-1111; or circle Reader Service 153.

Audio on The Internet

Audio products, that is.

Bose Corp. can now be found on the World Wide Web at *www.bose.com*. Web surfers can learn about the origins of the



company as well as the latest Bose products and technologies.

The Bose site is designed to minimize frustrations encountered on other Web pages. Senior Production Artist Matt Truenow said, "In printed material it doesn't matter how many graphics are on a page, but the more graphics you place on the Web, the longer a person has to wait to see that page. ... We decided that any graphic would have a functional purpose; most aid navigation."

For information contact Borman Associates at (800) 444-BOSE; or circle Reader Service 10.

Let's Talk Analog

If you are interested in "real-world signal processing," Analog Devices has some information it would like to share with you.

Newly available is Volume 31, Number 1 of "Analog Dialogue," featuring part one of an introductory series on DSP, an article on controller board



system and a how-to article for building a smart analog process-instrument transmitter.

Other sections of "Analog Dialogue" include "New Product Briefs," "Worth Reading" and "Editors Notes," which tackles the computer problem presented by the year 2000.

For information contact Literature Fulfillment at Analog Devices at (800) 262-5643; or circle Reader Service 34.

Sixty Seconds to A Better Car

Station managers would do well to

look into "The Car Clinic Minute," new for 1998 from J a m e s o n Broadcast. After all if a

After all, if a potential listerner's car isn't running, that's less time he or she is spending listening to their car radio. And that's no good for anybody, is it?

Join the 125-station line-up that will pick up the new program hosted by Bobby Likis.

"The Car Clinic Minute" will be distributed quarterly on CD.

For information contact Henry Canby at Jameson Broadcast, (800) 525-2175; or circle Reader Service 106.

Advertising Help And the Dating Scene

InXsys Broadcast Networks is offering RadioRecall, a non-traditional revenue partnership for your station. IBNS will supply you with the computer systems, Internet sites, interactive telecommunications systems, transcription and inputting of all advertiser commercials and listings.

RadioRecall works in the following manner:

When a listener misses and ad spot, he/she dials a toll-free line on your station interactive line.

He/she accesses a category list of advertisers.

He/she can hear a repeat of any ad running on your station.

Also from IBNS, RadioDate is the leader in voice personals for broadcasters. It is an interactive matching service that can be a source of non-traditional income.

Through the use of pay-per-call and credit card technologies, callers can be instantly matched with persons most likely to respond to them.

In addition to the cash flow, RadioDate generates valuable demographic information on users and provides a channel for advertisers to market to them on a one-to-one basis.

For information, contact Jim Spotts at (800) 825-6867; or circle **Reader** Service 204.



- Radio World -

Check Your Air Chain For Problems Now

W.C. Alexander

In our Aug. 20 issue, the conclusion to the story "How Healthy Is Your RF Plant?" was omitted inadvertently. We reprint the rest of the story here.

Transmitter building

Critters love warm transmitter buildings during cool weather. Varmints of all descriptions will utilize any opening, no matter how small, to gain entry. Once inside, they will find a warm, dry spot in which to hibernate, lay eggs or whatever critters do in the wintertime.

Cleaning of the transmitter site should include a professional extermination, whether or not an insect or rodent problem is evident. Because of the remote location of most transmitter sites, insects will abound and eventually cause problems. The best insurance is to exterminate aggressively. If you can stand the smell, use mothballs as described previously as a preventive measure.

A thorough check of air conditioning

and air handling units should top the list for building maintenance every year. Have a service company check the unit completely, performing any needed maintenance. Change all the filters yourself. Pick up two or more complete sets while you are shopping for filters so you have a set or two on hand for next time.

Look for evidence of roof leaks, cracked door seals and other ways that water can get in. A little water can do a lot of damage at a transmitter site.

Generator

Thunderstorm season is the time when the generator is likely to be needed the most. It is likely that your generator has done a lot of running during the spring months. Summer is a good time to check it to see how it has held up and check the fuel level. In addition to regular exercising of the unit, perform whatever regular preventive maintenance is recommended by the manufacturer. This probably includes changing the engine oil and filter, air filter, fuel filter, flushing the cooling system, and so forth.

Check the full-load voltage output and frequency, adjusting the governor as necessary. Some transmitters won't operate properly if the frequency of the AC power supply is much off the 60 Hz mark.

Review the exercise schedule to be sure it is adequate. Above all else, ensure that, when exercised, the generator runs long enough to reach its normal operating temperature. If shut down while still warming up, moisture will collect in the crankcase and cause corrosion. It would be better not to exercise the unit at all than to have too short a run-time.

Be on the lookout for bird/wasp nests in the generator housing, radiator, intake, and other areas. In addition to the "pest factor," these obstructions can impede the flow of induction or cooling air and result in generator damage or shutdown under load.

Finally, look for evidence of coolant, fuel and oil leaks. The unit may only leak when it is good and hot and running under load, and the only evidence you may see of this may be a stain on the concrete slab. Look for these stains and correct any leaks before they become big problems.

Insurance

While you're looking everything over, note all the equipment model and serial numbers and other identifying marks on an inventory list. Then, use this list to determine whether the insurance policy covering the site and equipment is adequate. The time to find out you are underinsured is not while filing a major claim! On the other hand, if you are overinsured, you're wasting money. An annual check of replacement costs is a good way to keep a handle on insurance coverage.

The weather may be good and warm right now, but the ice man cometh! The time to do outdoor maintenance is while you can. Make hay while the sun shines, and get that transmitter site in shape for fall and winter.





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III

World Radio History



Radio World

PRODUCT EVALUATION

Resource for Radio Production and Recording

September 17, 1997

Product Guide

See pp 57, 72

snap-to and butt-splice ad infinitum. Two CDJ units into a mixer lets you

delayed by technique.

load a sample on one deck, a music CD on the other and cut it all together in real time. Changes can be made based on immediate artistic decisions and not

The CDJ display also includes a red

bar graph that shows remaining time of a

cut as a linear concept. Numbers are one

Pioneer CD Rig: Maximum Mixes

Alan R. Peterson

Okay, so maybe the DAW *can't* do everything.

When given the choice of being able to segue and manipulate two pieces of music in real time with my hands, or cutting and pasting blocks on a workstation, I will go for the real time mix every time.

Digital editing, while powerful, can begin to feel somewhat "clinical" after awhile. A really exciting mix can enhance the performance behind a production, especially if the voice talent is tracking a dance or hip hop spot. With live mixing, there is immediacy as well as technical provess.

After all, this is the way we did it before the DAW came along and how club DJs still do it.

New generation DJ rig

Pioneer has come up with a pair of products that make mixing music from CD a creative pleasure: the CDJ 500 II compact disc player and the DJM 500 stereo mixer.

The design is inspired mostly by the rigs used by club disk jockeys: two CD "turntables" flanking a

"turntables" flanking a central mixer. Lots of radio veterans will probably draw a comparison between this unit and the old '70s-era Sparta "Dittydesk" and club rigs made by Numark, Gemini and others.

The CDJ 500 II compact disc player is a flattop design with a large jog wheel, buttons for looping, a Master Tempo slider and a large fluorescent display.

Like analog turntables, the CDJ 500 can be beat-matched to another sound source by using the jog wheel, then slip-cued on the beat for seamless segues.

Different tempos are no problem for the CDJ 500 II. The deck's Master



Pioneer CDJ 500 II and DJM 500: Mixes On the Fly

without the music becoming "chipmunked."

Tempo slider lets you alter the tempo of

a cut without affecting the pitch. A song

going at 125 beats per minute (bpm) can

be easily matched to another at 135 bpm

A built-in Cue Point Sampler allows you to mark a cue point on-the-fly during play. Every time the Cue button on the CD player is pressed, the playback jumps back to that exact point with no time lag. This is a very powerful feature.

To compare it to a conventional DAW process, say you wish to rhythmically play back a sample against another song already rolling. The DAW requires snapping a marker to each beat of the music bed and pasting the sample one track below. Efficient, but passionless; especially when you need to "stutter" or rhythmically machine-gun the sample for effect. You need to trim, paste, thing, but that little red bar creates an urgency that a countdown timer cannot match.

Going loopy

Really good DJs and production people can "stab" a sample or loop point without trimming and while the music is playing. The result sounds musical and effective without being sterile.

The Pioneer CDJ deck lets you set a loop into motion with Loop In and Loop Out buttons. Set the points where you want a passage to repeat then hit Loop In. The passage will play in a continuous pattern. Press Loop Out and it disengages.

See PIONEER, page 55



New Developments in Recordable CD Devices

Carl Lindemann

Despite the overwhelming popularity of CDs, Recordable CD (CD-R) has not made much of an impact at radio stations. This seems odd, given the need to archive the myriads of megabytes churned out by digital audio production.

And without CD-R, salespeople continue to make presentations with low-tech, lo-fi audiocassettes.

The problem is that creating CDs has been an awkward task. CD-R units have been geared mostly towards the needs of professional recording studies, not radio station



Sony CSP-960H CD-R Drive

production. But changes in CD-R recording methods have changed that.

With this improved utility, CD-R units are likely to gain a wider acceptance.

The latest product in the Sony

CD-R line, the 960 series, moves away from the CD-R original discat-once methodology.

All at once

The standard of recording studios, disc-at-once limits "burning" information or music into CDs to a one-time only proposition. To get the most of each disc, you have to wait till you gather and prepare a full CD worth of material.

This suits musicians who may be interested in producing glass masters for CD replication. But radio stations produce commercials and other on-air elements piecemeal. As a rule, you do not hold off production until there is enough material to fill a CD.

As such, disc-at-once is at odds with the workflow of radio production.

The all-or-nothing aspect of discat-once creates other complications. It puts significant demands on the host computer. Keeping up to 650MB of data streaming unimpeded to the recorder requires costly A/V-tuned SCSI hard drives. Otherwise, buffer underrun (a momentary lapse in the data stream) renders the recordings unusable.

These problems left CD-R See CD-R, page 56

— STUDIO SESSIONS —

Field Recording in Jerusalem

Rich Rarey

Much, if not most of the NPR overseas newsgathering efforts concentrate on getting the interview; talking to the academic, the political leader, the common man, the military leader.

Occasionally, a news gig comes along that allows more pure sound gathering. Listening to human activity and the environment, rather than speech.

That was our task several months ago: go to Jerusalem, record the sounds of this ancient city and gather a smattering of interviews to provide continuity between the aural scenes.

NPR Foreign Editor Loren Jenkins,

Think of Them as Reference Monitors You Can Wear

When you need to hear exactly what you've recorded... nothing more, nothing less... then only Sennheiser's HD 25 SP will do. Excellent isolation, with clear, accurate reproduction are the trademarks of these referencequality headphones. Plus, they're MUCH more comfortable than wearing speakers.

Your project studio is incomplete without the HD 25 SP. Check them out today at your local Sennheiser dealer.



IEE BOUCHSHIT YN PAA': BOAASI 1759 IN CALIFORNIA: 4116 WEST MAGNOLIA BLVD. SUITE 100, BURBANK, CA 9505 - TEL IBL 845, 7366 - FAE BILAS, 7140 IN CANADA: 221 LABROSSE AVE., PTE-CLAIRE, PQ H9R 1A3 TEL: 514,426,3013 FAX: 514,426,3953 himself once a reporter based in Jerusalem, elaborated:

"(I) would hope to avoid all but the most unavoidable politics to try to get under the skin of what makes the city so special: its history, its mix of cultures and peoples, its revered religious monuments, its diversity and internal contradictions, its beauty and its exotic nature, the passions of those who live there as their ancestors over the centuries have lived despite the cruelties that history has regularly dealt the city and its inhabitants.

"I guess, what I would like is a rich "All Things Considered" piece that would evoke the sights, sounds and smells and emotions that make Jerusalem, 'Jerusalem.'

The piece would evoke a once rich and terrifying past as well as dogged present of life in this most extraordinary of cities."

Sound expedition

NPR Reporter Alex Chadwick had traveled widely but never been to Jerusalem, so his ears and eyes would be our guide for this recording.

Our consummate producer, Michael Sullivan, had worked in Jerusalem over a dozen times in the last few years, but had never had the chance to attempt a puresound expedition of the city.

In addition to the radio pieces, we were to gather sound and interviews for a future installment of the NPR/National Geographic radio series "Radio Expeditions." This was a far more demanding project than simple sound recording, because we would need to record ambiance simultaneously from different physical perspectives.

Ten days before departure, we broke the engineering tasks into phases: First, select, test and pack equipment at NPR. Next, Travel to Jerusalem via Frankfurt, Germany, and Tel Aviv.

Third, set up a working editorial space in the Jerusalem hotel room. Fourth, record sound and interviews for three radio pieces and National Geographic. Fifth, edit and assemble actualities, interviews and reporter tracks for transmission to NPR.

Sixth, we needed to transmit all unmixed elements for the "big piece" in stereo, to NPR from the NPR Jerusalem office. Finally, pack and return to the United States.

Know what to expect

Because of previous trips to Jerusalem, we could anticipate what travel and equipment shipping would be like and knew that we wouldn't have to worry about the vagaries of water quality and electricity outages. In fact, we were looking forward to the local cuisine.

Fun fact: there are two McDonalds in Jerusalem, one Domino's Pizza and one diner devoted expressly to Elvis Presley memorabilia, sans the black velvet paintings of the King of Rock 'n' Roll.

After discussing the recording and transmission requirements with the producer, the technical directors of "All Things Considered," and of "Radio Expeditions," the NPR engineering shop manager and the NPR telecom manager, we had a good idea of what the equipment had to do, how it could best be carried and how to transmit it back to NPR.

To visualize the big picture, we sketched then drew lines where interconnections were to be made. This visualization lets you see things like the ways M-S World Radio History



microphone decoding can be done in the field, where redundancy of specialty cables and little things like attenuator pads, adapters, and headphones are needed.

Once completed, we packed according to the plan, and in the field, would connect by the plan. This would give us enormous confidence to handle the unexpected.

An Excel computer "workbook" is prepared that contains three spreadsheets: Recording Equipment, Microphones and Miscellaneous, and Transmission and AC power. As each item from the sketch is identified, its description is entered into the spreadsheet, with additional columns for Country of Origin, NPR inventory number, Manufacturer's Serial Number, Value in U.S. dollars and in which road case the equipment is packed.

When a specific item is pulled from the shelf and packed, the additional columns are filled in. This extra information is crucial for transporting equipment across international borders, and provides an organized document for packing. Best of all, it makes sense when repacking for return into the United States.

Open the bag, sir

U.S. Customs looks with curiosity when an engineer returning from overseas presents himself with two cartfuls of roadcases — equipment of some sort — and has nothing to declare.

To avoid the unpleasantness of having your equipment held in custody while you produce proof-of-ownership or worse, have

to pay import taxes on equipment that you already own, you must take steps to prove equipment ownership before you leave the United States. Fortunately, it is a straightforward affair.

For this remote, it only involved a pre-flight trip to the airport Customs Office with all the equipment, and several printed copies

of our spreadsheets. An official form with the sender's name, company address and general description of the equipment ("Equipment for the recording, editing and transmission of audio") is completed.

A customs officer then escorts you to the van, arbitrarily point to a roadcase, ask you to open it and point to an item. He or she will want you to show the corresponding listing of your spreadsheet. This continues until he or she is satisfied that your spreadsheet accurately reflects the contents, at which time your form is signed and stamped.

This official document becomes your proof that the equipment you are returning to the United States is not subject to import duty.

We have found that treating these officers with courtesy and respect always yields the same treatment in return and we appreciated our officer's efficiency in the process.

In the next installment, we will begin the actual equipment selection based on the gig, get on our flight, and tangle with extremely strict airport security on our stopover.

Rich Rarey is technical director of NPR's "Talk of the Nation." His most recent **RW** article was a review of the Sony D-8 DAT recorder, which accompanied him on the Jerusalem trip.

Rugged New Mixer From Allen & Heath

British mixer manufacturer Allen & Heath just made things easier for people doing small-scale production with the new MixWizard WZ20:8:2 mixer.

This dedicated eight-track recording board with stereo cue and effects routing is designed for production on modular digital multitrack recorders (MDMs).

Most computer-based digital multitrack recorders mix within the machine via software, but users of multitrack reel, cassette, ADAT and DA-88 compatible tape-based systems require an external mixing console. The MixWizard fits this requirement nicely.

Eight mono mic/line inputs on balanced XLRs and jacks are available, along with individual channel inserts, six Aux Sends and four-band EQ.

Six stereo line inputs have two-band EQ, six Aux Sends and switchable +4 dBv/-10 dBu operation. Full 100mm faders are used throughout.

Of equal importance is the "Mixdown" switch, which instantly routes the multitrack recorder back through the inputs, allowing the benefit of full-channel effects, EQ and inserts.

The MixWizard WZ20:8:2 is com-

workstations as well. Machines equipped



The Eight-bus MixWizard WZ20:8:2

with multiple soundcards can have inputs and outputs routed through the board for real hands-on control of the audio. The virtual mixer native to the software is left wide open and all mix decisions can be made on the WZ20:8:2.

Contact Allen & Heath for more information on the MixWizard series on audio consoles at (801) 568-7660 or circle **Reader Service 131.**

urer Allen & pletely appropriate for computer-based ier for people workstations as well. Machines equipped

- STUDIO SESSIONS -

DAW Software: Power, Not Price

Val Davis

I must have been very good in a previous life. It is the only way I can explain the good fortune that rolls my way. This time I get to review four affordable PC-based multitrack recorders.

For the benefit of those still stuck in Tapeland, asking, "What exactly is a PC-based multitrack recorder?", here we go.

A PC with soundcard and proper software can become a very effective digital editor. You can record audio directly into a PC as a soundfile and then edit it.

Editing removes undesirable noise, copying and pasting tracks creates "double tracking"; audio processing like compression, chorusing, echo and flanging allow manipulation of the sound.

When such a system can operate in a manner analogous to a multitrack tape recorder — synchronized playback of several soundfiles at once and, to a lesser extent, simultaneous recording



The Samplitude Mix Screen

of multiple sources — a computer audio editor moves into the realm of multitrack recorder.

Some packages are satisfactory for radio production, while others are fullblown multitrack tools more suited for professional recording studios. All of these software packages will run under Windows 95. Some run in Windows 3.1, while others are better optimized for the 32-bit NT platform.

The playing field is getting pretty crowded with these high-tech digital tools, but only a few are real players. With acknowledgement to the more expensive systems from Spectral, Arrakis, Digidesign and others, we will instead examine four serious PC-based production tools that cost less than \$1,000, which narrows the field considerably. The list is as follows:

• Samplitude — Comes either as a standalone piece of software or in the ARC 44 package which includes a high- end soundcard and the Samplitude software. Both are less than \$1,000.

• Saw Plus — Software Audio Workshop (SAW) was one of the first PC-based multitrack editors. SAW Plus adds a lot of features to the original software and also sells for less than \$1,000. • *Multiquence* — From the makers of GoldWave, one of the first two-track digital editors for the PC. This shareware product is a basic multitrack editor which costs only \$50 to register and it works well.

• Cool Edit Pro — From the makers of Cool Edit and Cool Edit 96. This is a powerful system that has a suggested retail of \$399 and it does a lot.

Samplitude

Samplitude is software written in Germany by SEK'D. When I first got



A Radio Favorite: SAW Plus

the shareware version off of the Web, I was amazed. This was the first PCbased digital editor I had seen that worked in a Windows environment and would support literally *any*

sound card that had multimedia drivers. I quickly laid some music

and voice tracks down and was pleased at the possibilities. Samplitude has built-in audio processing and can link directly to MIDI files, allowing a producer to create background audio or music, then lay down vocals or a voiceover all in one session with only the PC. Samplitude can handle up to 16 mono tracks or eight stereo tracks.

The editor is a little clumsy in that it creates pointers within an audio file whenever you make edits to a file. This means that the file stays in its original form, which takes up more hard drive space. However, the non-destructive edits allow you to change your mind without losing the original audio track.

Samplitude features virtual and hard disk projects, MPEG format support, real time resampling from 48 kHz to 41.1 kHz and a multitude of other features.

Draw volume curves, create automated mixes, add effects to selected sections of an audio file, copy and paste audio files, adjust time characteristics of an audio file or scrub audio files in real time while editing. The list is endless.

The onscreen mixer features EQ, Pan, Aux sends 1 and 2, Compression, and Aux returns. There are also virtual slide faders that you adjust with the mouse or macro keys. You can also solo each track, gang tracks or mute tracks all from the onscreen mixing console. This is cool software that is a serious studio tool. Samplitude is available from

Hohner Midia (yes, the harmonica

• *Multiquence* — From the makers of people) at (707) 578-2023 or circle GoldWave, one of the first two-track *Reader Service 130*.

SAW Plus

SAW Plus from Innovative Quality Software (IQS) features many improvements over the original four stereotrack program. SAW Plus is available in a 16-bit version or 32-bit version (SAW Plus32) for Windows 95 and NT.

The new version includes up to 24 stereo or mono tracks, 0.25 dB fader resolution, support of up to eight stereo sound cards, realtime mixing of different sample rates, drag-and-drop nondestructive editing and more.

SAW Plus resembles a real mixer and multitrack recorder. Some work went into making this feel like a tool that studio professionals would be comfortable with.

When working in SAW Plus, you can record audio directly into the Multitrack editor or first as a sound file that you can edit and then copy to the multitrack screen.

Once the track is recorded, you create Regions to process, splice, copy, adjust volume and mute to your needs.

The 32-bit version of SAW Plus takes advantage of the direct linear file access that is available in Windows 95 and NT.

Minimum hardware requirements for SAW Plus is a 166 MHz Pentium (or



Give Me Fifty: Shareware Multiquence

compatible) machine with at least 16MB RAM. Better performance is achieved with 32MB RAM. The 32-bit version requires at least 64MB RAM.

On a 166 MHz system with 64MB, SAW Plus will comfortably handle 16 tracks, while the 32-bit version on the same machine will handle 20 tracks. Often, the limiting factor in track numbers is hard drive speed.

SAW Plus also features compression, reverb, a graphic equalizer, echo and other effects. The program can convert bit rate and sample rate. Virtual meter bridges and reverb are available to increase the capability of the basic system.

SAW Plus supports most audio file formats including MPEG. IQS struck a deal with QDesign to use its softwarebased real-time MPEG encoder/decoder.

SAW Plus is in over 5,000 studios and radio stations and easily compares to systems priced many times its suggested \$700 price.

Contact IQS at (702) 435-9077 or via e-mail at *www.iqsoft.com* or *circle Reader Service 154*.

Multiquence

This remarkable little piece of shareware checks in well within our \$1,000 criteria. How does \$50 grab you?

While Multiquence does not feature many of the advanced audio processing capabilities of its counterparts, it works fine for simple multitrack production. You can record tracks directly into the multitrack screen, import tracks or link MIDI files.

Multiquence allows the insertion of audio files, MIDI files, CD tracks or even video cuts to all be incorporated into the project. Each element is assigned to an individual track. You might lay down a video track of your mother talking and put the voice of Elmer Fudd on another track, while a piece of MIDI music is playing in the background.

Pretty neat stuff for a package that costs only \$50.

This software is suited for radio stations on shoestring budgets or curious

See DAW, page 54 🕨



- STUDIO SESSIONS -

Mini-Money DAWs, Mega

DAW, continued from page 53

users that want an introduction and practice at multitrack editing without making a huge investment.

Download the shareware version at www.goldwave.com and if you like it, pay the 50 bucks. (Editor's note: The Goldwave Web page shows Multiquence is still in beta stage. Be sure you actually want it before paying for it.)

Cool Edit Pro

The original Cool Edit two-track digital editor was released over two years ago. The multitrack Cool Edit Pro



The Contender: Cool Edit Pro

is the next logical step.

Cool Edit Pro supports up to 64 tracks of digital audio, depending on

your system CPU, hard drive and memory. Like SAW Plus, tracks can be recorded directly into the multitrack screen or first into the WAV editing screen then imported into the multitrack screen.

Once audio is recorded, you can edit, add processing like flanging, chorusing, echo, time or pitch shift, reverse (for backward masking) or any other effect. Cool Edit Pro also has built-in compression, expansion and limiting.

Tracks can be EQ'd, adjusted for volume and pan and can be muted and solo'd.

Cool Edit Pro will mix all tracks down to a single audio file. It can sync to SMPTE and MIDI timecode but will not generate timecode. It is fast, easy to use and supports virtually all formats including MPEG.

> While recording, the wave is drawn in real time on the screen. This is something you only see on much higher-end systems such as the Orban DSE-7000.

Cool Edit Pro seems to be the easiest to learn of all the editors I have used. All of the operations follow a nice logi-

cal flow. Cool Edit Pro should be on the shelves right about the time you read this. Suggested retail is \$399. Cool Edit Pro is from Syntrillium Software. You can "try-before-youbuy" at www.syntrillium.com

How's it sound?

The issue of sound quality will depend on the soundcard you choose. Some brands include the ubiquitous SoundBlaster, Turtle Beach, APT, Antex, Echo, Digigram, Digital Audio Labs and Digidesign.

Some of these audio cards have only



Compare your current-day workstation to what your granddaddy used to record on.

This is an Armour Research Foundation *wire* recorder from 1943, which recorded audio magnetically onto a spool of steel wire. The hand is pointing to the recording head.

Wire recorders predated tape

one stereo input and one stereo output, while others feature multiple inputs and outputs. Some feature special audio processing chips that allow for special functions.

It will be hard to decide which of these systems will be best suited for your needs, but once you are working on a digital editor, your world will never be the same.

Val Davis is a broadcast automation consultant, producer and morning drive announcer at KEMB(FM) in Emmetsburg Iowa. He can be reached at vdavis@nerds.com

machines by only a short time during the 1940s. When tape manufacturers got it right during the '50s, wire recorders disappeared.

The recording media was unique, inasmuch as if you wanted to make a splice, you cut the wire and tied a knot in it. At a time when early tape machines could only handle a few minutes of storage on oxide-faced paper tape, this recorder could play back six hours of speech-quality audio from a 3-3/4-inch spool.

Get a look at that Record light. This NE-2 neon bulb only told you if there was a signal present.

The Armour recorder was portable, but not exactly a laptop: this specimen weighed in at 40 pounds.

-Alan R. Peterson



Circle (221) On Reader Service Card

Put Your Hands On the Music

PIONEER, continued from page 51

If you want it back, Reloop instantly returns to the established loop points. This kind of creative control lets you repeatedly return to a musical phrase within a composition for added drama or impact and with no time lag.

The mixer

The companion DJM 500 mixer includes an automatic BPM Counter. Presumably a low-pass filter isolates and follows the bass drum hits on most dance and hip hop CDs, then rapidly calculates the bpm and displays it in an LED window. Two such displays follow each CDJ compact disc player.

An effects bus lets you rapidly switch in echo, flanging, reverb, pitch shifting and autopan features. These can be left on continuously, but are designed to be

Each fader will start a CD when actuated and recue it when ramped to zero.

switched in and out as the music suggests. Using the BPM Counter and a little brainpower, you can come up with multiples of a song's actual bpm and drop in short delays that match the tempo.

The reverb is somewhat grainy and limited, and the pitch shifter glitches when the pitch is slid upwards. Understand these are just part of the overall bag of tricks found in the DJM mixer and are not meant to be any threat to the Harmonizers of the world.

Radio producers may complain about the short-throw faders, but that is real life in the DJ mixer world. You will hardly ever find 100mm sliders in this arena. These faders are meant more for fast slam-in, slam-out mixes than the delicate nature of studio consoles. You will probably like the three-band EQ and the LED VU meter bar on each channel.

Pioneer added a slick feature to the DJM faders. An extra control cable couples the mixer to the transport logic of the CDJ players for machine control and back-cue playback.

Each channel fader will start a CD deck when actuated and recue it every time the fader is ramped back to zero. This control is very fast and responsive and lets you do high-speed stutters in real time.

Sample playback

The Cross-fader — not found on pro or broadcast mixing consoles — can control the sample trigger on a deck. This keeps you from having to reach over and work the Cue button on each CDJ deck. Control over the playback of both CD players, once cued, can be done directly from the DJM mixer.

As mentioned, the combination of the CDJ and DJM units is ideal for complete on-the-fly mixouts of music tracks in dance club spots. It is a natural per-

former in the air studio for those latenight "Mix" shows where a club DJ comes in and does his/her best mixes on the air.

Remixing, or "reconstructing" songs is possible with the Pioneer CDJ and DJM system. This is where samples and snippets are added to an existing song for a realtime dance mix that can have the station's own signature (lots of contemporary hip hop producers got their start by reconstructing songs from Madonna, Cece Peniston and others). The BPM Counter lets you set the tempo of a drum computer against the CD that is playing for added texture.

If there are any quibbles, it would be

in the quality of the effects. Yes, they are not meant to be studio/laboratory quality effects, but someday you may want to run your voice or another audio source through the DJM 500 mixer. The result may not impress you.

"The ballistics of the jog wheels do not feel like real turntables." That was the impression given by the air talent at WKYS "KISS-FM" in Washington, who got to use the Pioneer system for a month.

In reality, turntables themselves do not "feel like turntables." You are not actually turning the weighted platter portion, but are spinning a piece of vinyl against the friction offered by a rubber or felt surface. Perhaps someday, some company will address this and create a virtual platter that has the exact feel of a turntable.

For now, the large weighted jog wheel has a good feel and just takes a little getting used to.

With all of the digital support you are getting in the production room, it feels good to put your hands right on the music and directly manipulate it. This is why the Pioneer CDJ 500 II player and DJM 500 mixer are worth some attention.

Pioneer announced the upcoming Fall release of new models based on the CDJ and DJM products. The existing models are still available.

For information, contact Pioneer at (800) PIONEER or circle Reader Service 107.



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Every radio engineer knows that's what they want from their STL system. No noise. Just spectrally efficient, robust audio. In other words, an STL system that puts out audio exactly the way it was put in.

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- STUDIO SESSIONS —

Radio May Be Ready for CD-R

CD-R, continued from page 51

unable to compete with DAT and other more reliable formats better suited to the day-to-day production needs of radio. But disc-at-once has given way to other methodologies.

A packet in the pocket

First, track-at-once recording made it possible to lay down tracks sequentially. Now packet recording makes the CD-R seem like any other mass storage device.

Dirk Peters is the national marketing manager of the Value Added Products Division, Computer Components and Peripherals Group of Sony Electronics. He sees this evolution broadening the appeal of CD-Rs.

This is the fifth generation of CD-R," said Peters. "The original drives came out '90 to '91. Disc-at-once ruled until about '94. Then track-at-once took over from '94 until '96. Now packet recording is taking off."

Multiple-session recording makes for mainstream usability. It also means fewer misfired discs, affectionately known as "coasters."

"With packet recording, it is almost impossible to have a buffer underrun ruin a disc," said Peters.

Taking this claim as a challenge, I set out to make a few "coasters."

The 960 series is a 2x record/6x read unit that comes packaged with various SCSI adapter card and software combinations. I tested a CSP-960H internal drive. Intended for data archiving, it comes bundled with the Adaptec 1502 SCSI adapter card and DirectCD software.

Saving large soundfiles from my PCbased digital editing package was simple. Available only under Windows 95, DirectCD lets you drag and drop files to the recorder using Windows Explorer.

Despite my best attempts at sabotage, I successfully burned large amounts of data onto discs. Taboo activities that interrupt data flow, leaving the screen saver on or opening other programs, went unpunished. I was even able to import lengthy soundfiles directly off sluggish ZIP discs.

My only misfire was probably caused by attempts to erase files accidentally recorded in the wrong folder. Even though the CD-R appears to be like any other storage device, it is not quite the same.

Laser spray

Making CDs in multiple sessions has a downside. It creates data artifacts from the laser-etching process. When the laser shuts off after writing, it does not fade instantaneously. As it dims, it leaves "data spray," or random bytes of information between files.

According to Peters, this has no effect whatsoever on data CDs.

"The file system knows what to read and what to ignore," said Peters.

As promised, the data spray did not interfere with the 960 ability to create consistently readable data discs.

Making audio CDs offered other challenges. Using the Adaptec Easy-CD Pro. I built a number of demo discs from WAV files. Instead of packet recording, audio recordings utilize track-at-once. This means you have to be cautious about buffer underruns. Still, the 960 operation was virtually flawless.

Mastering an audio CD was not much more complicated than storing data. But here, data spray causes audible remnants. The occasional "tic" between tracks is not too bad, and is almost reminiscent of surface noise on LP records.

The stray data also means that these discs are not totally compliant with the Red Book music CD standard.

It should be noted that units in the Sony 960 series do not perform disc-atonce music recording required to make masters for CD replication. This won't

any professional audio or broadcast

application - from the network tele-

borhood church.

No line loss

(CMRR)

48kHz sampling

No ground loops

CLEAR ADVANTAGES

production facility down to the neigh-

Inherent immunity to EMI and RFI

High common mode rejection ratio

Transmission distances to 100+ km

Modular design: expandable from

2 to 12 channels on one fiber

Analog or AES/EBU digital output

Data interface for transmission of

SMPTE, RS232/422/485, MIDI

Easy installation and field set-up

A complete Fibox system comprises

one or more Input modules, one or

more Output modules (either analog

or AES/EBU digital), plus fiber optic

cabling and any required power

mounting hardware.

supplies, linking cables, and rack

20-bit A/D and D/A conversion:

108dB dynamic range

TE

FIBOX SYSTEM

impact most radio applications, however. A Pro version supporting discat-once will be released next year.

Another idiosyncrasy is that unlike data CDs, partially written music discs will not play until "closed" to further recording.

The ear test

Despite all this, how does the finished product sound?

Pretty good. To my ears, CDs from the Sony unit yielded sounds somewhat harsher, more "digital" than the source material. But that is a minor quibble.

The increased usability of the fifth generation CD-R does not make it a

replacement for DAT and/or MiniDisc. Each continues to serve a purpose. But with the cost of CD-R discs down to as low as \$3 each, they offer a tremendous value in data storage: a half-cent per megabyte. For Peters, this assures a place in the market with "CD-R providing the most cost-effective storage solution for several years to come."

The format that could potentially be threatened by the CD-R is the audiocassette. CD-R allows account executives to make "classier," more effective audio presentations to prospective clients.

These can go beyond spec spots to communicate a station position in the market; crucial information for potential advertisers who had never heard of you until the sales rep dropped in.

See CD-R, page 57 🕨

(F





FBAO







FBDO

SLAVE BACK PANEL







In one compact unit, the FBAI-M incorporates a two-channel preamplifier, 20-bit delta-sigma A/D converters, a digital multiplexer, and a fiber optic transmitter. The FBAI-M accepts either microphone-level or line-level signals on balanced XLR inputs. The microphone preamplifier offers performance comparable to the finest studio mixing consoles, making the FBAI-M ideal for extremely demanding applications such as direct-to-digital remote recording of classical music. Phantom powering (48V) is provided for condenser microphones, selectable on/off with a front panel switch. Also on the front panel, each channel of the

FBAI-M is provided with a Mic/Line input selector switch, a continuously variable gain control (4 to 70dB boost in "Mic" position only), and "peak" LED to indicate input overload. A rear panel input polarity ("phase") reversal switch is provided for channel 1

FIBOX FBAO-M TWO CHANNEL ANALOG MASTER OUTPUT MODULE

The FBAO-M accepts and demultiplexes optical signals from a FBAI-M transmitter, and converts two channels of digital signal to analog using stateof-the-art 20-bit colinear D/A converters. Co-linear converters offer higher resolution near bipolar zero for greater accuracy and significantly reduced distortion. Analog outputs are balanced on XLR connectors with an average output level of +4dBu and a peak output of +20dBu. A front panel headphone jack is provided for monitoring and signal tracing. Connection of headphones does not interrupt main line outputs.

FIBOX FBDO-M TWO-CHANNEL DIGITAL MASTER OUTPUT MODULE

The FBDO-M accepts and demultiplexes optical signals from a FBAI-M transmitter, and converts two channels of the digital signal to AES/EBU or SPDIF format. Multiple rate converters provide output sampling frequencies selectable at 32kHz, 44.1kHz, 44.056kHz, or 48kHz by a front panel rotary switch. A fifth switch position allows sync to an external reference signal. Output is provided on both XLR (110 ohm) and BNC (75 ohm) connectors, and a TOSLINK fiber connector.

KCI Knight's Communications Inc., 2219 West Broadway, Fort Worth, Texas 76102 USA +1-817-877-3037 Fax 817-877-3039 800-880-5061

PRODUCT GUIDE

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

Sabine Feedback Eliminator

Sabine adds to its line of feedback elimination devices with the new FBX-1020, an upgraded version of the FBX-901, but with a lower price.



The 1020 is a single-channel unit that automatically senses feedback, determines its center frequency and "digs a hole" under the feedback by placing a narrow constant-Q digital notch filter precisely on the frequency. The process works constantly during the program.

The new 1020 has 10 feedback filters, an internal power supply, front panel controls for setting parameters and ClipGuard level control circuitry that can increase dynamic range by 10 dB.

List price of the Sabine FBX-1020 is \$599.95

For information, contact Sabine Inc., in Florida at (904) 418-2000 or circle Reader Service 178.

SONEX "Classic" Panels

The original illbruck SONEX foam

panels for control of reverberation in studio spaces are now known as SONEX classic panels.

The popular product contain banks of modified anechoic wedges that redirect sound waves into the foam material. The sound is converted into kinetic energy and absorbed. The adhesive-mounted 2by-4-foot panels are available in the original polyurethane foam in a variety of depths, or in "willtec" Class 1-rated melamine foam.

Sound absorption coefficients vary with thickness and frequency. Full test data and pricing information is available from the company on request.



For information, contact illbruck, inc., in Minnesota at (612) 520-3620 or circle Reader Service 202.

KCI Knight's Communications Inc.

FIBOX MASTER AND SLAVE MODULES

Master modules (-M) have the circuitry and connectors for fiber optic transmission. Slave modules (-SL) must be linked to a master module with the optional linking cable; LKI-6 for input modules, LKO-6 for output modules. This allows one master and up to five slave modules to connect to the fiber optic cable, for up to 12 channels of full bandwidth audio. The input master is the FBAI-M (analog input) module. Output masters are the FBAO-M (analog) or the FBDO-M (AES/EBU digital). Input slave modules are the FBAI-SL and the DATI-SL (data). Output slaves are the FBAO-SL, FBDO-SL, and the DATO-SL (data). See separate data sheet for information on Fibox data modules.

Units are shipped with a plug-in, wall-type transformer power supply. They may be installed as a stand-alone box or up to 3 units may be mounted in a 19-inch rack panel using the optional RMK rack mount kit.

The master modules are available for multimode or singlemode (-SM) fiber. They use standard ST fiber connectors, assuring ease of use and fast set-up in the field or on the sound stage.





ELECTRICAL SPECIFICATIONS

A/D Converter D/A Converter Oversampling Bandwidth **Dynamic Range Channel Separation** Power

FBAI:

Input Impedance Input Sensitivity Gain Control **Phantom Power** Phase Reversal Mic/Line Switch

FBAO: Output Impedance **Output Level**

Monitor Output Ground Lift

FBDO: **Output Format** Connectors

Wavelength

Wavelength

Dimensions

MULTIMODE (-M):

Recommended Fiber

Optical Power Budget

Recommended Fiber

Optical Power Budget

Receiver Input Sensitivity

Transmitter Output

SINGLEMODE (-SM):

Transmitter Output

OPTICAL SPECIFICATIONS

20-bit delta-sigma 20-bit co-linear 64x 0.1 Hz - 21.5 kHz (-3dB) 108dB typical (A weighted) 98dB or greater 12Vdc, 1A maximum

3k ohm -70dB to +20dB +48V switchable on/off Switchable on channel 1 Provided on both channels

39 ohm +4dBu average +20dBu peak -2 dBu average Switchable on channel 1

AES/EBU or SPDIF XLR (110 ohm), BNC (75 ohm) **TOSLINK** (fiber)

1310nm 62.5/125µm -14 to -18dBm -33.5dBm minimum (Average) **Receiver Input Sensitivity** -14.0dBm maximum 15.5dBm

> 1310nm (1550 available) 9/125µm 0dBm maximum -33.5dBm minimum (Average) -14.0dBm maximum 30dBm

PHYSICAL CHARACTERISTICS 6" x 1.75" x 8" (W x H x D) 150mm x 44mm x 200mm 2 lbs. 7.5 oz/1.12kg (master) 2 lbs. 5.7 oz/1.07kg (slave)

Apogee CD-R Media The Apogee Electronics recordable compact disc (CD-R) is a fully Orange

both 74-minute and 63-minute lengths. The Apogee CD-R features a phthalocyanine dye layer, giving it a goldenhued appearance, as opposed to the greenish appearance of cyanine-based media. Each disc comes with a one-year warranty and has an estimated archival lifetime of greater than 100 years.

Book-compatible media available in

The logo printing on the disc surface is done to minimize the amount of ink used and preserve the balance of the disc when in motion. Apogee also has special CD-R markers to title your recordings

Each CD-R is supplied in a standard jewel case with inlay card.

For information, contact Apogee Electronics in California at (310) 915-1000 or circle Reader Service 11.

See NEW, page 72

Recordable **CD** Decks

CD-R, continued from page 56

Sure, you can put the identical demo on cassette. But prospects are more likely to skip around through tracks on their CD player than fastforward and rewind through a lengthy tape.

As of this writing, the Sony 960 CD-R street price is under \$350. Whether by increasing sales or decreasing archiving costs, it should pay for itself many times over before giving way to its likely successor, the recordable DVD.

Watch for more new developments in recordable CD technology here in Studio Sessions.

Carl Lindemann is former production director of WCDQ(FM)/ WSME(AM), Sanford, Maine, and is now preparing his daily feature "CyberScene" for syndication. Reach him at carl@radioshow.net or at (207) 676-8525.

Weight

Continuously variable

SPECIAL REPORT **Fibox Passes With Flying Colors**

Dwight Weller

The Fibox from Lightwave Systems inc. (LSi) is a creative approach to transporting broadband (0.1 Hz to 25 kHz) two-channel audio on one fiber optic cable. It can do so with fiber lengths up to 2.5 miles with no degradation or compression-related artifacts.

Using 20-bit linear A/D and D/A conversion, this "Cool Stuff"-winning product marks a milestone in hauling audio point-to-point while eliminating problems often associated with distance, copper wire, ground loops and EMI/RFI.

On the panel

The FBAI-M transmitter of the Fibox set measures 5.7 inches by 1.7 inches by 8.2 inches and weighs less than four pounds, making it easy to slip into a remote kit.

The rear panel of the unit features XLR connectors for audio input, a phase reversal toggle switch, 12 VDC power jack, a DB15F data port and an ST style connector for the multimodetype fiber optic cable.

The front panel contains a mic/line switch and rotary attenuator for mic level control from -70 dB to +20.5 dB, a 48-volt phantom power switch and a main power switch with green LED power indicator and red overload indicators.

The FBAO-M receiver is of the same dimensions and weight as the FBAI-M and has rear panel connections for +4 dB audio output via male XLR connector and a ground-lift switch along with power, data and fiber ports.

The simple front panel has a power switch, green LED power indicator and a quarter-inch TRS stereo headphone jack.

Hauling audio

The obvious typical applications for the Fibox system include venues where audio must be transported over short or long distances such as STL applications, theme park runs, stadiums, live concerts, film lots and golf tournaments.

The Fibox is capable of wide bandwidth, 100 dB channel separation, "A"weighted 108 dB S/N ratio with an IHD+N of 0.006 percent.

Three Fibox units may be mounted next to each other in a single 19-inch rack space. The chassis have a dovetail on each side which allows the units to slide together — a nice feature in both remote vehicle and control room environments.

Additional LSi components can be added to the system, such as the LK6-I (input) and LK6-O (output) kits; these allow as many as six Fiboxes to share a single fiber optic cable, providing twelve discrete audio channels with the first unit in the chain as a master and



the other units as slaves.

SMPTE Time Code may be passed through the master fiber via optional FBSMPTE-I and FBSMPTE-O external modules. These SMPTE modules replace one Fibox audio input/output pair in multiple channel configurations, allowing five Fibox audio units (10 audio channels) plus SMPTE code on one fiber cable.

Control signals, synchronization protocols or data can be transported through the Fibox with a little coaching from factory technicians. Conservation of cable can be appreciated in situations where multiple signals and information from the same location are routed to the same destination.

Lighthouse Digital Systems, a separate company not connected to LSi, manufactures a unit called the Pathfinder which provides additional capabilities when used in conjunction with Fibox.

The Pathfinder is a high-speed switching and routing matrix that accepts virtually any type of digital signal, either on fiber optic cable or as an electrical signal on coaxial cable.

It allows digital-domain switching of the bitstream from a Fibox input unit (or several units) to various Fibox output boxes, or switching to AES/EBU digital output interface units forthcoming from LSi.

The not-so-obvious uses of the Fibox

set include seismic technologies of fault monitoring and oil/gas exploration. More important to broadcasters: communications links in EMI/RFI-polluted environments that would not otherwise be possible where RPU and wireless mics present unwanted surprises during or before a broadcast.

As an added plus, frequency coordination becomes a thing of the past when optical fiber is used.

Let there be light

I bench-tested the demo unit end-toend by using the factory-supplied 2-foot fiber jumper cable. The set exceeded manufacturer-published specifications by a fair margin as well as performing beyond the capability of conventional broadcast test apparatus.

In fairness to RW readers, I decided

The Fibox is an excellent addition to a broadcaster's remote system.

to test it under "real-life" environmental conditions after the bench test and enlisted the aid of supervisory personnel from the local telephone company. They were helpful in supplying a pointto-point fiber run of greater than two miles with no intermediate equipment that would have weighted our test data.

Because they are in the business of selling fiber optic pipelines to local clients for video and T-1 applications, the local telco was also able to supply test sets capable of measuring exactly what the Fibox system could do.

The tests that we conducted verified that the Fibox performed as well in the field as it did on the bench. None of the test results changed when the long run of fiber was substituted for the short jumper cable.

This fact, when combined with the performance results already proven beyond the published conservatively-

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rated specs, demonstrates quality almost never found with current technology. The features supported by the Fibox

set — the small size, the 1.2 ampere current requirement at 12 VDC (15 watts AC) and minimal heat production - combine to make the Fibox an excellent addition to a broadcaster's remote system. In fact, it could probably pay for itself over time, factoring in cost differences between fiber and ISDN circuits as well as connecting non-colocated duopolized properties without tying up their ISDN equipment.

Hop-shots

The Fibox makes those double- and triple-hop STL shots that depend on line-of-sight paths, uninterrupted AC supplies or EQ telco lines. Simple battery packs can provide hours of Fibox use for remote broadcasting or during power failures; telco surge protection is not an issue with fiber systems.

Mobile recording studios, sound reinforcement companies, theme parks and stadiums will appreciate saving money on time, labor and material by using fiber multiplexing instead of expensive multi-pair conventional copper cables and the associated loss of gain and high frequencies over long cable runs.

For information on the Fibox sys-

tem, contact Lightwave Systems inc., in Dallas at (214) 741-5142 or circle Reader Service 159.

Dwight Weller, CPBE, is the owner of Weller Audio-Visual Engineering in Baltimore, specializing in remote broadcast equipment rental and on-site production of radio remotes nationwide. He can be reached at (410) 252-8351 or via fax: (410) 252-4261.



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Buyer's Guide

Radio World

Monitors & Headphones

Sounding Terrific!

In radio, sound is what it's all about. This month in Buyer's Guide, we look at products that allow you to hear what your audience hears: Monitors and Headphones

Al Peterson "monitors" the trends in speaker design that the radio industry demands

Harrisburg, Pennsylvania radio voice John Wilsbach analyzes the Shure SM2 head-

set. How will it stand up against "the hardest durability test known to broadcasters?" Do your speakers sound "tubby" or "muffled?" Bruce Bartlett explains what it all means in the Monitor Jargon Glossary. When you go looking to buy monitors. you will never again wonder what the salesperson means by those confusing terms describing a monitor's sound.

As is now our standard, look for Technology Updates listing the monitors and headphones available.

Also, be sure to flip back a couple of pages and catch the review of the Lightwave Fibox transmission system by prominent Baltimore engineer Dwight Weller.

Keep sending us your feedback! E-mail us at sgary@imaspub.com with your comments and suggestions.

> - Susan Gary Buyer's Guide Editor

New Trends in Studio Monitoring Systems

Emphasis on most monitor design trends today is in ultra-accurate reproduction, smaller size and in some cases, builtin amplification.

These observations come from representatives of four prominent loudspeaker manufacturers who shared their thoughts with **RW**.

Wild ride

For radio studio monitors, nearly anything goes.

It is possible to wander into some of the older established stations and still find functioning Lansing "Voice of the Theater" cabinets, *circa* 1966. You are just as likely to encounter Radio Shack "Minimus" speakers in the production room as you are a set of E-V Sentry 100A powered monitors

It is equally possible to find pairs of "computer fair" mini-speakers meant for games connected to PC-based editors

When station income is based solely on sound, there had better be some assurance that it is being heard right. Companies that manufacture monitor speakers are making sure you are hearing it better and better.

Mark Bertrand, marketing and media relations director for Tannoy/TGI North America, noted, "Radio stations that buy our speakers are doing so because they are becoming more particular as to what they hear."

The Tannoy 800S speakers are the ones drawing the attention of these stations. In a way, digital audio has forced the issue of better speakers, but Bertrand points out, "Our speakers do more than reveal clarity. They often reveal when a crappy digital converter is being used."

According to Bertrand, "It is this kind of

critical response that stations are looking for in both powered and passive speakers."

Juice that cabinet!

Will Eggleston, marketing director of Genelec, sees the popularity of powered monitors growing.

"Five years ago, maybe four or five manufacturers made active monitors. Today there are 24," he said.



Dynamic range in monitors has come a long way since the days of the gramophone.

Eggleston commented that running an amplifed signal to passive speakers "over 30 feet of cable" comes with problems of its own, and that powered monitors are the way to go. He also noted the inherent differences between an "active" and a "powered" monitor.

"An active monitor has an electronic crossover before the amplifers, for bi-amping and tri-amping," he said. "A 'powered' monitor is basically one where an amplifer is 'glued and screwed' to the back of a speaker.'

Eggleston's take on speaker trends for radio is one in favor of improved quality all the way to the end user.

See TRENDS, page 61

World Radio History

TECHNICAL TERMS **Describing the Sound of a Monitor**

Susan Gary with **Bruce Bartlett**

When broadcasters talk about the sound of their station, they can mean the format, the style, or literally, the end product as heard by listeners.

Similarly, a variety of terms are used to describe end-product audio as heard in speakers and headphones. It is often easier to characterize the sonic quality of a monitoring system subjectively than analytically.

For example, say your program director

says the station sounds "piercing" through a certain pair of speakers. He or she may not know this is due to response spikes in the 3 kHz to 10 kHz range, but you do.

The sonic "colors" of a monitor or headphone under consideration are intangible and often difficult to describe. There are plenty of terms and definitions common to the audio industry that describe the way a monitor or headphone set sounds.

Here, RW columnist Bruce Bartlett provides such a listing of audio terms. These See GLOSSARY, page 61



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-BUYER'S GUIDE

Wanted: Big Bass, Small Cabinet

TRENDS, continued from page 58

"Everybody's audio is getting better. You can't even buy a TV anymore that isn't at least stereo. The trend is for better monitoring at the source," he said. "The Fox network is going through a lot of rebuilding and they're buying up lots of our speakers."

It may be accurate to infer from Eggleston's comments that radio's rebuilding efforts through consolidation will also force the issue of higher-quality monitoring as part of an overall upgrade.

Let's get small

Observations from EVI's Frank Walker point out the difficulty some speaker manufacturers go through.

"People tell us, 'Make it smaller, but keep it sounding the same'," he said.

Walker is with the Technical Support division of EV1, makers of the Electro-Voice line of monitors, including the Sentry self-powered units. His comments come from those made by customers.

"Folks want more bass in their speakers." he said. ""More thump', they tell us. Then they want their nearfield speakers made smaller, while still keeping the big sound."

Lots of bass in a compact nearfield unit is pretty much impossible, but Walker said EV has a secret project in the works that should satisfy a lot of users.

But how small can speakers get? Those terrible little 2-inch loudspeakers that came inside transistor radios 30 years ago got a new lease on life with the creation of "blaster" monitors that are sold with computer sound cards.

Most mix decisions are not made on small, inaccurate monitors such as these, but small speakers with big sound are desirable for the computer audio market.

A company in Pennsylvania has

licensed the Altec Lansing name for a set of high-fidelity computer speakers with a separate woofer for improved bass.

Walker said, "We realize they are out there, but we don't make them ourselves." David Kim of JBL Professional was

short and sweet in his assessment. "Broadcast users want more accuracy, higher SPLs (sound pressure levels) and more controlled off-axis response, because the rooms are all over the place. We are developing new monitors called the 'LSR' line that address this condition and we will debut them this fall."

There are plenty of monitor choices available, both nearfield and big box, that are right for your station or studio. Read the accompanying material and product data in *Buyer's Guide*.

- Alan R. Peterson

This Monitor Sounds Like ...

GLOSSARY, continued from page 58

will come in handy when you try to describe what you experience when auditioning a monitor for purchase.

• Airy: Spacious. Open. Good reproduction of high-frequency reflections. High frequency response extends to 15 or 20 kHz.

• **Bassy:** Emphasized low frequencies below about 200 Hz.

• **Boxy:** Having resonance as if the music were enclosed in a box. Sometimes an emphasis around 250 to 500 Hz.

• Edgy: Too much high frequency content. Trebly. Harmonics are too strong relative to the fundamentals. Distorted, having unwanted harmonics that add an edge or raspiness.

• Fat: Or. spatially diffuse — a sound panned to one channel then delayed, with the delayed signal panned to the other

channel. Or, slightly distorted with analog tape or tube distortion.

• Grainy: Audio sounding as if segmented into little grains, rather than flowing in one continuous piece. Not liquid or fluid. Early A/D converters sounded grainy, as do some inadequately designed modern ones.

• Harsh: Too much upper midrange. Peaks in the frequency response between 2 kHz and 6 kHz. Also excessive phase shift in a digital recorder's low-pass filter. • Muffled: Just what it sounds like: weak highs or weak upper mids. Speaker sounds as if it is covered with a blanket.

• **Piercing:** Strident, hard on the ears, screechy. Having sharp, narrow peaks in the response around 3 kHz to 10 kHz.

• **Punchy:** Good reproduction of dynamics. Good transient response, with strong impact. Sometimes a bump around 5 kHz or 20 kHz.

· Smeared: Lacking detail. Poor tran-

sient response, too much leakage between microphones. Poorly focused images.

• Spacious: Conveying a sense of space, ambiance, or room around the instruments. Stereo reverb. Early reflections.

• **Tight:** Good low-frequency transient response and detail.

• **Transparent: De**tailed, clear, not muddy. Wide flat frequency response, sharp time response, very low distortion and noise.

• **Tubby:** Low-frequency resonance. Sounds as if you are speaking in a bathtub.

• Warm: Good bass, adequate low frequencies, adequate fundamentals relative to harmonics. Not thin, Could also mean excessive bass or mid-bass. Also, pleasantly spacious, with adequate reverberation at low frequencies. "Warm highs" means "sweet highs."

Heyyyy Dude, Like Nice Speakers, Man!

You thought you had seen it all after Al Peterson showed you "Monitors from Mars" (RW, Dec. 11, 1996), but LPB in Pennsylvania has another extraordinary monitor to add to the list.

The Spatial One speaker combines bass extension with the Fractional Spacial System (FSS) tweeter technology in a compact speaker package. The 6-1/2-inch SEAS-driver woofer and 1inch Phillips fabric dome tweeter are housed in a cabinet made of ... hemp.

The cabinets are custom-made in Hungary using compressed hemp fibers, dyed in Australia using soybased inks and then shipped to the United States. The material behaves the same as non-resonant particleboard.

According to LPB literature, "Hemp is one of the most space-saving renewable materials on the planet.

... By maximizing the production of a small area using a renewable plant, the natural forests of the Earth remain unscathed while you rock on."

The Spatial One is finished in natural deep green or optional matte black. It has a frequency range of 50 Hz to 20 kHz and a sensitivity rating of 90 dB at 1-watt, 1-meter. The crossover frequency is at 3.5 kHz.

And for those of you wondering: Do not attempt to grow these speakers at home unless you want a visit from the Feds. It is illegal to grow and cultivate hemp inside the United States, but it is legal to import products made from it.



For more information or a demo (listening demonstration, that is), contact LPB in Pennsylvania at (610) 644-1123; fax: (610) 644-8651, via email: lpbsales@lpbinc.com or circle Reader Service 32.

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-BUYER'S GUIDE-

TARGET HEADPHONES SM2 Shure Works Wonderfully

John Wilsbach

When I took the Shure SM2 headset out of the box, I was not really sure what to expect. I had been using headset/mics from another leading brand since I began my broadcasting career. The Shure SM2 was lighter than the headset I had been using, but was somewhat similar to the older Telex PH91. And boy, it had a really neat retro look.

I tested the Shure SM2 surrounded by

crowds ranging in size from 1,000 at high school football games to 10,000 at professional indoor

soccer broadcasts. During the 60-day trial period allowed for my tests, I used the headset with two different remote broadcast consoles: the Zercom MAX-Z II and the Shure M267 board.

Swapping headsets

I broadcast eight games using the Shure SM2, and on two occasions, alternated between the SM2 and two others from a different manufacturer. My engineer and studio producer both agreed that the Shure SM2 sounded slightly better than the other models. In fact, the word they used was "crisper."

I, on the other hand, could not really detect a difference, although it can be said the earphones on the SM2 did not seem as sensitive as on the other models. I noticed the headset volume and output level had to be turned up higher on both the Shure and Zercom mixers to accommodate the lessened sensitivity of the Shure SM2. The headset specs show 100 Hz to 8 kHz, which is a perfectly reasonable range for speech.

The microphone is about the diameter of a dime and performed well in cutting out unnecessary background noise, while keeping the crowd on the air at just the right level. The mic arm is thin, but sufficiently adjustable to accommodate various facial and speaking positions. Mic response is 50 Hz to 15 kHz.

Keeping quiet

I noticed during my comparison, the Shure SM2 was also a lot quieter than the other models, in terms of mechanical noise. Sportscasters have a tendency to touch or reposition their headset a great deal. A headset with a more plastic construction is more likely to pick up the lit-

tle taps and clunks of normal use while the SM2 —which is similar to the old Telex PH91 — is more

metal than plastic. It may seem as if I am picking on plastic, but I have become very annoyed with headset noise over the years. I prefer less plastic in the headset construc-

tion rather than more. Unfortunately, the SM2 does not come with a cough switch. Every

Pacific Research & Engineering appointed Susan Dingethal vice president of sales and marketing. Dingethal comes to PR&E from Broadcast Electronics (BE) and will direct the domestic and international sales, oversee the company sales, marketing and business development initiatives with emphasis on broadcasting.

Dale Reed has been appointed vice president-marketing at **Trompter Electronics Inc.** Reed will oversee all product marketing, facilitate the development of new products and direct the company's advertising program.

Reed, who most recently served as general manager of Soladyne, a Merix



sportscaster knows there are times when you have to clear your throat or hiccup after a sip of a beverage. The cough switch saves a lot of embarrassment and can be a real lifesaver.

However, the SM2 does come with loose-ended wire instead of connectors, and you may wire your own preferred cough switch configuration, while adding on the XLR and quarter-inch

company, has a background in RF and has authored many technical papers. He also worked for Rogers Corp. for 23 years, serving in various sales/marketing positions.

Dave Gale has joined the Audio Broadcast Group, Inc. as director of engineering/project engineer for systems integration. He will be located in the corporate office in Grand Rapids, Mich. Gale is the former chief engineer for Pathfinder Communications.

ALTEL Systems Inc. appointed **Troy B. Jensen** to the position of Operations Manager. Jensen brings 17 years of working within the professional audio industry to ALTEL; he plugs, or other connectors of your choice.

The SM2 could also use some cushion pads on top. It starts to become a little uncomfortable after two hours of wear.

Cruel and unusual

The Shure SM2 withstood the hardest durability test known to broadcasters: living two months with me.

I have been known to treat equipment worse than the American Tourister Luggage gorilla, and the SM2 racked up plenty of frequent flyer miles by my side and in the bag.

The Shure SM2 is a very good headset/mic combo. Adding those cushions I mentioned would make them excellent. The list price of the Shure SM2 is \$277. When you compare the price to that of other manufacturers, the Shure SM2 is a reasonable bargain.

For information on the SM2, contact Shure Brothers at (847) 866-2527 or circle **Reader Service 56**.

John Wilsbach is the radio voice of the Harrisburg Heat pro indoor soccer team and manages educational station WMSS-FM in Middletown, Pa.

has experience in systems d e s i g n , a c o u s t i c a l design, project management, CAD, computer networking, plus sales/ marketing.



Marcus M. Annicelli was appointed director of manufacturing for Fiber Options Inc. Annicelli, who has more than 20 years of experience in electronic manufacturing, will oversee all activities regarding manufacturing operations, focusing on implementing a world class manufacturing concept.

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BUYER'S GUIDE

TARGET MONITORS 'Do You Hear What I Hear?'

Your station has exceptional talent and reliable equipment, but how do you sound to the audience? These companies have monitors that allow talent and producers to hear what your audience hears.

ALESIS

Designed to produce more low-end punch, the Monitor One studio reference monitor from Alesis uses SuperPort venting technology that avoids the "choking"

effect of smaller, shorter ports. The Monitor One can accept 120 watts of continuous program material and 200watt peaks.

The Monitor One works well with ADAT and ADAT-XT digital recording systems and the super-flat frequency response, 45 Hz to 18 kHz, ±3 dB, allows critical reference monitoring.

The Monitor One features a proprietary 6.5-inch low-frequency driver with a special mineral-filled polypropylene cone, a strong linear rubber surround and a 1-1/2-inch voice coil wound on a hightemperature Kapton former. The 1-inch silk-dome high-frequency driver is ferrofluid cooled and fed by a 2,500 Hz crossover network.

For more information, contact Alesis in California at (310) 558-4590; fax: (310) 836-9192 or circle Reader Service 8.

WESTLAKE AUDIO

Westlake Audio developed the Lc 6.75 monitor for professional audio monitoring in small control rooms, mobile recording, on-air or production. The Lc 6.75 (shown here with speaker muff) features a 3/4-inch soft dome tweeter that

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extends the effective sound power output to 18 kHz. The bass production comes from a 6 1/2-inch polypropylene woofer, which, when combined with the dual ports and aligned cabinet, produce bass sound to 60 Hz or beyond.

The impedance levels range from a nominal 7 ohms to a minimum 5 ohms and the monitor draws 80 W of continuous power.

Housed in a 16-inch by 8-inch by 10inch cabinet, the Lc 6.75 weighs 22 pounds. The standard finish is black utility paint.

For more information, contact Westlake Audio in California at (805) 499-3686; fax: (805) 498-2571 or circle Reader Service 179.

AXI/DYNAUDIO ACOUSTICS

New from AXI, the U.S. distributor for Dynaudio Acoustics, is the BM6A near field monitor. An active two way system, the BM6A uses a 7-inch magnesium silicate impregnated polypropylene bass drive unit and a 1-inch soft dome treble unit with aluminum voice coil.

For improved bass response, power handling and distortion figures, the bass unit features a 3-inch voice coil and advanced dedicated amplifier electronics. Power and "clip-on" indicators are mounted on the front baffle, which features specially radiused corners for minimized cabinet edge diffraction effects.

Using a discrete MOSFET design, the amplifier section is driven by a low frequency equalizer that offers a choice between extended, critically damped or high Qt response.

For more information, contact Barry Fox in Mass. at (617) 982-2626; fax: (617) 982-2625 or circle Reader Service 128.

АТС/ННВ

Handmade in England and distributed through HHB, the ATC SCM Pro Series features a soft dome midrange driver for controlled dispersion, ensuring an even response within a large listening area. Also, with the soft dome midrange driver, reverberant sound field matches the on-axis sound, producing a flat response.

The SCM Pro Series also features super linear magnetic materials, which are electrical insulators capable of supporting high levels of magnetic flux to eliminate distortion caused by eddy currents in the magnetic pole piece and front plate.

With seven standard monitors in the series, SCM10 Pro, SCM20SL Pro, See MONITORS, page 65

MONITORS continued from page 64

SCM100A Pro, SCM150A Pro, SCM200A, Pro and SCM300A Pro, the newest in the series is the SCM20A Pro Active Portable Monitor.

For more information, contact HHB in Maine at (207) 773-2424 or fax: (207) 773-2422, via e-mail: 75671.3316@compuserve.com visit the website: www. hhb.co.uk or circle Reader Service 80.

AUDIO INDEPENDENCE/QUESTED

The versatility of the H208 monitor from Quested allows it to be used as a soffit-mounted monitor in the smaller control room or as a mid-field reference unit in a larger one.

The compact three-way passive enclosure is housed in 25mm MDF. Each bass driver is loaded in its own chamber, while the mid-range driver is mounted in a third.

The direct radiator design utilizes complimentary softdome and cone drivers fed through the crossover. With this design, the drive units are mechanically matched as closely as possible, which produces a crossover with few complexities.

The monitor is free of "hot spots" and the use of high-tolerance crossover circuitry with minimal phase shift allows accurate, stable stereo imagery.

For more information, contact Audio Independence in Wisconsin at (608) 831-8700; fax: (608) 831-7100 or circle Reader Service 104.

AUDIX

The Powerhouse Series of monitors from Audix feature self-powered monitors designed as two-way integrated systems. Each speaker contains a woofer and tweeter and a passive crossover. The crossover divides the incoming signal between the woofer and tweeter.

The series contains five models: PH-3, PH-511, PH-6, PH-15 and PH-25. Each



pair offers a single volume control for both sides, stereo RCA inputs, a quarterinch speaker output jack to connect the second speaker and a power input jack.

All speakers in the series have a 4-ohm nominal impedance and range in sensitivity (1 watt per 1 meter) from 87 dB to 91 dB. The frequency response is from 100 Hz to 20 kHz with the PH-3 and 50 Hz to 20 kHz with the PH-15 and PH-25.

For more information, contact Audix in California at (714) 588-8072; fax: (714) 588-8172 or circle Reader Service 12.

GALAXY AUDIO

Developed for nearfield vocal monitoring, the Hot Spot and Hot Spot VC from Galaxy Audio feature two ferro fluid cooled 5-inch drivers with 40-ounce magnet structures. They weigh 8 pounds and have the power handling capacities of 200 watts.

The Hot Spot monitors also contain 96 dB (1 watt per 1 meter) sensitivity and a maximum SPL of 123 dB (200 watts per 1/2 meter). Housed in a cabinet constructed of black high-impact ABS plastic, the Hot Spot monitors have a charcoal foam grill.

The jack configuration makes linking Hot Spots possible. The Hot Spot VC features a front-mounted seven-step volume control that offers 18 dB of adjustability (in 3 dB increments). An integral adapter allows the Hot Spot to be mounted on a microphone stand. A black vinyl strap handle is available.

For more information, contact Galaxy Audio in Kansas at (316) 263-2852; fax: (316) 263-0642, visit the website: www.galaxyaudio.com or circle Reader Service 155.

GROUP ONE

A new driver design, which is based on the K-RoK monitor, provides 75 watts of power for the new RoKit Personal Shielded Monitor from KRK, exclusively distributed by Group One. The RoKit is a passive, two-way, shielded personal studio monitor that has a frequency response range of 69 Hz to 24 kHz (±3 dB).



Featuring a 6-1/2-inch polyvinyl proprietary long-stroke woofer and a 1-inch silk-dome tweeter, the crossover point is 1.5 kHz and the sensitivity is 91 dB (1 watt at 1 meter). Maximum SPL is 104 dB with a nominal impedance of

8 ohms The RoKit is housed in a 12-

1/2-inch high, 10-1/2-inch wide, 8-inch deep cabinet with the gray texture finish found with the K-RoK studio monitor.

For more information, contact Group One in New York at (516) 249-1399; fax: () 516) 753-1020 or contact the West Coast office: (310) 656-2521; fax: (310) 656-2524: via e-mail www.giltd.com or circle Reader Service 152.

MILLER & KREISEL SOUND CORPORATION

A new line of 5.1 multichannel discrete digital monitors, part of the Pro Solutions product line from Miller & Kreisel, made its debut in Las Vegas during the NAB show. THX approved, the 5.1 speaker system includes three S-150THX Discrete Digital Monitors, two SS-150THX Tripole Surround Speakers, HP-80 high pass filters and one of a series of powered subwoofers.

Available in multiple configurations, the S-150THX front channel speaker features the Phase-Focused crossover and delivers an accurate response with highly defined imaging capability in a 12.5-inch cabinet. The SS-150THX is two speakers in one cabinet; it can be remotely switched to operate as a standard dipole speaker, as a direct radiator or in Tripole mode, which allows it to radiate sound simultaneously as a dipole and as a direct radiator. The subwoofers complete the line of Pro Solutions.

For more information, contact Miller & Kreisel in California at (310) 204-2854; fax: (310) 202-8782, visit the website: www.mksound.com or circle Reader Service 199.

SASCOM

The Spendor SA line of nearfield monitors from Sascom consists of three models: SA-200, SA-300 and SA-500. All feature a two-way reflex system, active filters matched to unit responses

and switchable HF and LF equalization in fine 1 dB steps. With a preset input gain control (-6 dB to +18 dB), the Spendor monitors also contain delayed on/off circuitry to protect against input transients and silk diaphragms, ferrofluid cooled and damped HF unit.

A high-capacity power supply produces a low-frequency transient performance. Each monitor contains a filled homopolymer LF cone, coupled with long throw coil assembly and balanced magnet assembly. The Spendor SA monitors are housed in sculptured cabinets finished in textured gray.

For individual specifications, visit the website at www.sascom.com/spendor.htm

For more information, contact Sascom at (905) 469-8080; fax: (905) 469-1129

or circle Reader Service 176.

See MONITORS, page 66



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GENELEC

At the NAMM show in July, Genelec introduced the 1029A, a two-way, bi-amplified active monitoring system and accompanying 1091A subwoofer. The system is a compact close-field system featuring a high degree of accuracy and wide dynamic range.

The 1029A system uses the proprietary Directivity Control Waveguide Technology (DCW) and is powered by a pair of 40 W amplifiers. The monitors offer a frequency response of 69 Hz to 20 kHz (± 2.5 dB) from a 5-inch woofer and a 3/4-inch hard-domed tweeter.

With a front-mounted volume control and rear panel bass and treble tilt room response controls, the 1029A are housed



in an aluminum enclosure.

Designed to work with the 1029A monitors, the 1091A subwoofer features a single, 8-inch driver enclosed in a dual-vented MDF cabinet and is connected to the monitor in series. For more information, contact

Genelec in Massachusetts at (508) 440-7520; fax: (508) 440-7521, visit the website: www.genelec.com or circle Reader Service 175.

ELECTRO-VOICE

The Sentry 100A monitor speaker system from Electro-Voice employs a Super-Dome tweeter that can handle up to 25 watts of



input power. The low-frequency section is handled by an 8-inch direct radiator woofer installed in a vented enclowith sure fourth-order

The Sentry 100A monitor cabinet is constructed of scratch-resistant, matte black vinyl and may be rackmounted. The front is covered by a steel-reinforced

Butterworth tuning.

grill and custom gray cloth. The crossover frequency of the Sentry 100A is 2 kHz, nominal impedance is 6 ohms and the minimum impedance is 4.5 ohms. The SPL at 1 meter, 1 watt is 91 dB and the EIA Sensitivity Rating is 41.8 dB.

For more information, contact Electro-Voice in Michigan at ((616) 695-6831 or circle Reader Service 151.

SONY

Sony has included two types of inputs

for enhanced mixing capabilities of the SMS-1P near field monitor. Input 1 is a pin jack, standard jack, while Input 2 is an XLR-3-31 connector, standard jack that allows for two types of mixing. Both jacks control the input



volume, so that sound levels can be controlled independently.

A 10-centimeter, full range speaker unit has been included, along with a cancelling magnet and large-sized shield.

Designed for long hours of use, the SMS-1P features a large heat sink and built-in power amp with 15 watts of power output. An independent buffer amp has been included for each input.

The monitor, weighing approximately pounds. includes mounting capabilities.

For more information, contact Sony in New Jersey at (201) 358-4201; fax: (201) 358-4907 or circle Reader Service 200.

TANNOY

Centered immediately behind the bass cone of the Tannoy System 800 near field monitor is a high-performance tweeter. The design of the dual concentric driver produces all frequencies from a single point, mirroring the way sound is produced in real life.

The speaker is capable of high volume levels without compression and features a distortion level of <0.8 percent. The frequency response of the System 800 ranges from 47 Hz to 20 kHz while the nominal impedance is 8 ohms and the sensitivity is 92 dB SPL per W at one meter. Crossover frequency is 1.8 kHz and the dispersion, at -6 dB, is 90° conical.



Weighing 23 pounds, the System 800 is housed in 10.8-inch high, 17.7-inch wide, 10.5-inch deep high-density particle board enclosure.

For more information, contact Tannoy in Ontario, Canada at (519) 745-1158; fax (519) 745-2364; via e-mail: 100765.322@compuserve.com, visit the website: www.tannoy.com or circle Reader Service 36.

come

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Solid State, FM Broadcast R AMPL TO 1200W Ú. **P.A.Modules** 50W,150W, 300W, 500W, 700W In stock for immediate delivery Repair service available, MMD, AMT modules Silicon Valley POWEF R AMPLIFIERS The RF People 115 Phelan Ave., Unit 10, San Jose, CA 95112 1-800-986-9700 or Fax 1-408-986-1438 READER SERVICE NO 22 The Most Reliable Way To **Improve Phone Feeds** SEE US AT RADIO SHOW BOOTH #837 Recover low frequencies and improve the quality of telephone audio feeds with **Comrex Frequency Extenders.** Comrex extenders have been the standard for sports and news broadcasts for over 20 years ... try them for yourself! COMREX Comrex Corp., USA Tel: 508-263-1800 Fax: 508-635-0401 Fax-on-Demand: 508-264-9973 (Doc #104, 105, 106) READER SERVICE NO 45 Don't waste time dubbing music! Halland will dub 1,000 songs of your choice for only \$495! Pick from our inventory of Oldies, '70s-Gold, Classic Rock, AC or Country. One-day service no extra charge! 32K, MPEG-II, .WAV files compatible with: Arrakis, BSI, Enco, Pristine, Prophet Systems, Register Data,

Smarts and others.

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.



September 17, 1997

TARGET HEADPHONES Headphones Enhance Performance

"Can't you make me sound any better in these cans?"

If you are an engineer, you have probably heard this question before. Not only do headphones act as monitoring devices that accurately reproduce what the audience hears over the air, they also serve as "performance enhancers" for the personalities wearing them.

The logic is simple: the personality hears himself or herself sounding like a million bucks, so he or she will put the effort into giving a performance worth a million bucks. It may be subjective, but it is ultimately true.

One prominent Washington radio show has a reverb unit solely in the headphone chain for the benefit of the air talent. No reverb goes over the air; it is "all in their heads." Likewise, console manufacturers often include a headphone EQ to allow talent to shape the sound they hear in their phones.

Headphone manufacturers and distributors understand this concept and have made headphones for even the most discriminating tastes. Whether they are sealed units or open-cell headsets, lightweight or built like tanks, there is a set of cans out there for everyone.

AKG

The AKG K1000 Reference Listening System works much like our own ears and the Haas effect; differences in a sound's arrival time, phase and frequency response help determine the orignal direction of the sound. When a sound originates from the left, the sound will reach the left ear slightly before the right.

These headphones never touch the user's ears and can produce the directional information for the experience of proper depth and spatial orientation. Sounds from one "speaker" will travel around the head to be heard by the other ear for comparison of left/right differences.

With a frequency response range of 30 Hz to 25 kHz, the dynamic transducer design uses "ear speakers" and with the VLD magnet weighs 9-1/2 ounces. The



sensitivity is 7 dB per mW (free field) and the impedance level is 120 ohms. For more information, contact AKG in Tennessee at (615) 399-2199; fax: (615) 367-9046 or circle Reader Service 203.

beyerdynamic

Comprised of four headphone models, the **beyerdynamic** DT100 series headphones are used for audio recording and monitoring applications. The DT 100 model is a wide-frequency response



dynamic headphone; the DT 109 is a wide frequency response dynamic headset with a dynamic boom microphone. Both headsets feature dual muffs.

The DT 102, identical in specifications to the DT 100, is a single-muff headphone; the DT 108 is the single-muff version of the DT 109 (shown).

The modular construction permits infield servicability, while the foam-filled padding ensures comfort during wear. The DT 100 series headphones are available in a light gray and a matte black non-reflective finishes.

For more information, contact beyerdynamic in New York at (516) 293-3200; fax: (516) 293-3288 or circle **Reader** Service 84.

Fostex

The Regulated Phase or RP series headphones utilize transducer technology and are targeted to the professional audio community. The T-20RP model and the T-40RP model feature open ear design and a 50-ohm impedance level.

Weighing 12 ounces, the T-20RP headphone has a sensitivity rating of 96 dB 1 watt, 1 meter. The frequency response ranges from 50 Hz to 20 kHz and the maximum input power is 200 mW.

The T-40RP headphone weighs 121/4 ounces and has a sensitivity rating of 98 dB 1 watt, 1 meter. The frequency response ranges from 30 Hz to 20 kHz and the maximum input power is 200 mW.

For more information, contact Fostex in California at (310) 921-1112 or circle **Reader Service 108.**

Sennheiser

With a listening range of 250 feet in any direction, the RS8 wireless headphone system from **Sennheiser** can

World Radio History

be used in and out of doors. The RS8 operates in the 900 MHz bandwidth and



consists of the HDR 8 stereo headphones with integral radio frequency receiver and the T 8 transmitter, which can be connected to any analog signal source. A special filter is included that protects against amateur radio interference.

Three switchable frequencies ensure clear reception and the HiDyn Plus system reduces noise and interference while increasing the S/N ratio up to 110 dB.

The HDR 8 headphone is supraural in design and features an adjustable headband and volume control. It is powered by the BA 150 NiCad battery that provides three hours of operating time. The T 8 transmitter features a fixed antenna, automatic on/off switch and two battery recharging compartments.

For more information, contact Sennheiser in Connecticutt at (860) 434-9190; fax: (860) 434-1759; or in California at (818) 845-7366; fax: (818) 845-7140; visit the website: www.sennheiserusa.com or circle Reader Service 132.

KOSS

Designed for audio professionals, the Reference Professionals line of stereophones from Koss feature a detachable cord and optional boom microphone mount.



Koss guarantees the stereophones for the lifetime of the user with the No-Questions-Asked Lifetime Warranty. The line consists of four models: R/200 (shown here), R/100, R/90 and R/80.

The R/200 headphone contains neodymium iron boron magnet structures and 16-micron thick mylar diaphragms to deliver a frequency response of 18 Hz to 23 kHz. The headset features oxygen-free copper voice coils and open-ear cups to allow sound to pass in and out of the stereophone. Also available is the optional Koss Phase II ambiance enhancement circuitry for a 3-D listening experience. The R/100 features the same internal construction as the R/200, but delivers a frequency response of 16 Hz to 22 kHz. Closed ear cups and thick ear cushions isolate the listener. The Koss Phase II option is also available.

The R/90 consists of a neodymium magnet structure for a frequency response of 18 Hz to 23 kHz, and feature open ear cups.

The R/80, also with neodymium magnets and oxygen-free copper voice coils, deliver a frequency response of 16 Hz to 22 kHz. The closed cups isolate the listener.

For more information, contact Koss in Wisconsin at (414) 964-5000, visit the website: www.koss.com or circle Reader Service 180.



The **ECO** Series!

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

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

ECO quality - <u>unsurpassed</u>!

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

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

Over 150 **ECO**s are already in the field!

Great Products Great Solutions!



MARKETPLACE

Recently Introduced Products for the Radio Broadcast Professional. Got a product for Marketplace? Mail info and photos to: Marketplace, Radio World, Managing Editor, P.O. Box 1214, Falls Church, VA 22041.

Audio Control Industrial lasys Electro-Acoustic Analyzer

The Iasys from Audio Control Industrial is a self-contained, fuzzy logic-based electroacoustic analyzer which "learns" its environment through statistical analysis of amplitude, frequency and time.

The device features an automatic setup process that eliminates test variances due to different operators. All test results and formats relate directly to real audio devices. Iasys also tests system levels to verify magnitude and coherence versus frequency performance.

For more information, contact AudioControl Industrial in Washington at (206) 775-8461; fax: (206) 778-3166 or circle **Reader Service 201**.

Intraplex ISDN Broadcast Product Line

Combine program audio, voice and data transmission on a single ISDN



circuit with the IntraLink ISDN multiplexer and the OutBack ISDN codec; part of the **Intraplex** line of ISDN products. Use the products to reduce the cost of ISDN services and provide a flexible range of applications.

IntraLink supports connection and management of as many as six individual BRIs (basic rate interfaces) while allowing personnel to monitor and manage multiple channels and codecs from a single point via a PC. The unit includes an integrated terminal adapter and automatic redial. Radio broadcasters can also use ISDN service and IntraLink as a backup for their primary STL circuits.

The OutBack digital audio codec supports MPEG Audio Layer II and G.722 coding and can be used for remote program feeds. The OutBack is compatible with many existing codecs. The feature set includes two-way operation in a single box. The OutBack also features preprogrammed dialing capabilities and a built-in ISDN terminal adapter and auxiliary data port.

For more information, contact Intraplex in Massachusetts at (508) 692-9000; fax: (508) 692-2200 or circle **Reader Service 33.**

ATI Match-Maker

The Match-Maker MM100 bi-directional interface systems from Audio Technologies, Inc. (ATI) can match levels and impedances between unbalanced consumer/semi-pro equipment and balanced 600/150 ohm systems. To avoid RF problems and

ground-loop hum back through the power system, the Match-Maker allows complete output ground isolation of consumer line equipment.

The Match-Maker can be used for record-playback applications, interfacing audio or video cassette recorders and also for input/output matching of equalizers, noise reduction units, reverbs and mixers. The IHF can be impered to make a dual

jacks can be jumpered to make a dual line amp, two-output DA or a two-input





summing amp and stereo combiner.

For more information, contact ATI in Pennsylvania at (800) 959-0307 or (215) 443-0330; fax: (215) 443-0394, visit the website: www.atiguys.com or circle **Reader Service 177.**

Belden UTP Cable

MediaTwist, a new "open architecture" multimedia cable recently introduced by **Belden** is an unshielded twisted pair (UTP) designed to support multiple applications simultaneously, using each of four pairs to carry individual signals.



Because of broadcasters concern for cable emissions, Belden had the cable tested by the Underwriter Laboratories in Illinois, which awarded the cable a Class A Certification for Digital Devices.

The cable design includes the bonding of pairs for impedance tolerance, a crescent-shaped jacket for crush resistance and pair-to-pair maintenance. MediaTwist is available with 24 AWG solid bare copper conductors for both plenum and non-plenum installations. For more information, contact Belden in Illinois at (847) 818-1880; fax: (847) 818-1886 or circle Reader Service 81.

Analog Devices Analog-to-Digital Converter

Analog Devices introduced a new 10-bit sampling analog-to-digital converter (ADC), the AD9070, with a usable bandwidth of 230 MHz and a low power dissipation of 600 mW.

Requiring a -5 V supply and an encode clock for full performance operation, the AD9070 may be operated in a Positive-ECL (PECL) environment with a +5 supply. It offers a minimum 100 MSPS conversion rate and is available in a 28-pin plastic SOIC package with an Out-Of-Range indication feature. It is also available in a 28-pin ceramic DIP package.



For more information, contact Analog Devices in Massachusetts at (617) 937-1428; fax: (617) 821-4273 or circle **Reader Service 57**.

ATDI HTZ Lite Radio Communication Network Planning Tool

Based on geographic information, the HTZ Lite from **ATDI**, uses a digital elevation model and digitized map raster images, overlaying coverage calculations and other output and combines it with technical radio information for radio communication network planning. The HTZ Lite can also be used in the field with Global Positioning Satellite (GPS) input that identifies precise locations.

The HTZ Lite combines the digital elevation model with an image into a special project file and calculates a terrain profile which can be enhanced by addition of variable height and ground occupancy features such as trees and buildings. The program then calculates line-of-sight, intervisibility, and coverage, including composite coverage and intermodulation.

The HTZ Lite uses Windows NT 4.0 and Windows 95.

For more information, contact French Technology Press Office in Illinois at (312) 222-1237 or circle **Reader Service 9.**



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Circle (31) On Reader Service Card

NEW, continued from page 57

Audio-Technica Music Mic

For recording live music for broadcast or production, or for sampling drum sounds for music production, Audio-Technica has the ATM23HE



- PRODUCT GUIDE -

dynamic microphone.

nets and pianos.

Α

circle Reader Service 35.

single-box

This hypercardioid mic is primarily

designed as a snare drum microphone,

with a 70 Hz-16 kHz response and

excellent transient response coupled

with high efficiency. Output is via a

balanced XLR connector and the

works well with other highly dynamic sound sources such as speaker cabi-

While designed for the rigors of recording drum sounds, the ATM23HE

For information, contact Audio-

Technica in Ohio at (330) 686-2600 or

Opcode Synchronizer

solution

entire mic is only 3.25 inches long.

synchronizing studio equipment is available from Opcode Systems: the Studio 64 XTC.

The XTC provides accurate synchronization of any analog or digital multitrack recorder with both PC- and Macbased hard-disk recording systems and sequencers. Simultaneous Wordclock and Superclock outputs means sampleaccurate synchronization between a ProTools system and a Tascam DA-88 or E-mu Darwin is possible.

The XTC has an internal sync clock that can write SMPTE code as a master reference or it can generate code from an external timesource. It can also control ADAT-compatible machines through MIDI Machine Control (MMC) commands without any external boxes or extra cards.

Opcode says the XTC is about



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AudioUAULT®



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AudioVAULT from Broadcast Electronics can't make coffee (yet), but it will build your ratings and grow your bottom line and that's

a good start. AudioVAULT was designed to be designed by you - to fit your operations, your format, your overhead goals and your technical challenges. That is why it is the best selling digital system in the world. It works for you.

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one-third the price of comparably featured units from other manufacturers. The Studio 64 XTC has a list price of \$495.

September 17, 1997



For information, contact Opcode Systems in California at (415) 856-3333 or circle **Reader Service 59.**

MediaFORM Standalone CD Copier

The MediaFORM CD2CD/Pro is a new series of low-cost compact disc recorders that can produce up to six CDs simultaneously without the need of a PC.

The tower case combines a MediaFORM smart controller, a CD-ROM reader and up to six CD write decks. Each write drive runs at 4x speed, meaning full 74-minute CDs can be recorded in 18 minutes.

The master read-in drive is a 12x speed unit, allowing high-speed disc comparisons for quality control. Simple one-button operation of Stop, Start and Compares treamlines the process.

For information, contact MediaFORM in Pennsylvania at (610) 458-9200 or circle **Reader Service** 83.

Sonic Foundry Modeler

Sonic Foundry, makers of Sound Forge software and related plug-ins, introduced the Acoustics Modeler plug-in module.

The software program adds the acoustic coloration of real environments and sound alteration devices to recorded audio. Acoustics Modeler was designed for use with any editor that supports DirectX Audio plug-ins, which includes Sound Forge 4.0.

Rather than add reverb to enhance audio, the Acoustics Modeler incorporates the acoustical responses of a given environment directly onto the sound file.

The Acoustics Modeler features an extensive library consisting of dozens of acoustic signatures created from hundreds of hours of precise acoustic measurements. Such signatures include recording studios, concert halls, warehouses, tunnels, bridges and forests.

Sound-altering tools allow recorded material to be filtered through digital recreations of classic microphones, instrument amplifiers and speaker cabinets.

Users can record the responses of their own acoustic spaces with the Impulse Recovery Function. An acoustic impulse is measured and entered into the system, and this signature can be recalled at any time.

The characteristics of location recording can be recreated inside the computer without having to make repeat trips to the original location. Acoustic signatures can be combined and modified for one-of-a-kind audio effects.

Suggested price of the Sonic Foundry Acoustic Modeler is \$249.

For information, contact Sonic Foundry in Wisconsin at (608) 256-3133 or circle Reader Service 60.

Radie Werld. **Broadcast Equipment Exchange**

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Altec 1590-C (2) mono blocks, 200 W, mint cond, \$350/pr; McIntosh Mc240, tube amp, gd cond, \$1000; Soundcraftsmen 450X2 pro MOSFET rackmount. pro MOSFET rackmount, 450W per ch @ 2 ohms, fan cooled, \$250. R Cobb, Solid State Rcdg, 1044 Lightfoot Rd,

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Distribution amps. J Powley,

Scholastic Informational Network, 9279 Dutch Hill Rd, West Valley NY 14171. 716-942-3000.

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Hughev & Phillips KG-114 300mm code beacon, excel cond, \$500 ea; Puregas 1500 air dryer, 1500 cu ft/day, gd cond, \$950. E Black, KXXY, 100 NE 28 St, Oklahoma City OK 73105. 405-524-3770.

3" HELIAX STANDARD COAXIAL CABLE

50-Ohm, unused, cut to length. Priced below market. Shipped instantly. Call Basic Wire & Cable

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Advance Ind 1800 guyed 18" face, 1-1/4" solid legs, 100' w/guy cables, galvanized, no rust, on ground, \$1500; Utility 380 guyed 24" face, 150', solid legs galva-nized, no paint/rust, gd cond & standing, \$2500; Cablewave HCC300-50J, approx 100' w/end connectors, each end, gd cond flocistic-stat, applica floc wiend flexible, 3.0", on ground/sealed, BO. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

Pheips Dodge antenna Radomes, CFM HP Series, \$100 per set. E Moody, KESE, 216 N Main, Bentonville AR 72712. 501-621-

Scala broadband FM antennas (3), 9dB gain, rear mount 88-108 Mhz, 250 W input, \$300 ea. R Chambers,

Johnstonville Rd, Susanville CA 96130.916-257-2121

Scata low pwr circ polarized antennas (4), (4) 2CP dividers, Scala PDL4-2222/50 splitter, brand new, BO. Syd Abel, WRCY, 722 369 Japp 703-369-1080.

Shively 6812, 1 bay CP FM antenna, 97.7 MHz, like new, \$300. P Bridges, KEWI, 3313 Hot Springs Rd, Benton AR 72015. 501-316-1614.

ERI high pwr rototiller, 8 bay ctr fed tuned to 89.3 MHz, avail 10/1/97, \$4000; E-Z Way S20-500-80/41 tower, 24" face on the ground, prints avail, fiberglass rod insulators & lighting fixtures as is, avail 10/1/97, \$15,000. C Conlon, WRMB, 1511 W Boynton Beach, Boynton beach FL 33436. 561-737-9762.

Want to Buy

1-5/8" Heliax, 2 lengths w/end connectors needed, 180'+ & 70'+ or 250' total; 1-5/8" Heliax to 1-5/8" & 3" EIA flanges. J Powley, Scholastic Informational Network, 9279 Dutch Hill Rd, West Valley NY 14171.

Bird Thruline wattmeter rigid line sections (2), 1-5/8" & 3" rigid EIA flange, single or dbl sockets; Bird 1-5/8" #4712A or 4715-200A or 3-1/8" #460A or 4610-200A or equal. J Powley, Scholastic Informational Network, 9279 Dutch Hill Rd, West Valley NY 14171, 716-942-3000.

Medium to high power FM antenna on or near 97.3. R Kelly, KKOS, POB 681, Van Vleck TX 77482. 409-244-0970.

Phasor & divider for 3 tower DA

5000 ND day, 1000 DA night, or anything close. C Holt, WHNY, POB 1223, Mccomb MS 39648. 601-250-1250. AUDIO PRODUCTION

Want to Sell

Fostex 3180 stereo reverb w/24 mS pre-delay, rack mountable, ycg, will swap for a UREI Cooper Time Cube. E O'Brien, Imperial Sound, 383 N Studio St, Terre Haute IN 47803. 812-877-2663.

Industrial acoustic voice-over booth, new \$900 +shpg; Grim

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audio patch bay, new, \$120. J Baltar, New Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941

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Langevin AM1A 6 input audio mixer w/manual, excel cond, \$200; Shure M67 (2) 4 input audio mix-ers, vgc, \$80 ea; Symetrix 511

stereo NR system, excel cond, \$125. A Ross, Ross Programmer Co, 3309 214th St SW, Brier WA 98036. 425-775-8853. Otari 5050 BII, \$2200 +shpg; Advantage One 8 chnl bi amp mix-er, \$400 +shpg. J Baltar, Maine Reel Video, 335 Water St, Augusta

ME 04330, 207-623-1941. Sound Workshop 242 stereo reverb gen, solid state, \$300/BO. S Morse, S Morse Prod, 19 12th St, Carle Place NY 11516. 516-

Symetrix SX-202 dual mic pre-amp, fair cond, \$100. D Meyer, Meyer Prod, 1123 Del Mar Ave, Santa Barbara CA 93109. 805-962-8273.

334-5216.

Yamaha FX-900 simul-effects processor, \$250; Valley Dyna-Mite 2 chnl compressor/expander rack mounted version, \$300; Ensoniq mounted version, \$500, Ensoning EPS-16PLUS sampling keyboard w/software, \$900. J Laurence, Autumn Hill Studio, Franklin NC. 704-524-9602.



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World Radio History

Circle (233) On Reader Service Card

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AUDIO PRODUCTION continued...

Bose 402-W (4) walnut cabinet speakers, new cond w/EQ & mounting brackets, \$1500. D Murray, Murray Comm, 1028 Woodstone Dr, Kingsport TN 37663. 423-239-4745.

Digitech studio vocalist, new, \$550; Lexicon PCM 41 digital delay, \$300. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

Telefunken V-72 w/pwr. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Tannoy 15" speaker þair, newly recond, \$1450; vintage recond tube mic pre's & mixers, \$300-\$700; new ADC patch bays _" 52 points, \$169; ADC TT bays, \$129 up; new ADC TT or _" TRS cords, \$9; Furman _" to _" patchbays, \$95 ea; like new tape, _"x2500' 456, \$15 ea; 1" 456, 226, 250, \$25 ea; Dioitec 3.6 sec delay, \$150; ea; Digitec 3.6 sec delay, \$150; new pwr dist/filter rack mt, \$75. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

Want to Buy

Neve, Api, Gates, Longevin, Collins, Lexicon & other mic pre-amps, Eqs, reverbs, delays. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031 571-5031

Compressors & EQs, tube and sol-id state. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

AUTOMATION EQUIPMENT

Want to Sell

Audisk DS1000 9gB drive, \$2250; (2) DS100, \$1125/ea. D Kiech,

I EVANS

AAV, 262 Wildwood, Groveland IL 61535. 309-387-6989.

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CART MACHINES

Want to Sell

Tapecaster 700P PB only, old style, \$250; Tapecaster 700RP old style, w/delay board, \$350; Tapecaster 700P PB new style, \$300; Tapecaster 700RP new style, \$400, all used only seasonally, low hrs & regularly serviced, A Slaugh, Ski Areas of NY, 2144 Rd, Tully NY 13159. 315-696-6550.



ITC Delta stereo cart machines (4), gd cond, \$400 ea or all 4 +manual for \$1400. A Taffera, WZYY, 245 8th St, Renovo PA 17764. 717-923-9106.

ITC SP (2) mono/play, gd cond, \$125 ea +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258-5595.

only-no deck, 3 tone, stereo, \$175. W Gunn, Box 2902, Palm Springs

Consulting

Communications

BEE

CD PLAYERS

Want to Sell

Denon DN-C650F, like new, rack mount w/S/P dif, pitch, original box, \$450. K Thomas, Rebel Recording, 5555 Radio lane, Jacksonville FL 32205. 904-388-7711.

COMPUTERS

Want to Sell

Intel Pentium 133 MHz mini-tower computers & 14" digital SVGA monitors, each w/16MB RAM, 8x CD-ROM drives, 2.1gb & 1.6bg hard drives, 33.6k BPS modems, network cards w/150' cable, Windows 95 & Lantastic 7.0, monitors still in box, computer never used, only tested, \$3000 firm/all. T Olson, DDS Communications, 715-682-9278 leave message.

CONSOLES

Want to Sell

Allen & Heath 2416D 24x8x16. excel cond, original shpg box; SoundTech 1604 16 chnl 4 subs, used 10 times for live rcdg. D Huethner, Dynamic Sound, 358 W Huethner, Dynamic Sound, 358 W Bell St, Neenah WI 54956. 920-722-7228.

Arrakis GEM-600 Gemini System w/1.2 gig + network board & soft-ware, w/cart wall; Arrakis TS-8C Trak Star workstation w/270 MG w/network board & software, units working, \$11,500/negotiable. L Zeve, WHYL, Box WHYL, Carlisle PA 17013. 717-249-1717.

Auditronics 300 w/16 mono modules w/mic, A & B inputs, 4 aux sends, EQ, filters, (2) 2 chnl sub

modules, slate/studio module, CR mon/hdohn module, stereo master module, (2) logic control modules, (2) redundent pwr supplies, cus-tom fumiture, BO. P Wabrek, The Christian Science Monitor Radio, 1 Norway St C54, Boston MA 02115. 617-450-7614.

Mackie SR24/4 mixing console, new, still in box, warranty card to be mailed in, \$1080 +shpg. J Edwards, WZNF, 400 N Froadway, Urbana IL 61801, 217-367-1195.

McMartin 1081. T St James. Paramount Comm, 201 W California, Floydada TX 79235. 806-983-5704.

OpAmp Labs 1604-TV (2), one works, one for parts, spare mod-ules, outboard Opamp Labs reverb units, BO. S Kozak, reverb units, BO. S Ko Theater Snd Studio, 351 Pinewood Dr, Bay Village OH 44140. 216-871-5897 eves.

Soundworkshop Logic 8 Series 20 or 30 20x16x2 producers desk, extra pwr supply, excel cond, BO. B Falvey, Richmond St Recording, 168 Railroad St, Huntington Sta NY 11746, 516-423-3246.

BE 4M50 4 chnl, 8 input mono mixer w/monitor, cue & head phone amps, gd cond, \$400 +shpg; Cetec Sparta 2001 5 chnl, 10 input w/5 aux input sw w/monitor, cue & headphone amps, gd cond, \$500 +shpg. G Gi Radio Works, 1113 Nebrask G Gibbs St Sioux City IA 51102. 712-258-5595

Harris Medalist 8, Harris Stereo 80, both working when removed from service; Collins 1C-10A. J Smith, WRPQ, POB 456, Baraboo WI 53913. 608-356-3974.

Consulting Communications Engineers

EMC Test Lab

Wheatstone AudioArts 8X, pwr supply w/Phantom, excel, \$200. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

Soundcraft 600 32x16 w/patch-bay, mint, \$4950; Tascam 512 12x8 mixer, \$750; Tascam 520 20x8x16 mixer, \$1750; Tascam 30 8x4, \$450; Allen & Heath Syncon 28x24, great sounding, \$5000. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-9728

Want to Buy

Parts for Ramko DC385, input/line cards & input selector switches, also input switch flat plastic knobs for Gates Gatesway II console. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-6187.

Sparta remote desk, mono mixer. 4 or 5 chnl, (2) TT's & pre-amps. H Hudson, WTVR, 206 Westham Pky, Richmond VA 23229. 804-282-5557

DISCO-PRO SOUND EQUIP

Want to Sell

JBL L-36 decades, 10" 3 way Joudspeaker, excel cond, \$195/pr; JBL L-100 Century loudspeakers, excel cond, \$325/pr. R Cobb, Solid State Rcdg, 1044 Lightfoot Rd, Wimauma FL 33598. 813-634-1940

Klipsch KP-3002 C II, one pair, 500 W sound reinforcement/music PB loudspeakers, 2 way, 15" cast frame woofer & 1-1/2" titanium compression driver on Tractrix horn, handles, black carpeted, stand socket, 5 year no fault war-ranty, \$298 ea. B Fisher, KPOK, Box 829, Bowman ND 58623. 701-523-3883.

UREI 562 feedback suppressor w/manual, excel cond, \$225; Shure M610 feedback controller, new, \$75. A Ross, Ross Programmer Co, 3309 214th St SW, Brier WA 98036. 425-775-8853.

JBL 4330 15" studio monitors & horn, \$900/pr. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455

FINANCIAL SERVICES



Altec 1591-a compressor/mic-pre. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

America 533 slimline RDS/RBDS encoder, like new w/all software & manuals, BO; Modulation Sciences CLD-2500 composite line driver/rcvr matched set, great cond,\$860/pr.. D Payne, WZPL, 9245 N Meridian St #300, Indianapolis IN 46260. 317-816-4000.

September 17, 1997

Want to Buy

Cash pd for tube compress, amps, on-air signs. J Phillips, 414 Washington Ave, Defiance OH 43512, 1-800-old-mics.

Orban 8100A input carts 3 and 4, cards only. D Payne, WZPL, 9245 N Meridian St #300, Indianapolis IN 46260. 317-816-4000.

Teletronics or Urei (LA 2,3,4,1176), Gates, RCA, dbx (160-165), Altec, Collins. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Teletronix LA-2A's, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.

MICROPHONES

Want to Sell

Advantage One biamp, 8 chnl mixer, \$375 + shpg; ITC SP, \$75 +shpg. J Baltar, New Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941

AKG C-451 condenser (2) w/pwr supply for (2) mics & shock mount holders, \$800/both. J Krizancic, Marjon Sound Prod, 159 Easton Rd, Hermitage PA 16148. 412-347-4726.

RCA 88 saltshaker, excel cond, rebuilt in '95, will trade for RE-20 in excel cond, BO. R Miller, KUAU, Box 565, Kuau HI 96779. 808-572-5534

Shure 315 1960 ribbon mic, mint cond, chrome finish, \$400. M Schackow, 307 4th Ave E, Lemmon SD 57638. 605-374-3424

Shure SM-5B, ad cond, needs new foam enclosure, \$450; Neumann TLM-193, less than 1 yr old, mint cond w/windscreen & shock mount, \$1000. J Laurence, Autumn Hill Studio, Franklin NC. 704-524-9602.

EV 666. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Sony ECM 377 condensor w/papers, mint cond, \$450. D Kocher, Digital Sound Movers, 1919 Hanover Ave, Allentown PA 18103. 610-776-1455.

RCA 77DX, BK1A, \$395; vintage PA mics, Shure 51 Elvis, \$75, EV731, \$95, EV 630 or 635, \$75, RCA mini 77" shaped, \$295. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

Want to Buy

Cash pd for all/any old mics. J Phillips, 414 Washington Ave, Defiance OH 43512. 1-800-oldmics.

RCA 77 & 44 or other ribbons, dynamics & tube mics. T Coffman, Rolltop Studio, POB 17203, San Diego CA 92177. 619-571-5031.

Neumann, Sennheiser, AKG, many models. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 972-271-7625.

RCA 77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212, 615-269-6131, FAX: 615-292-3434

MISCELLANEOUS Want to Sell

Shure M68FC 4 chnl audio mixer, \$100/BO; UREI dbx 140 NR taiking machine, \$100/BO; Shure



CONSULTANTS

ITC upgrade PB to record, amps

September 17, 1997

MISCELLANEOUS continued...

SR107, audio EQ, \$200/BO; MXR 147 stereo octave EQ, \$100/BO; UREI 1/3 octave EQ, \$150/BO. Clarence, CMI, POB 21012. Clarence, CMI, POB 21012. Washington DC 20009. 202-986-1909.

RF Warning Signs 9"x 12" \$13.95 1.640 10"x 19"\$19.95 CAUTION HE Electronics (804) 984-425

100 urban music CD's, \$200: 500 country music CD's, \$1500. J Smith, FSA Bdctg, POB 1038, Elkin NC 28621. 910-835-2511.

McPhilbin Prolite studio warning light fixtures (6), ceiling pendant type w/dbl lenses, wall mt also, (2) on-air lens, (2) w/recording lens & (2) w/blank lens, \$50 ea +shpg. G Gibbs, Radio Works, 1113 ebraska St, Sioux City IA 51102. 712-258-5595

RCA open wire transmission line insulators/brackets (60), will sell

as whole or in any quantity. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-

Want to Buy

Service manual for JVC AX-R450BK tuner amplifier, copy OK. B Clark, Bullitt Bdctg, 1078 N Bardstown Rd, Mt Washington KY 40047. 502-538-4784.

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Recdgs, 228 East 10th, NYNY 10003. 212-674-3060.

MONITORS

Want to Sell

TFT AM mod mon. T St James, Paramount Comm, 201 W California, Floydada TX 79235. 806-983-5704.

Belar FMM-1, FMS-1, SCM-1, RF amp, \$1700. D Murray, Murray Comm, 1028 Woodstone Dr, Kingsport TN 37663. 423-239-

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Yaesu/Vertex VX-500V VHF 5 W handheld, new w/charger, new battery, \$400. P Russell, Bowdoin Sills Hall, Brunswick ME Colle 04011. 207-725-3066.

Zephyrus SCPC 700 rcvr. LNB. \$500; SA 4595 Sedat rcvr, \$500. J Smith, FSA Bdctg, POB 1038, Elkin NC 28621. 910-835-2511.

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30 Music Sq. W. #156 Nashville, TN 37203 (615) 244-6892

Ampex 351-2 in excel cond man Ampex 351-2 in excel cond, man-uals & cables, \$1650; Ampex 600 suitcase in excel cond, mono, sin-gle trk, \$350. M Schackow, Schackow Recording, 307 4th Ave E, Lemmon SD 57638. 605-374-3424.

Otari 5050112, \$1800 +shpg. J Baltar, New Musik Directions, 67 Green St, Augusta ME 04330. 207-623-1941.

Otari MX5050 4 chnl r-r, \$1500/BO. C Smith, CMI, POB 21012, Washington DC 20009. 202-986-1909.

Otari MX-5050Bil, like new, less than 75 original hrs w/original shpg carton & padding w/manual, \$1700. J Krizancic, Marjon Sound Prod, 159 Easton Rd, Hermitage PA 16148. 412-347-4726.

Pioneer RT-701 2 speed, rack mountable r-r tape deck, as new cond, \$350 +shpg; Sony DRD-100 (2) DAT real time duplicators, lw hrs, will swap for used DAT machine any make or model. E O'Brien, Imperial Sound, 383 N Studio St, Terre Haute IN 47803. 812-877-2663.

Revox B-77 r-r; Akai 4000DB r-r. T St James, Paramount Comm, 201



806-983-5704

w/any Nubus Mac, \$1250. A Goldwater, Magic Sound, 1780 Chanticleer, Santa Cruz CA 95062, 408-475-7505.

Technics RP-9690 remote control box for RS-1500, 1506 & 1520 r-r's, \$75. D Meyer, Meyer Prod, 1123 Del Mar Ave, Santa Barbara CA 93109. 805-962-8273.



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Ampex 440 rack mount, mono R/P, 7.5 & 15 ips, \$225 +shpg; Revox A-77, stainless deck plate w/oak cabinet, near mint cond, very few hrs, \$425; ITC 850 stereo, rack mount, 7.5 & 15 ips w/remote control panel (2), gd cond, \$325 ea +shpg. G Gibbs, Radio Works, 1113 Nebraska St, Sioux City IA 51102. 712-258

Teac 33405 _" 4 trk w/remote, needs work, \$125; Lafayette 15016 delayed feedback rcdr, r-r tape delay, excel cond, \$150. J Borden, Handbasket Prod, 2909 S Logan Ave, Milwaukee WI 53207. 414-482-8954

MX70 video playback system, \$900; Gd used _"x2500' 456 tape, \$20, 1"x2500' 996 & 250, \$35; new MRL short test tapes, \$229 for 2", save \$400. Save on all oth-er formats too. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

New & used Ampex 350 style tape transports, motors & parts, various prices. M Crosby, 408-363-1646

Tascam ATR60-2, in stand, \$1200; Tascam 58, 8 trk, \$1950; Tascam 38 8 trk, \$1650; Otari rascam 38 8 trk, \$1650; Otari 5050-8 Mk III, \$1900; Ampex 1200 PURC cards (5), \$125 ea; Custom locator for any deck, \$495; Sony 2 trks, \$195 ea. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-9728 9728.

Want to Buy

Fostex A-2 wanted for repair parts. A Slaugh, Ski Areas of NY, 2144 Currie Rd, Tully NY 13159. 315-696-6550.

MCI JH-110 _" 2 trk heads, will pay fair price. J Borden, Handbasket Prod, 2909 S Logan Ave, Milwaukee WI 53207. 414-482-8954.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or elec-tronic parts. Call 818-907-5161.

Ampex machines, recorder elec-tronics, mixers. W Gunn, Box 2902, Palm Springs CA 92262. 619-320-0728.

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Comrex LX-T encoder for single line freq extension, seldom used, like new cond, \$450. A Slaugh, Ski Areas of NY, 2144 Currie Rd, Tully NY 13159. 315-696-6550.

Moseley MRC-1600 remote control system. T St James, Paramount Comm, 201 W California, Floydada TX 79235.

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Denon 970FA, like new, digital out/analog out, \$1100. K Thomas, Rebel Recording, 5555 Radio Lane, Jacksonville FL 32205. 904-388-7711.

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Microtran table top tape degausser, handles 1"-2" tapes, \$150/BO; mechanical tape timers, Lyrec & Seike/Spotmaster, new & used. M Crosby, 408-363-1646.

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Exchange on a paid basis. Line ad listings & dis-	C. Engineering	F. Other (specify)
play advertising are available on a per word or	D. Programming/production	
per inch basis.		
WTS U WTB Category:		
Mod	el:	
Brief Description:		
Price:		
WTS U WTB Category:		
Make: Mod	el:	
Brief Description:		

Price:

*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee. **Broadcast Equipment Exchange** PO BOX 1214, Falls Church, VA 22041 . Tel: 800-336-3045 . Fax: 703-998-2966

TAPES/CARTS/

Grey Pack, AA2, Scotch, etc, lots of assorted carts. T St James, Paramount Comm, 201 W California, Floydada TX 79235. 806-983-5704.

Gold Mastercarts, music lengths, excel cond, \$.50 ea in lots of 100 +shpg. E Moody, KESE, 216 N Main, Bentonville AR 72712. 501-

World Radio History

TUBES continued...

1620 (10), used, test gd, \$50; Hickok 800 tube tester, complete in mint cond, \$100. E Davison, 1129 Willowbrook Dr, Springfield IL 62707, 217-793-0400.

REBUILT **ELECTRON TUBES** Partial List: 6623, 23791, TH150, 6425F, 6427, 8550, 6804, 6696, 6697, 5681, 5682, 5671, 7804, 3CX10,000H3, 3CX20,000H3, 4CX5000A,

4CX35,000C Worn out power tubes purchased

Vacuum Tube Industries, Inc 1-800-528-5014 508-584-4500 X75

EIMAC, RCA, AMPEREX, 3-500, 3CX1500A7, 4-400, 4X150A, 4CX250B, 572B, 807, 833C. Westgate 800-213-4563.

Want to Buy

Burle/RCA 9017, new, surplus or rebuilt, for ITS translator. J Powley, Scholastic Informational network Dutch Hill Rd, West Valley NY 14171

VOICE-OVER SERVICES

VOICE TALENT: OVER 90 CHARACTERS. Michael Spatafore, 719-532-1800.

TURNTABLES

Want to Sell

Technics SL-1200MK (2) for parts only; Rek-O-Kut B12-71. T St James, Paramount Comm, 201 W California, Floydada TX 79235 806-983-5704

Technics SP-15 3 speed w/tonearm. K Senger, KMTA, 508 Main, Box 1426, Miles city MT 59301. 406-232-5626.

NEEDLES, CARTRIDGES, BELTS...all major brands including old/obsolete models, one of the largest stocks in the country Expert consultation. NEEDLES EXPRESS (800) 358-2030 OR www.needleexpress.com

Want to Sell

Collins 310Z-1 exciters, 91.9 mhz, 104.9 mhz, 106.9 mhz, CHEAP, Transcom Corp, 800-441-8454.

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.

Continental 316F 10 kW AM used for standby, mind cond, avail 11/97, reliable, spare parts, \$19,500. G McClintock, WNQM, 1300 WWCR Ave, Nashville TN 37218. 615-255-1300/1377

Gates BC-1H 1 kW AM clean. \$2000. F Cresce, KC4MOP, Wash Gas, 6801 Industrial, Springfield VA 22151, 301-567-2012.

Gates FM-2H3 2 kW FM xmtr w/new Finn tube & solid state IPA w/o exciter, \$6000; Gates 250 W FM xmtr w/manual & exciter, \$500. J Stromquist, WNCB, 2828 Piedmont Ave, Duluth MN 55811. 218-722-3017.

Harris 20H2 20 kW recently refur-bished, works great, MX15 exciter, \$15,000/BO. B Augsburg, WAYM, POB 887, Brentwood TN 37024. 615-370-9296

McMartin 20 kW, rebuilt by Armstrong Transmitters for 15 kW, to operate on single-phase power, presently set up for 10 kW

EQUIPMENT

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BEE

Quality FM	Transmitters	s at Reas	onable Prices
20 watt Exciter	\$ 995.00	5 Kw.	\$ 19,990.00
120 watt	\$ 2,500.00	10 Kw.	\$ 22,990.00
300 watt	\$ 2,990.00	15 Kw.	\$ 28,990.00
2.5 kw .	\$ 10,990.00	20 Kw.	\$ 34,990.00
STL Transmitter	r 1,990.00	STL Recei	ver \$1,790.00
Both	\$ 3,500.00	20 w Trans	ator \$2,500.00
FM Antenn	as as low	as \$ 395	5.00 Per Bay
Jimmie Joy	nt / Superio	or Broadca	ast Products
Ph. 973/473	2577 800/279	-3326 Fax 8	00/ 644-5958
	ston Rd. #120		

Armstrong 300 W solid state IPA, avail late fall, BO. S Haynes, WHOU, POB 40, Houlton ME 04730. 207-723-4714.

Crown FM-100, bradn new, ideal for low pwr backup, freq agile, 100 W xmtr. Syd Abel, WRCY, 703-369-1080.

Gates 250GY AM 250-500 W w/spare tubes, pwr transformer & mod transformers extra, spares, \$2100/BO. J Cunningham, KEOR, Rt 1 Box 113B, Stonewall OK 74871. 405-265-4496.

Harris FM20H3 20 kW FM at 103.7 MHz, gd cond, currently on air, large inventory of spare parts. P Wahl, WWIB, 2396 State Hwy 53, Chippewa Falls WI 54729. 715-723-1037.

RCA BTA50F 50,000 kW AM tuned to 810 kHz, gd for parts, open for bids. L Timmons, WHB/KMZU, 102 N Mason St. Carrollton MO 64633. 816-542-0404

Radio World

New Technology Preview

Constraint of

RCA BTA5F 5 kW AM, excel cond w/manuals, ready for shpg. G Heidenfeldt, WRGH, 2880 W Lake Rd, Wilson NY 14172. 716-751-6187.

USI TA-100 100 mW AM, new, FCC approved, outdoor xmtr range up to 2 miles, \$1500. J Arthur, WRFP, POB 2233, Pensacola FL 32513. 850-484-0186

1963 Collins 830-10kW FM xmtr. just removed from service, \$4500. J McCormack, UTC Radio Station, 615 McCallie Ave, Chattanooga TN 37403. 423-755-4756

QEI 675 FM EXCITERS, \$1550; QEI 675T600 EM AMPLIFIERS \$3550, units are reconditioned and tuned on your frequency. Purchase includes manual and 6 month warranty. Contact Bob Brown at (609) 232-1625.

Used PTEK 500W FM amplifier. \$2950, full manufacturers 2 year warrentee. Other power amps and exciters also available. 408-448-3342.

Used McMartin BF-5M 5 kW-FM tuned and tested on your freq,



402-493-1886.

Want to Buy

Any FM exciter 20 W or more, stereo or mono, freq agile, must

Beach FL 32114. 904-253-0000. McMartin AM/FM xmtr, any mod-

el, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

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The **ECO** 15-30, Single tube, High Power Grounded Grid Transmitters up to 32 KW.

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77

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Serving the Broadcast Industry Since 1978 Fine Used AM & FM Transmitters and Also New Equipment For the best deals on Celwave products, Andrew cable and Shively antennas. 100 W EM 1985 Harris EM100K 250 W AM Collins 250G 2.5 KW FM 1988 Continental 814-R 1 KW AM 1965 RCA BTA 1R1 10 KW FM 1986 ITA 10,000B 1 KW AM 1975 Harris MW-1 20 KW FM 1977 RCA BTF 20E1 5 KW AM 1979 Harris MW-5A 20 KW FM 1973 Collins 831G 5 KW AM 1980 Harris MW-5A 20 KW FM 1972 CCA FM20.000DS 5 KW AM 1980 Collins 828E-1 5 KW AM 1982 Continental 315F 20 KW EM 1978 Harris EM20K 25 KW FM 1982 Harris FM25K 5 KW AM 1982 Continental 315R-1 50 KW AM 1978 Continental 317C-1 50 KW AM 1981 Continental 317C-1 50 KW AM 1981 Harris MW-50B 50 KW AM 1982 Harris MW-50B 1077 Rydal Road #101, Rydal PA 19046 800-441-8454 • 215-884-0888 • FAX No. 215-884-0738 VISIT OUR INTERNET SITE: WWW.TRCORP.COM SEND YOUR E-MAIL REQUESTS TO TRANSCOM@TRCORP.COM

on 100.1 MHz w/exciter & ADVERTISE ! in RADIO WORLD's BROADCAST

Reader Service No.

Employment

BEE.

HELP WANTED

STATION ENGINEER

RADIO KANSAS, a 3-station public radio FM network seeks a full-time engineer to assist the Dir. of Engineering in maintenance, projects and oncall duties for all facets of a modern broadcast facility. **Related electronics training** required. Broadcast technolo gy experience helpful. Position is perfect for the growing technologist looking to contribute to a strong broadcast system. Send resume to Personnel, Hutchinson Community College, 1300 N. Plum, Hutchinson, KS 67501.

Chief Engineer for group of AM/FM radio stations in Colorado Ski Country. Immediate opening for full time engineer with experi ence in RF, digital, satellite, audio, and computers. Applicant must be able to work on mountain top sites and be comfortable with top sites and be comfortable with winter conditions. Includes all major benefits. EOE. Fax Resume to: Rocky Mountain Radio, 970-949-0266 Attn: Marty Hijmans.

CHIEF ENGINEER

Gaylord Entertainment, located in Nashville, TN is seeking a Chief Engineer for WSM AM/FM and WWTN Radio with a minumum of 5 years experience in building, maintaining and repairing ana-log/digital studio audio, high RF, PC networking and power trouble shooting. Management experience is preferred. SBE, NARTE certification is a plus.

We offer an excellent comper sation and benefit package Qualified candidates send resu with cover letter including salary history to: Gaylord Entertainment Comm Grp, Attn: PSRW, 2806 Opryland Drive, Nashville, TN 37214 or fax the same to (615) 871-5750. E-mail: mrslater@ country.com. We are an equal opportunity employer.

Wanted: Semi-retired techniclan engineer to work part time maintaining transmitter and studio equipment in small town radio station. Salary open. Reply to POB 29, Dorris CA 96023.

dedicated team player, great prod Assistant Enginee skills, willing to relocate. Jennifer, 405-948-1114. Broadcasting corporation seek-ing full-time person to assist chief engineer with ongoing chief engineer with ongoing projects, day-to-day mainte-nance and repair of radio sta-tion equipment. Applicants should be H.S. graduates with supplemental college, trade school or military training. At least 1 year broadcast engineer-ing experience including expe-Semi-fab morning A/T-M/D, have mouth will travel, Country, A/C, Oldies. Mike, 517-362-7251.

Tower erector w/18 yrs exper & wide knowledge of MW & UHF antennas seeks work in the US Have worked extensively for American companies & have travelled for them. Have spent travelled for them. Have spent the better part of the last 2 yrs installing Analogue & Digital systems for mobile phones in the UK. Would appreciate the opportunity to emigrate to the US, call before 10PM UK time to Stevan J Walker, 011-44-1-61-747-4750.

Veteran bdctr w/great voice, quick wit, keen imagination, seek-ing position w/community involved station, consider all markets. Bruce, 216-398-6532.

Energetic guy w/a hunger for the business, sales exper, in Houston area, will travel anywhere. Jake, 281-461-9975.

Engineer seeks change. Experienced, primarily xmtrs, audio quality, preventive mainte-nance, SBE prof bdct engr, General Class license, amateur-

extra ham license, comes w/test

equip. Write to: Radio World, POB 1214, Falls Church VA 22041. Attn

Experienced main/tech, xmtr,

antenna, studios, analog & digital, SBE certified, seeking FT w/sta-ble, agressive firm. Write to:

Engineer, 7894 Palm Grove Ct,

Not a kid, not a dinosaur, seek

SE small mkt mgmt opp. Write

Box #: 9-17-2RW.

Indianapolis IN 46219.

ORBAN CUSTOMER SERVICE ENGINEER

Orban is looking for a broadcast engineer to provide technical support to our customers on our line of broadcasting equipment. This support includes providing information on specifications, applications, installation and setup, troubleshooting and repair, and theory of operation. Must have an AA in electronics or equivalent experience, and at least 4 years of broadcast engineering experience. Experience with IBM-compatible PC hardware is also essential. You must have excellent verbal and written communication skills, and thorough knowledge of electronic troubleshooting and repair techniques

> Orban, Human Resources, 1525 Alvarado Street, San Leandro, CA 94577.

POSITIONS WANTED

Send resume to:

ing experience, including expe-rience with radio/audio fre-quencies and AM-FM transmitters required. Must have skills/abilities in electronics,

troubleshooting, operating basic hand tools, soldering, breadboarding and reading

schematic diagrams. Send resumes to Radio World, POB 1214, Falls Church VA 22041.

CHIEF ENGINEER

Trombo in Winchester, Virginia. Must be licensed and experi-

enced in all facets of radio

engineering. Computer knowl-

edge is also a plus. Come live

in the beautiful Shanandoah Valley - only 60 miles west of DC. Please send

sgaines@shentel.net. Or call

teve Gaines at 540-662-5101.

correspondence to

ATLANTIC STAR radio

Attn: Box #9-17-1RW.

For

e-mail

36 yr old w/15 yrs exper looking to return to radio full time. Personality not a cue card reader rersonally not a cue card reader, also engineering skills, FCC General, SBE Certified, Narte, ETA, also Amateur FCC. For more info write to: Radio World, POB 1214, Falls Church VA 22041. Attn Box #: 9-3-97-1RW.

Fabulous female talent w/voice to match seeks on-air position,

SUBSCRIPTION/READER SERVICE FORM											
Radie FREE Subscriptio	Reader Service SEPT. 17, 1997 issue Use until D Please first fill out contact inform Then check each advertisement for ing number and circle below. Purchasing Authority 1. Recommend 2. Specify						tor co	mation at left. or correspond-			
Signature	Date	1		049 050					-	193 194	
Please print and include all informa				051				147		195	
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Name	_ Title	005	029	053	077	101	125	149	173	197	221
Company/Station		006	030	054	078		126	150		198	222
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Please check only one entry for ea	ich category:	010		058 059				154 155	-	102 203	
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C.Educational FM station	H.Consultant/ind engineer	016	040	064	088	112	136	160	184	208	232
E. Network/group owner	I. Mfg, distributor or dealer	017	041	065	089	113	137	161	185	209	233
	J. Other	018	042	066	090	114	138	162	186	210	234
II. Job Function (check one	ə)	019	043	067	091	115	139	163	187	211	-
A. Owner/President	G.Sales	020	044	068	092	116	140	164	188	212	-
B. General management		021		069				165		213	=
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D.Programming/production		023 024	047 048	071 072		_	143 144		_	215 216	
Copy & Mail to: Radio Wo	orld, PO Box 1214, Falls Churc	h, VA	1220	0 <mark>41,</mark> c	or F	AX to	o: 70)3-82	20-33	310	

OB 14706, Greenville Professional for hire. Solid morning AT, gd phones & fun, 10+ vrs exper, will consider any shift, anywhere, willing to relocate.

Kevin, 517-739-0328

Tired of nose talkers for your news/talker or adult formats? News anchor/producer, produc-tion, AT, good pipes. Alex 513-777-8423

> For details on space availability contact Simone at 703-998-7600

ABOUT OUR EMPLOYMENT SECTION

HELP WANTED: Any company or station can run "Help Wanted" ads for \$2/word or buy a display box for \$69/column inch. Payment must accompany insert, use your MasterCard or VISA; there will be no invoicing. Blind box numbers will be provided at an extra charge of \$15. Responses will be forwarded to listee, unopened, upon receipt. Call 703-998-7600 for details.

POSITIONS WANTED: Anyone can run a "Position Wanted" ad, FREE of charge (25 words max), and it will appear in the following 2 issues of Radio World. Contact information will be provided. but if a blind box number is required, there is a \$15 fee which must be paid with the listing (there will be no invoicing). Responses will be forwarded to the listee, unopened.

Mail to: Broadcast Equipment Exchange P.O. Box 1214, Falls Church, VA 22041 Attn: Simone Mullins

Advertiser

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This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

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U.S. Midwest: Santa Harvey-Coleman Other Regions: Stevan B. Dana		+1-703-998-76001	ax: +1-703-998-2966
Latin America: Alan Larter		+1-/03-998-/600 ext	-ax: +1-703-998-2966
UK, Ireland: Phil Guy Europe, Africa, Middle East: Dario Calabres Asia/Pacific: Eiji Yoshikawa		+44(0)1869-337508 Fax	: +44(0)1869-337509
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Free Subscriptions are available upon request to rent and new address to RWI a month in advanc review: send to the attention of the appropriate (e at P.O. Box 1214, Fai	ng and audiovisual equipment users. For addin Ils Church, VA 22041 USA. Unsolicited manus	ess changes, send cur- cripts are welcomed for

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CE Compliant



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The **A-6000** is engineered specifically for major market stations that demand a lot of function and need to lead with technical excellence. It's based on an open architecture mainframe that lets you change module locations with **no** restrictions, giving layout top priority and allowing easy reconfiguration as format needs change.

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