

House Bill Deregulates Radio

by Jacqueline Conciatore

WASHINGTON A U.S. House bill that would lift all radio ownership caps is good news to broadcasters worried about how they are positioned to compete against other media providers, but the proposal faces political hurdles ahead.

The mammoth telecommunications reform bill containing the broadcast deregulation provisions passed the House Commerce Committee 38-5 in late May, despite opposition from some leading Democrats.

Under the bill, rules that limit radio broadcasters to 20AM/20FM stations nationwide and three to four stations per market, would be abolished. And

the ceiling on national ownership reach for TV broadcasters would rise from 25 percent to 50 percent, although it would be held at 35 percent for the first year.

These provisions, about which there is some disagreement on both sides of the aisle, were tacked onto the original draft bill as an amendment from Rep. Cliff Stearns (R-Fla.), co-sponsored with Rep. Thomas Bliley (R-Va.) and Jack Fields (R-Texas).

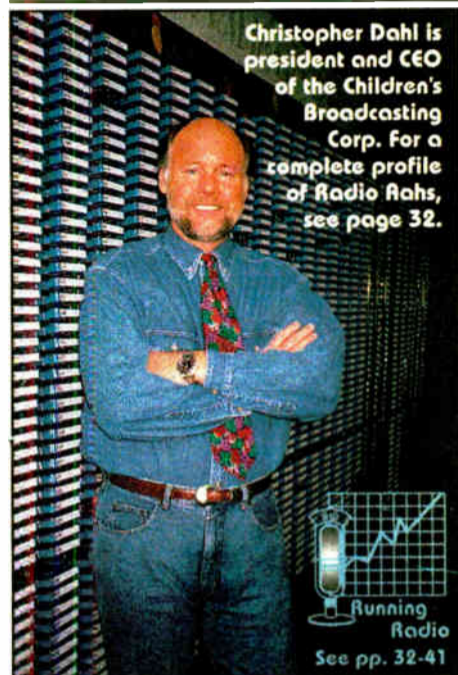
The House telecom bill also would eliminate cross-ownership restrictions, so that in a given market one company could own two TV stations, the cable company and a newspaper.

The bill will be put before the full House for a vote some time after July 4, sources said. There will almost certainly be attempts to strip out the broadcast deregulation provisions,

possibly from Rep. Edward Markey (D-Mass.) or Rep. John Dingell (D-Mich.), who has expressed concern about the elimination of cross-ownership restrictions.

In the meantime, the Senate is grappling with its telecom reform bill.

At press time, Sen. Bob Dole (R-Kan.) had just brought it to the floor, according



Christopher Dahl is president and CEO of the Children's Broadcasting Corp. For a complete profile of radio Aahs, see page 32.

Running Radio See pp. 32-41

ISDN Rate Structure Is Up for Comment at FCC

by Lynn Meadows

WASHINGTON The Federal Communications Commission (FCC) backed away from requiring phone companies to charge users of derived-channel lines like Integrated Services Digital Network (ISDN) on a per channel basis.

The commission's Common Carrier Bureau announced in late May that it will not enforce the rule that was confirmed in January while it accepts comment on alternative methods of charging for ISDN lines.

ISDN lines improve voice quality from remote sights because they transmit digital rather than analog data. Although the lines that carry the signal are the same as standard analog transmission lines, advanced equipment is used to code and decode voice and other information into digital data and transmit it over virtual channels.

The type of ISDN service used by radio broadcasters is Basic Rate Interface (BRI), that splits the signal into two voice channels plus an extra channel to carry signal information. The cap for subscriber line charges is \$6, meaning the maximum cost to radio stations for a BRI line under the current rule would have been \$12.

Hardest hit by the per channel charge would be companies that transmit video. These consumers use the Primary Rate Interface (PRI) service which divides a line into 23 voice-grade equivalent channels. "I am sure it was the PRI ISDN customer base that brought about this speedy reconsideration," said Lynn Distler, vice

president for marketing at Comrex Corp., a manufacturer of telco decoders and encoders (codecs).

Despite a ruling in January to charge ISDN lines on a per-channel basis, a

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to sources. Although it did not come out of committee with any broadcast deregulation provisions, observers expect an amendment that would lift ownership rules.

One Senate staff member said the broadcast deregulation provisions would be offered by Sen. Larry Pressler (R-S.D.), who chairs the Commerce Committee.

Sources said the ultimate deregulation package—a rewrite of the Communications Act of 1934—may be significantly less extreme by the time both Houses vote and rework the final plan in conference.

Although there have been reports that Vice President Gore, FCC Chairman Reed Hundt and National Telecommunications Information Administration (NTIA) head Larry Irving each have criticized various aspects of the telecom reform bills, including the broadcast deregulation provisions, there has not been official warning of any veto.

Radio in favor

Most radio broadcasters are in favor of the deregulation proposal.

Although the National Association of Broadcasters has remained neutral about the bill because its television members are divided about the ownership provisions, it pushed Congress to include the radio reform in the telecom bill.

After the House committee action, NAB President and CEO Edward Fritts called the reform bill "a historic milestone for

continued on page 11 ►

NEWSWATCH

Professional Audio Society Enhances Membership Categories

HOLLYWOOD, Calif. The Society of Professional Audio Recording Services (SPARS) created a new membership category to more fully represent the entire profile of the pro audio industry.

The new "individual membership" category is open to individuals presently engaged in or utilizing the services of the recording industry—provided they do not qualify for any of the society's five other membership categories.

Michigan Association of Broadcasters Annual Meeting Scheduled

LANSING, Mich. The Michigan Association of Broadcasters (MAB) will hold its 47th Annual Meeting and Management Retreat August 27-29.

Speakers include management consultant Dr. Sean Joyce and broadcast sales consultant Jason Jennings.

A panel titled "Lunch and the Law" will include input from Congressman John Dingell, Gary Fries, President and CEO of the Radio Advertising Bureau, and John David from the National Association of Broadcasters.

DX Service Celebrates 10th Anniversary

MANNVILLE, N.Y. This year marks the 10th anniversary of the National Radio Club's DX Audio Service. The service, which started with volunteers reading information from DX News Magazine, evolved into a format that includes interviews and covers both AM and FM changes.

The service, available each month on a 90-minute cassette, is offered for a fee to blind listeners and others who are interested in radio.

New Station Totals Published by FCC

WASHINGTON The Federal Communications Commission released an update of broadcast station totals. As of

April 30, there were 11,840 radio stations broadcasting in the United States.

Of these, 4,913 were AM stations, 5,173 were FM and 1,754 were non-commercial FM stations.

The total number of TV stations was 1,531.

Radio Revenue Posts 'Healthy' Growth in 1995

NEW YORK The Radio Advertising Bureau (RAB) announced that local and national spot advertising revenue increased 10 percent in April 1995 compared to April 1994.

Based on a pool of more than 100 markets, RAB reported that year-to-date revenue through April increased 13 percent compared to the same period in 1994.

"Our analysis suggests that we should continue to enjoy healthy revenue increases through the summer months—and beyond," said RAB President and CEO Gary Fries.

Leadership Conference Steering Committee Formed

DALLAS William Figenshu, president of the radio division for the Viacom Broadcast continued on next page ▶

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Group, and Jim Thompson, president and CEO of Liberty Broadcasting Corp., were named chairman and vice chairman, respectively, of the Marketing Leadership Conference Steering Committee of the Radio Advertising Bureau.

The Radio Advertising Bureau (RAB) established the steering committee to "lay the groundwork" for the group's Marketing Leadership Conference and Executive Symposium scheduled for February 1996.

Tapeless Audio Directory Available

WASHINGTON Published by independent consultants SYPHA, the fourth edition of the "Tapeless Audio Directory" is a buyer's guide to professional random access recording, editing and replay systems. It provides comprehensive details on more than 200 digital audio workstations, as well as cart replacement and broadcast automation systems.

The information provided includes target markets, hardware and software specifications, operational features, networking and file translation capabilities, archiving and backup facilities, future development plans, training and customer support, typical configurations and costs, and suppliers details for the United States, Europe and the Far East.

For convenience, the directory is divided into two main sections, editing and broadcast systems. Editors has been organized into stereo/four-channel and multi-channel categories, while broadcast has separate categories for news/speech, cart replacement and live-assist/automation.

The directory covers existing systems as well as those to be launched and those on which development has been halted.

The "Tapeless Audio Directory" is available from NAB Publications at 800-368-5644 or 202-429-5373; fax: 202-775-3515; and from Opamp Technical Books at 800-4-BOOKS-1 or 800-468-4322; e-mail: opamp@netcom.com for \$25.

FCC Reports on ISDN Growth

by Lynn Meadows

WASHINGTON The Federal Communications Commission (FCC) released its first Infrastructure Report in April detailing the changes in technology at telephone companies from 1989 to 1993.

The report indicates that the hardware required for ISDN services increased significantly over the four year period. Lines available for Basic Rate Interface (BRI), the two channel ISDN service used for carrying voice, increased from 126,276 lines in 1989 to 587,229 lines in 1993.

Primary Rate Interface (PRI) ISDN lines also increased during the four year period. The PRI lines divide into 23 channels to carry video and voice. The number of lines capable of transmitting PRI data increased from 124 in 1989 to 5,814 in 1994.

To obtain data, the FCC surveyed each of the regional Bell companies and companies owned by GTE.

The report, however, is only as good as the information provided by the local telephone conglomerates. Some companies have interpreted the questions and definitions differently over the past several years.

For instance, Bell Atlantic for the years 1989 through 1991 responded to the survey by including only the BRI lines in use. For 1992 and 1993, it began reporting the count of all BRI ISDN interfaces whether or not they were actually in service.

The report states that "the lack of a critical mass of customers using ISDN has been a major stumbling block in the proliferation of end-to-end digital services." The data for 1994 has not been analyzed yet.

Coalition Lobbies Senate

by Lynn Meadows

WASHINGTON In an eleventh hour addition to the ongoing debate over the telecommunications bill, the Coalition for Broadcast Diversity faxed a statement to Senators urging them not to address radio and television ownership deregulation in the pending bill.

According to the statement, there are several "dangerous possibilities" that could result from deregulation. "In addition to the threat to diversity in the marketplace of ideas, there is a concern that employment will suffer in the local media industry as well." Also possibly at risk say members is the "existence of affordable advertising rates for local businesses."

The newly formed coalition includes Greater Media Inc., Jersey Shore Broadcasting Corp., Press Broadcasting Co., and Beasley Broadcast Group. Meredith Broadcasting Group is also a member lending its support to television issues.

"Broadcasting is a strong business with excellent growth potential," the Coalition states, "It works socially and it works economically. It isn't broken and doesn't need fixing."

The fax arrived the same day Senate Majority Leader, Senator Bob Dole (R-Kan.) temporarily halted debate on the legislation in order to give senators time to read all the amendments. It is these amendments that address removing the caps on group ownership.

Proponents of deregulation see lifting the ownership cap as a way to improve economies of scale and "level the playing field" in anticipation of the arrival of Digital Satellite Radio which will be able to broadcast multiple stations to every market.

The Coalition disagrees stating, "If this legislation is passed, the competitive playing field will be significantly tilted in favor of large owners who can effectively shut out smaller companies from access to program suppliers, networks, etc. as well as dominating the advertising market."

In the three page statement, members explain why they believe more small owners have not stepped forward to protest the removal of ownership caps. "Many small broadcast companies have passive investors, whose desire to cash out in the bull market of consolidation effectively silences their broadcaster managers from speaking out on this issue."

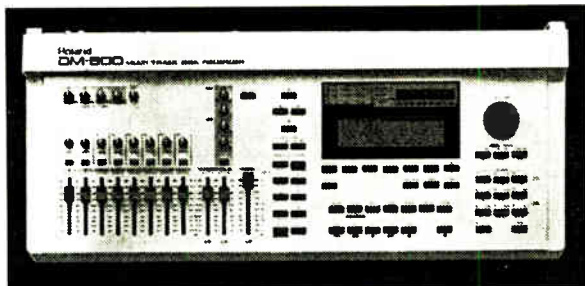
The NAB Radio Board has been a strong supporter of ownership deregulation. The Radio Board voted unanimously to support lifting the current ownership restrictions.

The NAB did not have any comments on the Coalition for Broadcast Diversity's opposing position. A spokesman for the NAB said "we'd like to reiterate our [radio] board's support for ownership deregulation."

The new coalition expects to receive support from stations across the country and will continue to press Congress to leave ownership deregulation off the bill...

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All-out War Hits Washington Airwaves

WASHINGTON All-out radio war has hit the mean streets of the nation's capital. Top-ranked WPGC-FM is taking a frontal assault from Washington radio veteran Cathy Hughes and her WKYS-FM. This one ought to be good.

WPGC-FM has ranked No. 1 in this market since 1990—for at least 17 consecutive Arbitron ratings periods. Success like that, as you all know, is hard-earned. WKYS-FM is going to have to be good, really good, to take down this powerhouse.

Yes, the music playlist on WPGC-FM is very tightly programmed and researched and tweaked. But music alone does not a station make.

For starters, WPGC-FM tied itself early and intrinsically to the Washington community. Not only with its community

forum features celebrities, politicians and Washingtonians speaking their minds on topical issues. Recently, for example, it sponsored a sort of town meeting between rival gangs on the air.

Other community programming includes the "Stop the Violence" campaign, "Books Not Bullets" and an annual Coat Drive that recently collected

and distributed 50,000 coats to area needy residents.

I could go on for quite a while about what WPGC-FM does that makes it the No. 1 station by far in this market. And by

extension, what WKYS-FM is going to have to do better to knock it down a peg. But the point really is that in market after market, radio war after radio war, the station on top is always the one that supervises its community with more than just music.

I think it is an exciting time for radio formats. AM is alive with the sound of talk and aggressive, in-your-face formats that are generating lots of attention and revenue for radio. WPGC-FM's sister station on AM is now programming a street-oriented blend of rap and hip hop that targets the 12-17 year olds—much more exciting and intense a format than the business radio via satellite format it had before.

Whatever happens in Washington radio... happens. The fun part for those of us on the sidelines is watching radio get better by virtue of market competition. If there are two great FMs on the dial going all-out to serve Washington, then Washington benefits. And regardless

of who ends up No. 1 in an Arbitron survey, that is really what radio is about for the listeners.

And if the radio war has more people sampling FM radio, then FM benefits. A strong radio contingent in any market helps sell retailers on the media. And that means more dollars on the bottom line, and more effective spots for your advertisers.

★ ★ ★

Many of you may have already spotted the new byline in *RW*, that of Lynn Meadows. Lynn joined us last week and will be the key contact person for news. Lynn has worked as a radio new director,

is computer savvy and she has a degree in government. Give her a call with any news bits you might hear, or drop her a line via e-mail at 74103.2435@compuserve.com.

★ ★ ★

Elsewhere on this page is a picture of Nancy Widmann, president of CBS Radio (and the only woman at the head of a major radio group) receiving an AWRT Genii award. She has also been selected to receive this year's National Radio Award from the National Association of Broadcasters. Congratulations for some well-deserved recognition!



95.5 FM
WPGC
Continuous Music

affairs programming and constant and far-reaching presence, but by giving the community air time in other ways. For example, WPGC-FM is willing to play new artists, with an emphasis on new local artists.

On another front, the station does not bury its public affairs programming on Sunday morning between 5 and 6 a.m. Albie D., the station's music director, created the program "Yo Listen Up" that airs on Monday nights. The public

CBS Radio President Nancy Widmann received the 1995 American Women in Radio and Television (AWRT) Genii Award, along with fellow honorees Aaron Spelling and Sela Ward. The event marked the 40th anniversary of the Genii Awards and the second year for a separate radio category. The event was sponsored by the Southern California chapter of AWRT and was held at the Beverly Hilton in Los Angeles.

Pictured l to r: Dayna Adams, AWRT president; Peter Lund, president, CBS Broadcast Group, who spoke on Nancy Widmann's behalf; Nancy Widmann; Diane English, keynote speaker; Aaron Spelling, and Karen Tobin, past chapter president and vice president, marketing, KIIS-AM-FM Los Angeles.



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Stop the stereotype

Dear RW,
This is in response to Chris Trace of WKNE in New Hampshire and his letter in the May 3 issue.

I will support congressional cuts of CPB funding when commercial radio stations begin airing public affairs and educational programming during times other than on Sunday mornings between 5-8 a.m., when not many people are listening, just so the station can say it actually does offer such programming.

NPR and local public radio stations dare to provide in-depth coverage of many non-political, non-partisan subjects during prime-time hours. Something that cannot be said of any commercial station to which I have ever listened.

It is time we quit stereotyping public radio listeners as upper-class snobby liberals. As a radio listener, I not only listen to NPR but also the local commercial news/talk, CHR, progressive rock and classical music stations. Take heed, many of your listeners may tune into public radio for what you do not provide, and with the attitude which you displayed in your recent letter, will you not be insulting a segment of your own listeners if they were to read your 'Perrier drinkers' depiction?

Bernie Ksiazek
North American Networks Inc.
Washington, DC

"The Birds"

Dear RW,
Ralph Townsey's "Birds on the Antenna" article reminded me of a story told by my predecessors.

WMBI is also one of the early AM licenses. Broadcasting began in 1926 from the near-north side of Chicago. In 1929, the transmitter plant was moved to then rural Addison, Ill., and a flat top antenna similar to the one described in

the RW article was installed. It too was plagued with periodic instability, but the cause was immediately known and one might say, anticipated with relish.

The problem occurred in the winter and as one might guess, happened when ice began building up on the wire cage.

Someone had the foresight to suspend this arrangement on pulleys and counterweights so instead of breaking, the whole arrangement slowly descended toward the roof of the transmitter building.

The solution was simple—a 12 gauge shotgun and a box of shells.

The site enjoyed the luxury of a rural, bucolic location. Blasting away on the iced-up antenna posed little threat to anyone and rewarded the shooter with a certain amount of satisfaction. With ice removed from the wires, the cage returned to its normal position. A trip to the hardware store to lay in more ammo and the staff was ready for the next event.

The two towers and the wire cage have long since been replaced by a Blaw-Knox vertical radiator, but the concrete piers and steel stubs of the old remain.

Bob Caithamer, director of engineering
Moody Broadcasting, Chicago, IL

Give us a break

Dear RW,
Your newspaper is a must-read for any radio industry types. We rely on your news articles to make informed decisions about purchasing equipment and operating our facilities. Therefore, we rely on your editors to separate wild claims from objective reporting.

Given that, I am very concerned that you would insult us with an article so obviously full of self-righteous claptrap as the April 19th piece about WINB and the "Main Street Forum." This self-congratulatory report asks us to accept at face value that this far-right propaganda machine is "a news/talk network" that is accepted by thousands of "contemporary

On With the Tests

The news that Eureka-147 will not receive permission to conduct field tests at L-band in San Francisco should not slow down the Electronic Industries Association (EIA) testing process for digital audio radio systems. If and when the European consortium decides to pull out of the process, six alternative systems remain—systems that survived the lab-testing process and now are ready for the rigorous field tests.

The National Telecommunications Information Administration (through which experimental L-band spectrum is acquired) should have been more forthcoming with EIA when one of its technical representatives participated in the preparatory discussions for the testing process. Yes, NTIA made its position clear at WARC '92—no L-band for the United States, only 2.3 GHz or in-band systems—but remaining silent while an L-band system was admitted into the testing process could have been perceived as tacit permission to test at L-band. NTIA should have insisted on S-band or in-band proponents only.

Interested U.S. parties can sample Eureka-147 field tests in Canada or Europe. Scientific curiosity aside, there is little point in testing a system at L-band for the United States. However, testing should proceed for the other six systems without undue pressure from the outside.

The concept of a worldwide standard for digital audio radio is an agreeable thought but not necessarily an economic need. The digital audio radio system of choice in this country can more than support receiver manufacturers catering to it. Our 260 million consumers, champions of spending, far outweigh Canada's 27 million, even if joined with the United Kingdom's 57 million and France's 57 million and Germany's 80 million. From a manufacturing standpoint, the numbers speak for themselves.

Now, if only our political associations would speak plainly with each other.

—RW

patriotic Americans huddled around their (shortwave) radios."

Gimme a break. WINB is a marginal operator that most people have never heard of. It sells its blocks of airtime to any right-wing hack with a budget to spew whatever they want. Stations like this have been operating around the fringes forever.

Please do not insult us with a headline touting "Main Street's Diverse Programming"—these shows are one ultra-right diatribe after another. These people have the right to call themselves whatever they want, but we expect you at RW to do a better job at editing their press release copy.

John McNary
Los Angeles, CA 90034

Ham Radio

Dear RW,
You have helped preserve radio's heritage with the feature article from Al Parker (Fond Recollections of Radio Ham, RW, April 5). But some might miss the connection between the hobby of ham radio and the profession of broadcasting and the craft of engineering.

When I was a college intern at a kilowatt daytimer at the start of my career, both my on-air skills and my technical grasp of radio had been given a strong foundation from "playing radio" with my AM station on the shortwave ham bands.

Interviewing local newsmakers was much like the conversation it would sometimes take to bring someone out about themselves on the airwaves at home. And getting good audio quality during field recording came from the same technical background it took to get my 1950 Collins transmitter sounding good.

These days, there are not as many places a would-be broadcaster can polish the skills needed to do a job in journalism, engineering or programming. That makes the vintage radio facet of the ham radio hobby even more important as a learning ground offering hands-on experience.

The Amateur Radio Service has a mandate to maintain a skilled pool of radio operators with both the technical and logistical expertise it takes to supply public service in times of disaster and emergency. I see little difference in the high communications standards I follow in the hobby, as I apply them to my career in radio.

The payoff ranges from having a delightful and satisfying job, to having fellow humans tell me I sound better on the "big rig" at home than on some of the network affiliates that carry my work!

Paul Courson, Business Editor
Associates Press Radio Networks
Washington, DC



Vol. 19, No. 13 June 28, 1995

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Radio World (ISSN: 0274-8541) is published bi-weekly by Industrial Marketing Advisory Services, Inc., 5827 Columbia Pike, Suite 310, Falls Church, VA 22041. Phone: 703-998-7600, Fax: 703-998-2966. Second-class postage rates are paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send 3579 forms and address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. REPRINTS: Reprints of all articles in this issue are available. Call or write Regan Deatherage, P.O. Box 1214, Falls Church, VA 22041; (703) 998-7600; Fax: (703) 998-2966. Copyright 1995 by Industrial Marketing Advisory Services, Inc. All rights reserved.

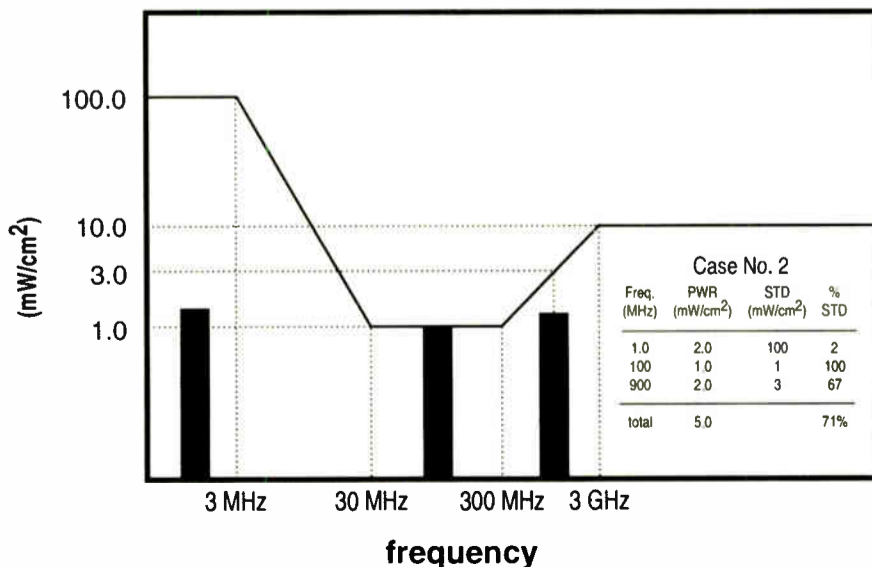
—PRINTED IN THE USA—

Next Issue of
Radio World
July 12, 1995

Correction

Figure 2 on page 17 of the May 31 issue ("Shaped Probes Ease Compliance") had incorrect numbers. The figure should have run as follows:

determining compliance in multisignal environment



World Media Expo Set for Big Easy

by Whitney Pinion

WASHINGTON Even though the worst heat of summer will have passed, the humidity will still linger in New Orleans when the second annual World Media Expo (WME) rolls into town Sept. 6-9.

Once again, WME will combine exhibitions with the conferences of National Association of Broadcasters (NAB), Society of Broadcast Engineers (SBE), the Society of Motion Picture & Television Engineers (SMPTE) and Radio-Television News Directors Association (RTNDA).

The NAB Radio Show promises something for everyone, from general

managers to group operators to engineers. The day before the exhibit floor opens, NAB will offer guided tours of some of New Orleans' top radio stations. Participants will get a glimpse of the technology and programming that make these stations successful.

Experts at NAB's digital radio seminar on Sept. 7 will offer advice on preparing stations for the digital age without wasting time or money on unproven technology. This seminar has a separate registration fee and will be open to all registrants of the NAB Radio Show, RTNDA, SBE and SMPTE conferences.

Mel Karmazin and Lowry Mays, CEOs of Infinity Broadcasting and Clear Channel

Communications, respectively, will participate in the session, "Radio: Today's Trends, Tomorrow's Opportunities."



Other familiar names at the Radio Show will include Ben Cohen and Jerry Greenfield, founders of Ben & Jerry's Ice Cream & Frozen Yogurt, who will share their unusual marketing approach during the NAB Radio Luncheon. Another high-

Alert System), unattended station operation, and digital and RF for radio.

The annual Ham Radio Reception on Sept. 8 and SBE's annual Awards Banquet the following evening will highlight the conference.

The Society of Motion Picture and Television Engineers (SMPTE) will also be on hand at WME. SMPTE, a technical association for motion imaging fields such as television, film, electronic imaging and multimedia, will be holding its technical conference in conjunction with the show.

SMPTE's four-day technical program will feature nearly a dozen sessions, two professional seminars and several workshops and educational offerings. A major theme of the SMPTE conference will be digitization, a subject that has entranced the television industry in recent years as much as it has radio.

Although most of SMPTE's sessions focus on images, some might be beneficial to radio folks. Of particular interest will be a seminar called "Internet for the New User," which promises to clue atten-

Three days of technical papers, the heart of the SBE Engineering conference, will begin on Sept. 7.

light of the luncheon will be the presentation of the NAB 1995 National Radio Award to CBS Radio's Nancy Widmann.

The finale of the Radio Show will be the Marconi Awards Dinner and Show the evening of Sept. 9.

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Three days of technical papers, the heart of the SBE Engineering conference, will begin on Sept. 7. The papers will provide attendees with a comprehensive update on broadcast regulation and technology. Topics will include EAS (Emergency

dees in on short-cuts to the information superhighway.

The Internet program will be held on Saturday, Sept. 9, with both morning and afternoon sessions planned.

Although the majority of the sessions will be open only to registrants for a particular conference, there will also be a number of sessions not affiliated with any one organization. A person registered with any of the four conferences will be able to attend these sessions.

Also, at press time there were plans to identify crossover sessions for registrants of any of the conferences.

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Mark Hallinger, news editor of TV Technology, contributed to this article. ☺



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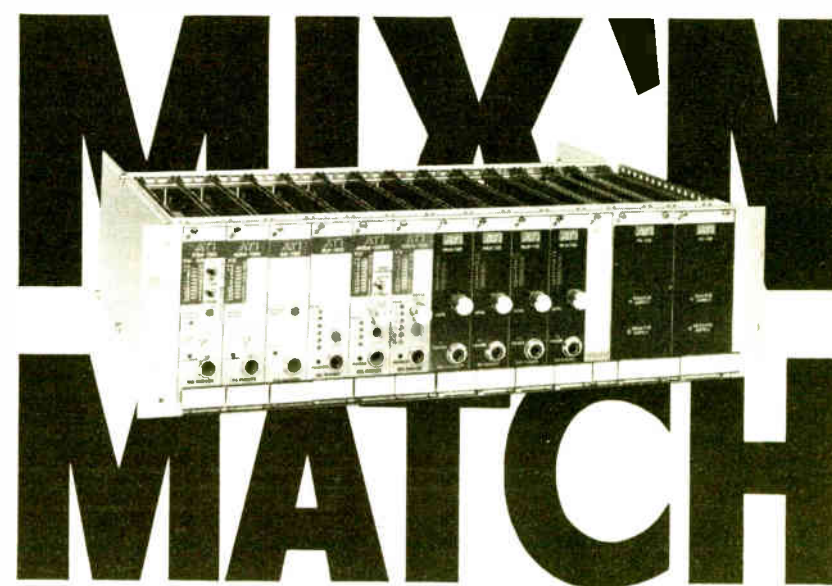
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Circle (28) On Reader Service Card

World Radio History

FCC Strives for Accessibility Via the PC

Editor's note: Having just unveiled its retooled information site on the Internet's World Wide Web to a waiting, diverse audience hungry for information, the Federal Communications Commission (FCC) is finding itself in the thick of the information superhighway.

Commission Chairman Reed Hundt has big plans for the FCC's Web site. He spoke about the commission's place on the information infrastructure with RW's Alan Haber.

RW: I understand the FCC's Web site was created as a result of your interest in getting the commission onto the information superhighway.

H: When I got here, I was very distressed to find out that the FCC was not on the cutting edge, but was as far back as you could possibly be on the information highway. We did not have computers on people's desks, we never used electronic mail, we were not on the Internet. It was appalling. This organization has been and is ready for radical reform, and it starts by us learning to communicate with each other as well as with the outside.

So now we are all on e-mail. We send almost 100,000 messages internally a week, and we have opened ourselves up to the outside. We do not want you to have to hire lawyers and lobbyists to find out what is going on here. We want ourselves to be transparent to the public. That is what we have gotten out of the World Wide Web access and our other forms of openness.

RW: So, in other words, the Web site was really an extension of that.

H: Oh, absolutely. It is a window on the agency. It is a door that anybody in the country can walk through. And, in terms of Web access, we are getting 6,000 hits a day.

And every one of those was a communication with the FCC that those people either could not do before or had to hire a lawyer or lobbyist to handle for them. And you know, that is not right. We are supposed to be open to the public.

RW: Aside from the ease with which people can get information off of a Web site, what are the benefits for the FCC having a site, and what are the benefits for people accessing it?

H: I suppose the number-one benefit is that they can find out what is going on. They can decide to participate in auctions. They can learn about what regulations create fair rules of competition so that they can enter new markets. They can get information so that they can invest more intelligently.

Also, and last but not least by any means, they have an opportunity to tell us what they think we ought to do, and we really need the public input.

RW: Do you think a Web site is an effective way for radio broadcasters to reach their listeners?

H: Absolutely true. It is an effective way to reach the listeners. It is also an effective way to talk to the FCC. I mean the Internet, generally. We would

be delighted to hear from radio broadcasters about any issue over the Internet. They can communicate directly to me, and are very welcome to do so... There is no reason to rely on newspapers and word-of-mouth. I would be happy to explain to anybody directly what we are doing.

RW: Some radio stations are providing the opportunity for visitors to their Web sites to hear them in real time. If the technology improves to the point that people can listen to radio over the Internet in basically perfect sound quality, do you think this type of delivery method could evolve into an alternative program source for listeners?

H: I think there are going to be lots of different ways that people will access radio in the future. Another example is the digital

audio radio satellite, which in a number of years will be up and will be broadcasting radio.

Another example is terrestrial digital in-band, which is going to change radio. I think that those are probably more significant than the access to radio over the Internet, but all three developments show that radio is about to go through enormous change, is about to have enormous opportunities for expansion.

RW: What do you think about listening to the radio over the Internet?

H: I think it is fine if they are going to do it. It is a little awkward. The key to radio now is that it is utterly portable... You do not have that same facility vis-à-vis the Internet, unless you have, of course, a very upscale portable laptop computer and a wireless modem, which is a little bit more pricey than the (cost of a portable radio). So I think that is a fairly high-end (and) specialized use. I would not think it is as significant as the coming digitalization of radio, in terms of a factor that is likely to radically change the industry.

RW: What is radio's role on the information superhighway?

H: Radio is one of the key lanes, and it is going to be more and more interesting, and more and more important. The key change is the change to digitization, which is going to greatly expand the opportunities that radio broadcasters have.

RW: How do you think the way the FCC is going onto the information superhighway fits in with the government's outlook on the topic?

H: I think what the FCC is doing is kind of a model for the entire government. We are trimming down and

speeding up our deliberations. We are trying to be more productive, and, at the same time, we are trying to be open to the public in totally new ways. And I think we are succeeding.

We are going through more change right

they have accepted it, and are aware of its possibilities?

H: Oh, yeah. This is taking off, sort of at an exponential rate. I really do not know what the boundaries are, if any.

RW: Do you think the FCC staff is excited about the possibilities?

H: People here have been very frustrated for a very long time about the difficulties in talking with each other, the slowness of our processes, the unnecessary logistical problems involved in just arranging internal meetings. We understand what communications can do, and we have not been able to do it. It is like a bunch of fine basketball players who do not have a basketball. But now that we have the PCs, you know, the place is changing itself overnight.

RW: So anybody, from the average citizen who may just have a passing interest in broadcasting, to a student or government person or a broadcaster, can find information and benefit from the FCC Web site?

H: That is exactly right.

RW: If you had to pick one thing that would say to you that the Web site has done its job, what would it be?

H: It would be the sheer fact that we have 6,000 interactions with the public over the World Wide Web per day. I mean, that alone proves that we are being much more successful than in the past in serving the public.

□ □ □

FCC Chairman Reed Hundt can be reached by e-mail at rhundt@fcc.gov. The FCC's Web site makes its home at <http://www.fcc.gov>.



FCC Chairman Reed Hundt



now than ever before in the whole history of the FCC. When I got here, (the FCC) was fairly impervious to change. But we are in the middle of fairly radical reform right now.

RW: What are some of the other programs the FCC has that relate to reaching out to the public through the information superhighway?

H: We are going to use the World Wide Web for regular virtual meetings with the public, for lots of press interaction. We are going to use the World Wide Web to put the different bureaus on line, in real time, so that they can talk with their industries. These are some of our plans for the future.

RW: How is the FCC staff taking to the Web? Do you think

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INTERNATIONAL UPDATE

Canada Introduces Eureka-147 TravelGuide

by James Careless

TORONTO As the implementation of Eureka-147 for digital radio moves forward, promoters are introducing ancillary services to make the new service more attractive to broadcasters and to grab the attention of consumers.

Canada, a staunch supporter of Eureka-147 for Digital Audio Broadcasting (DAB), used the annual Canadian International Auto Show to debut TravelGuide, an in-car navigation and traffic monitoring system delivered on L-band via Eureka.

The government of the province of Ontario—developer of TravelGuide—set up a working display during the February trade show with the cooperation of Chrysler and Digital Radio Research Inc. (DRRI), the Canadian industry/government group spearheading the drive toward achieving DAB in Canada before the end of the century.

Prototype configuration

Chrysler supplied a convertible to demonstrate a prototype "commercial" configuration of TravelGuide and a mini van to allow visitors to see the system in

action on the streets of downtown Toronto.

The car featured a small, in-dash Sony video display that was manipulated by a small remote control. The van used a laptop fixed to a steel pedestal positioned between the driver and passenger seats.

TravelGuide integrates police reports with information on traffic flow gathered by both buses and on-road sensors. These provide a data stream that is relayed via L-band to a digital radio equipped with a small monitor screen. Control is executed using either keys or—theoretically for now—voice recognition.

This design offers users important benefits. They can key in their current location and a destination, and then ask the computer for the most efficient route based on present conditions. TravelGuide then displays a route on the monitor screen—which is meant to be used primarily before the drive, not during—and also supplies audio instructions to the driver.

The audio instructions include a route overview spoken by the system's voice synthesizer during the on-road demo.

An example: "From Toronto Convention Centre, two hundred, fifty-five

Front Street West, Toronto, to Pearson International Airport Terminal Two, Toronto—total distance, thirty-five point three kilometers; thirty-eight minutes."

The system also provides turn-by-turn,

there was a snowstorm in Alabama several years ago, which was a complete freak occurrence, you would know about it."

From the point of view of the public, TravelGuide was a high-tech novelty,



Canada launched an in-car mapping system using Eureka-147 DAB.

U.S. Legislators Take On Radio Deregulation

► continued from page 1
the radio industry."

Station owners said the bill will help position them as players in a new media marketplace that is growing more fiercely competitive almost daily. One concern is the upcoming direct satellite broadcast



service that could deliver up to 60 channels of audio per market.

The consolidations that will emerge from an easing of ownership restrictions will lead to stronger, more cost-efficient stations, broadcasters said. And it will lead to more choices for listeners, if the most recent broadcast deregulation results prove anything, according to Richard Ferguson of NewCity Communications.

"If you have one FM in a market, you will go for the biggest (audience) share possible," Ferguson said. "Now with multiple facilities, people are saying, 'I can have a couple of niche formats.' We just put a jazz station in San Antonio. We created a new format—rhythm and romance, in Orlando."

Though some critics worry that the deregulation will lead to a dangerous level of concentration in various markets, Ferguson and others said existing antitrust provisions will prevent that.

Bill Stakelin, president and CEO of Apollo

Radio Ltd., said he believes the FCC will still maintain oversight. "I see good, strong companies," he said. "I do not think controls will ever be taken away. The FCC will set guidelines and be charged with the responsibility of setting criteria that will let people know when there is too much concentration and control in a market."

□ □ □

Jacqueline Conciatore is associate editor of the National Public Radio Current.

on-road instructions as the trip progresses, such as: "One—drive west on Front Street four hundred meters to Spadina Avenue. Turn left; select right lane after turn."

Data collected by TravelGuide is continuously updated, and new accidents and other problems are relayed to the driver immediately. The system, in turn, suggests alternative routes as needed.

Currently, there is only enough information collected for TravelGuide to cover downtown Toronto, according to Jackson Wong, the designer of TravelGuide who is with the Ontario Ministry of Transportation.

"In the future, when you are taking a trip from Toronto to Orlando, Fla., you will receive relevant information for the parts that you're travelling through," Wong said. "So in situations like when

albeit one that is only two to five years away from market, according to government sources.

Proof of potential

But for engineers like Wong, the system is proof of the potential for L-band DAB to supply new and different services and to do far more with datacasting than can be done currently with the Radio Data System (RDS).

"The RDS format is a fairly modest low data rate format" in its current analog configuration, Wong said.

"The kind of format that is being discussed and being deployed for trial here in digital radio makes use of the RDS format at a very high speed, and we are also experimenting with completely new services that RDS cannot cover—things

continued on page 13 ►

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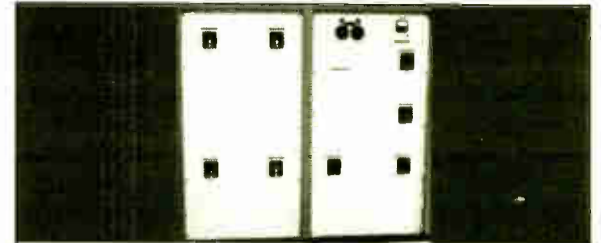
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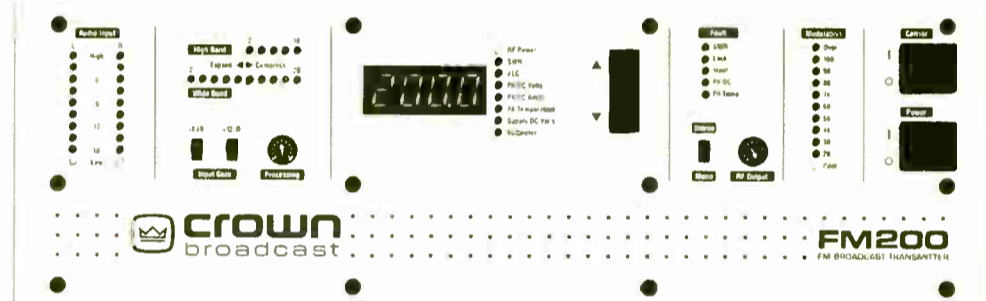
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INTERNATIONAL UPDATE

DAB Forum Promotes Eureka Agenda

GENEVA "More successful than one could have hoped for" is how Franc Kozamernik of the European Broadcasting Union (EBU) described the inaugural meeting of the EuroDab Forum.

In fact, nearly 200 representatives from all over the world attended, including not just Europeans but Canadians and Americans as well. Australia, China, India and Mexico also committed to joining the group.

Less formal

As a result of the success of the first meeting, several aspects of the forum will be changed. Even though the name will remain EuroDab, there will no longer be separate categories for European and non-European members. The memorandum of understanding also

was eliminated, and the forum will function much more as an open discussion group with less formal rules.

Among the surprises to come from DAB progress reports from various countries was the announcement from Belgium that the country will establish one DAB forum for both the Flemish and Francophone communities. The country is known for usually having different forums and groups for each language sector.

Hungary also announced that it is moving ahead quickly with plans to establish a DAB forum. A lot of support for the Hungarian DAB forum comes from the private commercial market.

Along those same lines, Kozamernik reported that he was officially contacted by the Popov Research Institute in St. Petersburg, Russia, which told him they

would like to join the group. This is the first official contact from Russia concerning DAB.

Poland is moving along quite rapidly with DAB and had a large representation at the meeting. Poland is one of the countries most keen on DAB right now, according to Kozamernik.

The Americans attending the meeting tended to be more from the manufacturing side, including representatives from Motorola, WorldSpace and Delco.

Therefore, it was no surprise that the interest in DAB from the Americans was from a commercial aspect. For example, Kozamernik said the U.S. car industry is interested in DAB because it manufactures automobiles for both the Canadian and European markets.

He said he also feels that there was a political reason behind the U.S. representation. Presently, 1.5 GHz is not allowed for allocation in the United States. Also, said Kozamernik, "The IBOC approach has limited scope. It can only duplicate existing sound channels on the FM band, whereas Eureka-147 can multiply the number of programs by a factor of 10."

The next EuroDab Forum meeting is Oct. 11, in London. The group also decided to sponsor a European DAB day next year, although exactly what that will entail was not been decided.

Another move promoted by the forum is

to conduct a major marketing study of Europe and the rest of the world concerning Eureka-147. The study would examine to what extent Eureka-147 is economically viable via satellite to mobile and non-mobile users.

This concern is driven by the amount of increasing competition in satellite delivery. Currently, several new satellite-based audio/data broadcasting systems are under development.

Proliferation worries

They include: Worldspace, Immarsat, European Space Agency, Voice of America/JPL, Radiosat, Astra ADR (Europeanwide satellite sub-carrier system) and CD Radio, a U.S. domestic satellite system.

What also worries people like Kozamernik is that this could lead to a proliferation of a number of different systems for global or regional satellite sound broadcasting.

This would not only be inconvenient for broadcasters and consumers, but would mean higher costs for receivers because the market would be so fragmented. That could happen because these competing systems would use different transmission standards and incompatible receivers.

The study also will examine the suitability of Eureka-147 for local services and certain copyright issues that are not fully defined. Manufacturers need to have a clear picture on which patents and copyrights are involved. There are similar questions coming from broadcasters, who even question which trademarks and logos they are allowed to use.

Eureka TravelGuide

▶ continued from page 11

like map display, which obviously requires quantum leaps of more information per second than RDS can carry."

As it turns out, Wong prefers L-band Eureka DAB over other alternatives simply because it has enough bandwidth to handle a broad range of services like "Yellow Pages," stock quotes and paging.

"Everything eats up bandwidth," he said, "and L-band is about the only technology that's 'doable' in the next five, 10, 20 years, that has this kind of capacity. FM-RDS will not."

For the broadcasters who attended the auto show to see the TravelGuide demo, the display was another step on the road to realizing DAB as a fully viable medium that is only a few years away, according to Canadian Association of Broadcasters President and CEO Michael McCabe.

Other services

"I think that by '97 or '98 you will start to see the first genuine, fully-operational digital stations," McCabe said. "And people will get not only high-quality sound, they will start to get some of these other services that come along with it."

Certainly the successful unveiling of TravelGuide helped get the point across that DAB is coming, a point hammered home to visitors by a DRRI audio-video display.

Another factor boosting this message was the North American debut of a Philips commercial-grade Eureka receiver, one that DRRI Vice President Duff Roman said is similar to consumer sets now being released in the European marketplace.

Taken as a whole, the TravelGuide/ DRRI clearly demonstrated that L-band-delivered data services are both practical and reliable in a mobile environment and that these services need not just be "updated" versions of existing products. They can be new and different, carving out market niches where none existed before.

For the general public, the display showed digital radio as a working reality. They were exposed to the fact that, right now, many of the major stations in Toronto are simulcast via DAB and that someday soon they, too, will have access to DAB receivers like the Philips model that was on display.

The TravelGuide/DRRI display did its job. What remains to be seen is whether commercial L-band DAB can do the same.

□ □ □

James Careless covers the industry in Canada for Radio World.

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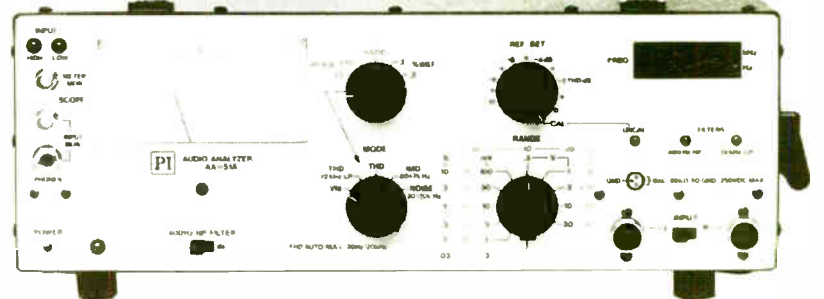
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COLE'S LAW

Decipher Renewal Paperwork Maze

by Harry Cole

WASHINGTON As I have previously noted in these pages, renewal time is fast approaching for radio stations throughout the land. What I have not focused on yet, however, is what this means for station engineers. Can they just sit back, content that more than a decade of deregulation has taken them out of the renewal loop? Nope.

The 1995 renewal application (no longer a mere postcard, but now an actual, multipage form, proving that the 1980s really are over) continues to contain the following question which will

ordinarily send management personnel screaming down to their engineers for the right answer: "Would a Commission grant of this application come within 47 C.F.R. Section 1.1307, such that it may have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding identified health and safety guidelines issued by the American National Standards Institute?"

While your standard Yes/No boxes follow the question, those are illusory: if you answer Yes, you have to include a separate exhibit, but if you answer No, you still have to "explain briefly why not."

In order to answer No to this question you have to be able to answer No to each item on an eight-item laundry list relating generally to "environmental" matters. Here is the list:

1. Does your facility involve high-intensity white lighting in residential neighborhoods?
2. Is your facility located in an officially designated wilderness area or wildlife preserve?
3. Does your facility threaten the existence or habitat of endangered species?
4. Does your facility affect "districts, sites, buildings, structures or objects significant in American history, architecture, archaeology, engineering or culture that are listed in the National Register of Historic Places or are eligible for listing"?
5. Does your facility affect "Indian religious sites"?
6. Is your facility located in a floodplain?
7. Did your facility require construction that involved significant changes in surface features?
8. Is your facility in violation of FCC-established guidelines regarding exposure

to excessive RF radiation?

The first seven of these questions should probably be pretty easy for just about everybody to complete. The tricky one is the eighth item.

To help you deal with the RF question, the FCC has created some "RF Radiation Compliance Worksheets/Instructions." Reliance on these worksheets is not mandatory, but it may be quite helpful.

continued on page 17 ▶

ISDN Fees in Question

▶ continued from page 1

spokesman for the FCC said. "It is our understanding that most companies have not been assessing a per-channel fee."

In a written statement, the Common Carrier Bureau stated: "We believe that the public interest is best served by focusing our resources on reaching an equitable long-term resolution of these issues as quickly as possible rather than devoting resources to enforcing a rule that is subject to possible amendment."

The decision was anticipated by industry manufacturers. "I am not surprised that they are reconsidering their previous ruling," said Distler.

The FCC proposed several alternatives to the per-channel charge for ISDN lines. The simplest is a return to charging one subscriber line charge per BRI or PRI line. Telecommunications Engineer Jeff Fritz, who chairs the National Information Infrastructure Working Group, supports this approach. "It was fair," he said. However, he noted that all of the proposals were "reasonable."

Another pricing option proposed would establish a charge proportional to cost. Phone companies would use the ratio of cost in providing an ISDN line to the cost

Copies of the worksheets are included in the "License Renewal Forms and Instructions," which the commission has presumably mailed out to each licensee. If you did not get a copy of that mailing, or if you cannot find the RF worksheets, just dial 800-671-2233 for the FCC's own "Radio Renewal Information Line." The forms, instructions and worksheets can be faxed out to you directly.

Do not assume because you have the RF worksheets, it will be a breeze. Even with the forms, you will have to (a) review some preliminary conditions to make sure

of providing an ordinary line. If that cost were six times as great, the charge for ISDN lines would be six times the charge of ordinary lines.

Fritz points out that using this method, the charges would vary between each local exchange making it difficult for broadcasters to correctly estimate the cost of a remote sportscast, for example.

Distler agreed. "I think it would be almost impossible to derive an 'average cost' of installing an ISDN line." Distler supports another FCC proposal that would give phone companies more flexibility in determining SLC rates.

Arthur Constantine, vice president of sales and marketing for New Jersey-based CCS Audio Products, a codec manufacturer, also favors some flexibility. "I think the FCC should allow telephone companies to provide ISDN services to radio stations for free," he said. "Radio stations provide valuable public services that cannot be obtained anywhere else."

For broadcast stations, the best pricing option will depend on how they use ISDN services. Neil Glassman, marketing director for Telos, a Cleveland-based codec manufacturer, explains that a station in a big city doing many local remotes might be affected by a higher SLC. Stations that do fewer remotes farther away may be willing to pay a higher SLC in exchange for a lower long distance rate.

Most people agree, however, that whatever the new pricing scheme adopted, the overall ISDN rates will continue to drop. Says Distler, "ISDN is a very cost-effective way for radio stations to transfer high-quality audio at today's rates even at an additional six dollars per month."

In its statement requesting comment, the FCC stated, "We must be careful to avoid erecting regulatory barriers to the development of beneficial new technologies." Michel Daley, a spokesman for Bell Atlantic, agreed. "With the introduction of the notice of proposed rulemaking we are now back on track towards introducing ISDN to all of our customers," he said.

This comes as good news to industry watchers who see the United States as sluggish in its conversion to ISDN lines. Japan, France and Germany all have a high market ISDN penetration.

Bell Atlantic was one of the first to object to the ruling in January to charge customers per channel. Along with NYNEX and others, the company requested an emergency waiver in February to be allowed to charge per line rather than per channel.

The FCC requires any responses to the notice of proposed rulemaking to be returned for discussion by mid-July. A ruling is expected after that.



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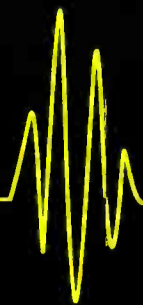
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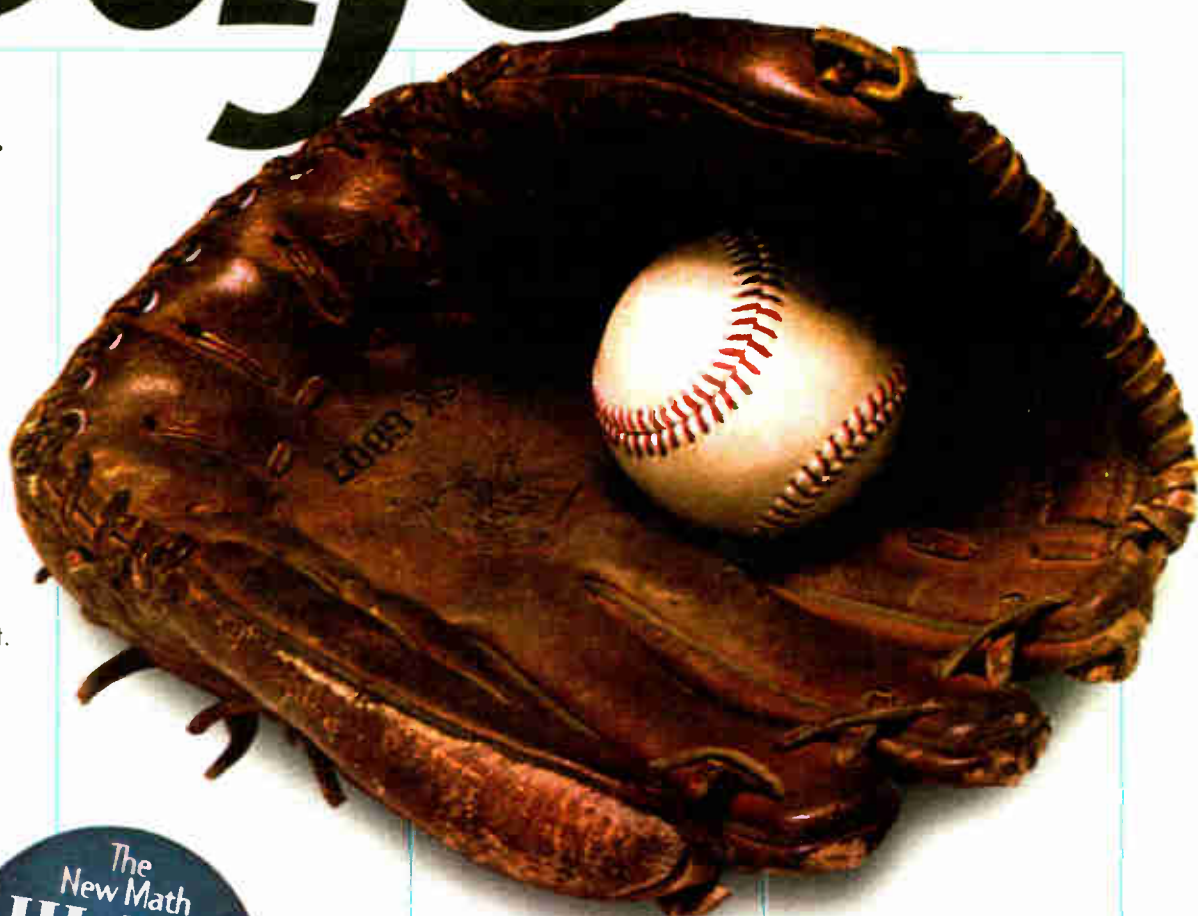
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Maze of Renewal

► continued from page 14

that you can even use the worksheets in the first place (there are a number of types of situations for which the worksheets do not apply) and (b) go through some calculations which will remind you a lot of filling in your federal income tax forms.

The purpose of these RF calculations is to determine whether the level of RF radiation to which the public is exposed in the area of your antenna is excessive. There are, of course, a variety of different ways by which this determination can be made. The RF worksheets allow you to run a relatively simple set of calculations using some information about your antenna(s) and supporting structure(s) and, for TV and FM stations, your ERP. The calculations also include, for FM stations, a multiplication factor designed to give a "worst-case" determination of RF. If you pass the test using such worst-case numbers, you should pass under any real world scenario.

Do not freak out, though, if you do not pass the worst-case test. Even if that happens, you can still offer an explanation based on such considerations as antenna radiation patterns, actual measurements of RF showing compliance, and the like.

Before trying some such alternative explanation, though, you would probably be smart to get hold of a copy of OST Bulletin No. 65, issued by the FCC's Office of Science and Technology. This little classic (real name: "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation") is pretty much the last word on RF exposure matters. (Want your own copy? Dial 202-418-0200 and order one now directly from the FCC.)

And finally, even if you do find that, no matter what, your facilities produce excessive RF, that still does not necessarily mean that your renewal will be denied. Rather, it just means that you will have to include, as part of your renewal application, an environmental assessment addressing the problem.

Of course, one of the usual goals of renewal applicants is to get their renewal applications granted as quickly and as smoothly as possible. If that is your goal, too, you would probably be well-advised to do what you can to assure that your facilities are within the FCC's RF guidelines.

If maximum avoidance of delay or other hassle is a high priority in your universe, you may wish to consider delegating the RF question to your consulting engineer.

And remember that, in a pinch, you can always call on your communications lawyer.

□ □ □

Harry Cole is a principal in the Washington-based law firm of Bechtel & Cole, Chartered. He can be reached at 202-833-4190.

KEYBOARD CONNECTION

Communication Options to Consider

by Barry Mishkind

TUCSON, Ariz. It is an old joke. A traveler discovers he is lost and approaches a farmer, seeking directions to the nearest town. The farmer knows the town, knows where it is, but finally tells the traveler "you can't get there from here."

Broadcasters who need help with equipment or software sometimes can find getting to the right person with the right information may seem almost as difficult a proposition.

How it was

Of course, there are the traditional routes: calling the manufacturers or their reps. Some manufacturers have excellent support programs, with highly skilled customer service technicians ready to handle any problem.

But, given the number of stations and the number of technical service folk, time zone differences and other factors, actually reaching the right person can still be a challenge. Most of us have played telephone tag at one time or another, or ended up cursing the incessant busy signal or the endless ringing when we needed help quickly.

Efforts to improve customer service over the years have brought answering services and machines, fax machines and the oft-hated voice mailboxes with their endless menu choices. All are efforts to take messages when people are busy or out. Each has its drawbacks. Messages and faxes pile up at the reception desk; fax machines run out of paper; voice mail can get erased by a power glitch.

All of which brings us to e-mail.

How it can be

E-mail really is the '90s. Electronic mail is transmitted from your computer via one or more networks and ends up in the account of the recipient. He can be around the block or around the world. In fact, most e-mail is delivered within minutes.

On the other hand, sometimes you cannot get there from where you are. A primary hurdle is having the exact e-mail address. Just one wrong letter or number in the address, and the message is rejected, bounced back to you, or just disappears into the "bit bucket." This can happen frequently when messages cross over to different networks. In fact, one major network had a reputation of "dumping" e-mail (deleting it) when its system got busy.

This brings up two important pieces of so-called Net etiquette. Because the one sending a message to you cannot always be certain you received it, it is a kindness to respond, even if only to say "message received." The flip side is: do not assume a lack of reply is because the other person is rude. They might not have gotten your e-mail. Personally, I have even had messages to other **RW** writers disappear, and it was only by my sending a follow-up that I got contact and a reply.

Benefits of e-mail

Nevertheless, there are some real benefits from e-mail. First, as I mentioned, it can be sent virtually instantaneously. For those with live on-line connections, their screen can tell them immediately when a message has arrived.

If your message needs to be routed to someone who can provide a better answer, this also takes mere nanoseconds.

Multiple copies can even be sent to several people in a company if a difficult or multipart question has come up. And, because it is electronic, there is no potential problem of running out of paper.

A third benefit comes when a problem or

to on the phone. Yet, in the computer age, we can find ourselves communicating with others without even hearing their voice.

So, it is nice to have an opportunity to get together at trade shows and meet the folk with whom you have been exchanging e-mail. This year, **RW** sponsored the Third Annual Computer Users' lunch meeting on Tuesday during the NAB show. More than two dozen people showed up and chatted about everything from specific programs to increasing the availability of the Society of Broadcast Engineers (SBE) echo.

Topping the list of door prizes were several broadcast industry-oriented items. Communications Data Services provided a full color propagation map. And both Rules Service Company and Pike & Fischer provided a computer set of the FCC Rules and Regulations.

DacEasy sent a couple of copies of its Instant Rolodex, along with the new DacEasy Accounting for Windows (a CD with more than \$700 of software perfect for use by small businesses).

Groliers provided the Groliers Multimedia Encyclopedia. From Mindscape came the newly updated Grammy Awards Multimedia CD-ROM, complete with more than 35 audio/video clips of winning songs.

Parsons Technology sent along its Information Please Business Almanac and Desk Reference (a CD with lots of legal software and other business software), and a copy of It's Legal, a package to help write contracts, wills, etc.

Microsoft Corporation sent copies of the MS Professional Office, and the 1995 copies of MS Bookshelf, MS Encarta and MS Cinemania.

And from Symantec we had copies of Norton Utilities, the Norton Desktop and Norton Anti-Virus programs.

I would like to offer my sincere thanks to all these fine companies that helped make this year's lunch gathering a stand-out part of the NAB convention.

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Barry Mishkind can be reached at 520-296-3797, or via the Internet: "barry@coyote.datalog.com."

Here are some valuable e-mail addresses you will want to clip and save.

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question arises in the middle of the night. Rather than missing connections (or sleep), an e-mail message can be sent anytime, and the company can have the answer in your mailbox when you awaken.

To see who is connected, I surveyed a number of manufacturers and reps at the recent National Association of Broadcasters (NAB) show. Quite a few now have, or are planning to have, e-mail addresses for sales and technical support. While some are a bit hesitant to get into e-mail activity, one vendor told me he can handle 50 e-mail messages much faster than 10 phone calls, identifying the ones needing telephone assistance more quickly.

It is always nice to meet the voices you talk

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INSIGHT-ON-RULES

Examining Commission's EAS Rules

by Harold Hallikainen

SAN LUIS OBISPO, Calif. On Dec. 9, 1994, the Federal Communications Commission (FCC) released a Report and Order that replaces the existing Emergency Broadcasting System with a new Emergency Alert System. It also issued a Further Notice of Proposed Rulemaking regarding EAS for cable systems, MDS (wireless cable), Digital Audio Radio and other services.

In this article, I will take a close look at the new rules regarding broadcast stations. This article is based on a review of the Report and Order and discussion with FCC staff and others. The full text of the report and order is available on Internet at <<http://fcc.gov/>> or <<http://slonet/~hhalika/>>. It is also available by fax at 805-

decoders in stations must be modified to respond to the existing two-tone (853 and 960 Hz) attention signal in a minimum of three and a maximum of four seconds. Currently, decoders are required to respond in eight to 16 seconds. Decoders can be modified anytime before July 1.

Starting July 1, two-tone encoders may be modified to transmit the attention signal for eight to 25 seconds. The shortened tone was suggested by the National Association of Broadcasters (NAB) in its EBS petition. The eight-second minimum with a decode time maximum of four seconds ensures broadcast stations will continue to properly receive the EBS tones.

Starting July 1, stations may start using the new EAS codes in addition to the shortened EBS tone.

Starting July 1, 1996, stations must use

broadcast the two-tone "attention signal" during monthly tests and during emergencies. Paragraph 95 of the Report and Order indicates that retention of the tone or not making it excessively short was due to comments from a couple of organizations representing disabled persons. It was thought that the tones would catch someone's attention better than a short audio frequency shift-keyed (AFSK) chirp.

In operation

In addition, though not mentioned in the Report and Order, there are several thousand consumer receivers in operation

around the country that detect the two-tone attention signal. Continued use of the two-tone attention signal allows these receivers to continue to operate.

Currently, the two-tone attention signal provides a very limited form of message addressing. Receivers are muted unless an emergency message is sent. The EAS expands the addressability of the system.

The EAS protocol uses an audio frequency shift-keyed asynchronous data signal with one start bit (always space), eight data bits, no parity bit and one stop bit (always mark). The data is transmitted at 520.83 bits per second with a mark frequency of 2083.3 Hz and a space frequency of 1562.5 Hz. The rules do not specify tolerances on these frequencies. The asynchronous "8 none 1" is also not clearly specified in the rules. The tones

continued on page 21 ▶

Table 1. - The EAS Protocol

[PREAMBLE] ZCZC-ORG-EEE-PSSCCC + TTTT-JJJHHMM-LLLLLLLLL-
(one second pause)
[PREAMBLE] ZCZC-ORG-EEE-PSSCCC + TTTT-JJJHHMM-LLLLLLLLL-
(one second pause)
[PREAMBLE] ZCZC-ORG-EEE-PSSCCC + TTTT-JJJHHMM-LLLLLLLLL-
(one or more second pause)
(two-tone attention signal for 8 to 25 seconds)
(emergency audio programming)
[PREAMBLE] NNNN
(one second pause)
[PREAMBLE] NNNN
(one second pause)
[PREAMBLE] NNNN
(one or more second pause)

541-0201. You may also want to check the FCC's fax server at 202-418-2830.

Implementation timetable

No changes are required until July 1. However, by July 1, all existing EBS

the new EAS codes along with the shortened EBS tone.

Starting July 1, 1996, stations no longer need to maintain the existing two-tone decoders. All station alerting is done by the new EAS codes. Stations must continue to

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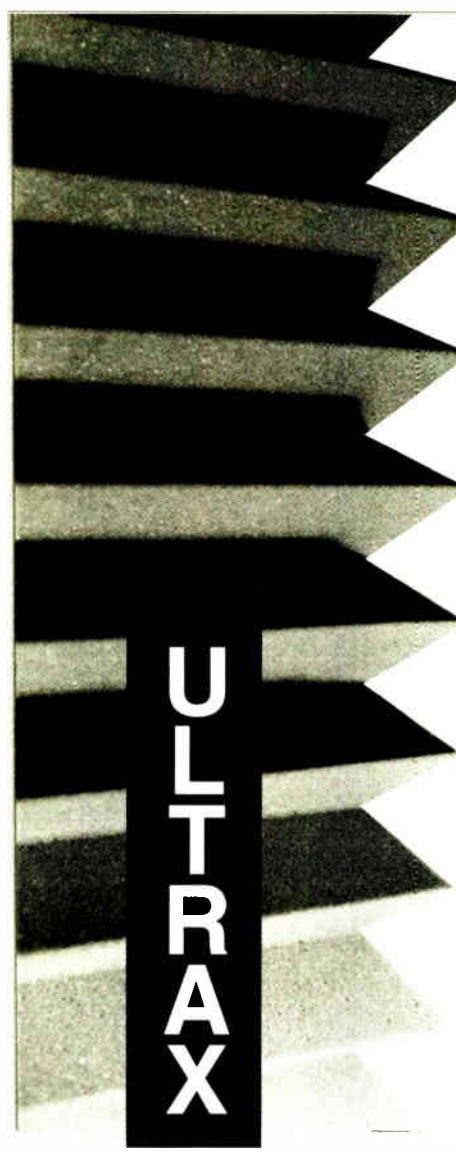
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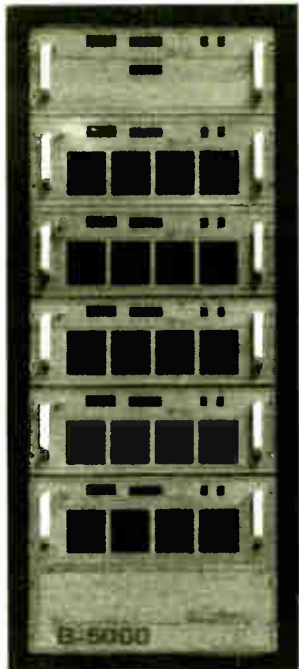
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Look at New EAS Rules

► continued from page 19

must modulate the transmitter at least 80 percent (peak), according to 11.51(f). Many stations are not meeting the existing

currently transmitting the code. When packets are relayed, this is the only field that is changed.

NNNN is an End of Message indicator.

It can mute consumer receivers or return stations to normal programming automatically. The rules do not specify the contents of the one-second pause. It could be one second of silence, one second of normal program audio or one second of 2083.3 Hz. Paragraph 110 of the R&O refers to "unobtrusive tests" of the system where only the EAS data is sent. They estimate the tests would take about six seconds and be unintelligible to listeners. If an average alerting packet runs 58 bytes (including preamble) and each byte is 10 bits (including start and stop bits), it would take a little over a second to transmit. The End of Message packets

are considerably shorter, running 20 bytes with the preamble. These each take about 400 milliseconds. It seems that the

"unobtrusive test" would be less obtrusive if program audio were allowed in the pause periods. The data bursts would then sound something like the data bursts we currently hear on some networks for station equipment control.

Decoders must receive two identical headers (of the three transmitted) to be considered valid. This is the system error checking.

Typical tests

Stations will be required to initiate weekly tests of the system (see 11.61(a)(2)). Prior to July 1, 1996, tests include the existing attention signal and EBS test script. These tests (as existing tests) are to be conducted weekly on random days and times between 8:30 a.m. and sunset. Starting July 1, 1996, stations (except class D NCE and LPTV) are to run the "unobtrusive" tests consisting of the EAS header transmitted three times, followed by the EAS EOM transmitted three times. Stations are required to log EAS test transmissions and receptions. No audio message is required. Only the AFSK data stream is broadcast. These tests are not relayed to other stations.

Monthly tests in odd-numbered months will be run between 8:30 a.m. and sunset. Tests in even-numbered months will be run between sunset and 8:30 a.m. These tests include the EAS header, the two-tone attention signal, a test script and the EAS EOM. Broadcast stations do not originate this test, but instead relay tests that are received from other sources. The test is originated by "local or state primary sources" (such as a county or state

emergency operations center).

Stations in the originating local area or originating state are required to retransmit the test within 15 minutes of reception. Because the new system will use a web topology instead of the existing tree structure, there will be many loops, making it possible for the station to receive a message several times, each arriving over a different route. The decoder ignores subsequent identical messages, preventing continuous transmissions.

Stations pre-program their EAS decoder as to what areas and which event codes they wish to respond to. All stations must respond to EAN (national emergency) messages. On receiving a valid EAS header, the decoder displays the identifying data and notifies the operator if the header matches one of the

continued on page 22 ►

Table 2. - EAS Event Codes

EAN	National Emergency Action Notification
EAT	National Emergency Action Termination
NIC	National Information Center
NPT	National Periodic Test
RMT	Required Monthly Test
RWT	Required Weekly Test
TOA	Tornado Watch
TOR	Tornado Warning
SVA	Severe Thunderstorm Watch
SVR	Severe Thunderstorm Warning
SVS	Severe Weather Statement
SPS	Special Weather Statement
FFA	Flash Flood Watch
FFW	Flash Flood Warning
FFS	Flash Flood Statement
FLA	Flood Watch
FLW	Flood Warning
FLS	Flood Statement
WSA	Winter Storm Watch
WSW	Winter Storm Warning
BZW	Blizzard Warning
HWA	High Wind Watch
HWW	High Wind Warning
HUA	Hurricane Watch
HUW	Hurricane Warning
HLS	Hurricane Statement
TSA	Tsunami Watch
TSW	Tsunami Warning
EVI	Evacuate Immediate
CEM	Civil Emergency Message
DMO	Practice/Demo Warning
ADR	Administrative Message

modulation requirements because of the manner in which their audio processing equipment handles the tones.

As shown in Table 1, each data packet starts with a preamble (16 bytes of hex AB). It is followed by a string of ASCII characters (with the most significant bit a zero or space). The "ZCZC" is sent as a four-character ASCII sequence. It is a "start-of-message" flag.

Identifiers

ORG is a three-character identifier indicating who originated the activation of the EAS. Only five ORG codes are assigned. These are EAN (Emergency Action Notification network of program networks and suppliers for a national alert), PEP (Primary Entry Point, key broadcast stations which can provide national emergency information if EAN fails), WXR (National Weather Service), CIV (civil authorities, such as EAS activations by state or county governments), and EAS (Emergency Alert System activations by broadcast or cable systems).

EEE is a three-character "event code" that identifies the type of emergency. These are listed in Table 2.

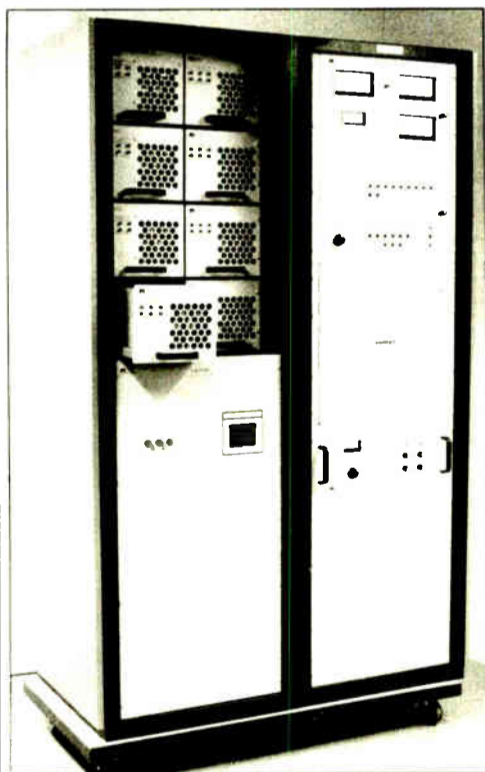
PSSCCC defines the location of the emergency. Each state is assigned a number (SS). Each county is assigned a number (CCC). If the CCC is 000, the emergency covers the whole state. P is 0 if the emergency covers the whole county. P can be a number 1 through 9 to cover nine portions of a county (generally scanning west to east, north to south).

TTTT defines the valid duration of the emergency in HHMM format with 15-minute resolution below one hour, then 30-minute resolution.

JJJHHMM defines the time the message was originally released. JJJ is a three-digit number representing the day of year (1 January is 001). HHMM is the time in UTC (the old GMT). The use of UTC was selected since emergency messages may cross time zones.

LLLLLLLL is the identity of the station

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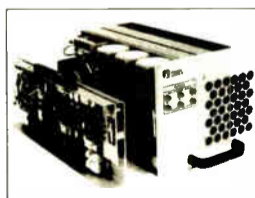
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Look at New EAS Rules

► continued from page 21

stored emergency types. The decoder records up to two minutes of emergency programming followed by the EAS EOM. The operator may then relay the message using the received EAS header information and the recorded emergency audio. If necessary, the emergency programming may be translated to another language for that station's audience.

It seems that local EAS plans should be set up to either include separate distribution webs for each language spoken in an area (and broadcast), or a single web that could be used with the emergency operations center giving the emergency instructions in several languages sequentially (like the announcements in airports).

Automation

The new system has many features making automation possible. It still has a few requirements disallowing automation (such as the required check of the Authenticator Word List in 11.54(a)(2)), but I expect further refinement of the system to make automation feasible. This, combined with the proposed reduction in operator requirements (discussed last month) would allow unattended operation of broadcast stations.

I see the EAS as a web of nodes, all interconnected by several communica-

tions paths. National, state and local emergency agencies have several entry points to the web. A county emergency operations center might have an EAS encoder driving phone lines or a county radio system driving the EAS decoders at several stations in the area. When an emergency occurs, the emergency official could push a button on a map of the county identifying which area(s) require notification. She/he would then push a button marked "Evacuate Immediate" (or other event code) and wait for the "green light". The green light would be lit after the three EAS headers and the two-tone attention signal are sent. The official would then give the emergency instructions and push the EOM button. This audio (AFSK data stream, attention signal and voice announcement) would be sent to several stations in the area. Stations that have programmed their EAS systems for this area and event type would immediately broadcast the EAS codes (regenerating them, substituting their own call letters) followed by the attention signal, the emergency audio and the EAS EOM.

Because it takes time to fully decode the EAS data stream and regenerate it, it is necessary to buffer the audio. The new EAS systems will include a two-minute (minimum) audio storage. Other stations monitoring this station will similarly receive the

EAS data stream and rebroadcast it. The "immediate" retransmission is required only for national (EAN) messages.

State and local messages may be delayed up to 15 minutes (see 11.51(k)(2)). It appears that EAS systems could be designed to interface with program automation systems to run the emergency message during the next break, avoiding

keyboard that are used to program the system and display information pulled from received EAS headers.

The systems will also have a serial data port to relay EAS data to and receive EAS data from non-audio circuits (digital data circuits, RBDS encoder/decoder, etc.). It appears (based on 11.32(a)(2), 11.32(a)(3), and 11.32(a)(1)) that the

Stations in the originating local area or originating state are required to retransmit the test within 15 minutes of reception.

program interruption. This, however, seems to add unnecessary complexity. If the use of EAS is indeed reserved for true emergencies, it appears immediate retransmission is appropriate.

Although the Report and Order recognizes the possibility of manufacturing separate encoders and decoders, I suspect most units will be integrated. This vastly simplifies the interface requirements when the system must automatically relay an emergency message. So, here is what I see as the new EBS box.

New hardware

An "integrated" EAS unit would be required to have at least two audio inputs. These would monitor other EAS sources, such as other broadcast stations, state and local emergency communications circuits, weather service radios, etc. A state EAS plan provides the monitoring assignments for each station. The topology is designed to provide several paths from an originating point to all participants so a failure at any one point does not disrupt the system.

I would suggest a "program loop-through" similar to many existing EBS systems. The loop-through should be designed to consider the varieties of program transmission methods. At a minimum, I would suggest a way of handling balanced stereo audio and composite stereo. On receiving appropriate EAS codes, the system would drop whatever audio is being passed through and substitute its audio (the EAS tones, attention signal, time delayed emergency program, EAS EOM), then return to normal audio.

The system will have a display and

EAS systems do a speed conversion from 520.83 bps used over audio channels to 1200 bps for digital circuits.

Vast improvement

The new system appears to be a vast improvement over the existing EBS. This is the third EBS system I have worked with, starting with the old 1 kHz tone and carrier drops (which typically tripped breakers on our old transmitter). The addressability, web network structure and features that allow for automation look very good. There are still a few things to be worked out, and some room for additional features.

I would like to see the EAS protocol expanded a bit to allow a plain text packet between the header and EOM packets. The packet could also include a language identification code. An emergency operations center could then generate a text message along with a voice emergency announcement. This text message could be relayed to RBDS receivers, electronic billboards, television stations and CATV systems where a voice announcement may not be appropriate.

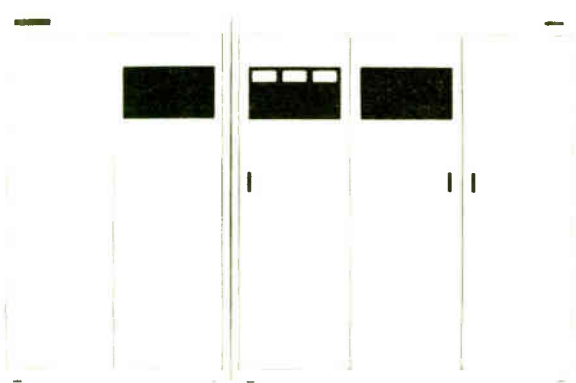
Once again, I invite you to read the Report and Order yourself. It is available via Internet or fax, as described above.

□ □ □

Harold Hallikainen is president of Hallikainen and Friends, a manufacturer of transmitter control and telemetry systems. He also teaches electronics at Cuesta College, San Luis Obispo, and is doing lots of contra dancing. He can be reached at 805-541-0200; fax: 805-541-0201. He can also be reached on Internet at ap621@cleveland.freenet.edu.

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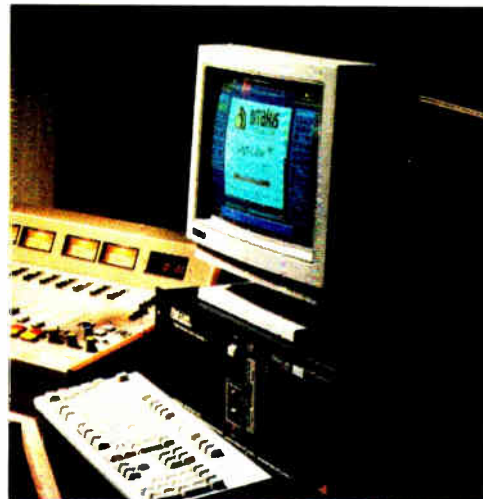
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STATION SKETCHES

Finer Points of House Monitor Systems

by Tom Vernon

HARRISBURG, Pa. A good house monitor system should be an essential component of any radio station. Older systems often evolve into a nightmare of intermittent L pads and randomized series/parallel speaker combinations that almost work, while some newer systems feed off-air audio through the zone page speakers of the phone system. While the latter is convenient, the audio quality of two-inch speakers in plastic enclosures is not exactly awe-inspiring.

This month's discussion will focus on

how to design and build a reliable house monitor using a constant-voltage distribution system.

First requirement

Your first need is for a stable source of uninterrupted off-air audio. The best choice is a fixed-tuned receiver with a good outside antenna. Older analog tuners can drift off frequency and are easily tampered with. Newer digital tuners will default to who-knows-what after a power failure. Modulation monitor feeds may subject the station to ear-splitting tones and periods of silence whenever the

monitor is calibrated. At best, you may be able to modify the monitor so that the audio feed is disconnected when calibration tones are present.

The amplifier must have a suitable power rating for the number of speakers that are being driven. Although any amp will do, make life easy on yourself and purchase one that has its output set up for a 70.7 V system. Do not forget to leave some reserve for future expansion. For a small system with seven or eight speakers, an amp with 20-30 W RMS output should do nicely.

To be more scientific, the amplifier

should be able to put out about 1 1/2-times the power of the speakers connected. Thus, if the sum of the speakers is 25 W, the amplifier should be capable of producing 37.5 W.

The easiest way to handle audio distribution from the monitor amp is with a constant voltage distribution system. Some of the most common volt arrangements are 70.7 and 25. This concept confuses some people, because we usually match impedance in ohms, and 70.7 V transformers have their primaries specified in watts. Fear not, there is a logic to this system.

Back to basics

Getting back to basics, the source impedance of a transformer may be calculated as follows:

$$Z = E^2/W$$

where: Z=impedance
E=voltage
W=watts

For a 70.7 V system, it looks like this:

$$Z = \frac{70.7 \times 70.7}{W}$$

Rounding off the voltage figure:

$$Z = \frac{5000}{W}$$

Thus, for a 20 W amplifier, we would have an impedance (Z) of 250 ohms. The

Table 1.

A listing of output powers and their corresponding impedance taps for 70.7 volt systems. All figures are derived from the formula $Z = 5,000/W$.

POWER OUTPUT (WATTS)	IMPEDANCE TAP FOR 70.7 VOLT LINES
5	1,000
10	500
15	333
20	250
25	200
30	166
40	125
50	100
60	83
80	62.5
100	50

flexibility of a constant voltage system comes from the many ways we can split up this 250-ohm load. Figure 1 illustrates a simple system with four 5 W speakers, and shows its equivalent circuit. Referring back to Table 1, 5 W corresponds to 1000 ohms. Four parallel 1000 ohm transformers present a load of 250 ohms to the amplifier. Alternately, larger rooms may be assigned speakers with higher power specifications.

In summary

To summarize, each speaker must have its own line-matching transformer, and all transformers are connected in parallel to the amplifier. The sum of the transformer primary power ratings must equal the output power of the amplifier, no more, no less.

It is often desirable to have individual
continued on page 28 ►

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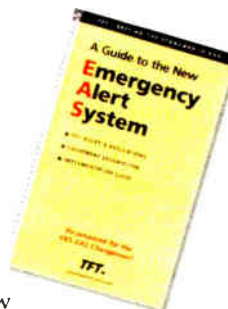
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House Monitor System

► continued from page 26

volume controls for each speaker location. There are two ways to do this: with a 10-ohm pot connected as a voltage divider between transformer secondary and speaker, or with an 8-ohm T or L pad. The voltage divider mismatches the transformer somewhat at extremes of its rotation, while T and L pads often become scratchy and end up being a maintenance chore.

When installing a house monitor system, take care not to create a future nightmare. Wiring speakers with phone wire or small gauge shielded pair is not a good idea. Use 16-gauge speaker wire, solder all connections and be sure to leave service loops behind speakers so

that subsequent maintenance is not a hassle. Do yourself or your successor a favor and create some written documentation while the details of the project are fresh in your mind.

House monitor systems are often neglected in favor of higher priority projects. With care in planning and installation, however the house monitor can reliably deliver your off-air signal throughout the station, and need not be a source of constant aggravation.

□ □ □

Tom Vernon is completing a Ph.D. at the University of Pennsylvania in Philadelphia. His radio home is the university's public station, WXPN-FM. Tom may be reached at 717-367-5595.

Figure 1.

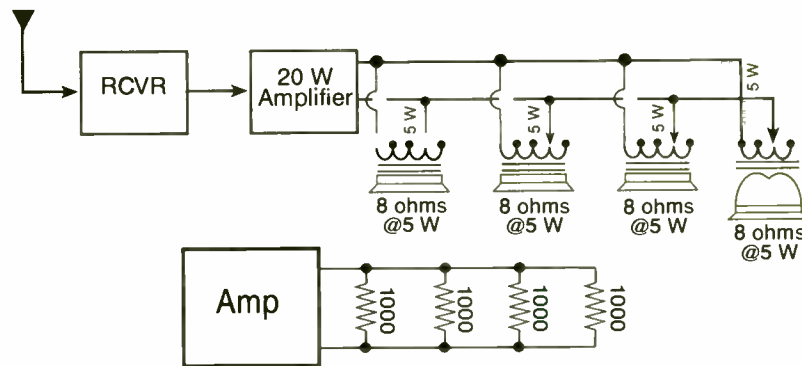


Fig. 1. 70.7 V house monitor system with 20 W amplifier, and its equivalent circuit. As long as the transformer primaries add up to 20 W, any combination of power levels may be selected.

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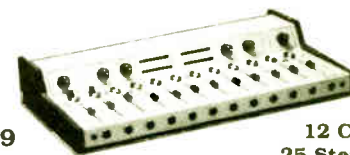
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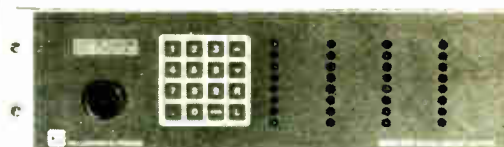
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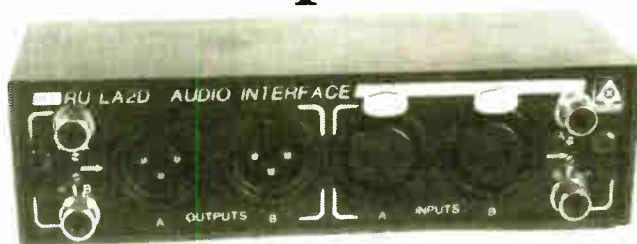
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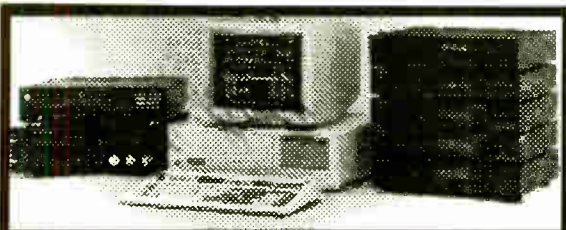
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Building Simple Balanced Circuits

by Jim Somich

BROADVIEW HEIGHTS, Ohio In recent columns, I covered the basic concept of cookbook circuit design and showed examples of the two most common audio op-amp circuits: the non-inverting stage and the inverting stage.

These stages are referred to as voltage amplifiers. They are used in applications where it is not necessary to deliver large amounts of power (voltage and current) to a load. It is relatively simple to extend our cookbook approach to designing simple output stages that can supply considerable power to either

headphones or loudspeakers.

This month I will also show you how to construct simple balanced input and output stages using op-amps. These electronically-balanced circuits can be used in place of audio input and output transformers in most circuits at a substantial reduction in cost. Armed with these simple cookbook circuits, you will be able to design many of your own small audio projects.

Supply power

Figure 1 is the schematic for a non-inverting voltage amplifier stage, such as I discussed last month, driving a push-

pull Class-B Darlington power transistor output stage. Note that feedback is taken after the Darlington. A Darlington power

pins and a case connection) they look like conventional bi-polar junction transistors. Power Darlington offers higher input resistance and current gain than individual transistors.

Most op-amps are ill-equipped to deliver substantial power to a load with-

With simple cookbook circuits, you will be able to design many of your own small audio projects.

transistor consists of two bi-polar power transistors on a single chip. The transistors are DC-coupled internally as emitter followers. Because they are packaged in discrete cases with three pins (or two

out performance degradation, but the addition of a simple Darlington output stage turns the common voltage amplifier into an op-amp power amplifier. A power amplifier can deliver both voltage and current to a load. This is the best way to configure an operational amplifier to drive a loudspeaker or headphones.

The Darlington pair shown in Figure 1 is a Motorola MJ1001 (NPN) and MJ901 (PNP). This pair has a maximum power dissipation rating of 70 W and a collector breakdown voltage of 80 V. They will withstand a constant collector current (I_c) of 10 amps! In practice you should not exceed 65 to 75 percent of these ratings. This would translate into a maximum collector voltage of 50 V.

In the real world, I would run this pair off a bi-polar 30 V, allowing a lot of headroom. In this circuit configuration, they will deliver 15 to 25 W of clean power to a 4-ohm load.

Too hot?

If you try to push this pair to full dissipation, they will get quite warm. Be sure to use adequate heat-sinking. My cook-

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book rule of thumb is: If you cannot touch the device for more than 10 or 15 seconds, it is running too hot!

Circuit modifications could include an output coupling capacitor to block DC from the output. Make sure the cap is large enough that you do not start to roll off low frequencies. Large polarized electrolytics work fine. You might also consider an in-line 1 or 2 amp fuse, such as a 3 AG, that will (hopefully) blow before your speaker or phones.

There are dozens of Darlington pairs listed in the data books. I am only using this pair as an example. The beauty of cookbook designing is that you can use what you have on hand or what you can easily acquire. Just remember to watch the maximum collector voltage rating and use adequate heat sinking.

Op-amps are, inherently, differential
continued on next page ►

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Figure 1.

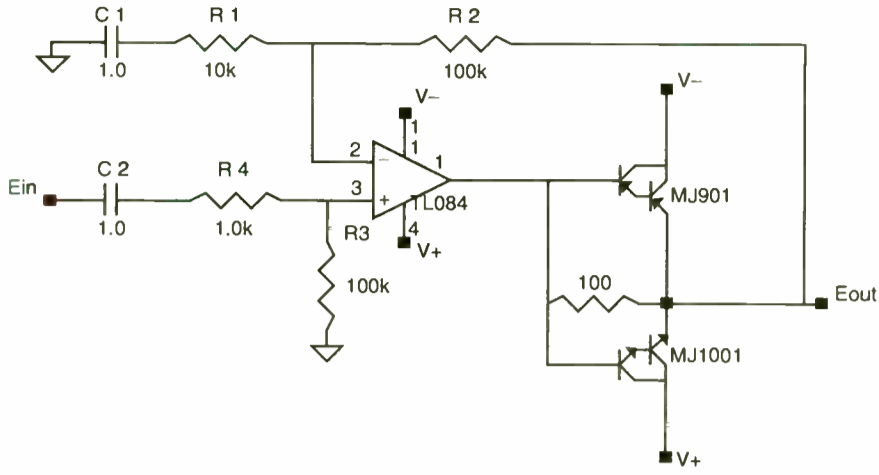
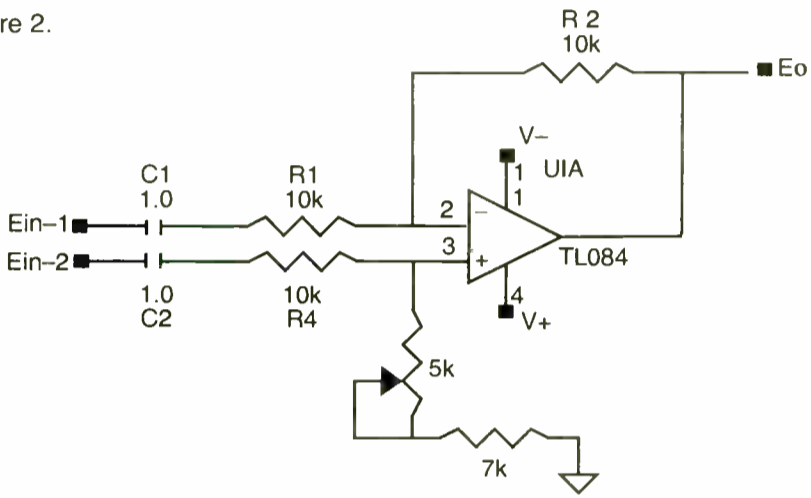


Figure 2.



devices. They respond to the difference voltage on their inputs. However, in most applications, they are run unbalanced: one side against ground. It is relatively simple to configure any op-amp for a balanced input. This is very useful when you want to connect the op-amp across a balanced audio line and do not want to unbalance the line by grounding out one side. A balanced input will also exhibit high common-mode rejection. This means that any noise picked on by the input leads will be canceled by the device. It will allow

input lines longer than a few inches without noise pickup.

Simple stage

Figure 2 is a simple differential input stage. It is self-explanatory except for the pot which is used to maximize the common-mode rejection. Connect an oscillator high side to both input terminals, the other side to ground, and use the pot to null the output.

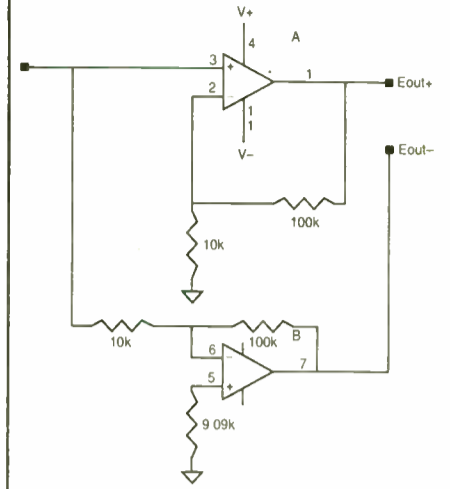
Because op-amps can invert or not invert a signal, they can easily be configured as balanced line drivers. Figure 3

shows just such a stage. One side is a non-inverting voltage amplifier and the other side is an inverter. By definition, therefore, the output is balanced to the ground. The output terminals are at opposite polarity at any given instant and neither is grounded.

That is all for this month. I will return to the cookbook from time to time to examine useful circuits that can be whipped up without much bother. Next month, I plan to discuss the design of a simple FM stereo demodulator that is easy to build and very handy for testing and adjusting your processing.

□ □ □
 Jim Somich is a radio broadcast engineering consultant and president of MicroCon Systems Ltd., a manufacturer of broadcast equipment. He can be reached at 216-546-0967.

Figure 3.



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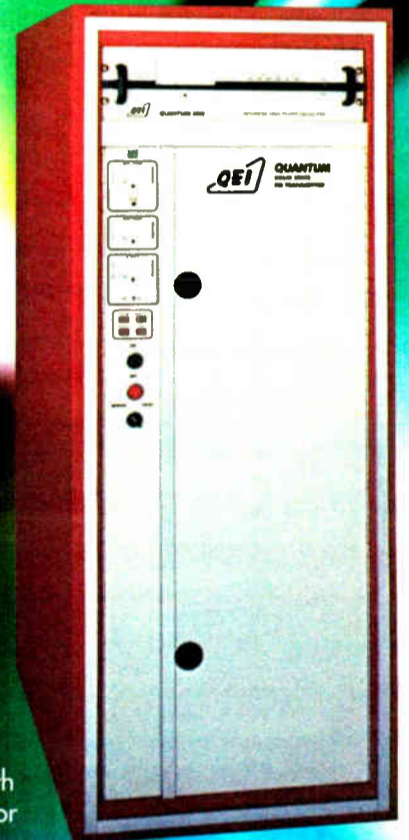
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Running Radio

**Your Guide to
Production
Libraries
See pp. 37-39**

Your Resource for Business, Programming & Sales

Radio Aahs Programming Child's Play

by Alan Haber

SILVER SPRING, Md. Nine-and-a-half year old Michael Shevitz is on the "Tour du Jour" this morning. He and his classmates are watching mega-cool DJ Kenny Curtis strut his stuff behind the microphones of Radio Aahs affiliates WKDB, WKDL and WKDV, three AM stations serving the Baltimore, Washington and Northern Virginia areas, respectively (WKDL is the originating station; the others are repeaters, but with local IDs and commercials).

Michael is this morning's guest DJ. And he has done a great job. Kenny thanks him for coming out to the station. "And we are going to take you out," he says, excitedly, "with a song that you requested to hear. From the soundtrack of the motion picture Free William—Willie to his friends, of course—this is Michael Jackson, asking the question, 'Will You Be There?'" And the answer is, "Yes, you

will." He addresses Michael, star DJ of the day. "Way to go, duuuude!"

The music starts to play, and Kenny talks it up: "Great music for great kids, in the Radio Zone—1570, 1460 and 1050 on your AM radio (a show biz pause) thing."

Just your average wacky DJ doing his average wacky thing—for kids.

The Radio Zone

The "All-American Alarm Clock" show, heard weekday mornings 6-11 a.m., is unique among the programs carried by the 27 stations in the 24-hour-a-day Radio Aahs children's radio network. Although the other affiliates carry the network's Alarm Clock show, WKDB, WKDL and WKDV carry a locally-originated version, hosted by Curtis and sidekick Susan Huber (network programming is carried the rest of the day and night).

Kids programming has worked out well for the three stations, the oldest of which is just over two years old. Joan Homa

Schultz, the stations' general manager, is thrilled with the progress so far. "I think we have made tremendous ground when you figure that we just started totally from scratch," she said.

Shultz estimated the three stations' audience to be more than 200,000 people—both kids and adults—a week.

Families, in other words. "I feel like we have a focus group every single solitary day," said Shultz. Parents "cannot wait to come in and they will stay in here and talk to you for 15 minutes, and say 'I just let you know what I think about your radio station, how much I love it. You know, I listen all the time. I drop my kids off at day

care or at school, and I'm on my way to work, and I am all the way downtown and I'm still listening to your radio station.'"

A local presence, in the form of the locally-produced morning show, was important, according to Schultz. "Radio

has always had its best results in a grass roots community-type outreach," she said. "We just want this to be a family community radio station." From a sales and business standpoint, she added. "It is absolutely critical to be able to have live promotions, giveaways, kids calling in, so that they are not just calling in to the 800 number of the Radio Aahs network."

Advertising, which has been growing steadily for the stations, is diverse: everything from kids-oriented accounts to the more traditional types—banking, automotive, healthcare, and performing arts institutions, for example.



DJ-in-training Michael Shevitz

Kids are part of the on-air mix. For example, movie reviews and reviews of the circus, even of restaurants, are done by kids. "Kids love listening to other kids," said Schultz.

continued on page 34 ►

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ROOTS OF RADIO

Spin-off Radio Show Reached Stardom

by Read G. Burgan

LAKE LINDEN, Mich. If you think that "The Great Gildersleeve" was a radio series about a Water Commissioner played by Willard Waterman... you are wrong. Then again... you are right. Confusing? No more so than the life of radio's most infamous blowhard and lover, Throckmorton P. Gildersleeve.

As radio programs go, "The Great Gildersleeve" was hardly a pioneering show. When it first appeared on Aug. 31, 1941, radio was well beyond its infancy. But it broke new ground in at least one area—the spin-off, where a new program is created by spinning off a program based on one of another program's characters—and gave radio listeners one of its most enjoyable programs for nearly 18 years.

Peary's brainchild

"The Great Gildersleeve" was the brainchild of Harold Peary. Peary, whose original name was Harold Jose Pereira de Faria, was a Portuguese immigrant. He began his career in radio in the late 1920s, using his abilities as a character actor and singer in a variety of roles on both the west coast and in Chicago. In



Harold Peary

San Francisco he was featured on an NBC program called "The Spanish Serenader."

While in Chicago he joined the cast of the "Fibber McGee and Molly" program.

At first he played a number of fairly anonymous roles, but eventually began playing a character called Gildersleeve. For a while the character was fairly amorphous, hardly being the same from one program to the next. But with Peary's urging and help, the character began to take shape.

By the late 1930s, Throckmorton P. Gildersleeve had moved next door to Fibber McGee and Molly in Wistful Vista. McGee and Gildersleeve were cut from the same bolt of cloth. Both were boastful, abrasive and short-tempered. For nearly two years they traded insults and looked for ways to do each other in.

Gildersleeve was one of the few characters on the show who was a match for the obnoxious McGee. His stock phrase was, "You're a haaaard man, McGee."

But Peary had ambitions beyond Wistful Vista. In 1941 Kraft Foods cast Peary in his very own show, "The Great Gildersleeve," originating in NBC's

Hollywood studios and airing on Sunday evenings from 6:30-7 p.m. Peary was 35 years old, had curly hair, a dark mustache and weighed in at 220 pounds when he began his new series.

The early episodes created a detailed snapshot of Gildersleeve, including the fact that he graduated from Princeton with the class of 1914. Assuming he was 22 years old when he graduated, that would have made him 49 years old in 1941. But network news releases in 1943 listed Gildersleeve as 42 years old! As the series progressed, these kinds of details faded into the background.

In the transition episode aired on Aug. 31, 1941, Throckmorton P. Gildersleeve boards a train to leave Wistful Vista and travel to Summerfield to assist his nephew Leroy and niece, Marjorie, who have been orphaned. When he leaves, he tells the staff of his Gildersleeve Girdle Works (Our motto, "If you want a corset, of course it's... Gildersleeve") that he will only be gone a few days... at least three days, or maybe the end of the week."

Girdle works

For the rest of the 1941-1942 year, his

employment status is in limbo.

While he frequently makes reference to his Girdle Works company, he never returns. In later episodes he comes and goes from his office, but we are not told what he does aside from managing the affairs of his nephew and niece—and these are not spelled out.

It goes without saying that Harold Peary was the Great Gildersleeve. His voice was perfect for the part. His trademark was a laugh that has been described as hefty, lecherous, and dirty. The truth is, however you describe it, Peary's laugh was the one all-consuming, identifying trademark of the Great Gildersleeve. His most frequent exclamation was, "This is going to be one of my baaaaad days." Peary's size paralleled that of Gildersleeve, who was described as portly. Many episodes

continued on page 35 ▶

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Targeting a rather unique audience (unique in the face of some of the more traditional radio audiences, that is), Minneapolis, Minnesota-based Radio Aahs offers an enriching listening experience 24 hours a day, enhanced by a strong creative heart that reaches out to the entire family.

"At night, (Radio Aahs is) just like regular radio," said Christopher T. Dahl, president and CEO of Radio Aahs's parent company, Children's Broadcasting Corporation. "Most people listen and consume radio during the day. Kids are not any different, although kids are not up at night as much as maybe their adult counterparts are."

Nevertheless, said Dahl, "Kids are up. They are sick. They cannot sleep. Their parents are not home, and the other part is that they go to bed with the radio on..." It was important for Radio Aahs's programming mix to ensure that kids would not tune in and hear dead air at any time of the day or night, "or worse yet, hear programming that did not relate to kids' radio," said Dahl.

Radio Aahs may well be "the only full-time, 24-hours-a-day, seven-days-a-week, kids media resource in broadcasting today," according to Dahl. Further, it is not just for kids—it is for parents, too.

It is important not to alienate the parents, said Dahl. The Children's Broadcasting Corporation's stated mission "is to entertain and educate children and their families through positive multimedia programming and products." Radio Aahs is the Corporation's messenger, forging on with the needs of children and their families always foremost in mind.

Weekday program offerings range from "Avenue 'A,'" an exercise in imagination and music hosted by Amy, to "Great Music for Great Kids," during which Stix Franklin spins the platters that matter for night owl listeners and Jana welcomes the early birds. On weekends, live broadcasts from Disneyland in California and Walt Disney World in Florida are part of the entertaining on-air mix.

Before Radio Aahs grew into a network, it was the format at flagship station WWTC-AM in Minneapolis. Twenty-seven stations are signed on as Radio Aahs affiliates, but Dahl said he is not concerned with the number of affiliates; he is concentrating on market coverage—right now the network is in just over 30 percent of the United States (with one exception, on AM stations; affiliates include KPLS-AM in Los Angeles/Orange County and KAHZ-AM in Dallas, Ft. Worth).

Radio Aahs presents another alternative to advertisers who traditionally spend their dollars

with television and print media. "There is a billion dollars' worth of advertising that's aimed at kids—specifically at kids," said Dahl. "And, unlike the adult advertising world, where you have got a hundred different alternatives, you really just have two alternatives (for kids advertising)—primarily print and television. These people are looking for new ways to advertise to kids."

In other words, as the saying goes, kids are people, too. "We treat them that way," said Dahl. "I think advertisers and sponsors are aware of what Radio Aahs does and think this is really by and large a good place to showcase their products."

Dahl said Radio Aahs intends to "continue forging ahead to get the top 100 market coverage." Additionally, he said he is looking to "continue to build the network, but also to take advantage of the brand identity that we are creating. You ask a child in Minneapolis or Baltimore or Washington what Aahs means, and he or she will say it is the radio station. I think that the franchise itself, the name Aahs, has a tremendous amount of appeal beyond just radio advertising."

Dahl pointed to the recently launched Radio Aahs magazine as an example. "The magazine brings us into publishing," he said. Overall, he noted that there is "a tremendous number of other opportunities out there for us."

Radio for Children

► continued from page 32

All kinds of music (and artists) are played on the All-American Alarm Clock show—everything from rock to country and classical, from lots of Motown to, say, a selection from "The Lion King" movie soundtrack. Parents "love that we are exposing their kids to different things," said Schultz, "in a very non-educational, non-hey-kid-you-are-learning-something-here (way)."

The music does not necessarily have to be geared specifically toward kids, but, said Curtis, the music has to be "content appropriate... We have a line... We don't want to cross the line too much, but, at the same time, we don't want to be too goody-goody either." The last thing a kid wants to listen to is music

that's supposed to be for kids, he added.

The biggest challenge, said Curtis, is programming for the wide age range of the audience, which stretches from about four to 14. "My target audience in this show is a family stuck in a car," he said. "The idea is a radio station that can give them everything they need and want in one morning without changing the station," including traffic, weather and sports, which is delivered by, not coincidentally, a kid, who Curtis said is hilarious. He remembered a line the kid spoke: "'The Bullets stink, let's face it.' I mean, you would think the kid was 50 the way he talks," he said. "It is hysterical."

The stations run a lot of contests, but, according to Schultz, "the winning is

not so much in the prize. The winning is just in getting through and having the right answer... If it was coming from Mom and Dad, saying

'Go to the atlas, go to the dictionary,' I mean, forget it. Because we say it as media, it is cool, and that is something else that... is not lost on the parent, that we are all working on this project together."

Kenny Curtis, wacky morning DJ cutup, is a natural behind the mic, relating to kids on the air and in the studio as

part of the "Tour du Jour" as if he were a kid himself. He cannot believe how much fun he is having. Amazingly, this is his first radio gig, but it is not his first

kids-oriented job—Curtis spent five years hosting a kids' TV show on the Fox TV affiliate in Baltimore. Bright and bubbly co-host Susan Huber has been on the show since November 1993.

Having local personalities on the morning show is a good thing, said Curtis: "You have got your own human marketing tool. That way you have a personality to send to places, and it is easier to sell because you can do contests and promotions that are live. As long as you are taking cues from the network, and there is a consistency in programming, it is okay."

Programming the station is more of a collaborative than an individual effort, said Program Director Dan Turner. "This (format) is unique because it has never been done before, and that is what attracted me to it," he said. "I look at children's radio, really, as the last bastion of creativity in radio."

The "All-American Alarm Clock Show" and, for that matter, Radio Aahs, goes down like a great, magical breakfast. Magic, in fact, may well be an integral element in the fabric of cut-up Curtis and his show. Legerdemain was, in fact, integral to a segment of today's Tour du Jour.

After turning the kids into chipmunks with the help of some production sleight-of-hand, the cheerful host asked the kids if they knew how he achieved the trick. "Was it magic or was it a machine?" he asked. "Machine!" came the cry back from the kids.

"Yeah," said Curtis, perhaps a bit dejected at the response. "Nobody says magic anymore." Except, that is, for the listeners, perhaps.



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CONNECTING THE WORLD

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World Radio History

Gildersleeve on Radio

► continued from page 33

included jibes about his girth.

During the first year, the episodes were written by Leonard L. Levinson. From the very first episode, many—but not all—of the characters that became a part of the series were present. Nephew Leroy was an outspoken brat who had the measure of his uncle "Mort" and was quick to deflate his pompous ego with his classic response: "What a character!" Much to the chagrin of parents everywhere, Leroy gave the kids of the forties several clichés including, "Are you kiddin" and "For Corn Sake."

Walter Tuttle began the role in 1941 when he was 18 years of age but looked and sounded like the twelve-year-old he was playing.

Softer role

Niece Marjorie played a softer role. She served as a buffer between Leroy and his "Unk," while fending off Leroy's jabs at her boyfriends. Lurene Tuttle played the role for the first three years. Lillian Randolph played their black maid, Birdie Lee Coggins. While Birdie was a stereotypical role, Lillian Randolph gave the character life and

joy. She never hesitated to contradict Gildersleeve and often had the last word.

The last of the early characters to stay with the show was Judge Horace Hooker, played by Earle Ross. "Gildie" runs afoul of the judge while on the train to Summerfield and begins a lifelong feud with the "old goat." In point of fact, Ross makes Hooker sound like an old goat. His high-pitched nasal rattle of a laugh was unmistakable.

But the first year's episodes were flat. Most of the time was spent with his nephew and niece, and although it made for pleasant listening, it just was not great stuff.

In 1942, John Whedon took on the writing, and was later joined by Sam Moore.

Almost immediately two changes were made. One was the introduction of Peavey, the local druggist. Peavey was reminiscent of Wallace Wimple of Fibber McGee and Molly. Both were hen-pecked. Peavey was played by Richard LeGrand, who began the role at 60 years of age. LeGrand had played in vaudeville since 1901, and in radio since 1927. People could not wait to hear him say dryly, "Well, now, I wouldn't say that."

New job


The second major change was getting Gildersleeve appointed as the Water Commissioner of Summerfield. This gave him status in the community, a real job that people could relate to (Although

continued on page 40 ►

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READER SERVICE NO. 197

Production Libraries Enhance Bottom Line

by Alan Peterson

WASHINGTON Radio stations constantly advertise new technologies, new artists and wild new image promotions. Yet many ignore the necessity of up-to-date production music to enhance creative efforts. Some rely on out-of-date vinyl libraries or even jazz or New Age CDs sent by record companies; an unwise choice from marketing and legal standpoints.

Production music is as much a part of a station's success as personalities, programming and processing. Yet, while hundreds of hours go into programming music selection and rotation, only a fraction of that time is given to the sound of station production. Commercials can represent up to 20 percent or more of any broadcast hour, so high quality production music becomes a necessary tool rather than a luxury.

Production library providers FirstCom, OmniMusic and TM Century can offer reasons why any effective production library is necessary to accomplish the goal of the "total sound."

Why a library?

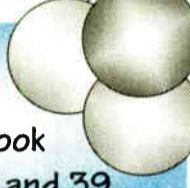
"To come screaming into the '90s," said Richie Allen from TM Century. With music trends constantly evolving, a timely production library means a seamless flow from music into spots and promos. FirstCom's Carol Riffert refers to these elements as "the second part," and acknowledges that the combination must fit; that is, commercial and promo production should match the overall pace of the station's sound.

OmniMusic's Doug Wood agrees the sound of station production should be every bit as good as the programming, especially because audiences can very easily tell the difference. The good news is, a library need not be a collection of both usable and unusable cuts anymore.

For example, a country station needing a basic library would require upbeat and down-tempo cuts, some novelty music and a solid holiday collection.

Previously, the only choice would have been a stock library also containing cuts appropriate to CHR and urban stations. Part of the investment would remain on the shelf unused. Now, companies like FirstCom will assemble custom libraries based on station need, instead of all-inclusive collections. Format compatibility is assured, because the station selects music specific to their requirements.

In radio production, speed equals profit. Good sounding spots turned around quickly gives the production department time to work



See the
Production
Services Sourcebook
on pages 38 and 39.

on specs for new clients. Instrumental album collections are, for the most part, serious time wasters (as well as being illegal; more below), so a fully-cataloged, cross-referenced music library means better productivity.

However, time spent referencing a catalog to find music appropriate in mood and tempo could mean more time wasted looking for the right cut. Beginning with its most recent library, TM offers a CD-ROM of music samples allowing production directors to audition cuts instantly and check for compatibility with other cuts. TM's Richie Allen claims a 60 percent savings in time spent searching for music, translating into more time to be creative on spec spots for new business.

Tight budget?

Rates for leasing a library can be based on criteria including production load and output, and sometimes Arbitron market ranking. Stations in Tyler, Texas, would not pay the same as New York for the same library. Some companies such as OmniMusic make no distinction when it comes to market sizes, and lease their libraries for a constant price. An attractive alter-

native for smaller market stations on lean budgets is to "buy out" older music collections.

Different needs

Larger market stations need to be on the cutting edge, but musical tastes in lesser markets do not change as dramatically. Some well-seasoned cuts may be considered safe in less competitive markets. Get specifics from individual companies, because a buyout may actually mean a "license in perpetuity" in which the production company would still retain rights to the music. Always ask.

Most compelling is this: Production music is written and licensed specifically for station use. Using old instrumentals, NAC jazz CDs and popular music is not only bad practice, but illegal as well. For example, a car dealer wishes to use the song "On the Road Again" to promote the dealership. The first violation would be public performance (of the recording), outlined in detail in a station's ASCAP or BMI agreement.

The second would be mechanical rights, in which the publisher is supposed to be paid for use of the song itself (not the recording). Music considered

"in the public domain" is also off-limits. While a classical piece written by Mozart may be fair game, the recording of it made last year would not be. Statutory penalties for even one copyright violation can run well into the thousands, so using in-house CDs and records to save on a library may actually cost the station money in damages levied by copyright holders.

Looping music samples from the production company's demo CD is also illegal. Most companies will issue an order to "cease and desist," although both Carol Riffert and Doug Wood prefer to call the offending station first to offer them their respective company's library.

A good investment

A well produced production library is a solid investment, making commercials and promos sound as exciting as programming. Many larger market stations update or even change libraries frequently, but small and medium market operations will find a standard three-year lease plan quite satisfactory and profitable. Considering how much thought, strategy and research goes into programming music for a station, the selection of production music should be approached with similar consideration.

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Contact: Bemie Grice
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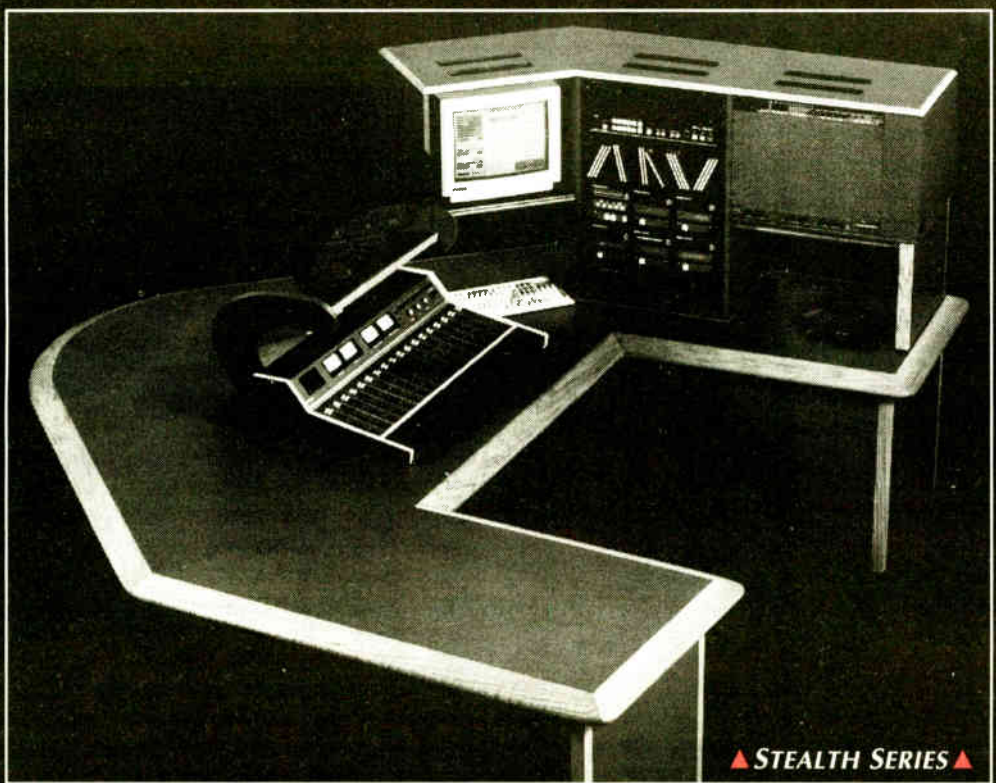
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World Radio History

Gildersleeve on Radio

► continued from page 35

one wonders why he did not go to work until 10 a.m.!), and real problems to deal with. For the next 16 years, Throckmorton P. Gildersleeve would be known as the Water Commissioner of Summerfield.

The process by which Gildersleeve became Water Commissioner introduced a third change—serialization. It took three episodes to have Gildersleeve appointed Water Commissioner. In the past, each of the episodes had been complete in itself, with little link to one another. From then on, there often would be running themes, frequently with cliffhanger endings to keep the audience

in suspense until the following week.

In later years, several months were required to resolve the plot when Gildersleeve ran for mayor or when he found himself engaged to both Leila Ransom and Eve Goodwin. Perhaps the most famous of the Gildersleeve serials was the finding of a lost baby. A nationwide contest was held in which listeners wrote in their suggestions for the baby's name. Thousands responded. It was radio at its best.

Blunting the edge

Whedon and Moore also took the edge off of Gildersleeve's character. On the Fibber McGee and Molly show, he was a

foil for McGee. But there was no McGee in Summerfield. While Gildersleeve remained pompous, a blowhard, and a stretcher-of-the-truth, he became mellow and warmer.

On most radio shows, romance was left to the young. But as Summerfield's most eligible bachelor, Gildersleeve became a first-class lover, albeit by 1940s standards. Throckmorton dated Summerfield's most beautiful women, wrote them poetry, stole their kisses and wooed them with his beautiful baritone singing voice.

Later, one more feature was added to the Gildersleeve mix—the Jolly Boys. The Jolly Boys was a social club consisting of Gildersleeve, Peavey, Judge Hooker, and two additional regulars, Floyd Munson the barber, and Police Chief Gates. Floyd was played by Arthur

Q. Bryan, Gates by Ken Christy. Ironically, Bryan later joined the cast of Fibber McGee and Molly as Doc Gamble, helping to fill the void created when Peary left that series.

The Jolly Boys was a loosely defined group who met in the hall above Floyd's barbershop. Unlike the Rotary or Kiwanis Clubs, it had little purpose other than to provide a place for the boys to play games and sing. Their motto was: "One for all and all for one." More often than not their meetings turned into a free-for-all. The Jolly Boys provided a natural setting for Peary to showcase his baritone voice, and sing he did—both as a soloist and as a member of the Jolly Boys quartet. In later years, entire broadcasts were devoted to Gildersleeve's attempts to revive interest among the members of that lagging organization.

Film career

The Great Gildersleeve appeared in several movies during the 1940s, including Look Who's Laughing (1941), where he appeared with a number of radio stars, including Fibber McGee and Molly and Edgar Bergen. Two Gildersleeve movies were released in 1943, The Great Gildersleeve and Gildersleeve On Broadway. While these films gave Gildersleeve fans a chance to actually see their hero, they disappointed many because, with the exception of Lillian Randolph, none of the other Gildersleeve regulars were featured (Richard LeGrand does appear in a delightful portrayal of Peavey in the second film). Leroy was played by a soprano singing angel faced boy who would have made Walter Tetley ill.

After nearly 10 successful years as the Great Gildersleeve, Harold Peary grew tired of the role and quit. The last program featuring Peary aired on June 14, 1950. With the originator of the role gone, you would expect the program to die. Right? Wrong.

The program resumed on Sept. 6, 1950, with Willard Waterman in the lead role. Waterman's career had paralleled Peary's. He began in radio in Chicago in 1936 and went on to play numerous roles on network radio. His voice so closely resembled Peary's that most people never noticed the difference. And one has to admit that there is something singularly appropriate about a man named Waterman playing a Water Commissioner.

Like other radio programs, "The Great Gildersleeve" began to fall on hard times in the mid 1950s as television gradually eclipsed radio. In 1954 the program became a daily, 15-minute series. In 1955 it returned to a weekly half-hour program, in which form it continued until 1958.

Harold Peary died in April of 1985 at the age of 76. Willard Waterman died this year on Feb. 1, at the age of 80. Fortunately, recordings of most of the Great Gildersleeve series have survived. This slice of radio's golden age will undoubtedly garner a whole new generation of followers in the years ahead.

One can almost hear Peavey saying, "Well, now I wouldn't say that." With Leroy adding, "Are you kiddin'?" Followed by Gildersleeve's, "Leececeeroy!" And then an all-knowing, self-satisfying laugh....

□ □ □

Read Burgan is a free-lance writer and a former public radio station manager who can be reached at (906) 296-0652 or through e-mail at AH746@detroit.freenet.org.

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Exploring Washington Web Sites

by Alan Haber

ALEXANDRIA, Va. "You are what you is," or so, said Frank Zappa many moons ago. The way I figure it, you are either an outdoors type of person with an affinity for fresh flowers, clean air and furry little animals jumping with abandon over your picnic basket, or you are an indoors, couch potato type of egg.

Count me happily among the latter group, of which I have been a card-carrying member since my childhood. My mother used to beg me to go outside and play when I was a kid, and I would happily oblige, provided I could listen to the radio while doing so.

Remember that I was a kid in the days before everything electronic became portable, so I was pretty grumpy when I was outside the house, away from my bedroom or the family room. Now, of course, everything is portable, so I can listen to the radio or enjoy just about anything electronic when I am outside.

I can even work on *Haberspace* on my notebook computer, but I am having a hard time finding a cable to help me connect from faraway, outdoor locations to the telephone jack on the wall—any wall. So I am spending a lot of time indoors, negotiating the Web, looking for great radio sites.

I have been checking out the Federal Communications Commission (FCC) Web site from time to time, and, frankly, I had not been all that impressed with it—until now.

Whereas until recently you would have

been greeted by the FCC logo and some plain text links—a rather cold-looking user interface—you are now welcomed by an attractive home page, featuring a banner incorporating the full-color FCC emblem, and a nice color photo of the FCC commissioners. In addition, some clickable buttons take you to the various pages on the site, including ones that contain the commission's Daily Digest, current rulemakings, and contact information for visitors who want to know more.

The site, which is being accessed by 6,000 people a day (from as far away as Japan), first went up on the Web last December because the Web was deemed to be an important new medium for transmitting information to the public and, what is more, FCC Chairman Reed Hundt felt it was a good way for the commission to get its documents into the public's hands (see related story page 3).

The FCC's Sheryl Segal is in charge of managing published documents and user access; Andy Fishel, in the commission's

Office of the Managing Director, and Mark Corbett, formerly of Intel, are also involved.

Planned enhancements to the site include a search capability, so visitors can find documents that contain information on particular subjects with ease. It is possible that the current 56 kilobit telephone line may be upgraded in the future, if site traffic warrants.

I think you will be pleased with the new-generation FCC Web site. Check it out at <http://www.fcc.gov>.

And now, the envelope please (Haberspace staff drags said envelope into Haberspace World Headquarters): an enthusiastic round of applause, if you will, for the FCC's Web Site, my Neat (and Most Improved) Site of the Month.

There has also been a flurry of Web activity at the National Association of Broadcasters (NAB).

"We are trying to encourage broadcasters to adopt new technologies," said Walt Wurfel, senior vice president, public affairs and communications. "We had noticed... that a bunch

of TV and radio stations were beginning to use Web sites for their various local contacts with their audiences... and we just are looking for a way to use every communications medium to spread the word about broadcasting, the NAB and NAB shows."

A Web site, Wurfel added, was the next logical step up from the NAB's fax-on-demand services. The NAB site offers a variety of information, from news about the upcoming World Media Expo to NAB news releases.

One of the association's aims, said Wurfel, "is to reach more people than we can through the mail. Our budget only allows us to go to the member contact at each station, which is the general manager, and yet, we serve engineers and a lot of other people at stations."

The NAB is also looking to reach the public with its Web site. "Broadcasting needs to be understood better by everybody, from the average Joe, who happens to be a legislative assistant on Capitol Hill, to professors of journalism who are always looking for information," said Wurfel. "This helps us answer a lot of the more frequent requests before they get asked. One of the information resources available on the site is "Online @ NAB," an Internet newsletter "that kind of explains more in layman's terms, and in a little broader (way) than our legislative and regulatory focus, what is happening in the world of broadcasting."

Issues are posted on the Web site each week for people who do not subscribe to it through e-mail.

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- ▶ Second line provides full Multiconference Mode. The operator and two callers can talk and listen to each other simultaneously.
- ▶ Hybrid null of 60 dB's.
- ▶ No adjustment required.
- ▶ Ideal companion for TLE-02 Portable Mixer.

The TLE-02 Portable Mixer

- ▶ On Air phone call with audio presence, depth and clarity of voice. No "telephone sound".
- ▶ Designed for non-technical users, ideal for field reporters.
- ▶ Light weight (3.3 Lb) and great autonomy, using 8 AA batteries.
- ▶ Dialing pad in front panel (pulse/tone selectable).
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Broadcast Equipment Exchange

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AMPLIFIERS

Want To Sell

Henry Engineering C250AB10 linear pwr amp, tuned to 950 kHz, 75W carrier, 250W peak, rated @ 75W but could do 125W, 2000 hrs w/LBP xmtr, \$750. K Riggs, KTBR, POB 1760, Roseburg OR 97470. 503-672-4427.

Want To Buy

Record Cutting Equipment. 612-869-4963.

Jampro JHPC-9 FM on 93.1, new, in original box. Caribbean Comm. Co., 330 E Kilbourn Ave, Milwaukee WI 53202 USA. 414-283-4515 or FAX 414-283-4505 for more information.

ANTENNAS/TOWERS/CABLES

Want To Sell

Jennings RG31A5750F21 coaxial vacuum relay, 6", 115V actuator, 325 kw @ 30 MHz, \$500/BO. Bill D, HCJB World Radio, 1718 W Mishawaka Rd, Elkhart IN 46517. 219-294-8398.

RCA-Dielectric DCR-C-12 bay hi pwr 100.3, \$6500; ERI FML 2 bay rotiller 100.1, low pwr, ec, \$4500; ERI FML 1 bay rotiller 96.7, \$1500; Shively 2 bay hi pwr 95.3, \$4500. R L Wachter, KNSX FM, 984 N Jefferson, St Louis MO 63031. 314-921-2121.

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Shively 3 bay 6813 FM antenna, 92.1 MHz w/tra lg radomes, new in 1985, xln cond, can be re-tuned 90-94 MHz, will deliver to factory for re-tuning, \$2500. B Williamson, WNHQ, 28 Jones Rd #3, Milford NH 03055. 603-672-9292.

Bogen MO-100A tube 100 W booster amp, 2 ea 8417 (666) pwr tubes, 1 ea 7247 (12AX7) driver, \$100+shpg. R Evans, 704-524-7983.

Jampro JLCP-7 7-bay circular polarized, tuned to 106.3 MHz, BO. R Meyers, Sound Masters Rec, 4700 SW 75 Ave, Miami FL 33155. 305-264-5963.

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50 plus sections of 3 inch rigid transmission line, excellent condition, will sell any quantity. 806-372-5130.

Want To Buy

ERI Multi-bay rotiller needed on or near 93.3 & 97.5, 400-1000 tower needed for class upgrade. R L Wachter, KNSX FM, 984 N Jefferson, St Louis MO 63031. 314-921-2121.

3 or more bay class A size antenna on 105.9 wanted to trade for cash or huge 4-bay Phelps-Dodge CFM-HP-4, end fed w/3 1/8" inter-bay line, prefer heaters, low wind load. K Tuckerman, WMMC, 217-826-8017.

Non-comm/educational station looking for antenna & tower w/lights, will give receipt. KADU, 218-263-3000.

AUDIO PRODUCTION

Want To Sell

Sontec 250B EQ, \$2000; API 560B EQs (2), \$650/ea; Audio+Designs Compex limiter F760X-RS, \$900; all 4, \$4000; Shure FP 11 port headphone amp, \$125; Shure FP 12 port mic/line amp, \$125. D Glasser, Airshow, 7021 Woodland Dr, Springfield VA 22151. 703-642-9035.

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Zephyrus 304 receiver-audio card-tone decoder, never used, BO; Microphase Communications MP-2030S, 1 yo, BO; Bext exciter, 25W tunable, almost new, BO. D Magnum, WBOG/WUSK/WTMB, 800-736-9264.

Avcom Inc EBS-1000, BO; Belar FM & AM FM amps (2), BO; RF mod GTN 88S Gates radio component, BO; Yesco Music Syst 8-trk model 820, BO. WYKS-FM, 904-331-2200.

Yamaha 2031 graphic EQ, \$175; Otari MX-5050BII 2-trk, \$1100; Tascam 22-4 4-trk, \$450; Aphex M-120 dist amp, \$100; Mod Assoc dist amp, \$100; Micro-trak 6411 phono preamp, \$50; Sennheiser MD-421, \$200. 510-895-6358.

Bulk eraser, \$49; Stewart 4 ch D-box, \$95; Cue command decoder, \$125; NEW Tascam midiizer MTS1000, \$450; Infonics 7" reel copier 1-3 copies, 2 @ \$125 ea; Furman elec crossovers, \$95; Peavey M2600 pwr amp, \$375; Crest FA800 PWR AMP, \$475. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Roland SRV 2000, \$525; dbx 503 expander/comp, \$290; Orban 414-A stereo compressor, \$425/BO; UA 565-filter, BO. T Coffman, 619-571-5031.

ADC 1/4" patchbays and cords, NEW, UNDER HALF PRICE, ADC TT patchbays, \$129 up, NEW cords, \$9.95. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Symetrix 528 voice proc, brand new in box, \$425. J Johnson, KHTR, 509-332-6551.

DaviSound "INNER TUBES" pro audio tube processors! Compressors, EQ, other "Tool Boxes", custom assembled and handcrafted! MCP DaviSound, PO Box 521, Newberry, SC 29108. 803-276-0639.

Good used studio tape 1/2" \$15, 1" \$30, 2" \$55. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Want To Buy

RCA BA-6A or 86; Collins 26-J; Langevin AM-7A limiter; Langevin AM-5301 amp; Langevin AM-5116-b preamp; Langevin passive EQ 251A-252A or Altech; GE GE-7 limiter; any passive filters or EQs; stereo adapter for Audiomax II RZ or UTC-HA 106 (2) & UTC-HA-114 xfrms. P Barlow, 909-613-1323.

MXR-Neve-API EQs, mic-pres, delay, etc. T Coffman, 619-571-5031.

Ampex tube mixers, plug-in mic preamp modules for PR10's, Altec or other tube compressors, Mackie mixers. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

AUTOMATION EQUIPMENT

Want To Sell

SMC 350 Carousels (6) w/manuals, BO; 2-slot SMC cart drawers (4), BO; 19" racks on casters (5), BO; SMC 3060 60-event programmer, BO; SMC AS-10 source cntlr w/cards & remote, BO; SMC DP-1 digital programmer, BO. R Miller, WKEI/WJRE, 217-824-3395.

BE Cntrl 16 compl, or will sell components separately, incl 5 Revox R-Rs, 3 16m Go-Carts, 2 triple-deck cart machines, BO. B Stanley, 616-925-9300.

Harris 7002 Instacart, 5 ITC 750's, 3 snl plys, floppy disc backup, incl sample AC music library on 90+ reels, no monthly fees, BO. J David, KMPC/KSTG, POB 907, Skiston MI 63801. 314-471-1520.

Harris 9000 (5) ITC 750, Carousels, dual floppy drives, snl cart deck, plus more, currently on-air, avail 7/95, \$2500. Tom, 715-234-9059.

Schafer 7000 w/Audiofiles, lvl 1A software, DAT backup, xtras, good cond, \$3500. Jim, 814-255-4186.

Want To Buy

Need bearings for 16m Insta-Carts, shafts, old Insta-Carts @ reasonable prices. S Smith, KBFV, Box D, Bellingham WA 98225. 360-734-8555.

CART MACHINES

Want To Sell

BE Splicefinder eraser, less than 1 yo, seldom used, \$750. R Statham, 407-692-1000.

ITC Delta stereo cart machines (4), w/all tones, xln cond, \$600/ea; plybk printed circuit cards (3) for ITC SP cart machines, \$85/ea; cue printed circuit cards (3) for ITC SP plybk machines, \$85/ea; ITC Delta rcd/plybk cart machine w/all tones, xln cond, \$900; capstan motors (3) for ITC 750 R-R machines, factory recond, \$150/ea; plybk, rcd amp & cur bias cards for ITC 750 R-R machines, \$100; printed circuit cards (assorted) for SMC DS-20 switcher & model 452 Carousels, \$50-\$150. R Statham, 407-692-1000.

Audicord mono cart machine, excellent condition, \$650. 806-372-5130.

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BE 5400C PB stereos (2), excellent condition, \$2500/ea. S Cooper, WRIC-FM, POB 838, Richmond VA 24641. 703-964-4066.

Scully L50313-9 not working, probably parts only, record/play with roller cabinet, BO; ITC triple deck mono cart machine, heads OK, motor weak, \$300. R Wittick, 916-283-1370.

SpotMaster stereo plyr, BO; Tapecaster 700RP, BO; ITC stereo rcd, BO; ITC mono rcd, BO; ITC ESL-4 plyr, BO; ITC Encore RP, BO; ITC SP, BO. WYKS-FM, 904-331-2200.

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Tapecaster X-701 mono PB, xln cond, very clean, guaranteed w/manual, \$295. K Lamson, 510-447-7405.

Tapecaster cart machines (2), 1 R/P & 1 ply only, both have new motors w/about 25 hrs use, BO. D Kirby, Rhapsody Prod, POB 1543, Palm Springs CA 92263-1543. 619-320-1782.

BE 5300C tripledeck, stereo, PB, mint less than 50 hrs, BO. R Kaufman, Pams Prods, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

ITC System 99B stereo record/play; tones, ELSA, auto head: \$1200/firm. C Scott, WKYU-FM, (502) 745-5489.

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Ampex parts, xport & electronics parts, from 350 units to MM1200 rcds, some new, most used, in super cond, motors, headstacks, guides etc, lots of stuff; also 3 Scully 280 electronics comp, \$100/ea. M Gore, 415-469-0136.

Infonics SRC-4 1/4" reel to 4 stereo cass dupe, new rollers, belts, capstan shaft sleeve, works good for its age, service manual incl, \$1000/BO. F Badaeux, The Musik Factory, 1812 Procter St, Port Arthur TX 77640-6746. 409-982-7121.

Revox B77, hardly used, perfect, 3 3/4-7 1/2 ips, 2-trk, \$650. B Meuse, Muse Audio Arts, 600 Rainbow Dr #107, Mountain View CA 94041. 415-969-2433.

Studer B-67, 7.5/15/30 ips, 1/4" 2-trk, compl w/remote cntrl, manual & xport cover, fully svcd, xln cond, good heads, \$1600/BO. R Streicher, 818-359-8012.



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| TM-1 | Temperature Monitor Unit |
| DAI-RP | Relay Panel Kit |
| DB-1 | Delay Board for DAI-1 (50 milisecond) |
| SU-5 | Update your RFC-1 to real human voice |

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Uher CR-134, doesn't work, clean w/manuals, \$25. G Hultman, Hultman Media Svcs, 300 Limp Creek Rd, Grants Pass OR 97527. 503-474-6466.

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Ampex 600 1/2-trk 7.5 ips 7" reel, good cond, will trade for Magnecord 748 or 1048 10.5" reel in good cond, \$100+shpg. E Lightman, WEDL Radio, 550 Merchant St, Ambridge PA 15003-2463. 412-266-2802.

Ampex 440 1/2" 4-trks (2) w/stands, BO; Ampex 440 stereos (2) in stands, BO; Ampex 400 monos (2) in stands, BO; Ampex ATR 800 for parts w/stand, BO; Ampex 440 xports (3), BO; Ampex 440 wood stands (3), BO. K Alford, 206-285-2295.

MCI JH-110B stereo in roll-around console, BO; Otari MX-5050 MKIII 8-trk, BO; Otari MX-70-16 w/compl remote, BO; Scully 280 stereo in roll-around, BO. B Hildebrand, 314-427-2727.

MX5050 BII-2 1/4" 2-track, completely rebuilt, excellent condition, 90 day warranty, BO. 415-589-5206.

Revox PR99R-RB (4) w/25 Hz, xint cond, \$600/ea or \$2000/all. L Mariner, KDLK/KLKE Radio, 107 Center D, Del Rio TX 78840. 210-775-9583.

Otari MX50N - mint condition, less than 100 hours use, \$1500/BO. 609-737-2586.

Otari 5050-SHD 8 track 1/2" newly rebuilt, heads have full, life left, \$1800. W Gunn 619-320-0728.

Sony TC-630 early 70s stereo, very good cond, sound working order, \$175+shpg. M Tam, Multi Path Prod, 7110 Cody St, Shawnee KS 66203-4332. 913-631-9638.

Tascam DA-30 DAT recorder, like new condition, less than 100 hrs, never rack mounted, BO. T Alexander, WDOK-WRMR, 1 Radio Ln, Cleveland OH 44114. 216-696-0123.

Teac X7R R-R, like new, \$400. B Pitts, WJBY, POB 930, Gadsden AL 35950. 205-442-1222.

Telex stereo Copyette 1 to 1 cass copier, new PB head, manuals, good cond, \$300. F Radeaux, The Musik Factory, 1812 Procter St, Port Arthur TX 77604-6746. 409-982-7121.

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Otari Mark II-IV 1/2" 4-track, multi-track, mint, less than 50 hours, Best Offer. R Kaufman, Pams Productions, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

Scully '100' recorders, record/play amplifiers, 8, 16, 24 track heads. Sequoia Electronics, 4646 Hounds-haven Way, San Jose CA 95111. 408-363-1646.

Tascam ATR 60 8 trk w/stand, remote, \$2250; Otari 5050-8 new heads, rebuilt, \$1595; Ampex 440E-8, \$1950; Tascam 25-2, \$495; Ampex ATR700, \$495; Scully 16 trk 2", \$2950; Tascam 52 top of line, \$650; M79-24 fully rebuilt, \$9,500; Tascam locator for 85-16, \$375; Fostex E22 1/2" timecode deck, \$950; Fostex A80 8 trk w/45D mixer, \$995. W Gunn, POB 2902, Palm Springs, CA 92263. 619-320-0728.

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Tascam 32 2-chnl rcds/repros (2), very good cond, \$1000/ea/BO. R Wittick, 916-283-1370.

Want To Buy

Slow rcdg R-R machine for station log. 809-352-7440.

Elmo DR-1 & SR-1 cass tape rcd-s; Almo GS-1200 stereo projectors; Fisher Price PXL-1000 video rcd-s; Bolex & Arriflex 16mm cine equip. Henry, 914-949-5920.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

CD PLAYERS

Want To Sell

Sony CDK-006 juke boxes (3). 2 totally refurbished to factory specs, 3rd in svc & working properly, \$1395/ea for refurbished units, \$995 for other. Jim, 717-692-2193.

COMPUTERS

Want To Sell

Roland DM-80 hard disk edit syst w/8-chnl rcd, cntrlr, faders, QUERTY keyboard, MIDI, 2x1.2 Gig SCSI drives, analog-digital I/O, SMPTE, chase etc, \$7500/BO; Turtle Beach 56k HD edit 386/40 EISA computer w/8MB RAM, 670, 1GB, 5.25", video card + 19" NEC XL monitor, digital I/O MIDI box, fully working, many gold/platinum CDs on this syst, \$1250. T Dorsey, 615-259-4452.

CONSOLES

Want To Sell

Langevin Discrete consoles, BO; AM-4 console, BO; AM-1/AM-2 mixers & many parts, BO; P Barlow, 909-613-1323.

Quantum Audio Lab QM-8P console w/pwr sply & manuals, as is, \$495. David C, KYKZ, POB 999, Lake Charles LA 70602. 318-439-3300.

Used input mods for Arrakis 12,000 console, orig style, not Turbo version faceplate, TPM1 25, TRS-2, DA-2, TPM3-2, TPM2-2, TCRM1-1, also blank mod covers, 7 avail, BO. E Monskis, 717-653-0800.

Ampro Microtouch 5-chnl stereo, good condition, \$500; Russco 505 5-chnl mono, good condition, \$400. M Persons, KLKS Radio, 402 Buffalo Hills Ln, Brainerd MN 56401.

Autogram AC-8 stereo, xint cond, \$2000. 510-895-6358.

Gates Yard board, recently gone thru with new switches & condensers, has had proof, also compl set of new connectors to connect all inputs to board, BO. D Kirby, Rhapsody Prod, POB 1543, Palm Springs CA 92263-1543. 619-320-1782.

Shure M267 4-chnl mic mixer, XLR inputs, good cond, \$275. B Taylor, 617-266-4220.

Soundtrax 16-chnl production console, \$950/BO. B Pitts, WJBY, POB 930, Gadsden AL 35950. 205-442-1222.

Tascam 4-channel mixer, recorder model ministudio, Porta-One, excellent condition, guaranteed with manual, \$295. K Lamson, 510-447-7405.

Ramsa 820 20x8x16 with meter bridge, \$1795; Quantum 23x16x24 as used by LA Philharmonic, \$3750. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Want To Buy

API, Neve whole or parts, working or not. T Coffman, 619-571-5031.

Neve consoles: any condition or parts Also: UA, UREI, Teletronics, Fairchild, RCA, Pultec, API, any TUBE GEAR or COMPRESSORS Call 201-656-3936 or fax 201-963-4764

Howe 7500 manual. G Jacques, KBZR-FM, 7434 E Stetson Dr #265, Phoenix AZ 85251. 602-423-9255.

DISCO-PRO SOUND EQUIPMENT

Want To Sell

Roland RSS-8048 sound space proc, 4 in-8 out 360 degree-3D of 4 mono signals, with case, \$7500; Roland R-880 digital reverb with remote & R Nichols & G Massenburg prog cards, like new, 2 avail, \$1750/ea. T Dorsey, 615-259-4452.

Fostex 3180 reverb unit, will trade for UREI, Cooper Time Cube model #920-16. E O'Brien, Imperial Sound, 383 N Studio St, Terre Haute IN 47803-9773. 812-877-2663.

JBL 4410A(L) 3-way studio monitor speaker, used approximately 8 hours, mint with warranty card, \$298+shipping. R Evans, 704-524-7983.

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Texar Audio Prisms (2) w/Optimod card, will trade for S/A 7300 Sedat 4 card, BO. D Solinske, WWRM, 877 Exec Ctr Dr W, St Petersburg FL 33702. 813-576-1073.

Want To Buy

Gates, Inovonics, Fairchild, RCA, UREI, Teletronics, all types, solid state & tube. T Coffman, 619-571-5031.

Fairchild 670 or 660 tube compressor/limiter, Teletronics LA-2A tube compressor/limiter or UREI LA-3A solid state compressor/limiter, call after 3PM CST. 214-271-7625.

MICROPHONES

Want To Sell

AKG D-140 dynamic cardioid mics, \$225/pair. R Streicher, 818-359-8012.

Sennheiser 421s (3) w/boom clamp & wind screen, xint cond, \$200/ea. 813-732-5339.

Sennheiser MKH-40 cardioid & MKH-30 figure-8 w/MS clip & shock mount cradle, \$1600. D Glasser, Airshow, 7021 Woodland Dr, Springfield VA 22151. 703-642-9035.

AKG C414 TL II, mint cond, orig box, case & manuals, \$1200. Mark S, 605-374-3424.

Electro-Voice 635A dynamic, omnidirectional mic w/stand adapter, \$95. B Taylor, 617-266-4220.

Shure 561 mic on Shure 540A desk stands, many avail, fair to good cond, \$10-\$50/ea. Al, 712-362-4119.

Shure 330 uni-directional ribbon, very clean, in red Shure bag, \$75. G Hultman, Hultman Media Svcs, 300 Limp Creek Rd, Grants Pass OR 97527. 503-474-6466.

Sony ECM377 large dia. cond mic, \$495; RCA 77DX w/new ribbon, Crown GLM200 lavalier like new, \$125. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Want To Buy

AKG 451-EB, AKG 460-EB, EV RE-27, more. T Coffman, 619-571-5031.

Inexpensive hand-held wireless mic w/receiver. Al, 712-362-4119.

Old mics, call plates, on-air lights. J Phillips, 414 Washington Ave, Defiance OH 43512. 419-782-8591.

RCA ribbons, AKG 451's, Neumann KM84's, U87's AKG 414's. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

RCA 77DXs/44BXs ribbon, chrome/TV grey, gd cond, BO. R Kaufman, Pams Prods, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights & audition 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

75kW gen, Fermont model MEP006A, 6 cylinder turbochrgd, self-contained 50 gal tank, load tested, 3 phase, 4 wire, 1,575 hrs, no autostart, BO. Paul, WYMG Radio, 217-546-9000.

KEM 6 plate 16mm #1950 laser disc plyrs, Pioneer 4400/6000/6200/7820 or Sony 2000, \$250/ea; many various 3/4" Sony or JVC plyrs & rcds, \$150-\$350; Nagra 3 for parts, good heads, \$200. B&H projectors 1592c or Jan, \$325/ea; plus many odd items. Peter or Mark, 212-719-2744.

IBM System 36 mainframes (2), BO; Telrad office phone syst w/30+ phones, BO; RCA 10-bay FM antenna (95.7) w/radomes, BO. K Alford, 206-285-2295.

Onan/Cummins 30 kW gensets (2) diesel, one 800 hrs, \$7500; one 1500 hrs, \$9500; day tank w/auto oil level cntrl, \$16,000/all. R Wittick, 916-283-1370.

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Spring cleaning has arrived, 3 pg list of equip incl R-Rs, audio proc & tape NR for sale, call fax or e-mail for list & method of reply. C Scherer, CBRE, WMMS/WHK/WMJ, 216-781-9667, 216-771-1007 FAX. chriss@wmms.com.

Want To Buy

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.

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Belar AMM-2 mod monitor w/remote meter panel, works fine, \$1000. R Wittick, 916-283-1370.

TFT 730-A SCA monitor, \$100; 7610/7630 remote, \$200. D Gilliam, 1435 S Dobson, Mesa AZ 85202. 602-969-3413.

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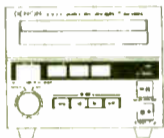
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Major Mkt/large station experienced Chief Engineer considering supervisory/corporate chief's position. 25 yrs exper, directionals, applications, great organization, looking for stable company w/excel remuneration. Respond to: Radio World, POB 1214, Falls Church VA 22041. Attn: Box # 95-6-28-1RW.

CE 15+ yrs exper, upgrades, new construction. 805-473-0871.

Ready to rock your listeners' sox off! Bright young talent, willing to do what it takes! Steve, 918-742-1227.

HELP WANTED

Chief Engineer - Two Class C FM's and one Class B AM directional in Southeast, Gulf coast area require full time engineer. Must have experience in both digital and analog studio and transmitter equipment as well as hold an FCC General or SBE certification. Send resume to Radio World, POB 1214, Falls Church VA 22041. Attn Box #95-6-28-2RW.

Groups of 6 radio stations in Northeast seeking experience chief. Knowledge of RF, studio maintenance, computers, digital audio a must. Good pay and benefits. Reply to: Radio World, P.O. Box 1214, Falls Church VA 22041. Box RW95-5-31-2RW.

NEWS POSITION: Christian music, news and information network in upstate, NY needs experienced, ministry-minded reporter/editor/anchor to work in high gear, issues-oriented newsroom. Send resume and tape to: News Director, Family Life Network, POB 506, Bath, NY 14810. EOE.

C.E: SW Kansas mkt leader needs a take charge individual to maintain multi-station facility. AM directional & class C FM's hard-drive audio exper helpful. Fax 316-276-3568 or send resume & salary history to Don Brintnall, KBUF, 1309 E Fulton St, Garden City KS 67846.

CE for 10 kw AM DA-2 contemplating new studio construction. Resort community, western state. Competency in: AM DA's, PC computer systems, PC computer networks, TVRO studio/RF construction, maintenance, FCC compliance. Minimum five years experience and FCC General Class Permit. Resume, references, salary expectations, and credentials to: "Resumes" at 2950 SW 2nd Avenue, Fort Lauderdale, FL 33315 or FAX to 305-524-8734 EOE

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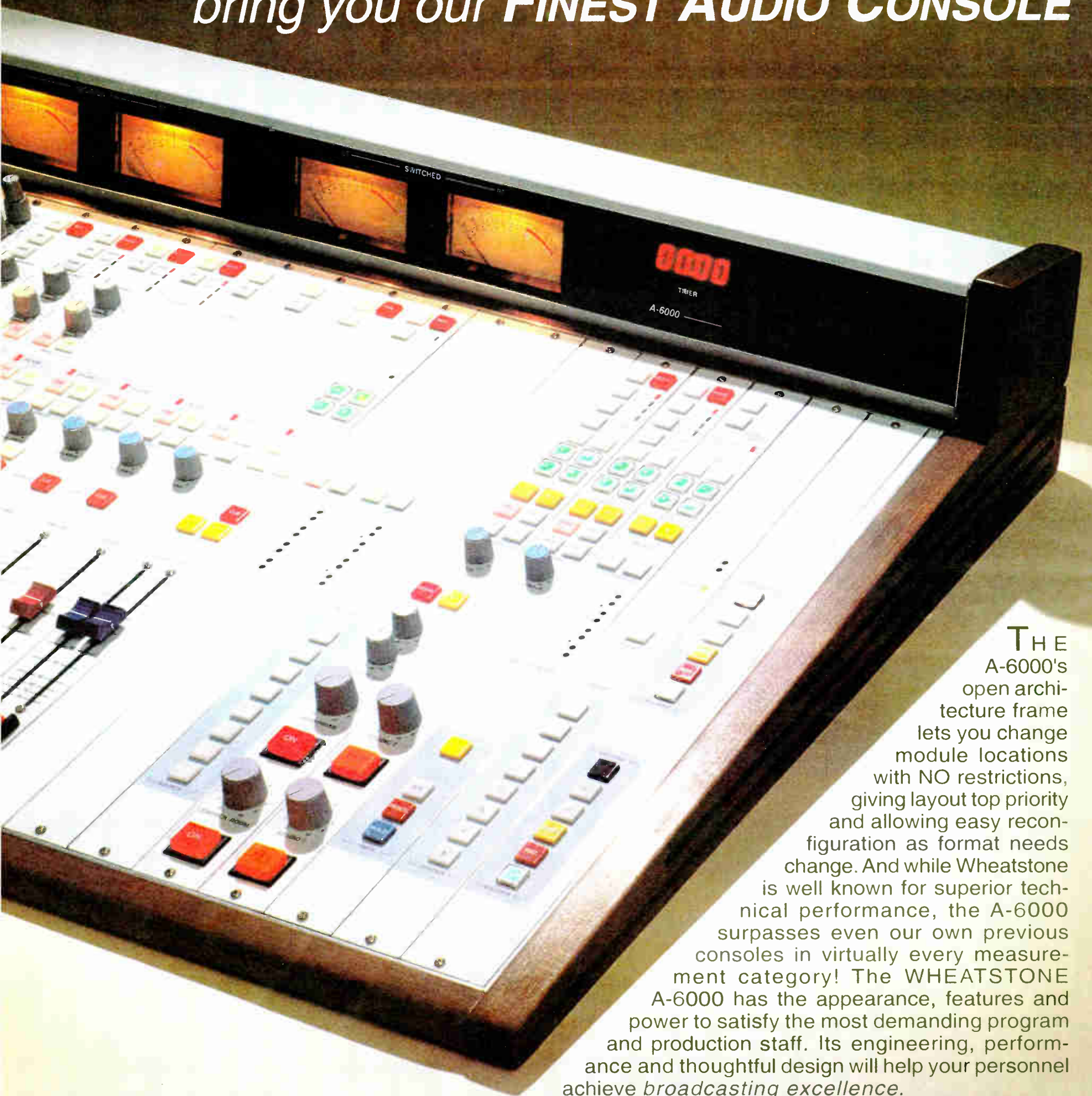
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