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SBE Show Preview  
Pages 10-15

# Radio World®

Vol 14, No 18

Radio's Best Read Newspaper

September 26, 1990

## SBE Convenes Amid Concerns

by John Gatski

**St. Louis MO** Based on the number of exhibitors that have purchased space, the 1990 Society of Broadcast Engineers (SBE) show looks to be in good shape this year.

But some broadcast equipment com-

panies are concerned about the show. A few companies have cut back their booth sizes or are skipping SBE this year, citing various reasons including the current national economic slowdown and an uncertainty about SBE as a selling show.

Also, as show budgets get tighter, a few have decided to forego SBE in lieu

of other conventions that have a larger attendance.

One company decided not to attend because it disagreed with SBE holding next year's show in Houston, also a point of contention with other manufacturers.

As of late August, 130 companies had registered for the 4-6 October show and more than 150 are expected to exhibit, according to show manager Eddie Barker, president of Eddie Barker and Associates, which manages the convention for SBE.

Barker said very few companies have decided not to attend, and there has not been an overall downsizing in booths, even with an \$8-to-\$10-per-square-foot rate increase.

### A strong show

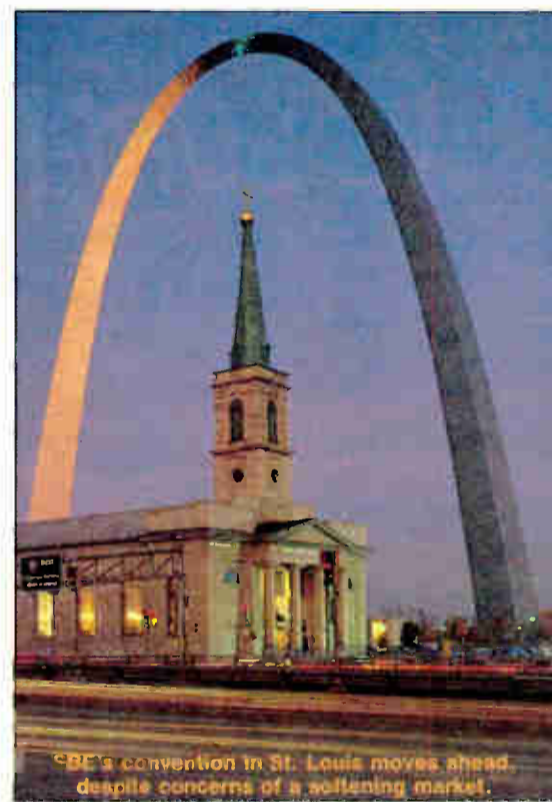
"We're ahead of where we were at this point last year," Barker said.

At the 1989 Kansas City show, 146 companies exhibited, according to Barker, who noted that many companies will not buy booth space until late September.

Most company officials interviewed

said the economy could affect the show. Although most declined to call the current economic slowdown a slump, they

(continued on page 10)



## Sat CD Views Vary

by Charles Taylor

**Washington DC** Satellite CD Radio's proposal to combine digital satellite feeds with terrestrial digital stations has prompted a mixed bag of reactions, ranging from pristine praise to wholehearted scorn.

While they may guide the Commission in assessing public opinion on the

system—and on digital audio broadcasting (DAB) in general—the FCC likely will not act on Satellite CD's proposal until it has fully assessed the issue of digital audio radio.

At a 1 August meeting, the FCC said that the company's proposal, because it requests allocation of new spectrum, probably will be folded into a sweeping

(continued on page 7)



Western radio broadcasts are keeping Iraq's jammers busy.

## Iraq Riled by Radio

by Alan Carter

**Washington DC** Western radio broadcasters are playing a cat-and-mouse game with Iraq President Saddam Hussein.

They are just as determined to transmit radio signals into Iraq and Kuwait as he has been to keep them out, after his army invaded Kuwait on 2 August.

The British Broadcasting Corp. (BBC), with better transmission sites and stronger medium wave capability in the Middle East than the Voice of America (VOA), is having the best luck side-stepping the Iraqi government's jamming of Arabic-language broadcasts.

### Adding frequencies

When Iraq jams one frequency, the BBC just adds some more, according to Dennis Thompson, who heads the network's broadcast coverage operations from London.

(continued on page 2)

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# Iraqi Radio War

(continued from page 1)

"From the feedback we're getting, some channels remain open," he said. "And people can pick up some of the channels that are jammed, although the signal isn't very good."

The VOA also is transmitting Arabic broadcasts via the Worldnet satellite system to television-receive-only antenna dishes, while continuing short and medium wave transmissions, to get around the jamming.

"The Iraqis are beginning to show some signs of being

strained," said Bill Whitaker, chief of frequency management and monitoring for VOA in

**"The Iraqis are beginning to show some signs of being strained."**

Washington. Iraq stopped jamming Iranian broadcasts, he said, and cut back its own broadcasts to interfere with Western signals.

The BBC has increased the

Arabic broadcasts from nine hours to 10 and one-half hours and increased the English-language version to 24 hours.

The BBC transmits from Cyprus and the island of Masira off the coast of Oman.

VOA has increased its Arabic

broadcasts to nine and three-quarter hours, up two and one quarter hours. It also is using more frequencies and transmitting into North Africa.

Among its English program-

ming are bulletins from the State Department. The VOA also broadcast President Bush's speech to US troops because the Armed Forces Network doesn't have transmitting capabilities in the Middle East.

The VOA signal is transmitted from Greenville, NC, to relay stations in Germany and the Greek island of Rhodes.

The Iraqis use what VOA calls "bubble jamming," so-called because of the sound it makes. VOA is not sure how the Iraqis create the interference, except to speculate it may be an "FMing of the carrier balance."

Not only is Iraq interfering with the BBC and VOA, it is jamming government radio

from Saudi Arabia and Egypt.

"The jamming is pretty effective, but the determined listener can get pieces of information," Whitaker said.

## Iraq's retort

The Iraqi government radio, Radio Baghdad, also took an initiative to get its message out.

An English language broadcast is transmitted into Europe and the US, according to Kim Elliott, an audio research officer at VOA. Although the frequency changes, the signal could be heard in the US, 4-6 PM EDT on 13660 kHz (the European broadcast) and 9:30-11:30 PM EDT on 9515 kHz and 11810 kHz (the US transmission).

"What you hear is pretty much predictable," Elliott said.

Radio Baghdad is broadcasting directly to US troops in Saudi Arabia. But that propaganda will have the same effect as a similar attempt by the Japanese government during World War II, according to Elliott. "Tokyo Rose was not taken very seriously."

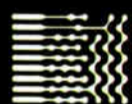
After the invasion, Radio Baghdad was heard on the frequency used by Radio Kuwait, according to the BBC *World Broadcasting Information* (WBI) service. But within days after the invasion, Radio Kuwait surfaced from an unknown site, appealing for resistance against the invasion.

Across the spectrum, government radio operations are stepping up their broadcasts into the Middle East, WBI reported.

Radio Denmark has eight programs daily to the Middle East, including a special 25-minute program.

Radio Japan increased its Arabic output and Radio Netherlands changed frequencies to avoid Iraqi jamming.

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# Manufacturers Following DAB

by Alan Carter

**Washington DC** Radio transmitter manufacturers, a group that will be significantly affected by the advent of digital audio broadcasting, said there are too many unknowns for them to launch into DAB product development just yet.

But they are closely watching events unfold, both in the US and internationally, and one manufacturer noted the impact could change the business while others questioned the current enthusiasm.

Nautel Broadcast Sales Manager Jorgen Jensen said that because DAB would require a very limited number of transmitters for stations there would be no volume of sales. He said the money to be made in DAB will be with receivers and systems management.

Another transmitter company says the transition will likely be made. "I think it very well may be the wave of the future," said CCA Electronics Sales and Marketing VP John Binsfeld. "It appears to have significant advantages over the analog transmission we're now using."

But after hearing demonstrations conducted by Canadian broadcasters this summer in Canada of the European-developed Eureka 147 system, another industry observer, Continental Domestic Sales Manager Walt Rice, said he didn't understand "what all the hoopla is about."

"I'm not sure 'they've found it'—which is what 'Eureka' means," Rice said, a

reference to the name of the European developed system which tested in Canada this summer.

Those reactions show the extreme that opinion runs on the fastly-developing DAB. Between 18 May and 1 August, four proposals were filed at the FCC on DAB, and the Commission issued an inquiry into the issue.

"There are so many questions that are

**"I don't see a lot of changes on the equipment side until after the process is in place."**

in the gray area," Rice said. "It's a new technology, and nothing is in concrete."

Rice said he expected it would be 10 to 20 years before DAB, an audio service that will be incompatible with analog AM and FM, would be in use.

But many industry predictions have guessed at shorter transition times.

However, Jensen also said he believes DAB may be 20 years away and explained there are many issues such as technical and standards questions that must be solved. "This is not straightforward," he said.

While DAB would displace sales of existing equipment to broadcasters that make the transition, Jensen said AM should continue to be a significant market for developing countries.

QEI Senior VP Bill Hoelzel is another transmitter maker not yet ready to abandon existing terrestrial broadcasting. While noting the importance and potential impact of a DAB service, he said, "There are also certainly things done very well in this industry that are analog."

But noting existing digital products that QEI has developed and markets, Hoelzel said, "We certainly have the capabilities to design DAB products."

At Harris, Advanced Marketing Director Bob Weirather said there are many hurdles to overcome—like spectrum assignment—before DAB can become a reality. He said he is "a little hesitant to believe" the service can be put into operation as fast as some broadcasters suggest.

Some believe DAB could be on the air in five to 10 years, despite the current wait for spectrum assignment, no transmitters other than a very limited number used in demonstrations that are undergoing continued development, and the lack of receivers.

Harris representatives were in Canada this summer to observe the DAB tests held across the country. The report: "Good quality," Weirather said.

"DAB is a big, big subject," Weirather said. "It is very much looked at. But

we've got a while to climb."

Across the equipment industry, distributors contacted said there is not a significant amount of impact yet from the emerging technology.

Bradley Broadcast Sales Manager Neil Glassman said there is more going on among broadcasters—managers and programmers—and those on the regulatory side.

And that is where Glassman noted a strong interest, particularly on whether DAB will replace AM and FM. "I see a very, very healthy debate."

He also said he is surprised that some in the industry say DAB is an unexpected development. "It's not like people haven't been talking about this for a long while," he said, referring to the work in Europe.

Broadcast Supply West Marketing VP Tim Schweiger said broadcasters "are very mum" on the issue. He added, "I don't see a lot of changes on the equipment side until after the process is in place."

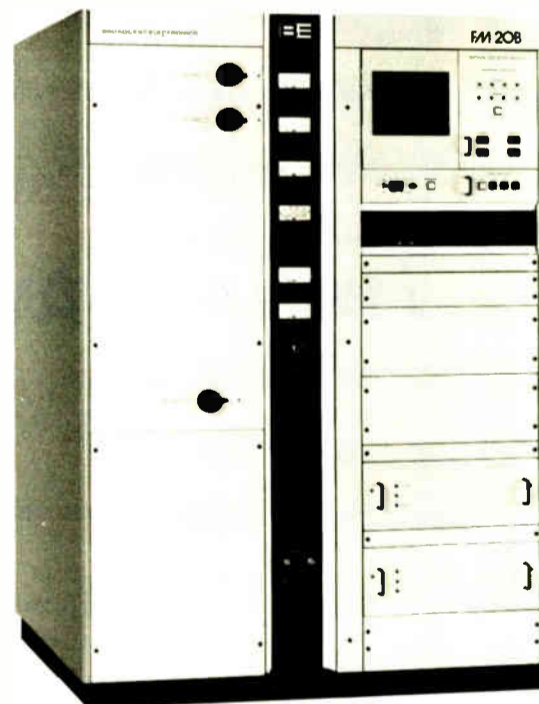
Audio Broadcast Group President Dave Veldsma was another distributor who said he hasn't heard much discussion among manufacturers. "What I have heard is a lot of broadcasters are concerned," he said.

Allied National Sales Manager Dave Burns said he views DAB as another evolutionary step for radio, but he maintained it will be eight to 10 years before DAB would be introduced.

Broadcasters must keep their current facilities at a state-of-the-art level, Burns said. "We can't just say, well, the good Lord will take care of us and sit back and wait until this miracle happens."

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# Rolling Through the Fall Shows

by Judith Gross

**Falls Church VA** Don't know about you, but three trade shows in four weeks is a mite too much for my feet to tolerate. I sympathize with those of you who spend that time cruisin' the floor or worse, standing in a booth and smiling.

But it's good to see familiar faces and hear the latest industry buzz.

Things are tight all over, by the sound of it. But the survivors are playing it smart and will make it through even this crunch.

Latest word on DAB is that the **Digital Radio Committee**, that informal group of industry engineers who started meeting to exchange info on the emerging technology, is going to continue to meet—as a formal group now.

Chairman Paul Donahue, of Gannett, and co-chair Mike Starling of NPR want to let the industry know that participation is open, and the intent is to bring to light as much technical information as possible, "unhampered by political restraints."



Last time, the group got a rundown about the **ISO tests** of different data compression systems, including **MUSICAM**, which is the one used in the **Eureka 147** system. Greg Urbiel, who directs technical operations for midwest CBS-owned stations, was one of three from this country who actually participated in listening tests.

Can the listener tell the information has been compressed, by a 6:1 ratio? Those who have heard it say **no**.

Now the Digital Radio Committee is going to explore the possibility of a digital audio system that is **compatible with existing FM**, possibly even using the

same band. Does such a system exist? Stay tuned . . .

TV Marti, move over. Seems the controversial service into Cuba, which boasts an **airlift transmitter** on a blimp, is in good company.

A Rhode Island AM recently made history by launching a giant **helium-filled balloon** to serve as an antenna. **WKFD**, which calls itself the littlest state's smallest radio station, bought its tower from **WICE** back in '61.

Well, the tired old tower finally had enough and crumbled into the sea, according to the station. Not to worry. The solution was a 12'x12' balloon—bright yellow—to float 120' in the air to substitute until the new tower was up and running.

In the photo of the launch you can see the station had a little help. **CE Duffy Egan** was assisted by RI's **Grand Quahog**, or giant clam. And you thought they were only good for steaming.

Two distinctions for two companies of note. First, **National Supervisory Network** was nominated to receive the 1990 **ENNE Enterprise Network Excellence Award**.

The award, to be presented at **Net-World '90**, honors those who excel in the use of enterprise network technology to boost productivity/profits for their clients. **NSN's** unique service, which monitors stations' transmitters remotely via **satellite**, certainly qualifies.

And **Bext** has become the first company to receive **FCC Part 74 authorization** for its booster gear. The Commission caused a lot of **misunderstanding** recently when it insisted that the new high power boosters had to be approved under Part 74, not Part 73 rules. But **Bext** came through and went the distance.

Say it isn't so. Is it true that **Marconi Award** nominees were hit on by those selling advertising for the **NAB's weekly newsletter** to take out an ad to help their chances?

And wasn't it a wee bit unusual to see **Radio Satellite Corp.**, in an ad in the newsletter, touting its ability to give some stations superstation status via its **satellite service**? Didn't the **NAB Board**

come out with a statement of opposition to satellite digital services in favor of localism?

Heard an interesting way to promote **AM listening**, mentioned in passing by

"the first new music format for AM in 10 years."

**J.R.** doesn't mince words in the promotion. He comes right out and says "listeners didn't leave AM radio as much as they were chased away by bad programming." Whew!

The new format is dubbed "**Amplitune™**" and supposedly provides music that sounds good on AM. **J.R.** goes on to say that with the threat of **digital broadcasting** looming, "AMs which are not successful in their markets are a waste of spectrum."

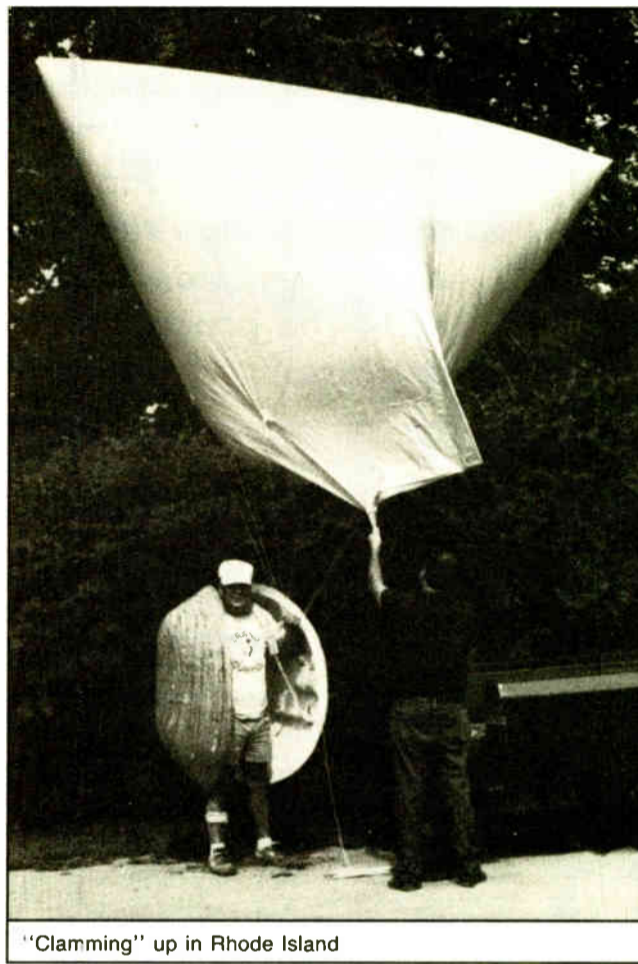
Now I don't know exactly what this new format could possibly do for AM, but I'm about to check it out on the trade show circuit. Count on it.

On the **SBE convention** front I'm glad to see some fun activities scheduled to get attendees on the exhibit floor. Everybody knows the way to our attention spans is through our stomachs. But what, no **shop coats** filled with goodies this year?

And I was thinking that **roller skates** would definitely be an asset at these shows. You know, roll down the ramp from the plane and right into the exhibit hall. Think how much ground you could cover. Easier on the feet, too.

'Course, you'd hear me calling "Gangway!" Never did learn how to stop those things.

Heard a juicy tidbit? Spill your guts to **Earwaves** by faxing **JG** at 703-998-2966, writing to **PO Box 1214, Falls Church VA 22041**, or calling 703-998-7600. Who knows, you could win a coveted **RW mug**.



"Clamming" up in Rhode Island

**Ed Montgomery**, who occasionally gets up **Big Apple** way and loves to listen to the legendary AMs. **WABC** is apparently using a clever jingle to inform its listeners they'll get better reception if they put the radio **near a window**.

I knew that (that's how I listen to AM in my office). Of course, if you happen to be on the **90th floor** of the **World Trade Center** it's even better.

And speaking of AM, you have to love a promotion by **J.R. Russ** out of **Laurel, MD**. **Russ Programming** hopes to set the AM world on fire with what it's calling

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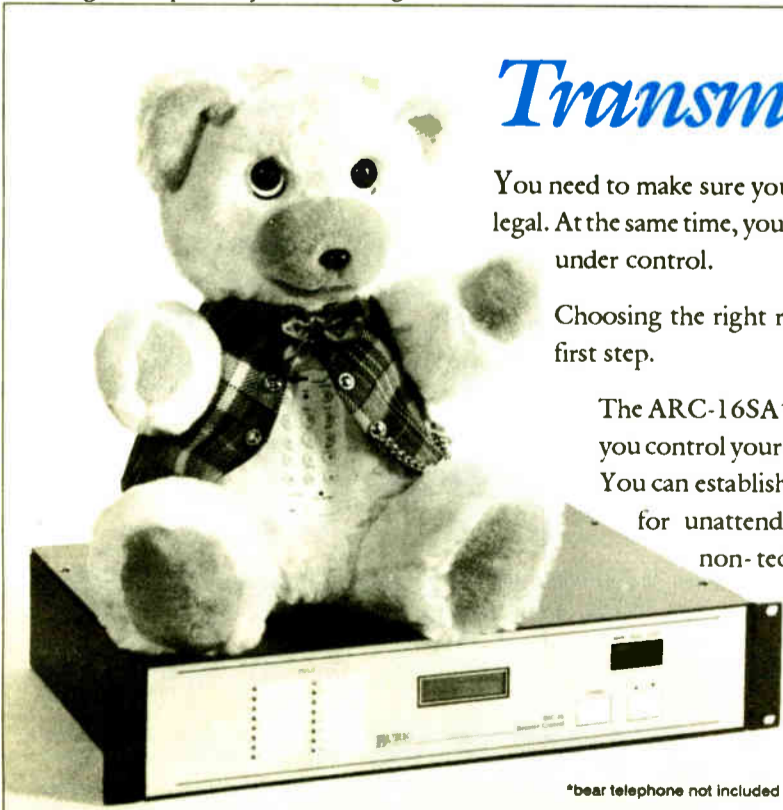
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### Will RDS supplant subcarriers?

Dear RW:

On EBS . . . the RDS idea is good, but what about those broadcasters whose 57 kHz subcarrier is already occupied with paging?

One of the stations in our group has its 57 kHz subcarrier leased, and I believe all the CBS FMs do the same. Additionally, I know of a few public stations that lease their 57 kHz subcarriers . . . and they need the bucks.

I'd hate for the government to take over a part of my signal. And for those who are renting their subcarriers, will they be compensated for the lost revenue?

I much prefer the UHF repeater scheme being discussed in the Bay Area . . . that way the information is delivered on the "main channel" where even those folks with headset radios can get the information.

Eric Hoehn, TD  
KHMZ  
Columbia, MO

it's not on people's radios. There's ample evidence that digital is fast becoming an accomplished fact inside the station. What is beginning to breathe down our necks is digital transmission to the receiver, DAB.

If licensees with big investments in FM want to fight DAB, let them. They'll be repeating the mistakes of some myopic AM owners 20 and 30 years ago. Now is the time for those heavily invested in AM stations to work with industry groups, manufacturers, the FCC, and anyone else developing terrestrial, local DAB. AM owners should be looking for early colonization of DAB, to regain the cutting edge.

We made the transition to cartridge tape, solid state and CDs as each new technology came along. This will be a somewhat bigger jump, but those who don't prepare for it are destined for the same graveyard inhabited by spark-gap transmitters and ETs.

Chuck Crouse, Reporter/Anchor  
WEEI-AM  
Boston, MA

### AM should look to DAB

Dear RW:

Let's face it: The expanded AM band is a dead end. It's AM, it's analog and

## Radio World

Vol 14, No 18 September 26, 1990

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Production Director, Kim Lowe

Chris Freter, Lisa Roach, Julianne Stone  
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Ad Coordination Manager, Simone Mullins

Circulation Manager, Tiana Hickman

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### Advertising Sales Representatives:

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800-336-3045, Fax: 703-998-2966

West Coast, Pat Macsata

415-786-2198, Fax: 415-786-2754



**Radio World** (ISSN: 0274-8541) is published semimonthly (except February, which has 3 issues) 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 is paid at Falls Church VA 22041 and additional mailing offices. POSTMASTER: Send 3579 forms and address changes to Radio World, P.O. Box 1214, Falls Church VA 22041. Copyright 1990 by Industrial Marketing Advisory Services, Inc. All rights reserved.

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**Next Issue**  
**Radio World**  
**October 10, 1990**

### Drug war hypocrisy

Dear RW:

I don't know about the rest of you DJs and news people, but I'm pretty fed up with this bogus "war on drugs" and how far into our lives it has seeped. Although I knew it was coming, the "FCC Says No to Drugs" (25 July RW) story pegged my needles.

For the past several years, the government has been following the administration's misguided "drug free workplace" policies, and now the FCC is in on it.

It burns me that a jock who gets busted for minor marijuana possession—that should be equivalent to a parking fine—could be screwed for life out of his or her chosen career. You don't have to even be able to read or write in this new era of Reagan's deregulated broadcasting business, but if you're busted, you're chemically unfit to work at a radio station. What hypocrisy.

It's apparently OK for the manager to go out for a few drinks with the FCC Inspector—but it's not OK for members of the staff to have an occasional weekend joint. It's also apparently OK for the federal government to subsidize the tobacco and alcohol industries with hundreds of millions of dollars and those same corporations turn around and spend hundreds of millions of dollars advertising on our stations.

Billions of dollars are being spent on the law enforcement side of this war on drugs and almost a million Americans are already behind bars because of it. The misery of this war on citizens who got caught in this national dragnet is reported on our newscast almost every day.

The broadcasting management and ownership is donating a million dollars a day worth of airtime to the Media Partnership for a Drug Free America PSA campaign. Many of these ads are just plain stupid—and may more of them are patently untrue.

Enthusiasm for the SBE national convention appears to be abundant despite recent concerns about a sluggish industry.

The St. Louis venue is a boost this year and once again the lack of overlap between exhibit and session hours promises the success of last year's show.

But the health of this still-young convention, crowded into a busy fall schedule, hinges on drawing a robust attendance.

Every SBE member and SBE chapter should make an effort to support their organization's convention by showing up in St. Louis to visit the exhibits, attend seminars and exchange knowledge and comradery with colleagues.

The SBE has put forth the effort to make this an affordable convention for members, even in a tight economy. And it's the one gathering where engineers can spend time learning about new products and developments unfettered by non-technical personnel and issues.

## Support SBE Show

With vast technical changes for radio looming on the horizon, no engineer can afford to be left out of the learning process and emerging debates that will shape the future.

But in addition to their attendance, it's also important for SBE members and convention exhibitors to let the society's officers know of concerns over policies regarding the show or the SBE itself.

As members vote in a slate of officers, they should also provide input which will help guide the future direction of the show and the society.

The national convention—despite a few stumbles—has picked up momentum in the past few years and it's important that the upward trend continue.

SBE—the convention as well as the organization—needs strong participation if it's going to grow and be successful in a volatile industry.

—RW

Radio, I propose, is deliberately disinforming the American public on a daily basis at the request of the President. If that's not the same sort of propaganda we used to self-righteously accuse the communists of, I don't know what is.

It's time to call off this Big Brother police-state war on drugs. And it's got to start with each one of us. If we're really going to have a "kinder, gentler" nation, we're going to have to do it on our own.

First, radio professionals, especially owners and managers, can tell the FCC that the proposed amendment is unnecessary and an invasion of privacy. The whole Drug Free Workplace Act is probably unconstitutional anyway, but until somebody has the courage to challenge it in court, we can just say "No" to the FCC.

Second, Program and News Directors should take a very critical look at the information that they are broadcasting about the drug war in the news and the "say no" PSAs. We are obligated to tell the public the truth, not to tell the government's story and lie for it.

Media credibility has been falling for many years now, and, I suggest, it is in part due to the blind willingness of the media to repeat the "official line." Millions of Americans are losing their civil rights and until the members of the media start standing up to this bogus war (or start losing theirs), millions more will also.

This new prohibition is tearing our country apart and until that's changed, the Roaring '20s may look like a Sunday picnic compared to the '90s. It doesn't have to happen. We can all tell the administration "No"—and the sooner, the better.

Mark H. Hunter, Graduate Student  
University of Northern Colorado  
Greeley, CO

### Bay area memories

Dear RW:

I wholeheartedly agree with Bonnie Simmons comments on the state of San

Francisco radio or for that matter, the rest of the country (19 June RW).

Growing up on Bay Area radio (KEWB-AM, KYA-AM, KFRC-AM, KMPX-FM and KSAN-FM), especially KSAN in the late '60s to mid '70s, was a real musical pleasure and education.

KSAN's "no format" format was the reason I used to listen an average of eight hours a day. You never knew what was going to happen next. That was the beauty of the whole thing.

The established radio stations at that time, and even today, never could figure out what was going on. The disc jockeys were just doing it for the love of music and radio.

What a loss to radio, now that Bonnie Simmons and the other DJs of KSAN are out of broadcasting. I guess there's no place in today's "synthesized-techno-pop" radio market for a KSAN to survive.

Thank you Bonnie Simmons and KSAN for all the years of wonder radio. You guys did it "all for the love of rock and roll!"

P.S.—How can I get a copy of the compilation of KSAN programming?

Ed Y. Lee, Owner/VP  
KTGM-TV  
Tamuning, Guam

### Fewer AM stereo receivers

Dear RW:

Those interested in the future of AM stereo should take a look at the May, 1990 edition of *Audio* magazine.

The issue features an extensive "Car Stereo Directory" which includes the latest information on the automotive sound equipment marketplace.

Of the 59 radio receiver manufacturers listed, only six are offering units with an AM stereo option.

No wonder AM stereo is having such a hard time finding believers.

Ken Mills, GM  
KCSN, California State University  
Northridge, CA

# BROADCAST EQUIPMENT

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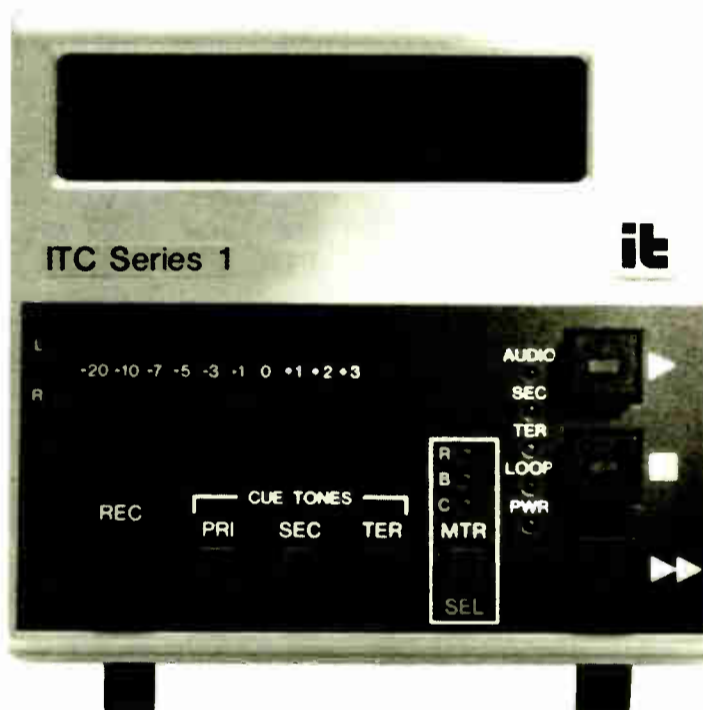
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ITC sells more cart machines than anyone else. Allied sells more ITC than anyone else.

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# Satellite CD Reactions Mixed

(continued from page 1)

digital rulemaking on digital radio, which was introduced in a Notice of Inquiry (NOI) at the meeting. Action on that (NOI) could take many months.

## An important ally

Many of the comments presented critical analyses of Satellite CD's proposal, however, the system does have at least one important ally. At the FCC meeting, Commissioner Ervin Duggan lent support to the proposal's use of both terrestrial and satellite transmission.

"I find the hybrid idea most appealing," Duggan said. "It seems to offer the best of both worlds."

A number of the companies commenting on Satellite CD's proposal have a stake in the future of DAB, and their comments reflect such.

Strother Communications, which has petitioned the FCC for DAB testing authority and spectrum allocation utilizing the Eureka 147-based terrestrial digital system, politely acknowledged that Satellite CD's satellite-to-user transmission of digital audio was a logical complement to its own terrestrial DAB proposal, and would meet the public interest.

However, Strother pointed out that the audio specifications in Satellite CD Radio's petition indicate that its sound quality will be no better than current FM broadcasts.

"(Our) point is simply that the United States' digital audio system should reflect the best current technology has to offer, and should meet the emerging world standard for DAB, both of which are represented at present by the Eureka 147 system," Strother said.

## AM/FM can't compete with digital

The company also differed with Satellite CD's intention to establish digital audio as competition with current AM and FM stations. The inherent superiority of digital, Strother said, will in-

evitably make current analog transmission systems obsolete. Strother's own proposal includes a plan to convert existing AMs and FM stations to digital.

Radio Satellite Corp., which has before the FCC an application to construct and operate a ground station for satellite access to provide audio and ancillary data services, including 10 digital audio channels, said it will wait for response to Satellite CD's proposal before offering its own viewpoint.

"RadioSat plans to review the comments filed in response to CD Radio's petition and, if appropriate, may reply to particular issues raised by the commenting parties," the company said.

Electronic product, system and component manufacturer General Instrument Corp. (GIC), which said it innovated satellite delivery of CD-quality sound over cable television, led its comments with the complaint that it should be known as the "real pioneer in the delivery of digital sound programming by satellite"—not Satellite CD Radio.

It rejected Satellite CD's move to allocate terrestrial spectrum for its proposal. "No spectrum should be used solely for terrestrial broadcasting," GIC said. "We understand the need for terrestrial repeaters to fill in the weak signal areas, although it is not clear that the overly simplistic proposal of Satellite CD would be adequate to satisfy that goal."

## Timing is unreasonable

GIC also criticized the timing of Satellite CD's proposal as unreasonable, saying that no FCC action is possible before the 1992 World Administrative Radio Conference (WARC) is over. The Association for Broadcast Engineering Standards (ABES) agreed, commenting that the Commission should not permit a variety of new permanent services while the basic regulatory parameters for such services are being planned.

The NAB, which opposes satellite digital services, cast the most negative vote

on the proposal, recommending that it be dismissed or simply deferred.

"The Commission should focus its energies, instead, on the broad range of domestic and international policymaking and allocations planning which must precede any consideration of an actual domestic spectrum reallocation for any such digital service," NAB said.

The association also criticized Satellite CD's proposed use of satellite delivery, claiming that it contradicts the principles of broadcast localism "that have guided the development of the American system of radio broadcasting."

A number of technical and policy questions also were raised. The company's proposals regarding modulation and compression techniques are largely in a theoretical stage only, NAB said. Details of the proposed encoding system compression capability are unclear. And the intended use of the Dolby AC-2 sound coding method was questioned.

Finally, the NAB said that given the availability of the Eureka technology worldwide, there is a question whether Satellite CD's system would be adopted internationally, thus thwarting the WARC objective of a worldwide digital system.

## Dolby lends support

Among the supporters of the system was Dolby Laboratories, who would benefit from Satellite CD's success by its proposed utilization of the Dolby AC-2 sound coding method.

Dolby praised the proposal as an effective use of spectrum and said it would offer a diverse choice of radio programming nationwide; a means for the radio industry to improve broadcast audio quality; a means to stay on par with planned European technologies; an important augmentation to the Emergency Broadcast System; a more efficient means to disseminate advertising on a nationwide basis; and an important new

satellite and launch vehicle market.

Ford Aerospace, which said it pioneered the design and manufacture of communications satellites for military and international uses, said the proposal was "an innovative and promising addition to the radio broadcasting industry, with potential to provide a major advancement in quality and selection of programming."

WHUR-FM in Washington supported establishment of Satellite CD's proposal because it will help create new opportunities for minority media entrepreneurs.

"For example, it will provide viable, efficient and affordable outlets for programming to the public on a local, sectional and national basis," the station said. "It would also allow a local station to expand its listener base and thereby have additional opportunities to increase its revenues."

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# NRSC Tightens Up Procedures

Attempting to "Simplify and Clarify," Committee Addresses Voting, Appeals and Attendance Issues

by John Gatski

**Washington DC** The National Radio Systems Committee (NRSC) has implemented additional procedures governing its meetings and decisions, including official language barring the press from attending meetings.

The procedures also cover membership, meeting attendance, acceptance and distribution of submitted documents, decisions and appeals, according to NAB Science and Technology Senior

VP Michael Rau.

"It should simplify and clarify the administration of the NRSC," Rau said.

## Press still out

Last year, the NAB and Electronic Industries Association, which created NRSC, ruled that the press could no longer attend NRSC meetings claiming the presence of the media could deter frank discussion by members.

The NRSC's procedures now state in

writing that "in order to foster open and uninhibited discussions, representatives of the press are not permitted."

Although the procedures do not men-

## Initial and final approval of a standard requires three-fourths majority. . .

tion whether the NRSC also will continue a ban on members tape recording the meetings, which also was an-

nounced verbally by NRSC attorneys last year, Rau said the tape recorder ban is still in effect.

"That still stands," Rau said. "Because something is not in the procedures, it doesn't mean it is not in effect."

Other specific procedures include a requirement for two-thirds majority for decisions made by NRSC, committee or

subcommittee except decisions involving standards.

For initiating standards development, a three-fourths majority vote by members present at the meeting "may authorize the development of a technical standard proposal."

Initial and final approval of a standard requires three-fourths majority of NRSC members that are mailed letter ballots.

The procedures also state that all negative votes and comments shall be circulated with the letter ballot results and mailed out to all NRSC members with the notice of the next full NRSC committee meeting.

## Resolution of appeals

The newly adopted rules also empower the NRSC chairman to resolve adverse comments or negative votes. If a resolution cannot be made, the objecting party can appeal.

The appeal process requires a written appeal of a standard decision within 30 days. The NRSC chairman then will appoint a review panel to hear the appeal.

The rules do not place a time limit on how long the chairman can take to appoint the review panel and schedule the hearing, but Rau said it would be in the interest of the NRSC to resolve an appeal "expeditiously."

The appeal review panel will consist of the chairman, two NAB Engineering Advisory Committee members and two EIA Radio Engineering Committee members, who have not participated in the development of the proposed NRSC standard.

Once the NRSC chairman chooses the review panel, the NAB or EIA must notify the appellant of the planned hearing at least 30 days in advance of its scheduling.

During the hearing, the review panel will conduct its business in a closed forum and "shall review all relevant NRSC records, hear from NAB or EIA staff liaisons and review all appellant comments" before making a decision.

The panel can either deny the appeal or refer the standard back to a NRSC committee or subcommittee for reconsideration.

The denial of the appeal must be approved by a four-fifths majority of the review panel. If not, the standard proposal must be referred back to the NRSC appropriate committee or subcommittee, according to the procedures.

Rau said it is likely that after a year or two of operating under these procedures, the NRSC may amend them or add any additional wording that may have been overlooked in the new rules.

For more information about the NRSC procedures, contact Michael Rau at the NAB, 202-429-5339.

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# FAA Plan Ignores FM Concerns

by Ben Evans

**Washington DC** The Federal Aviation Administration (FAA) has proposed new regulations that would require many operators of transmitting stations to file notice with the agency if they propose to operate a new station or make changes to an existing station.

The FAA plans are not in line with the FCC's position concerning interference requirements of broadcast operations on air traffic radio operations, an issue under debate for years.

FCC Mass Media Bureau Assistant Chief for Engineering Bill Hassinger said his agency saw the document before it was released for public comment 3 August in the Federal Register and made recommendations. But he said, "It does not reflect our suggestions, and we intend to express our concerns to the FAA."

The new provisions are aimed primarily at new and modified FM and VHF-TV stations. The FAA estimates that between 4500 and 7500 notices will be required to be filed annually under the proposed notification requirements, at an estimated cost to proponents of \$237,000 to \$397,000 over a 10-year period.

If the new provisions are adopted, proposals for new or changed FM and VHF-TV facilities and many other transmitting facilities that require FCC ap-

proval would be subject to FAA approval, including those that do not involve new antenna tower construction.

The proposed EMI rules are the result of a regulatory review initiated by the FAA in 1977 to amend Part 77 of the Federal Aviation Regulations (FAR). Part 77 contains airspace obstruction standards

## The new provisions are aimed primarily at new and modified FM and VHF-TV stations.

and notice requirements for antenna towers and other objects that affect air travel. Comments are due by 31 December.

### Ongoing issue

As justification for the proposed regulations, the FAA points to the Airport and Airway Safety and Capacity Expansion Act of 1987 that requires it to conduct studies of proposed construction to determine their adverse impact based upon specified factors, including electromagnetic effects.

The EMI provision is one of 20 proposals in the FAA's proposed rulemaking. The proposals, according to

the FAA, are necessary to implement the airport and airway safety act.

The aeronautical frequencies are just above the FM band, from 108 MHz to 137 MHz. This interference typically takes place with various combinations of power, frequency, type of receiver, aircraft and how an antenna is mounted on an aircraft.

The FAA is authorized to evaluate antenna tower construction proposals for effect upon the safety of airspace navigation. Until the early 1980s, the evaluation process was limited primarily to the obstruction hazard of a tower to airborne aircraft.

In recent years, however, the proliferation of new FM stations and power upgrades of existing stations raised concern at the FAA that more interference would be caused to aircraft receivers, so the FAA broadened its evaluation to include a routine check of antenna tower proposals for potential to cause EMI to aeronautical facilities.

### CPs denied

Since it began evaluating EMI, the FAA has issued objections for new broadcast tower proposals throughout the US, citing EMI hazards, even for those constructions that would not cause physical hazard to aircraft.

As a result, many broadcasters pursuing new station constructions cannot get a construction permit from the FCC.

The FCC is reluctant to issue a construction permit for a proposed tower construction that receives an objection by the FAA.

Current regulations limit the FAA's review process to new tower constructions that require FAA notification. The FAA, in its current proposal, seeks to require notification of new stations or modifications of existing stations that propose no new construction, or propose to relocate to existing tower sites.

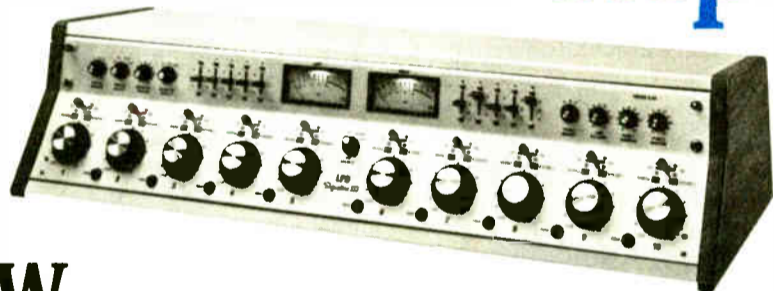
The proposed rulemaking would amend the obstruction standards of Part 77 to include EMI, expand the FAA Form 7460-1 notice requirement to include constructions or modifications of transmitting stations that have the potential to cause EMI, and authorize the FAA regional offices to evaluate the EMI effects when determining whether a proposal would be a hazard to air navigation.

A copy of the proposal, Notice No. 90-18, may be obtained by writing to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Inquiry Center, APA-430, 800 Independence Ave. SW, Washington DC 20591, or by calling 202-267-3484.

Comments mailed should be addressed to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-10), Docket No. 26305, 800 Independence Ave. SW, Washington, DC 20591.

Ben Evans is a partner in the Thiensville, WI-based consulting communications engineers firm of Evans Associates. He can be reached at 414-242-6000.

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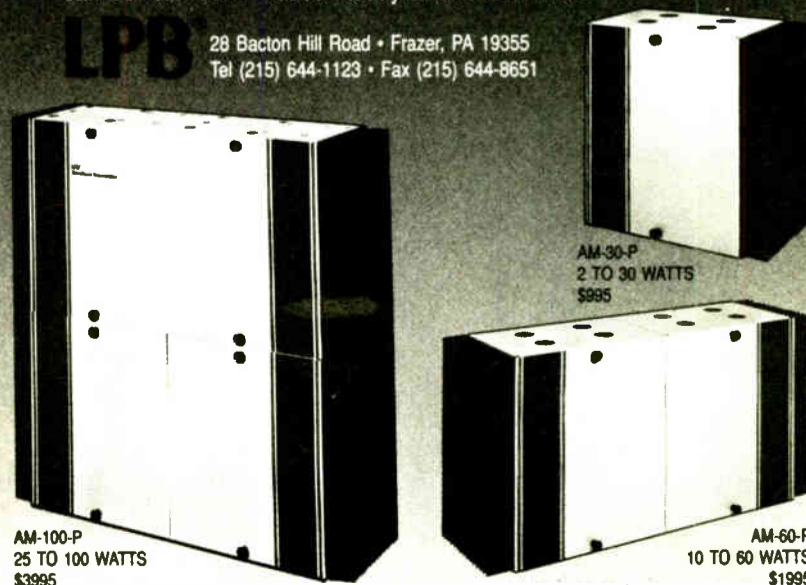
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# SBE Show Preview

St. Louis Oct 4-7, 1990

## SBE Show in a Soft Economy

(continued from page 1)

said broadcast equipment sales are not as brisk as projected.

A sluggish economy's effect on engineer attendance may start to play a role in deciding which shows to exhibit at during the traditional fall trade show crunch, according to several marketing managers.

Numerous companies said there are too many fall shows. A few went as far as saying that SBE is the one to cut back on when budgets get tight, based on past attendance.

Broadcast Electronics (BE) downsized its booth because of the crowded trade show schedule. "We're a little smaller this year," BE Domestic Sales Manager Tim Bealar said. "If you are going to pull back, this is the show to do it."

Radio Systems President Dan Braverman said he has a smaller booth in St. Louis than in Kansas City because of fewer serious-minded buyers at the show last year.

### Not a sales show

"It's a good engineering show, but not much of a purchase show," Braverman said.

Bradley Broadcast Sales Manager Neil Glassman said he decided to forgo SBE again this year because of the glut of fall trade shows. The company last had a booth at SBE in 1988.

"There are too many shows in the fall," Glassman said. "At some point, something has to give."

On the other hand, many companies said they are going with their usual staff and resources, although they still are worried about the economy's effect on attendance.

Harris-Allied National Marketing Manager Dave Burns said his company will

take the same number of people and have the same size booth as last year, but there is uncertainty about the show.

"I think the economy could possibly affect attendance because people who go may have to pay for it out of their own pockets," Burns said.

Audiopak Sales VP Gordon Stafford said his company also is going to the show with the same resources as last year. "But we are a little concerned about the economy having an affect on the attendance," he said.

### Good ol' St. Louis

Several vendors are confident the show will do well because of the stability of being centrally located in the Midwest again.

Last year's show in Kansas City was better attended than anticipated—probably due to it being brought back to the Midwest, after a less than robust convention in Denver in 1988, according to exhibiting companies.

The 1988 show in Denver disappointed many companies because attendance was less than expected, which was attributed to the city's non-central location.

QEI Marketing Manager Jeff Detweiler said holding the 1990 SBE in St. Louis, the same central geographic proximity as Kansas City, will help the show at least for this year.

"It was a lot better last year and we expect good things from this show," Detweiler said.

Although companies don't see St. Louis as a problem, there is plenty of grumbling about next year's location—Houston.

Pacific Recorders and Engineering was one major radio company which pulled out of the SBE national convention entirely, after participation the past few years. President Jack Williams said he tentatively

planned to go to St. Louis this year, but decided against it when he found out SBE was not going to back away from its commitment to have its 1991 show in Houston.

"Had the show elected to stay in St. Louis in 1991 (instead of Houston), it's conceivable we would have gone this year," Williams said. "It was definitely a component in our decision."

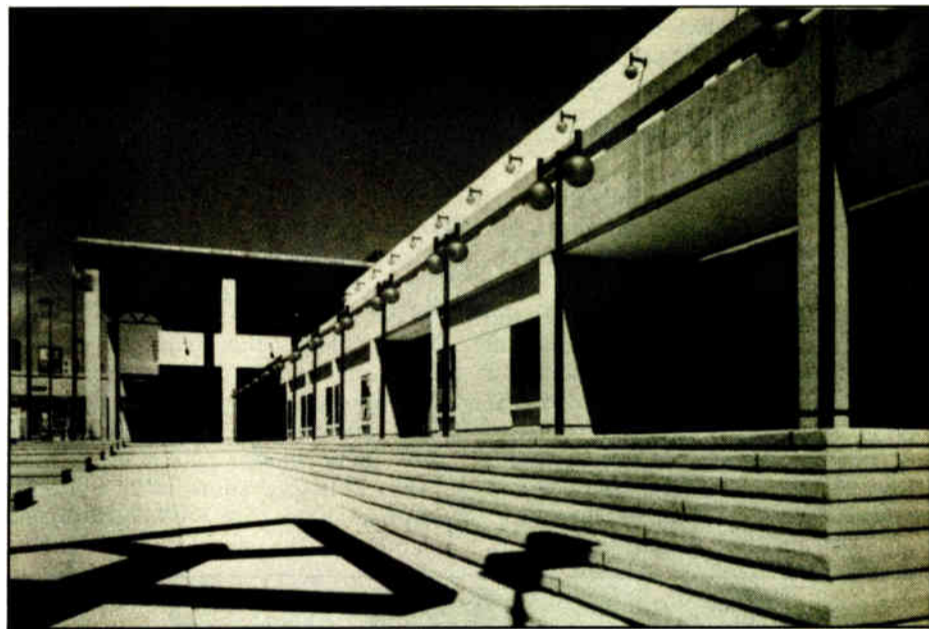
Economic concerns about SBE's ability

ton. It is a questionable place to have a convention," Audiopak's Stafford said.

QEI's Detweiler echoed those sentiments. "We would prefer to keep it in St. Louis where it is centrally located to the national broadcast community," he said.

He said the SBE only has to recall the dissatisfaction of vendors at the Denver show to understand how companies feel. "They tried the experiment (moving the show) and it didn't work," Detweiler said.

Harris-Allied Burns said companies should pressure SBE to move the show from Houston to St. Louis in 1991 and keep it there or risk dredging up the ani-



St. Louis' A.J. Cervantes Convention Center will serve as the venue for SBE's 4-7 October conclave.

to be a selling show also played a part in the company's decision, he said.

Instead of SBE or the NAB radio show in Boston, PR&E will attend an unnamed European show, Williams added.

Other companies also indicated less-than-enthusiastic support for holding the 1991 show in Houston.

"We had some experience with Hous-

mosity created during the Denver show.

"They resuscitated it in Kansas City. They will nurture it in St. Louis, but they'll kill it in Houston," Burns said.

CRL is going to St. Louis, but Marketing Manager Bill Ammons said it is doubtful the company will go to Houston.

"It's too far from the middle of the country," Ammons said. "They really ought to go out and ask the exhibitors what they think."

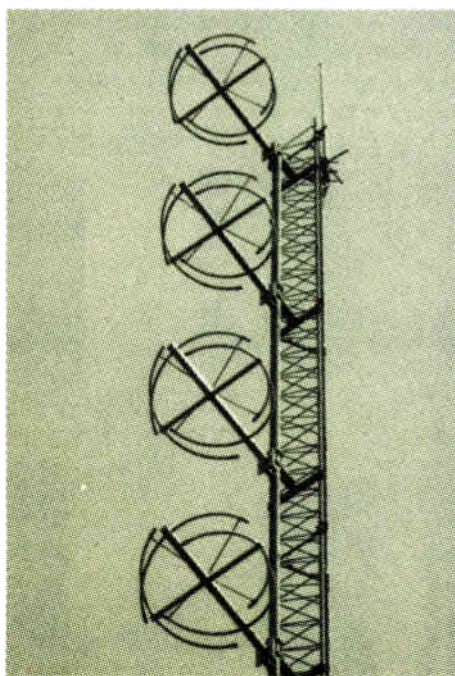
Barker, whose company is based in Dallas, defended Houston, calling it a good convention town. He said engineers and manufacturers will enjoy it.

"We are very comfortable with it. We think it's going to be a great show," Barker said.

Barker also defended moving the SBE show to various cities during the past few years. "I think it has been successful over the past three years, moving it about," he said.

The Houston location will not be changed, according to Barker, because contracts with the hotels and George Brown Convention Center have been signed.

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## Stations Discover Hidden Assets

**Trade-in, Trade-out: Save Big Bucks with Equipment Exchange**

by  
**John Grayson**  
Harris Allied Chicago



Our typical used equipment success story starts out with a scenario that may be easy for you to identify with.

Transmitter rooms so full of used radio gear it's difficult to find the transmitter. A workshop cluttered with discarded equipment stacked so high it's difficult to tell the test jig from the broom closet.

Management finally budgets for that new piece of gear you've needed for so long. The only hitch is that the price has gone up several times since you put in the capital request two years ago.

Here we are coasting along on an empty or insufficient budget and the program director announces a format change "from all music all the time" to "your source of news and talk radio 24 hours a day" . . . you need a phone interface and some new microphones tomorrow.

In more than one situation, listeners have discovered that a station is doing its talk show without a profanity delay.

In another specific case a station's 12-year-old stereo generator has just degenerated and the old reliable standby is setting off the smoke detector.

### Solution and Proof

The Harris Allied Equipment Exchange is a resource that many stations use regularly to solve their new equipment purchase budget problems!

Just last year a major metro AM/FM combo cleaned out a transmitter building and more than six studios' worth of old gear. They sent THREE truck loads of abandoned radio hardware to Allied's used equipment department. All of this effort paid off in \$30,000 directly applicable to several new needs that had always been cut from budgeting considerations. They also reclaimed untold amounts of space in their transmitter building.

A Minnesota customer called to order a phone hybrid only to discover that the price had increased since the last time he checked. By trading in some old cart machines and a modulation monitor, he was not only able to cover the increase, but also upgrade it to a top-of-the-line DIGITAL hybrid!

Recently a medium market customer learned of a format change and came to us for new microphones. The customer had a budget placed somewhere between slim and none. However, by trading in some gear, he was able to buy the new mics which shipped the same day he called!

To find out just how fast a program director can move, let his listeners figure out that his station isn't doing their phone-in show with a profanity delay. One station didn't have a profanity delay because they thought they couldn't afford it. It turns out they couldn't afford to be WITHOUT one. A used equipment trade-in to the Harris Allied Equipment Exchange made the profanity delay possible!

Two years ago a small market station in Wisconsin lost its stereo generator. Then they lost their backup. Then they called Harris Allied. The new stereo generator arrived the next day, 100% paid for with used equipment they were able to dig up!

### The Hard Way

SELLING used gear yourself ties up your switchboard making you very unpopular with your receptionist.

How do you transact a sale with someone you don't know? They don't want to send

the money until they've seen your used gear . . . you don't want to ship your used gear until you have their money.

### Simple and Clean

Trading in your used gear with Allied is very simple. Give us a call for an appraisal. We'll do all the foot work, evaluating your trade-in equipment against the new gear you need and call or fax you back with a quotation which will save you many dollars or, possibly, trade out the new equipment you need for the used equipment you have!

We're easy to do business with. There's a good chance your station is already on account with us. Your used equipment acts as a credit toward the new equipment you need.

### In a Nutshell

You can talk to us today about the used equipment you have and the new equipment you need. If you're serious about trading in your used equipment to save dollars, there's a good chance we'll make a deal. Or, you can have 68 tire-kickers call you about each of the items you have for sale. The choice is yours.

Check around. You may be sitting on a wealth of used equipment. Give us a call. Remember, we buy, sell and trade selected used equipment.



All this used equipment was turned into valuable dollars toward the new equipment several radio stations needed. Leasing may provide finances for the balance.

## MACH 3 for AKG DSE

**The New Speed of Sound takes the fear out of flying**

A spot that used to take Dan McCoy an hour to produce now takes only 20 minutes.

Dan McCoy was the first radio production director to use the DSE 7000. Dan says he saw it revolutionize the way production is done at one of Boston's top radio stations, WZOU.

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Dan McCoy calls the DSE 7000 "The most impressive thing that's ever happened to radio."

### Radio And Production Believes

Jerry Vigil, editor and publisher of RAP, the RAP sheet for radio's production personnel, writes in the August issue, "our hats are off to AKG Acoustics for the most serious approach to digital audio work stations designed for radio our industry has ever seen."

Jerry leaves no doubt about the direct aim taken by AKG on the radio production market. "AKG didn't contact major recording studios or engineers at radio stations across the country and ask what they



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thought their production directors could use in their studios. Instead, AKG spoke directly to the people who spend their days cranking out spot after spot, promo after promo, sweeper after sweeper."

Jerry summarized, "The machine is called the DSE 7000, and it belongs in every radio production room where speed, quality, and ease of use are the top priorities."

Jerry Vigil's comments are used by permission of Radio And Production, P.O. Box 150265, Irving, TX 75015-0265, (214) 254-1100.

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# Exhibitor Directory

The following is a list of SBE exhibitors of interest to radio stations. Booth numbers were supplied by convention management and may change; check with SBE at the convention.



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Our new 210 radio console looks remarkably similar to our 12-year-industry-leading 200 radio console...until you look beneath the surface. Inside the 210 you'll find improvements in every section you can hear and use. From our new lower-noise input preamplifiers to our new transformerless output modules. From our new overbridge and broader acces-

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3M Professional Audio/Video	926
Allied Broadcast Equipment	910
Allied Tower Co. Inc.	2041
Altronic Research Inc.	905
Andrew Corp.	1010
ATI-Audio Technologies Inc.	705
Audio Accessories Inc.	2015
Audio Precision	722
Audiopak Inc.	2019
Broadcast Electronics Inc.	716
Broadcasters General Store	1417
BSW/Broadcast Supply West	616
Burk Technology	2020
Central Tower Inc.	903
Century 21 Programming	1307
Circuit Research Labs	711
Coaxial Dynamics Inc.	2030
Comrex Corp.	1510
Continental Electronics	1110
Crouse-Kimzey Co.	724
Current Technology Inc.	1422
Dataworld	819
Delta Electronics Inc.	1111
Denon America Inc.	1124/1126M
Di-Tech Inc.	607
Dielectric Communications	816
Dolby Laboratories Inc.	1310
Econco	806
Electronics Research Inc.	2018
Fidelipac Corp.	1016
Flash Technology Corp.	1924
Gentner Electronics Corp.	1516
Harris Broadcast	910
Holiday Industries Inc.	610
Ice Crackers Inc.	901
International Tapetronics Corp.	1513
Jampro Antennas Inc.	2031
JVC Professional Products Co.	1303
Kintronic Labs Inc.	918
LDL Communications Inc.	700
Lightning Eliminators & Consul	812
LPB Inc.	704
M/A-Com MAC Inc.	1223
Marti Electronics Inc.	2029
Modulation Sciences Inc.	1927
Moseley Associates Inc.	2033
Motorola Inc./AM Stereo	916
National Supervisory Network	2039
Otari Corp.	710
Panasonic Broadcast Systems Co.	1323
Potomac Instruments Inc.	1401
QEI Corp.	1028
Radio Systems Inc.	924
Rohde & Schwarz Inc.	606
Scala Electronic Corp.	1311
Sennheiser Electronic	1405
Shively Labs	929
Sony Communications Products	1001
Sound Technology Inc.	1304
Studer Revox America Inc.	1200
TFT Inc.	623
Tri-Tech Inc. d/b/a Cellcast	603
Wheatstone Corp.	1006

SBE booth numbers were correct at time of publication. Radio World assumes no liability for errors.

# SBE Activities Schedule

## Thursday, 4 October

### Morning Session: State of the Broadcast Industry

7:30 AM No-host continental breakfast

8 AM Conference Opening and SBE Membership Meeting  
Brad Dick, SBE president John Battison, conference chair

8:45 AM NAB Looks to the Future Michael Rau, NAB. A glimpse into NAB's plans for the Fifth Estate.

9:25 AM Overview of the World of Broadcasting Wally Johnson, Moffett, Larson and Johnson. A former chief of the broadcast bureau looks at today's achievements in the industry.

10:05 AM Engineering at the FCC Tom Stanley, FCC. The Commission's work goes far beyond issuing violation notices.

10:45 AM FCC vs. FAA: Are Solutions in Sight? Moderator: John Chevalier Jr., Aviation Systems Associates. Panelists: William Suffa, Lahm, Suffa & Cavell Harry F. Cole, Bechtel & Cole William Hassinger, FCC Steve Rothchild, FAA. A panel discussion about problems between the FCC and FAA that have broadcasters caught in the middle.

Noon End of Morning Session—Lunch Break

### Afternoon Session: The Regulation Front

1 PM Avoiding Pirate Radio Interference Don Bishop, *Mobile Radio Technology* magazine. Pirates may capture listeners, but the FCC eventually sinks the pirates.

1:40 PM Dealing With PCBs Kent Kroneman, KUED-TV, Salt Lake City. If you're going to have a hand in any dealings with PCBs, wear kid gloves and do your homework.

2:20 PM Reality Check: Broadcasting Today Jerry Whitaker, *Broadcast Engineering*. What lies below the waves?

3 PM FM and the FCC Robert Greenberg, FCC. A look at the latest happenings in the world of FM

3:40 PM FCC Field Enforcement James Dailey, FCC. How to avoid those pink slips.

4:20 PM FCC Roundtable Moderator: John Battison, conference chair. Panelists: Keith Larson (LPTV) John Reiser (international affairs) John Sadler (AM) Robert Greenberg (FM) Tom Stanley (mass media bureau). Your chance to pick the FCC's brains.

5:45 PM End of Afternoon Session

6-8 PM Attendee Reception in Exhibit Hall An informal get-together with friends, exhibitors and SBE officers.

8-10 PM Night Owl Session: Audio Processing in the NRSC and Digital Age Moderator: Bill Ammons, CRL Systems. Panelists: Kelly Hannig, Gentner Electronics Frank Foti,

Cutting Edge Charles Harbrick, QEI Sandra Woodruff, KFWB-AM. Find out how the pieces of the NRSC and digital puzzle fit together.

## Friday, 5 October

7:30 AM No-host continental breakfast

### RF Technology, Part 1

8 AM Directional Antenna Assessment Tom Osenkowsky, consultant, Brookfield, CT. It is imperative to keep tabs on how well your DA is accomplishing its intended job of area

coverage.

8:40 AM Constructing a Tight-Budget FM Station John McKinney, WJMR-FM, Fredericktown, OH. How a penny-pincher puts a successful FM station on the air.

9:20 AM Topic and presenter to be announced

10 AM Close of Sessions

10 AM-3 PM Exhibit Floor Open

Noon Free walkaround lunch with paid admission

New Technology for Radio, Part 1



St. Louis Union Station houses shops and entertainment, as well as the Hyatt Regency hotel.

3 PM Solid-State FM Transmitters Greg Stone, Varian/Continental Electronics. An exami-

nation of the technology and its trade-offs.

(continued on page 15)

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# Convention Boasts Full Slate

(continued from page 13)

**3:40 PM Engineering an All-Digital-Disc Audio Facility** David M. Schwartz, Compusonics. Digital discs require first-class support.

**4:20 PM Infinite Remote-Control Expansion** Ron Steenwald, WKLQ-FM, Grand Rapids, MI. Why stop at one control point or system?

**5 PM Interfacing Digital Telephones** Paul Anderson, Gentner Electronics. Connections that were once a snap are now potential troublemakers unless they're handled properly.

**5:40 PM Close of Sessions**

**6-7 PM Ham Radio Reception**

**Saturday, 6 October**

**8 AM** Hosted continental breakfast with exhibitors on convention floor. Receive a free SBE coffee mug with paid registration.

**8 AM-1 PM Exhibit Floor Open**

**Noon** Enjoy an informal lunch of pizza and beer with exhibitors on the convention floor.

**New Technology for Radio, Part 2**

**1 PM PC Automation** Michael D. Rich, Media Computing. If personal computers can rule the world, one could keep

things running at your station.

**1:40 PM Theory and Practice of Fiber Optics** Ralph Evans III, Evans & Associates. Intelligent applications of fiber optics in radio depend on a clear understanding of the technology.

**2:20 PM Living With Combined Cavity-Back FM Antennas** Fred Pantsios, Harris Corp. A discussion of the new technique of "one antenna, many transmitters."

**RF Technology, Part 2**

**3 PM Graphical Presentation of an FM Channel Search** Doug Vernier, Northern Iowa University. A must for anyone who has ever wondered what an FM allocation looks like on paper.

**3:40 PM Is Your STL Antenna Too High?** Carr Stalnaker, contract engineer, Cabot, AR. Believe it or not, the sky is not the limit when it comes to your facility's STL antenna.

**4:20 PM Keeping Broadcast FM Technically Competitive** Tom Keller, Broadcast Technology Partners. Today's FM dilemmas call for new techniques, such as diversity, Walsh decoders and FMX.

**5 PM Accurate PA Tuning for FM Transmitters** Mukunda B. Shrestha, Broadcast Electronics. "Dipping the plate" may no longer be enough.

**5:40 PM Close of Session**

**5:45 PM SBE Reception/Dinner/Entertainment** Join in a tribute to SBE's lifetime members and enjoy the comedy of entertainer Calvin Coolidge, back by popular demand.

**Sunday, 7 October**

**Frequency Coordination Update**

**9 AM Frequency Coordination** Richard Rudman, KFWB, Los Angeles, and Gerry Dalton, KKDA, Grand Prairie, TX. If you're not part of the solution, you're part of the problem. Are you coordinating or interfering?

**Engineering Workshop: Preparing for a Disaster** Workshop Coordinator: John Battison, conference chair

**10 AM Lessons Learned From the San**

**Francisco Earthquake** Peter Hammar, Hammar Communications. The big shake-up brought broadcasters face to face with the uncertainties of true crisis-mode operation.

**10:40 AM How We Handled Hurricane Hugo** David Bird, WTAT-TV, Charleston, SC. Broadcasters joined forces against Mother Nature's fury and undoubtedly saved countless lives.

**11:20 AM EBS at Work** Bill Ruck, KFOG/KNBR, San Francisco. How EBS fared during the San Francisco earthquake.

**Noon Close of 1990 Convention** John Battison, conference chair.



Laclede's Landing, the city's restored area, stretches out its cobblestone streets under the gaze of the Arch.

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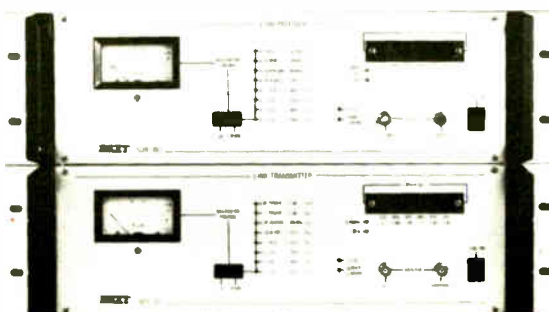
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# The Perils of Personnel Policies

by John M. Cummuta

**Downers Grove IL** Could you imagine the military without policies? If there were no chain of command, no consequences for disobedience, no rewards for proper performance—what kind of chaos would result?

Could you imagine a successful business without policies? Although in smaller businesses these rules and organizational performance standards are often unwritten, if the company works, you can bet that there are acknowledged and enforced policies.

So does that mean, "The more policies

the better?" Nope. It means, "The better policies the better." In fact, it is an increasing reality that there are situations

## ENGINEERING MANAGER

where having no policy is highly preferred to having a weak or misleading one.

It's probably a symptom of our lawsuit-crazy society, but more and more employees are holding employers hostage, because of poorly conceived or poorly

enforced policies. It's gotten to the point where you've got to be meticulous about every element of employer/employee relations.

While most people are aware of the more publicized policy liability examples, such as age or sex discrimination, or sexual harassment, I'm going to cover a few less obvious areas where you'll want to keep your policy ducks lined up.

### What's a policy?

Before I get into specific policy considerations, it's important to understand that any communication from "Management" can be perceived as a policy. More

than that, it can be used against the company or a specific manager, in a court of law, whether it was written or verbal.

Many company leaders think that the only policies they can be held responsible for are those that are chiseled into their corporate policy manual, but that's a dangerous misunderstanding to have. Memos from management can be considered as policies, and thereby amendments to the company policy manual. Even speeches made by corporate leaders can be interpreted as policies.

And when I say "Management," I mean anyone with the title of manager. That probably means *you*. Be careful what you say, and even more careful of what you put in writing. If you have any misgivings about a rule, regulation or policy you're about to pronounce, run it by the owners or station manager, to see if they want to be held accountable for that position.

### Points to consider

Avoid being overly considerate in your policy manual. Don't commit your company to any policy that may turn out to be inappropriate to future circumstances.

For example: Let's say that you state that you'll *never* invade an employee's privacy. Then you find out that one of your engineers has an alcohol problem—which occasionally manifests itself when that person is driving the station van.

Or how about if one of your people starts dating a highly-placed staff member of a competitive station? And the person on your staff is in a position to pass along strategic information to his or her new love?

While you might appear to be perfectly justified in telling both of these people to change their personal situation or face dismissal, they could sue you for breach of the policy that committed you to staying out of their personal lives.

You see, policies are considered—for all practical purposes—employment contracts. They can be, and usually are, enforced as binding on the employer. So that they are not to be taken lightly, nor

(continued on page 18)

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# New York Gets a Spanish Accent

by Dee McVicker

**New York NY** Through a series of complex transactions involving a number of New York area stations, Spanish Broadcasting System acquired 97.9 on the dial in February of 1989. Then, things got complicated.

While a new facility was being completed, the group's AM housed the newly acquired FM. Already cramped for space in its facility near New York's Times Square, the AM made available its news booth for a make-shift FM control room.

## FACILITIES SHOWCASE

Also residing in these confined quarters was an in-house representative agency formed by Spanish Broadcasting; it required space for at least ten employees.

### Townhouse setting

Meanwhile, Chief Engineer Dan Lohse got to work renovating a six-floor townhouse in midtown Manhattan for Spanish Broadcasting's WSKQ-AM/FM stations and representative agency SBS network. To fit its new purpose, the townhouse needed considerable work.

Although it stands six stories tall and 22' wide, the townhouse challenged even the

most ingenious layout designs. Initially, the plan called for putting studios on the lower floor, below street level.

This, however, was quickly ruled out—the group would have needed to trench out concrete flooring, at 2' deep, to put ducting underneath for an air handling system. The cost was prohibitive.

"I think we must have tried ten different locations in the building before we finally settled on the fourth and fifth floors for all the technical (studio) space," said Lohse, who worked with project engineer Ron Schiller of Tele-Measurements to implement a viable solution.

The solution, however, required a new addition to the building. Because studios would now take up two floors of the townhouse, a new wing, adding another 20' to the depth of the building, was needed in order to adequately isolate studios in a floating floor environment.

In addition, said Lohse, "We went up another two, two-and-a-half stories for a mechanical penthouse where all the air conditioning, air handlers and that kind of thing (were installed)."

### Checking the list, twice

Once these arduous tasks were completed, Lohse and Schiller began cross-referencing equipment lists. There were two: a list from the old facility and another from Rockefeller Center. The long



WSKQ's Station Manager, PD and air talent Tony Campos, on the air at FM-98.

complex transaction that resulted in Spanish Broadcasting's acquisition of WSKQ-FM also included an inventory of equipment from WNBC's previous facility in Rockefeller Center.

Explained Lohse, "Before purchasing the FM, Spanish Broadcasting purchased 1050-AM, which at that time was WFAN, owned by Emmis. The deal was

we would buy that (WFAN) and in turn give that to the owners of WEVD (now WSKQ), plus a chunk of cash."

Meanwhile, said Lohse, "Emmis was also at that time purchasing WNBC's property. Since Emmis already had studios, we in turn—because we were not getting a studio with it—got all the studio

(continued on page 21)

## Computer Automation

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# Protection from Policy Pitfalls

(continued from page 16)

used indiscriminately to put out momentary fires. Their effect could be long-lasting and potentially devastating.

## Don't imply "forever"

Avoid including statements that imply "lifetime" employment. Making statements like, "You're joining the company family," or "You'll be taken care of, as long as you do a good job," are grist for the lawyer's mill. They can be distorted to represent guarantees of a permanent position, and you could be sued for wrongful discharge for letting one of your "family" members go.

Instead of such "belonging"-type statements, start your policy manual off with visionary concepts, company goals and team attitudes. When describing terms of employment, use words like "at will," which means that it's up to the company.

That does not mean that you can simply blow people off the payroll whenever the whim strikes you, because there are existing labor laws covering an employee's rights, which override your company policies whether they're written or unwritten. What we're talking about in this article is how to avoid creating greater responsibilities for your company than federal labor laws already

place on you.

Who do the policies cover—and who do they *not* cover? If specific groups, such as "managers," are *not* covered by standard policies, make that clear in writing.

The obvious problem you'll face if you don't is that, if you have to discipline or discharge one of these "uncovered" personnel, they could say you violated company policies. The fact that the referenced policies are *not* supposed to pertain to them will not hold water, unless that exception has been clearly made in the policies themselves.

## Be aware of restrictiveness

Also, avoid creating discipline procedures that are too restrictive. There are situations and offenses that would rightfully justify immediate dismissal of an employee. But if your policy manual commits your company to a policy of progressive discipline—without clearly delineated exceptions—you may find yourself unable to fire a person for a specific offense.

You'll have to give them a warning and wait for them to commit another crime before you can take them to the next step of the process.

## Beware of specificity

Avoid being too specific in work rules. Be careful about declaring specific parameters that will lead to specific dis-

ciplinary actions by the company. While this might sound contrary to statements I've already made, I'm really only talking about particular situations that lend themselves to abuse.

For example, absenteeism. If you delineate a specific number of days of absences that will lead to a specific reaction by the company—escalating up to discipline or discharge—you're telling unscrupulous employees exactly how many "free" days off they can take without getting fired.

It's better to say something like, "Excessive absences can lead to discipline or discharge." Then you can describe "excessive" on a case-by-case basis.

## A few more to watch out for

Loosely-worded severance-pay policies, committing the company to periodic raises and failure to reserve the right to amend policies are three more opportunities to get the company into irreversible situations that could prove disastrous.

The bottom line is that "Murphy's Law" operates liberally in the area of employee relations, so whenever you're establishing or modifying personnel policies, consider all the possible ways that each new rule could be used against your company's best interests.

You might save yourself having to experience each nightmare first-hand.

■ ■ ■

*John Cummuta is president of Advanced Marketing Concepts, Inc., a broadcast management and marketing consulting firm, and a regular RW columnist. He can be reached at 708-969-4400.*

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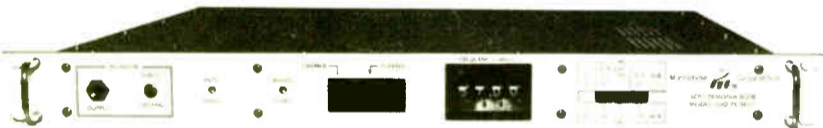
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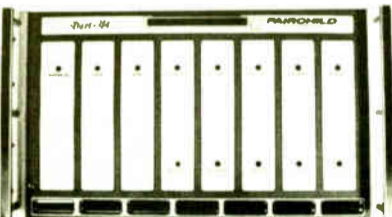
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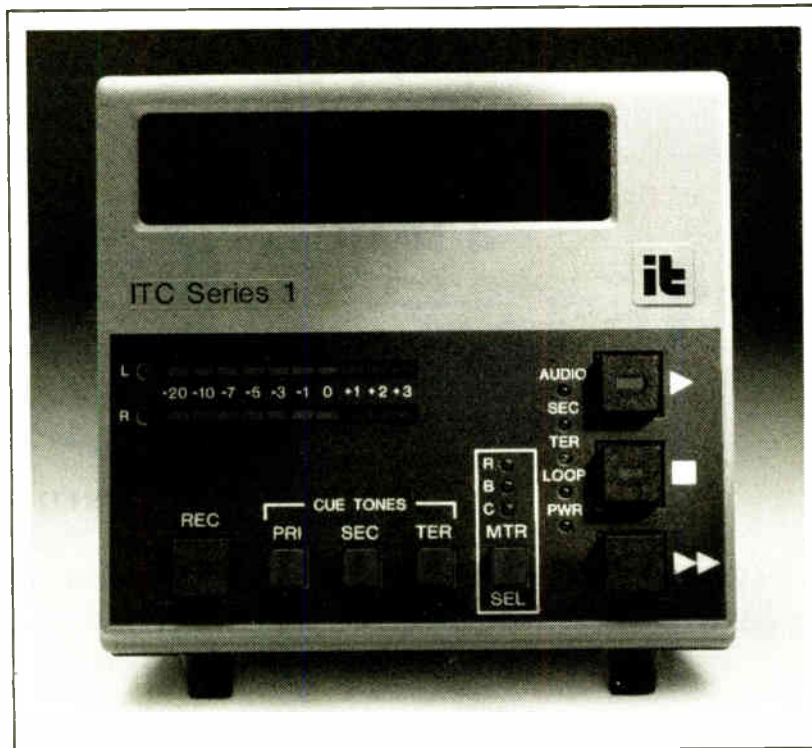
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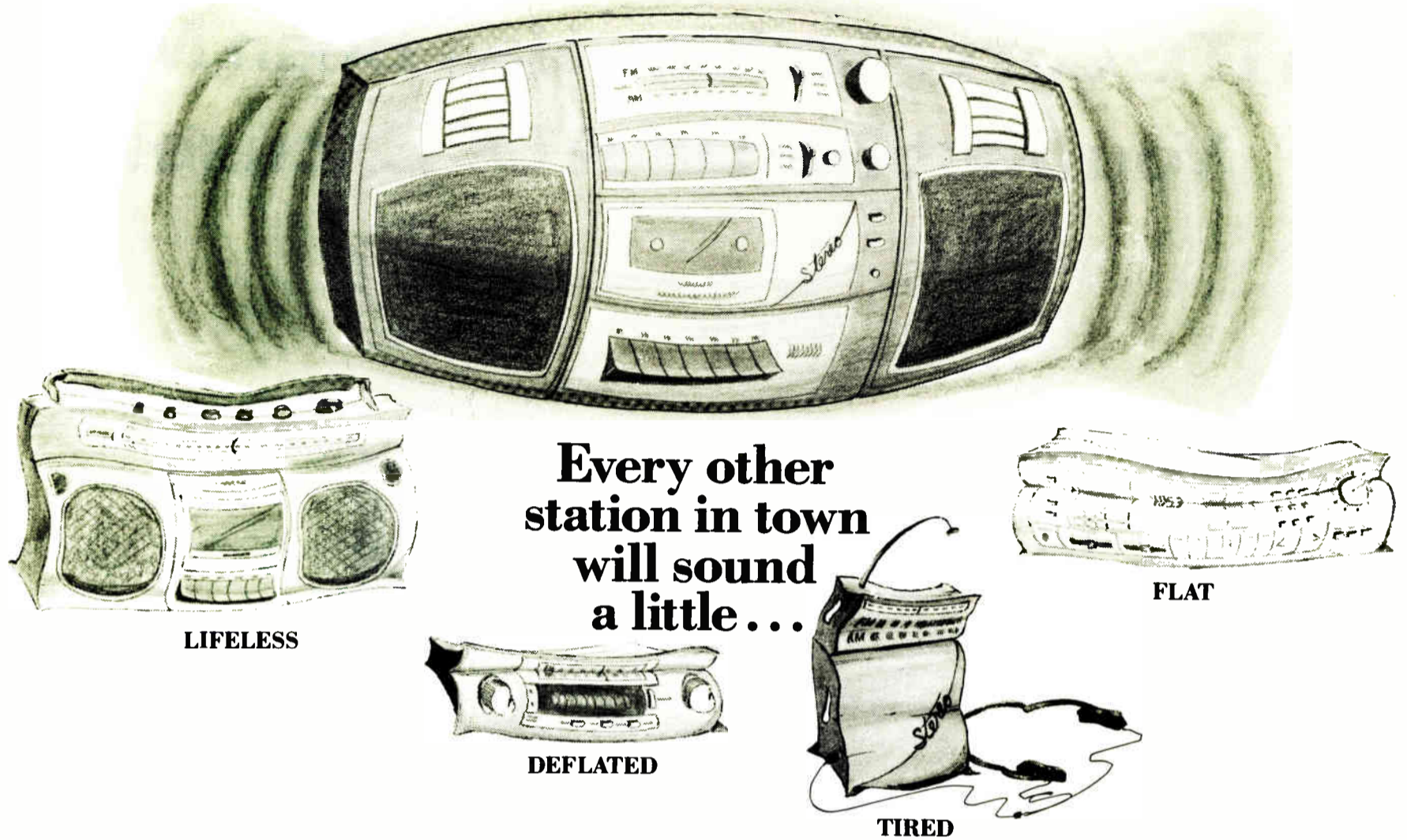
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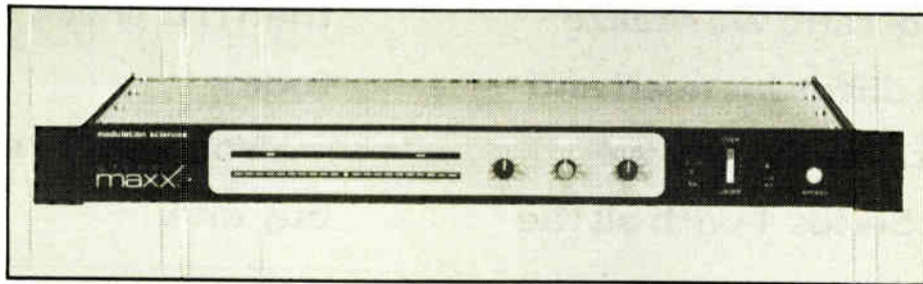
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# Constructing Studios for WSKQ

(continued from page 17)  
 equipment from NBC." To further complicate matters, the new owners of then WFAN ended up with NBC gear as well. Although some of it was fairly dated, most of the NBC equipment was state-of-the-art and in good condition. A Pacific Recorders & Engineering BMX-22 console, a few Otari recorders and a Utah Scientific switcher were just a few of the pieces to make their way from the NBC studios to WSKQ's new facility. All equipment, including a few purchased items, was consolidated at Tele-Measurements' facility in New Jersey for pre-wiring and pre-testing prior to installation.

## Throwing the switch

In January, after months of planning and laboring, Schiller and Lohse threw the switch to the new facility in midtown Manhattan. The FM had been moved first, and four hours later, the AM. Amazingly, it was a smooth transition. Commented Schiller, "None of these rooms were tested as a complete system. They were all tested individually. We never knew until the major switch if we would have a catastrophe on our hands." Installed on the fifth floor of the renovated townhouse are a newsroom, news studio, technical operations center and AM and FM control rooms. On the fourth floor are the stations' 2-track and 8-track production studios.

The AM and FM on-air studios both use Harrison consoles with ITC 99 cart machines, Denon CD players, and Otari MX5050-BII reel-to-reels. "All channels are identical in both rooms," pointed out Lohse. "The only thing that differs is in the size of the studios and the furniture." The AM, which airs a Spanish news program a good part of the morning, needed the extra footage for increased production activity and five talent positions. In contrast, the FM has two talent positions for its Spanish Top 40 format.

## From furniture to equipment

The furniture, described by Lohse as having "all kinds of reveals and exotic formica," was built by a New Jersey company, which was able to incorporate some of the cabinetry from WNBC. The cost of furniture, said Lohse, "was probably around \$10,000 to \$15,000 a room." The two production studios were fitted with the same source gear found in the air studios, which were married to PR&E BMX consoles. In addition, dbx 900 rack frames, including flangers, compressors, de-essers and noise reduction, are used in both studios, with the 8-track having MIDI capability as well. For telephone hybrid, Lohse installed Gentners. Three 18-line Gentner units, one each for AM and FM and another

for the 2-track production studio, are located in the stations' technical center. To change feeds going into the phone system, the SDA-8, a combination distribution amp and switcher, was used. Said Lohse, "In most cases, the send portion of the telephone system was fed from the clean feed of the consoles, but it could also pick up any point in the facility and feed that back down or create all kinds of mix-minuses back down the phone line."

## Switcher setup

The Utah Scientific central switchers, residing in the stations' terminal room, feed the various studios in the facility as

well as the GM's office, so management can punch up any studio from an office stereo system. In addition, said Lohse, "AM and FM control have two switcher control heads that take 20 feeds apiece." The control heads, which pick up identical feeds in the AM and FM air studios, and the hard-wired feeds coming in from some 20 Gentner distribution amps in the terminal room, offer studios triple redundancy. Said Lohse, "If you can't get something on one channel, you can definitely get it on another, or another, or another." Dan Lohse, who spent long hours with Ron Schiller implementing WSKQ's

studios, recently left Spanish Broadcasting to join newly formed Digital Plant, a subsidiary of Digital Radio Labs. Ron Schiller also recently vacated his post at Tele-Measurements, and is now general manager of Digital Plant. The two are currently knee-deep in another project, which will be delivering 91 channels of compact disc music to cable subscribers within a few weeks. Spanish Broadcasting, meanwhile, is making use of all six floors of WSKQ's new facility in midtown Manhattan. General Manager Tony Campos reports that station personnel are breathing easier with the increased production capability—and space. ■ ■ ■  
 Dee McVicker is a free-lance writer and regular contributor to RW. To inquire about her writing service, call 602-899-8916.

# Affordable: The Real Definition

## Sound Stage

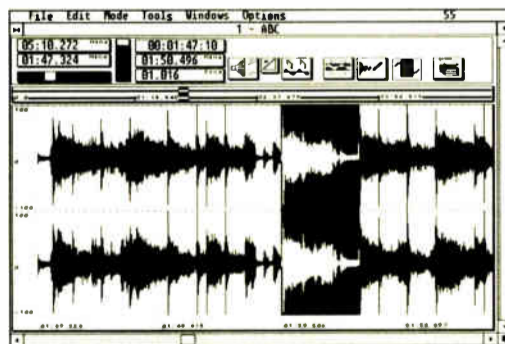
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# Benefits of Adding Crosstalk

by Barry Mishkind

**Tucson AZ** I'm about to recommend to you that you install some crosstalk in your station!

That might seem a bit strange a first: Normally in these pages you would read information on how to reduce or eliminate crosstalk. But as you'll see, adding crosstalk to your computer will improve its link with the outside world.

## To pay or not to pay

There is no lack of telecommunications programs. They range from free programs packed in your modem box to shareware programs that you can register for at a modest fee to commercial applications.

## KEYBOARD CONNECTION

Are you looking for something simple to get your modem to dial out? Then virtually any telcom package will do the job, even the free ones.

But, let's move to the next level and ask: What features are important to you when you go on-line? Screen capture and file downloading come to mind immediately as important. Then perhaps the actual connection process itself.

Screen capture is when everything

that is on the screen is copied to a file on your disk, so you can re-read it later.

You might use it with RABCOOP, the co-op report service of the Radio Advertising Bureau. Since you're paying something like a dollar a minute, hand copying data from the screen can be expensive.

A capture directs everything that comes to you into a file. Then you can hang up and review the data carefully. Or, edit it and print it out after "cleaning" it up.

File downloading is used for coded files and programs that you will then use. Obviously, accurate transmission is essential so the program will run properly. There are a number of "protocols" or methods of transmission used, providing protection from errors.

One such protocol is ZModem, a speedier improvement on XModem, YModem and others. If you intend to do any amount of file transfer, it is wise to have a telcom program featuring ZModem.

## Telecom connection

A telcom program can also help make the initial connection. It should have an easily accessed directory of numbers you call. A few keystrokes should bring the right number to the screen.

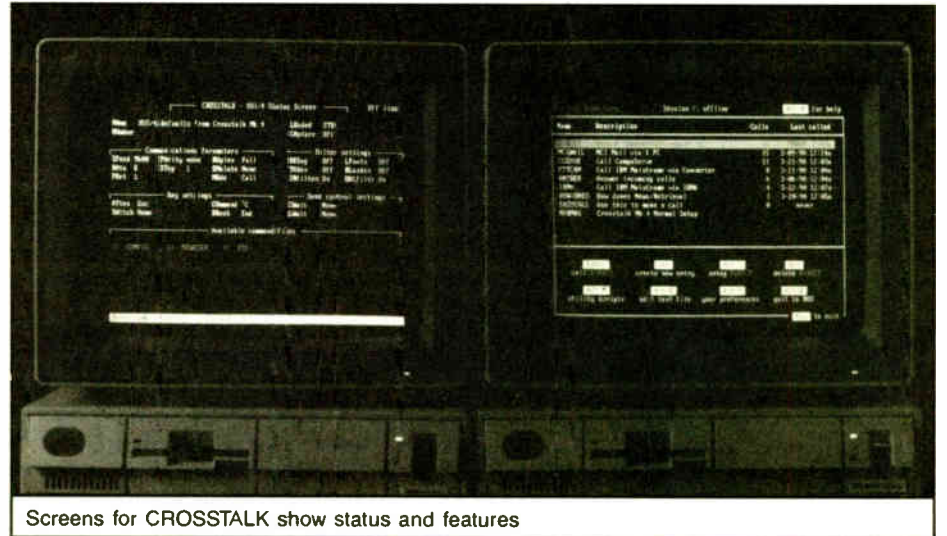
And since most computers to which you'll connect will require that you enter a user name and password, a pro-

gram that stores and even "plays" these back is a real convenience.

As mentioned earlier, many modem boxes come with programs. They are, like BitCom for example, simple. They don't have a lot of features, but they get

ProComm, QModem and Telix all offer dialing directories, with fairly easy screen capture and file transfer. However, the version of QModem that I used required an external program to run the ZModem transfer protocol.

While that's not an insurmountable problem, if you're a novice user, perhaps another program, like Telix with ZModem built in, is a better choice. Scripts to automate connection with BBSs and



Screens for CROSSTALK show status and features

you on-line. If that's all you want, the price is right. Free.

ProComm, QModem and Telix are three shareware packages that have developed over the years into pretty powerful tools. (Shareware is software that is distributed and copied freely; often the current version is on a BBS near you. If you use the program regularly, you are expected to register and pay a modest fee.)

They come complete; a manual is even included to print out or read. However, they can run to 300 pages or more; by the time you pay for paper and copies (remember laser printers cost three to five cents a page to operate), it adds up fast.

Paying the registration fee is often easier and not much more expensive. As a bonus, registration entitles you to telephone support to answer your questions.

other computer services can be constructed with some effort.

Registration for these shareware packages runs under about \$50. One key point: With shareware, you get the program to try out from the companies or a local BBS; so try before you buy.

## Pay more, get more

Then there are the commercial packages. Two of the best I've worked with of late come from DCA: CROSSTALK Mk. 4 and CROSSTALK for Windows.

Both of these programs have similar foundations, the popular CROSSTALK XVI (so popular that at least one clone program was produced as a look-alike). The major difference is (surprise) CROSSTALK for Windows was designed to run in Windows, and was recently enhanced to run in Windows 3.0 with its neat point and shoot feature as

(continued on next page)

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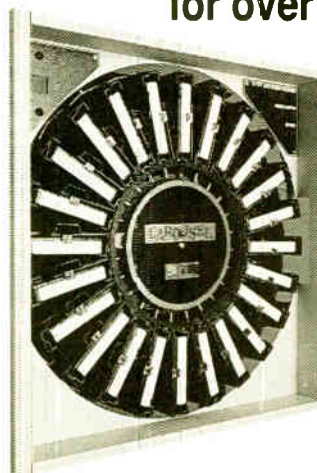
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# New BBS Listings

There has been a lot of activity on the BBS scene in the past few months. Here are some highlights.

- MediaNet is being carried by a lot more BBSs, and Relay International Message Exchange (RIME) is now starting an engineering conference to complement its general radio conference.

- There may be a non-broadcast BBS closer to you that runs one of the national echos.

- FidoNet, RIME and MediaNet are now all running engineering conferences. There is some effort being made to tie them together in the near future.

- All BBSs run at least 2400 Baud. A rate of 300 baud is becoming unacceptable on many boards.

- Australian readers can connect with Broadcast On-Line, a MediaNet node. Their number is (011-61) 2-416-9279.

## Crosstalk

(continued from previous page) well as keyboard operation.

Although a little more expensive, CROSSTALK comes loaded with lots of features, some not included in any shareware program.

For example, I was first attracted to CROSSTALK by its ability to go into the background on my computer, allowing me to carry on with work while downloading a file.

Just depressing the hot key combination allows me to drop to DOS and load a program to find or check on a file I might want to send or bring up a word processor to create a note to send.

Even if all you wanted to do was start a printout, or consult a calculator, this is a handy feature. You can return to

Phone Number	BBS Name	Location	SBE Chap Affil	Conferences
206-443-6170	Western Washington Freq Coord	Western WA	16	FCC
214-647-0670	DFW Frequency Coordination	Dallas/Ft. Worth	67	
303-341-0129	Colorado Broadcasters BBS	Denver	48	F
303-949-3253	Master Control (NSN)	Avon, CO		F/C
315-474-5070	SBE Chapt 22	Syracuse, NY	22	
317-547-6204	MediaNet Pro-Line	Indianapolis		M/R
317-935-0531	Allied/RW Broadcast BBS	Richmond, IN		
404-320-6202	AV-Sync	Atlanta		
404-982-0960	Rock & Roll Party	Atlanta		F/M/R
414-771-3032	Second Opinion BBS	Milwaukee, WI	28	M
415-391-2657	Northern CA FCC	San Francisco		F
415-641-4373	KALW	San Francisco		
419-228-7236	Black Hole BBS	Lima, OH		F
501-753-6536	Chapter 75 SBE	Little Rock, AK	75	
602-438-0459	CRL Customer Service BBS	Phoenix		
602-872-9148	Broadcasters BBS	Phoenix		F
619-298-4027	So. California Media Line	San Diego		M
713-974-3912	Houston SBE	Houston	105	
713-859-8195	Cloud 9	Houston		R
719-634-5661	Colorado Springs Broadcast BBS	Colorado Springs		F
801-967-9716	Planet Vulcan	Salt Lake City		
804-550-3338	Flamethrower B'cast			
	Resource Ctr	Richmond, VA		
804-973-8235	Broadcasters BBS	Charlottesville, VA		M
818-248-3088	Hot Tips	Glendale, CA		R
918-437-9004	The Radio BBS	Tulsa	56	

F=FidoNet      M=MediaNet      R=RIME      C=RPE Consultant      FCC=Local FCC person

CROSSTALK simply by depressing the hot key combination a second time.

Other users will love the CASL (CROSSTALK Applications Script Language). This can be used to automate many activities from logging onto a BBS to collecting and distributing all your EV-mail. Custom menus can also be put together to help others in your station more fully utilize their computers.

Among the features that CASL implements is the automated script learning mode, where CROSSTALK watches as you log on or do something and stores the commands for future automatic use.

Also, I like the way the dialing directory allows you to not only see the names and numbers, but other data

like the last time you dialed into the number.

A couple of other features that have made me enjoy CROSSTALK are the way it automatically labels capture files with the filename and date, so you can keep track of them, and strong ZModem support allowing easy file transfer.

The Windows version has by nature fewer features, such as fewer VDT emulations and a smaller script language but is still very powerful. Right now, it's my personal favorite telcom program. At street prices, neither version is beyond the reach of even modest budgets.

Yep, crosstalk can be just the right thing to add to your computer! Check it out.

Barry Mishkind, is a consultant and contract engineer in Tucson. He can be reached at 602-296-3797, or on FidoNet 1:300/11.

# A Memo to C.E.'s About Audio Switchers

Anyone who has researched the routing switcher market has uncovered "The Problem": Audio switchers are small or they are large, but they aren't mid-size. And even when they are small, the price is still large—to cover the upgrade path that's always built in.

360 Systems has a solution. We invite you to compare our new AM-16 Series with anything else on the market. Here are just a few of our features:

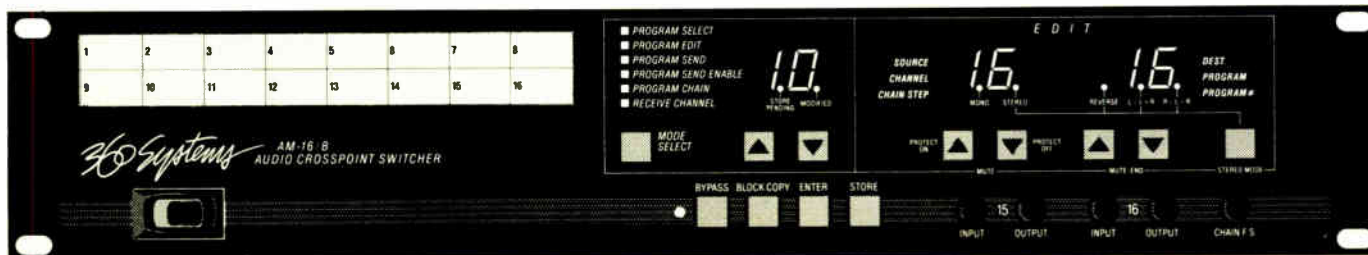
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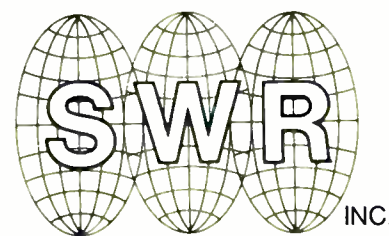
In our early years, servicing other company's products, we found inherent weaknesses in every design.

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# Digging Into the DAB Inquiry

by Harry Cole

**Washington DC** Just when you thought that Docket 80-90 was finally in the finito file and competition in the radio biz had finally maxed out, here comes DAB (digital audio broadcasting, for those of you who may somehow have missed the deafening buzz of the last several months).

The technical whys and wherefores of DAB have been elucidated in these pages by those much more technically proficient than I, so I won't even try. What you should know, however, is

that the FCC has put itself into gear quickly on this project, with the release of a Notice of Inquiry on 21 August.

## COLE'S LAW

If you want to put your two cents' worth in, comments are presently due to be filed no later than 12 October 1990, with reply comments due 13 November (but don't be surprised if

one or more extensions of those deadlines is granted).

Where is the Commission going with DAB? At this point it's anybody's guess. But there are some signals in the FCC's sparse three-page Notice of Inquiry which may give some hints.

### And they're off

For openers, this notice got out of the box in record time. The first private proposal for adoption of a new DAB allotment scheme was filed in mid-May, with another following later that month and a third arriving in July.

Sure, there has been DAB movement on the international front for some time, but the FCC didn't seem to be getting too excited about it and it did not seem to have lit the fire under the FCC.

In any event, the fact that the FCC seems ready to move fast on this front is an indication the agency does not want to discourage the development of this new technology by regulatory foot-dragging.

(This is also apparent when the FCC refers to DAB as a "potentially important new medium" the emergence of which the FCC should "facilitate ... as appropriate".)

Second, probably because of the sorry decline of AM broadcasting, the FCC seems to be acutely aware of the impact that DAB could have on the existing broadcasting industry. One section of the Notice of Inquiry specifi-

cally seeks comments on how best to implement a DAB service with existing broadcasters.

One thought hinted at by the Commission is a "migration or transition priority" for broadcasters, which would presumably give existing broadcasters dibs on DAB channels.

Of course, the notice does nothing more than hint—it does not address the practical problems of how to implement such an approach, such as the political problem of dealing with the equalizing effects of DAB (which would likely put your 500 watt AM daytimer in parity with your full Class C FMs and even your Class I-A clear channels).

### Regulation questions

Third, the FCC specifically seeks comments on how a DAB service should be regulated. Should it be like broadcasting, with a strong localism component (as appears to be required by the Communications Act)? Or could some new hybrid classification be developed?

In recent years the FCC has appeared to prefer the "hybrid" regulatory approach, probably because it was easier to fit into a framework where deregulation rules. While a "hybrid" might seem a nice idea in theory, though, it may not be acceptable to Congress, which has long held fast to the notions of localism and public

(continued on page 31)

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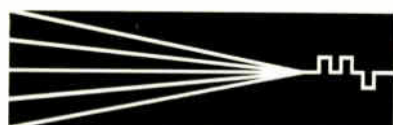
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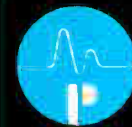
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This satisfied BMX III user is Herb Squire, Chief Engineer at WQXR-FM/AM, New York, N.Y.



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World Radio History

# FROM THE TRENCHES

by Alan Peterson

## Sometimes a Station Can Be a Real Zoo

Dear JG,

Wow, almost the end of September. Just another couple of weeks and our legendary New England foliage will be ablaze in glorious reds, yellows and oranges. I'll pack the camera with some Kodak 25 and forward some shots your way.

Good thing we got our new FM studio up and running—the old one got invaded by a bat the other night. That's right, I said a bat! A real live brown flararound mouse with Radar Endorsement. Little creep sneaked in through a cable run and was putting on a flying circus that had us cheering. It culminated in a deft two-footed upside-down hookup to a fluorescent fixture that would've drawn a perfect 10 from NASA.

It isn't very often studios or offices are invaded in this manner, unless located at the transmitter site. In the office, the odd ant or two (thousand) by the coffee corner is the extent of unwelcome company. Generally, wildlife is drawn to the tower and transmitter building—as every CE I know will attest to. The warmth of the

electronic gear, the cozy corners of ATUs, the dryness of overhanging roofs . . .

Ever have a close encounter with some critter, Jude? Who hasn't? I still remember Roy Taylor in Syracuse bringing that crooked old cane of his to work that one

**In honor of our station owners, we've named our own little "mascot" after our softball team: The Berkshire Bat.**

day. Well, that's what I thought it was—the day before, it was a very sizable snake that "Got the switch at midnight" in an ATU. Some time afterwards I discovered many CEs have gag names for such a syndrome: Crispy Critters, Reptile Rotisserie and Snake-&-Bake are the overwhelming favorites.

Anthony Kord has written reviews for RW in recent months from his Rhode Island digs; five years back when both of us were at WHMP-FM, we took the trip up Horse Mountain in Western Massachusetts for transmitter maintenance. Moments after Tony opened the door and went in, a flea—a *big* flea . . . leapt up my pants leg and bit. Very hard.

Mercifully, Tony was already inside and underway while I proceeded to tear my pants off and slap at my legs, yelping and hooting while doing the DeeJay Jump. That little \*\$%&\* hurt!

Not knowing how many other bugs were lining up at the buffet table, I tumbled through the door and swiftly shut it. Lord knows what he'd have thought about my mental stability: a man dancing on a mountain with his pants off during routine maintenance of a transmitter. I'd have been walking back to the studios.

I should be grateful this didn't take place in Arizona. Three years ago a Tucson engineer told me about scorpions hanging around the shack.

Every now and again wildlife will invade the studios. When Paul Baker was on WLAD back around 1819 or so (yes, I said 1819, the man remembers when coal was invented!) a huge raccoon crawled through a vent and into the studio during his shift. Pretty amazing considering the studios are a few flights up in a midtown Danbury building! The 'coon's first and only stop was the equipment rack—warm and cozy, natch. Try concentrating on doing a show with one of these babies five feet away, about to go potty in your RCA limiter!

My first job in Upstate Noo Yawk had hot and cold running zoology all the time. My newswoman's voice kept dropping out during a cast, and when I looked her way, her head would snap downwards every few moments. Turns out her puppy—a stray she found—was playing tug o'war with her headphone cable, giving some very sharp pulls.

At the same station, migrating ducks, geese and grouse would often bang their widdle heads into our tower and guys in-flight. Lights and paint meant squat to these boids. More often than not, they'd

fly on with a bad headache, but there have been some major quackups (sorry).

Anyway, in honor of our station owners, we've named our own little "mascot" after our softball team: The Berkshire Bat. And we're looking forward to his (her?) next visit to the sta-



tion so the weekenders can see our little flaprat.


Somehow, giving these visitors names make them a welcome addition to nearly any operation. Emotional? Maybe. After all, even though they shouldn't be there, they're still nice to have around.

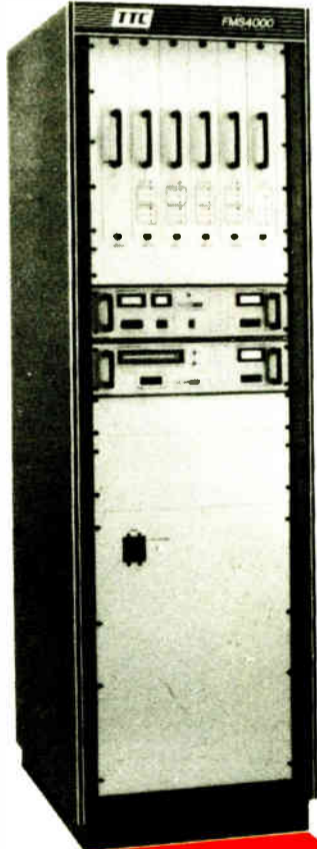
Too bad I didn't write this ten years back. I would certainly have named a bird after my favorite editor.

"Judith Grouse" . . . gets ya right there, doesn't it?

Just Bats about this place, —Al

Al Peterson divides his time among writing, working as air talent for WLAD and hanging by his feet from the station's wiring conduits. Contact him c/o RW.





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# Road Testing AKG's DSE 7000

by Ty Ford

**Baltimore MD** This edition of *Producer's File* is the first of a two-part article on the AKG DSE 7000 Digital Sound Editor. In an effort to answer real-life application questions, I arranged for an evaluation of the system at my studio with AKG Marketing Director David Angress.

When it arrived, I took time to read the first parts of the manual before I began to set the system up. The manual, by the way, gets high marks for being written and laid out extremely well. Total unpacking and setup time was easily done in less than an hour.

Although the first computer tower I received had a power supply problem and had to be replaced, the second one arrived the next day and within an hour's time I was doing simple record-



The DSE 7000, in place at the author's studio

ing and editing.

A major design consideration was to have the DSE 7000 simple enough to operate that it could be used by the air-staff for everyday voice-over-music spots, as well as more creative work concocted by the production director. Unless your company's pockets are rather deep, it doesn't make sense to have an expensive and complicated piece of production gear that only one person knows how to use.

## The bottom line

At an entry level list price of \$37,500, AKG's DSE 7000 is designed primarily as a spot maker for the radio market. The four main parts are: the Intel 386 computer tower (7.5" x 26" x 19"), an ASCII keyboard, an EGA color monitor and the controller (25" x 3" x 16"). The controller includes a 10-channel mixer and all of the operating and editing controls.

Accompanying cables allow you to plug the keyboard, monitor and controller into the tower. Try thinking in terms of the system as being a random access 8-track digital recorder, a 10-channel mixer with two effect sends and a random access two-track digital mix-down recorder.

Although I was able to record voice-over-music donuts in the same room with the system, the hard drive and vent fan produce enough noise to strongly suggest that the tower be placed away from the microphones. David Angress has found several ways to get around the problem, including extender cables that can put 25' or more between the tower and the monitor and controller.

The DSE 7000 has two balanced audio inputs, two balanced outputs and two

separate balanced effect sends. Average input levels can be fixed at -10 dBm, -8

## PRODUCER'S FILE

dBm, 0 dBm or +8 dBm. Inputs and outputs can be balanced or unbalanced. Because the system throughputs the audio, I simply "borrowed" the input and output cables from one of my two-track

reel-to-reel machines to incorporate the DSE 7000 into my system at the patchbay.

## Monitoring capability

Even though the DSE 7000 has only two line level inputs, which means you can only record two tracks at a time, you can monitor any or all previously recorded tracks while laying in new tracks. For example, you can record your music bed first and immediately listen to it while you do your voice track or add

sound effects.

Although the the manual suggests that a system could be set up with a switcher in front of the inputs, allowing you to select CD players, turntables, tape machines or other line level input sources, you'd still need preamps for any low level sources, such as microphones.

Because the system has no EQ, also consider patchable stereo EQ after the switcher and before the inputs. There is also no other audio processing in the

(continued on page 32)



Chuck Steak - Our overzealous food critic. EQ Number: 72.



Doggie Demento - Always a dot off center. EQ Number: 7.



Earl E. Bird - Awake only with headphones on. EQ Number: 19.



Woolf-man Jack - One howwwling party dude. EQ Number: 49.

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button. They just punch in the number when they sit down, and all of their processing is reset instantly, exactly, repeatably.

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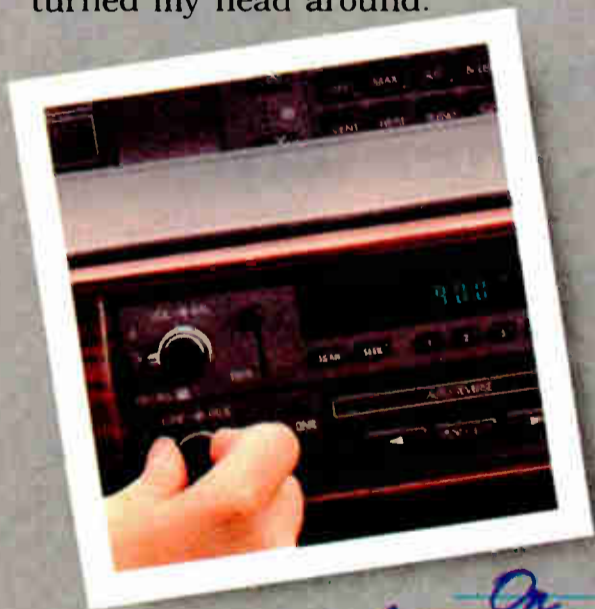
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# Harris Technology in Action

## "We're burning up every other AM in the market with our new DX10."

**W**SEA AM serves the Delmarva region and South Jersey from Georgetown, Delaware. They recently acquired a 10 kW day/1 kW night directional authorization, a Harris DX 10 digitally modulated solid state AM transmitter—and a new Corporate Chief Engineer, Terry Dalton. "By the time WSEA's owner Great Scott Broadcasting hired me," Terry recalls, "they had already decided on the Harris. I could understand that, since the fifteen year old Gates at WSEA still passes its proof of performance tests. But I needed to be sold on the new Harris transmitter. I'd heard about the DX series' all-solid-state design and its digital modulation, but I didn't expect them to make much difference."

Terry ran his DX 10 into a dummy load at full power continuously for six weeks before putting it on the air. "I was ready to jump on the slightest malfunction," he admits, "but I couldn't find anything. That kind of stability and reliability was one thing that turned my head around."



*On the road...*

OR AT HOME, DX PERFORMANCE IS AUDIBLY SUPERIOR.

The other was performance—in A/B comparisons we ran with the old Gates, the two signals were like day and night. We had NRSC-2 pre-emphasis on both and an Optimod 9000 with the high end cranked all the way up on the Gates—but the Harris DX



*Chief Engineer Terry Dalton...*

AND "THE BLOWTORCH" WSEA'S NEW HARRIS DX 10 DIGITALLY MODULATED AM TRANSMITTER.

was still cleaner and brighter. The low end from the DX 10 was tight and punchy, with none of the old transmitter's boominess."

When WSEA finally put their new DX 10 on the air, they did it with no announcements at all. "That very first day," Terry reports, "we got calls from people picking us up in places where they never could before. Others commented on how much better we were sounding, even on car radios. We were still running 1 kW under our old non-directional authorization. But we were burning up every other AM in the market, including some that put out an audibly overmodulated signal. Our sales department immediately named this new DX 10 'The Blowtorch'."

Terry verified the DX 10's increased coverage personally on a drive to New Jersey. "I used to lose WSEA around Cape May," he says. "This last time, the signal stayed clear all the way to Atlantic City—a 35 mile increase in range without any more power."

Measurements showed me why we're getting out so much further now. The asymmetries are incredible: I'm running 98/9% negative peaks and 119% positive, with absolutely no distortion or splatter.

In tests, I've taken the positive peaks even higher, and it stays clean. Digital modulation and solid state circuitry make a real difference."

"I was ready to find things wrong with the DX 10," Terry admits, "But its performance and reliability have me 100% sold. As far as I'm concerned, any new Great Scott Broadcasting AM stations will have Harris DX transmitters."

We're glad the DX 10 won Terry Dalton over. It shows that DX transmitters are doing everything we expected of them. After all, real innovations should make a difference in the real world.

If you'd like more information on DX series AM transmitters from 10 to 50 kW\*, call (217) 222-8200, Ext. 3408. If outside the continental US, fax your request to (217) 224-2764. And for studio equipment to take full advantage of DX transmitter performance, call Allied Broadcast Equipment at (800) 622-0022.

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# Bipolar Transistors

This is the second in a 12-part series called Amplifier Fundamentals. Northern Virginia Community College will offer 1.2 CEUs (continuing education units) to registered students who successfully complete the course and an examination mailed at its conclusion.

Successful completion of the course and the final exam will also earn 1.3 professional credits toward recertification under the maintenance of certification provisions of the SBE Certification Program. To register, contact the Director of Continuing Education, Annandale Campus, 8333 Little River Turnpike, Annandale, VA 22003, or call 703-323-3159. The fee for the course is \$35.

by Ed Montgomery

## Part II of XII

**Annandale VA** Amplification of an electrical signal takes place in an active device. Whether transistors or tubes are used doesn't matter. Both devices con-

trol a relatively large current flow with a very small input signal.

Figure 1 illustrates the schematic diagrams of a transistor, triode vacuum tube and a field effect transistor. Although the transistors are a "solid-state" device—that is, one solid crystal—they all function in a similar manner.

The emitter, cathode and source; base, grid and gate; and the collector, plate and drain are all similar in the way they function. For this installment only the bipolar transistor will be considered.

Figure 2 is an illustration of a common-emitter amplifier.  $R_1$  is the "load" or the output of the circuit.  $R_2$ ,  $R_3$  and  $R_4$  are "bias" resistors chosen to set the proper voltage levels for the base and emitter establishing proper currents for the transistor.

The amplification factor or "beta" can vary widely from transistor to transistor (even the same type). Therefore, the bias resistors are chosen to make the output of the transistor less dependent on beta and more a factor of the resistors establishing

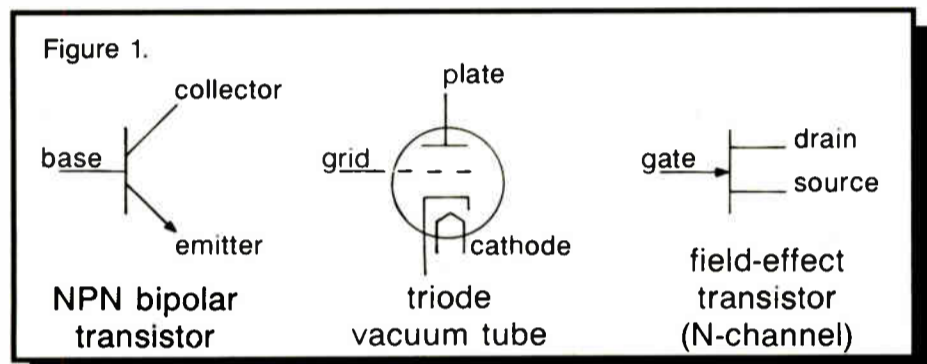
common-base amplifier has considerable power and voltage gain but current gain is very low. This design can be used as an impedance matching stage exhibiting a very low input impedance and a very high output impedance.

The common-base amplifier is frequently used in radiofrequency applications as well. Grounding the base reduces the amount of capacitance generated within the emitter-base-collector junctions within the transistor's crystal. This is a critical consideration when designing radiofrequency (RF) amplifiers.

The common-collector, or emitter-

and common-collector amplifiers produce outputs that are in-phase with the input signal.

Further study of amplifiers is recommended for a greater understanding of how they function. Chapter 6 of Elec-



stallment is necessary to fully understand amplifier operation.

The common-emitter amplifier is the most used. The emitter is either connected directly to ground or grounded

through an emitter resistor. The common-emitter amplifier produces the most power gain.

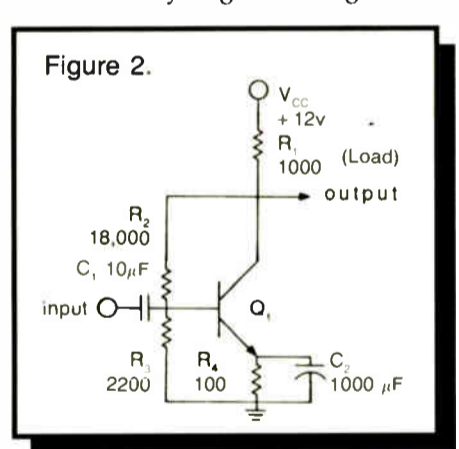


Figure 4 illustrates two other amplifier configurations that can be used. The

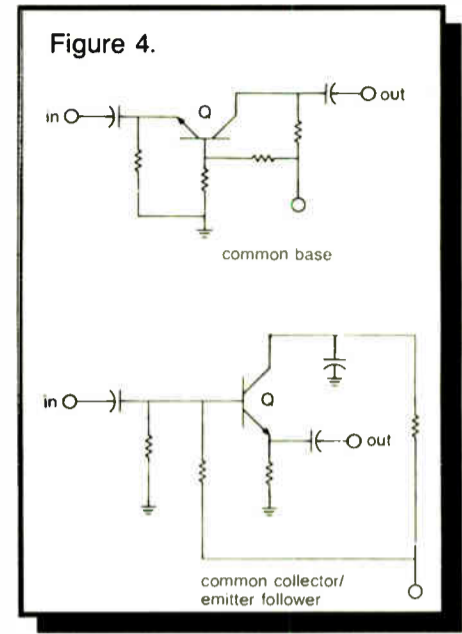
common-base amplifier has considerable power and voltage gain but current gain is very low. This design can be used as an impedance matching stage exhibiting a very low input impedance and a very high output impedance.

Figure 3 shows the equation for the voltage gain of a common-emitter amplifier: 
$$A_v = \frac{R_L}{R_L + R_e}$$

common collector/ emitter follower amplifier has the output taken off of the emitter with the collector grounded to all AC signals through  $C_C$ .

Common collector amplifiers have high power and current gain with low voltage gain. This type offers a high input impedance and low output impedance. It can be used to isolate electronic circuits from external connections. It can also be used to drive speakers which have a low impedance, transferring power from a higher impedance stage.

The common-emitter amplifier produces an output that is 180° out-of-phase with the input. Common-base



tronics, Principles and Applications, by Schuler, is an excellent source. "Solid State Basics" in the ARRL Handbook is also an excellent reference source.

Ed Montgomery currently is an electronics teacher in the Fairfax County school system. He has taught broadcast engineering at Northern Virginia Community College and worked as broadcast engineer for several radio stations. He can be reached at 703-971-6881.

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# WORKBENCH

## Automated Station's Cart Warning Buzzer

by Jim Wenstrom, CE  
KFLS/KKRB

**Klamath Falls OR** Automated stations are great. My Harris 9001 and SMC MSP-1 do not give me any problems. But the people who operate them do.

Our Harris system uses the IGM Go-

wrong is the error light will go on.

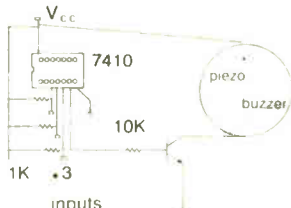
This is no problem if you are standing there. My problem is that the automation is not in the same room as the studio. This one was easy: I just installed a 5 V Piezo buzzer in parallel with the error light.

The other automation posed a bigger problem. The SMC system uses SMC 350 carousels. Our board-ops would use these as single play cart machines during ball games. That is no problem unless they forget to take them out of the manual position.

One Saturday around noon I came into the station and sure enough, all three of the 350s were still in manual. After the GM and sales manager finished with the PD, I came up with the schematic in Figure 1.

All power is stolen from the 350 and the circuit was laid out on perf board. If you need to keep an eye on more, you can use a 7430 instead. Just keep all unused inputs tied high. Now whenever any of the carousels are in manual, the Piezo buzzer lets everyone know.

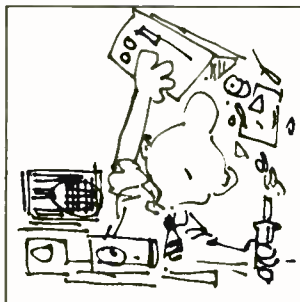
Figure 1.



• Tie all unused inputs to terminal on manual switch that goes high when in manual position. Tie all unused inputs to ground.

Cart 24's which are very reliable. It is a problem, though, when they want to pull in a cart that isn't there and the only indication you get that something is

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## New Digital Probe

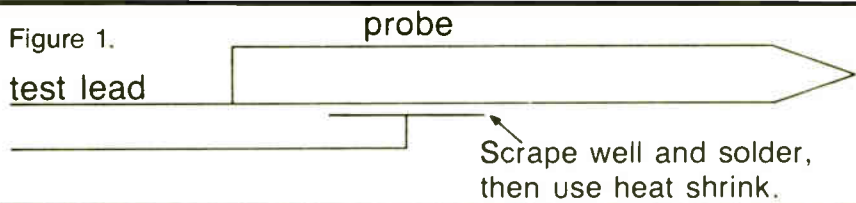


Figure 1.

by Wally Lorenc  
WWHN

**Minooka IL** In response to your request for a favorite maintenance technique, I hereby submit mine.

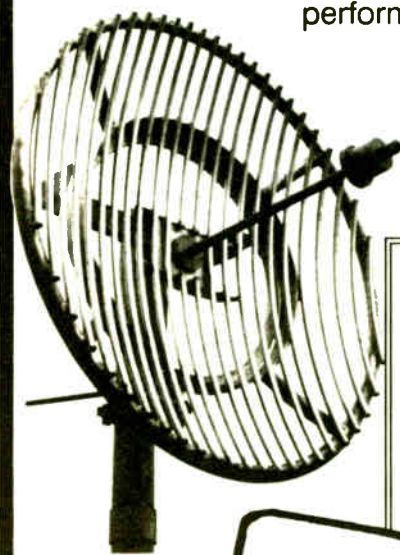
I got sick and tired of having my digital meter probe slipping and sliding over IC pin connections and shorting across

tightly spaced IC pins when measuring.

I use a probe made from 3/16" brazing rod and three layers of heat shrink spaghetti. This is one positive way of assuring good contact when making measurement. I also extend the length of heat shrink to keep the test lead from breaking at the connection to the probe.

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## Silver Plating Ploy

by Jim Wenstrom, CE  
KFLS/KKRB

**Klamath Falls OR** OK. Your edge connectors don't connect. Or you want to plate your own PC creations but don't want to bother with electro-plate solutions. The plating on the socket for that 4CX15000 has worn off and no longer makes reliable contact. Your budget was shot months ago. What are you going to do now?

Give the people at Cool Amp Company a call. They have a silver plating polish compound that I have used over the past couple years that solves all of the above problems and more.

This white powder has an indefinite shelf-life, is inexpensive, and easy to use. It is much more than a polish. It will actually put a silver plate on copper or brass (I haven't used it on anything else). There are no messy or dangerous chemicals.

Application can't be easier. Use a cotton swab or ball and a little bit of water and just rub it on. In minutes you can silver-plate a circuit board or replate a power amp tube or socket.

It has saved me time, money and my sanity. Silver plating polish is available from: Cool Amp Co. 8603 SW 17 Ave., Portland, OR 97219 Or give them a call at 503-244-2230.

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# FCC Dabbles in DAB

(continued from page 24)

trusteeship which have been the hallmarks of broadcasting.

Fourth, and perhaps most illustrative of the FCC's real position on DAB, is the near total lack of discussion of any real nuts and bolts technical proposals. If the Commission's thinking on DAB were relatively well along the way, the FCC would presumably offer us at least some preliminary technical specs for comment.

What do we get instead? No specific proposals, and only passing remarks—at a technical level that you don't have

tiveness?

On the whole, the Commission has packed a number of cosmic questions into its three-page notice. And well it should, since DAB could entail a dramatic overhaul of broadcasting as we know it. It is somehow reassuring to see the agency, which has often ended up playing catch-up ball, actually trying to get a headstart on this important issue.

It is also reassuring to see the FCC approaching that issue with, apparently, a reasonably open mind, as opposed to a particular attitude derived from one or

**The bottom line is that DAB appears to be gaining momentum, and it should not be ignored. At this point opposition to DAB is likely to be futile.**

to be an engineer to understand—about some of the more obvious aspects of the available technology. This tends to confirm the notion that the FCC really doesn't have any fixed idea of where it wants DAB to go just right now, but that it most certainly wants to be in control of where it may ultimately go. And, implicit in that is the notion that the FCC certainly expects DAB to be going somewhere, and reasonably soon.

## Brass tacks

Some of the other questions the FCC is seeking comments on: Does the public really want DAB? What would DAB cost (to the public and to the DAB provider)? Should DAB development be tied into ATV (aka HDTV) development? Should DAB include both a terrestrial and a satellite component? If so, how should spectrum be allotted between those two components? How (if at all) would DAB affect US competi-

another influential industry source. (Of course, this may be because most of the usual influential industry sources are still trying themselves to figure out how they feel about DAB.)

The bottom line is that DAB appears to be gaining momentum, and it should not be ignored. At this point opposition to DAB is likely to be futile.

In its Notice of Inquiry, the Commission has given *anyone* who has any interest at all in this area the opportunity to express his or her views. Each member of the radio broadcast industry should consider taking advantage of that opportunity, so that the FCC has the broadest possible range of comments, suggestions, criticisms and viewpoints from which to formulate its ultimate regulatory system.

■ ■ ■

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

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# Putting the DSE 7000 to Work

(continued from page 27)

strictest sense of the term; however, careful track slipping between two tracks can be used to flange or echo a sound. You can also loop a sound to make up your own echoes. In addition, any or all of the tracks can easily be individually recorded, edited, panned, flipped out of phase and copied to or from.

The DSE 7000 is a 16-bit linear PCM format with custom time aligned 18-bit ADCs. Analog outputs are 4x oversampled. It's capable of operating at 32 kHz, 44.1 kHz or 48 kHz. I ran the system at 32 kHz to allow for maximum recording time (4.4 minutes per 16M DRAM card). Even though this limited the high frequency response to 15 kHz, I was very happy with the top end.

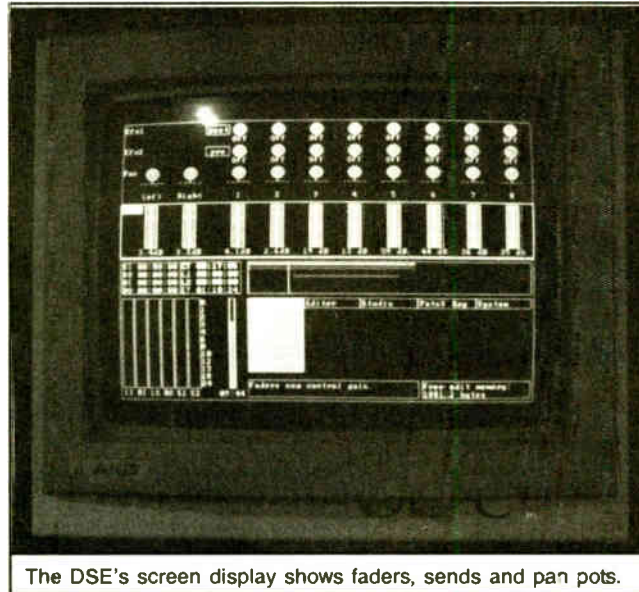
When you retrieve previous productions from the hard drive, they are loaded in less than real time. Retrieval of a typical 60-second stereo jingle with voice track, which adds up to 2.5 minutes of audio, takes about a minute.

## The shadow knows

Because RAM is volatile, the DSE 7000 "shadows" all of the work done, saving it to a hard drive. Think of shadowing as an ongoing automatic Save feature. When the controller is unused for more than a few seconds, the computer senses the inactivity and automatically begins to save the work to disk. When you begin to use the controller again, the system stops saving and returns to the task at hand.

Options include: a 676M hard drive for

increased audio storage (an additional \$1400); up to three additional 16M random access memory (RAM) cards each holding 4.4 minutes at 32 kHz (\$4500 per card) for up to a total of 17.6 minutes of recording; a digital I/O module supporting AES/EBU and DAT/SPDIF and a custom stand (\$1200).



The DSE's screen display shows faders, sends and pan pots.

Realizing that a lot of people who do spot production at (or for) radio stations are less than thrilled with the idea of learning about computers, AKG set about to minimize the presence of the Intel 386.

They succeeded. The only times you are reminded that you're working on a computer is when you're using the key-

board to name a production, retrieving sound from the library or verifying that you want to erase something. The latter, incidentally, is a great safeguard against accidental erasure.

After a few days of working with the system, I decided to test the learning curve on someone who wasn't a production rat.

Karen Aylor was a likely candidate. Karen's been in radio for nine years. She is currently assistant PD and music director at 97 Underground here in Baltimore.

Our first session lasted an hour, during which I showed her how to start the system and set it up to record and playback. After recording a stereo music bed and separate voice tracks, we did some simple editing exercises.

The music bed we used was a full 60 seconds. Karen's read somewhat shorter. Because the total length of the spot was not critical, we edited the end of the music bed so that it ended just after her last words.

This was nothing you couldn't do on a two-track 1/4" machine—except for the fact that the best place to do the music edit was before she stopped talking.

On an eight-track reel-to-reel you could try editing the existing music tracks by punching in an ending or even make another pass to put the ending on two other tracks and cross fade to the new ending. Either way you'd spend a lot of time trying to get it right.

With the DSE 7000 it was simply a matter of finding what hit of the ending

## The DSE 7000 is a 16-bit linear PCM format with custom time aligned 18-bit ADCs.

of the bed you wanted to start with, and then finding a place in the music bed somewhere before her last words to make a musically natural-sounding edit. After marking both places, you hit the cut button and the execute button and in less than a second your edit is done.

If it works, you move on. If it doesn't, you hit the "Undo" button and try new edit points until you get something that works! Incidentally, "Undo" takes less than a second also.

In the next *Producer's File*, I'll go into more detail about why I believe the DSE 7000 may just be the digital audio "Ginsu knife" spot producers have been looking for.

■ ■ ■

Ty Ford is an independent audio consultant and regular contributor to RW. Currently, he is writing an advanced production book for Focal Press. Reach him by phone at 301-889-6201 or by MCI mail #347-6645.

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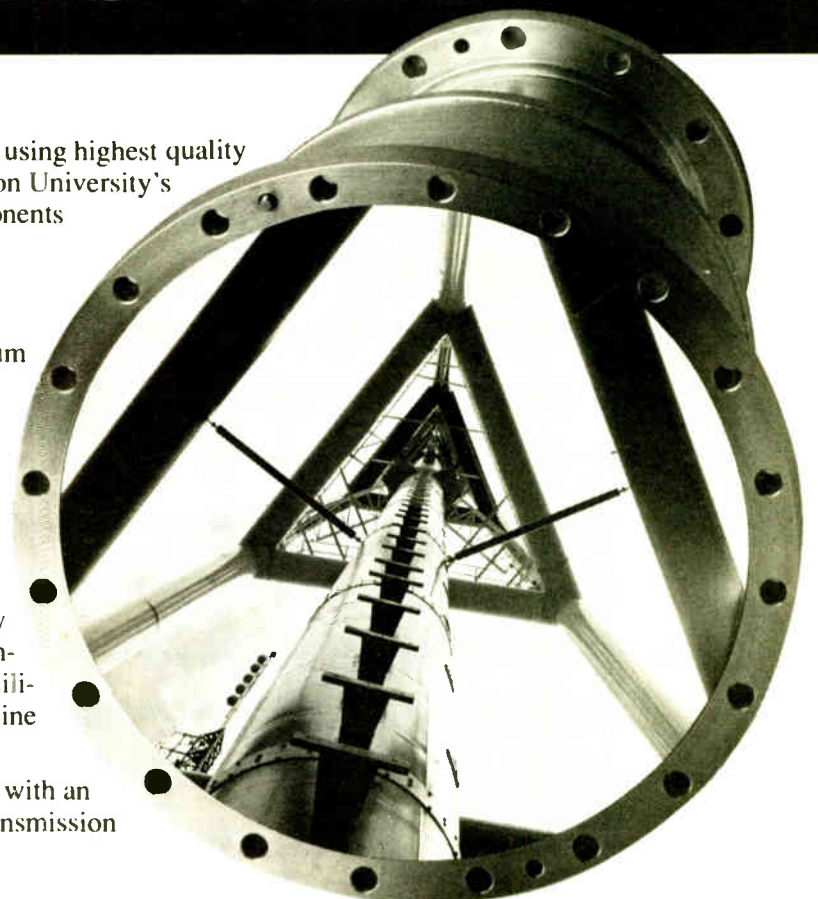
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World Radio History



# High Power: Hidden Hazards?

by Howard L. Enstrom

**Mount Dora FL** I began specializing in translators 12 years ago, when I had much to do with getting the first FCC type-accepted Jones equipment manufactured and marketed. It was a welcome change from field engineering and all the years of long days and nights at stations far from home.

This first writing for RW will not focus on translators, but why low power FM, in general, may solve high power broadcasting's problems—including health concerns related to traditional broadcast operations.

During 70 years of broadcasting, the highest-powered stations have been assumed to be the most important. On the AM side, the heavy flywheel keeps turning: There has been clamor for more carrier power, more sideband power and width, and loudest sound, even if it means deliberate distortion of original program material. Thus, for the lack of spectral elbow room, the NRSC-2 fence was created.

## Low Power Lowdown

In FM, there are channel shortages in urban areas. Directional antennas to shoehorn-in more stations are opposed by the NAB. But that's not the worst of it. Traditional broadcasting, particularly high power, may have another, more insidious, problem—one that may pose a hazard to health.

Before I elaborate, let me offer a little history.

### Glory days

The cult of high power broadcasting began well after Fleming invented his vacuum valve (tube) in 1904. De Forest

added an element he didn't know what to do with, and called it an "audion."

Then came Armstrong, who stunned the scientific world with his detector that amplified signals. In time, analog modulation was developed, so that in fall of 1920, KDKA became the first significant broadcast station.

How the public loved radio. "DXing" was a national pastime, subject of morning office boastful talk, and a "QSL" verification sent by a distant station was a cherished item. Chicago's radio stations

observed "silent night" on Mondays, to help DXers. Radio was glamorous, and announcers were stars.

It was an era of national prosperity, the Charleston dance, Brandes earphones, rooftop aeriels and battery acid holes in dining room rugs. Yes, broadcasting served rural America, but also itself, with mail order program sponsors paying dearly to advertise on high power radio.

The concern over environmental hazards includes electromagnetic wave

energy, from wavelengths as long as those for 60 Hz AC power all the way through the spectrum to gamma.

### Leukemia link?

Two years ago, Washington State University's Dr. Samuel Milham, in a study published by the *American Journal of Epidemiology*, established a relationship between exposure to electromagnetic fields and leukemia. Amateur radio operators, for example, had a higher death rate due to

(continued on page 34)

## Digital Frequency Extension

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extension plus, at the touch of a button, the added benefits of a telephone hybrid.

For frequency extension from the field, the EFT-900 and EFT-1000 expand on the capabilities of the EFT-100. With internal mic and headset amplifiers and telephone couplers, you will haul less into the field and get on-air much faster. The EFT-1000 even includes auto-answer and auto-setup functions.

All Gentner extenders include filtering to reduce hum, built-in noise reduction and special processing of the high frequencies. Best yet, Gentner extenders are full duplex devices allowing true two-way communication. You get cues back to the broadcast site without compromising the effectiveness of your remote system or juggling unnecessary hardware.

### How We Squeeze More Sound Into The Phone.

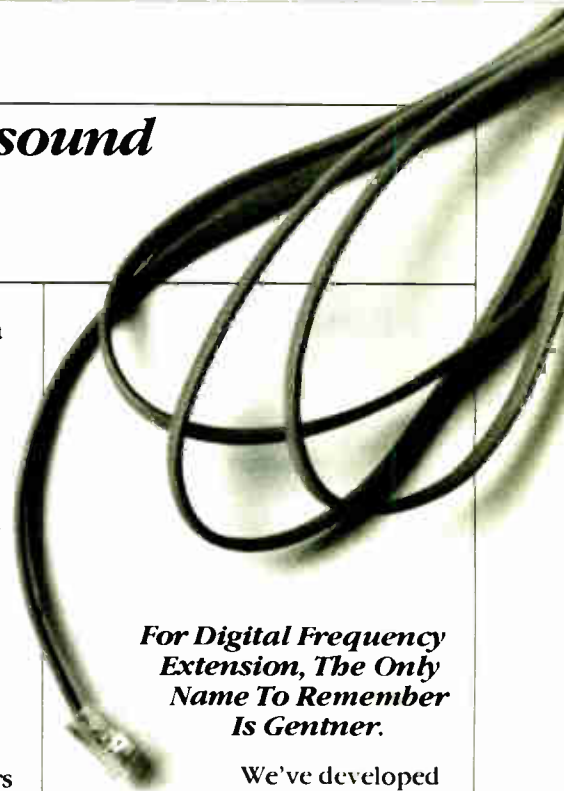
It's called Frequency Extension, though it would be more accurate to think of it as Frequency Recovery. Basically, before the signal goes down the phone line, we digitally up-shift the signal 250 Hz. This "squeezes" the low frequency information, normally lost, into the phone line. When the signal gets to the station, we digitally down-shift the signal 250 Hz to recover the low frequency information. What reaches your listener is a fuller, richer, more natural sound.

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# Bigger Is Not Always Better

(continued from page 33)

acute myelogenous leukemia, multiple myeloma and possibly other types of lymphoma.

More recently, Dr. Ronald Glaser, of Ohio State University School of Medicine and Dr. Bruce Rabin, chairman of the department of pathology, University of Pittsburgh, have reported findings that change former beliefs about separate immune, hormone and nervous systems in humans. Stress, they state, is observed at the genetic level.

Interestingly, human brain nerve cells

trigger electrical signals to communicate with each other, producing faint magnetic fields one-ten billionth to one-ten millionth the strength of the earth's magnetic field. Magnetic flux, at right angles to direction of current flow between cells, can actually be measured with a biomagnetometer. The new technology is called "magnetoencephalography," or MEG.

To illustrate, consider the following analogy. An electric motor shaft turns because its armature's own field follows the changing field of coils. Logically, human brain cells try to follow their own fields,

influenced by indescribably complex fields induced by unshielded, external radiation. Constant, unrelenting motion results in stress fatigue, gradual breakdown and impairment of brain nerve cells.

High power radio is not an evil empire. But its shotgun style of propagation wastes energy, heating clouds, foliage, the waters, structures and wildlife . . . making humans electrical objects of dielectric loss.

We avoid excessive radiation from the sun, X-rays, and CRTs. We cannot avoid exposure to many forms of invisible elec-

tromagnetic radiation from many services, aside from broadcasting. But I think we need to reduce what we can.

## A new awakening

Even if all suggested risks of high power RF radiation are overblown, it would still be in the national interest to plan for low power mass media radio service. The wave of the future will originate with such types of safer, more efficient devices.

Traditional broadcasting has had its 70 years of captive audiences. Those listeners may now turn to other attractive consumer products, such as DAB even through DBS.

For this future, I envision a low power community FM radio system, similar to cellular phones. Right now, nearly 2000 tiny 1 or 10 W black boxes are on the air. Some are very efficiently and discretely narrowcasting to specific communities, with ultra-low environmental impact.

An ideal low power system launches a signal from an antenna having an optical view of its target community or service area. The area is illuminated by focused propagation in H and E planes, vertical and horizontal. Polarization is either dual or circular.

The signal is received in the area as full-quieting and enjoyable as a local or distant Class C FM station. Capital investment cost varies, with some systems coming in well under \$10,000.

Understandably, local commercial FMs don't welcome another station's translator in their back yard. That's what new FCC rules would deal with. Audience fragmentation is not a large issue, if a translator serves a minor interest not served by a local FM station.

Someday, a low power service of the kind I've just described may become a reality. Someday, bigger won't be best.

■ ■ ■

*Howard L. Enstrom is a broadcast consultant. He has owned and managed an AM station, and is president of FM Technology Associates, Inc., specializing in engineering design and sale of FM translator equipment. He can be reached at 904-383-3682, or by FAX: 904-383-4077.*



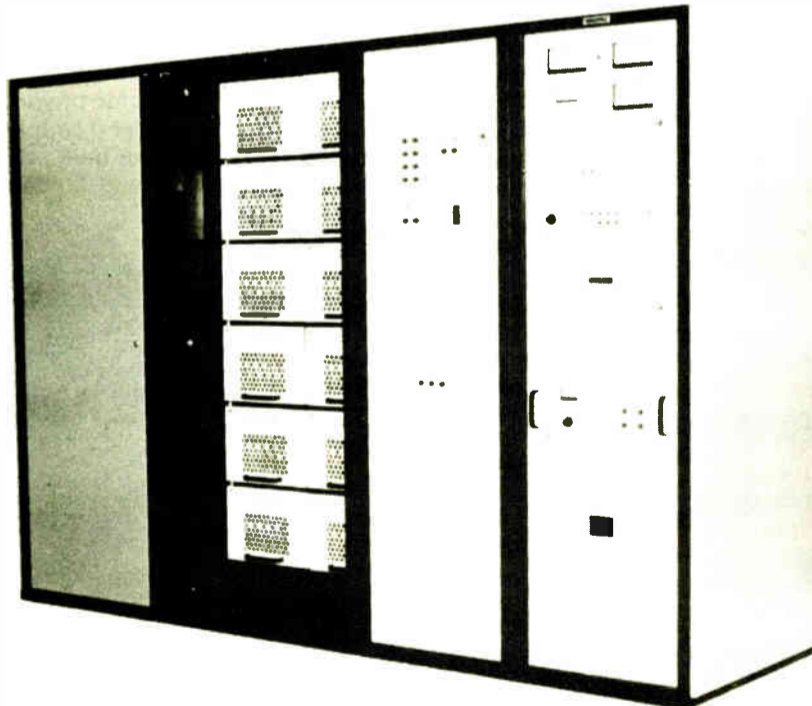
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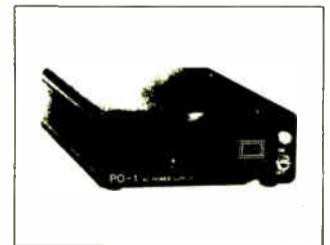


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# RTL Links Stations in Germany

by Fred Holub

**Stuttgart WEST GERMANY** The full-time satellite-style radio format, a common method of programming US radio stations since the early '80s, has made its European debut as the "RTL Radio" network.



A typical studio, with full automation

At 8:00 AM on 30 July 1990, a studio in Stuttgart, West Germany and 10 FM transmitters scattered throughout the Southern German state of Baden-Wuerttemberg were linked together by 15 kHz stereo telco lines plus a high-speed telco data line.

The data system, believed to be the first of its kind in Europe, allows each station to maintain its local identity

through insertion of station IDs, promotional announcements and slogans, and even jingles. These elements, along with local commercial breaks, are under control of the network air talent in the Stuttgart studios.

Negotiations for satellite channels have been completed, and sometime before

the end of 1990 the telco circuits will give way to state-of-the-art digital transmission.

#### Cog in a complex gear

Although similar in some respects to Satellite Music Network and Unistar Radio Network in the US, the new "RTL Radio" network (a subsidiary of the legendary Radio Luxembourg Corpora-

tion) differs from its American predecessors in many important ways.

Radio broadcasting in Germany is governed by a bureaucracy and a set of regulations far more complex than those of the American FCC, according to RTL Network General Manager John Monninghoff, who visited several US networks and stations while his new network was in the planning stages.

Stations are still required to originate large amounts of local news and public affairs programming. Networks are prohibited from operating in any market for too many consecutive hours. Most restrictive is the fact that each of the eleven West German states (soon to be fifteen when the two Germanies are reunited) has its own broadcasting commissions and regulations, which generally discourage networks from operating across state lines.

Like the Unistar (formerly Transtar) Radio Network in Los Angeles, CA, RTL provides a "text" (i.e., hardcopy) capability to its affiliates. With computers in Stuttgart linked to station printers at either 9600 or 19,200 baud, affiliates will be instantly informed of news bulletins, schedule changes or emergency announcements, as well as receiving such routine items as music logs and DJ shifts.

A few aspects of network programming in Germany are actually simpler than in the US. For example, because the country is relatively small, it is easier to

generalize about weather, politics and other topical items. Also, since all of Central Europe is one time zone, announcers are able to do time checks without having to say, "It's eleven minutes past the hour!"

#### Familiar studios

The RTL Network studios are not too different from those of a German major-market radio station, with exception of the cue system control equipment. Consoles, telephone hybrids and reel-to-reel tape machines are generally furnished by Studer, although the main on-air network audio board was manufactured by ANT.

Other gear is more familiar to American radio engineers, such as Otari cart machines, Sennheiser and Neumann microphones and Eventide digital effects.

The cue system control equipment was custom designed and built by RTL Stuttgart Technical Director Horst-Michael Lutsch and his staff. The encoding and multiplexing cards and shelves are made by the German firm Mikrobit GmbH. Sixteen control circuits are available in addition to the text channel discussed earlier.

Commercial radio broadcasting in Europe (with the exception of Luxembourg) is a relatively new phenomenon, and it still is not entirely private. All transmit-

(continued on page 38)

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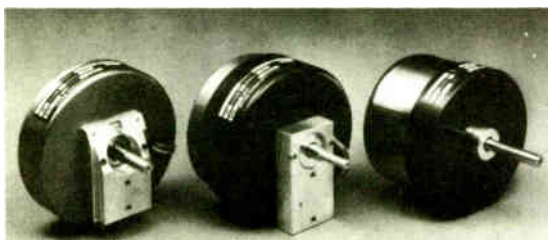
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# AM Rules Emphasize Accuracy

by Steve Crowley

**Washington DC** The FCC's AM rules, adopted and proposed, have hit the streets—much too late to make an Earth Day tie-in (electromagnetic pollution, cleaning up the band . . . never mind).

Adopted: rules to improve the accuracy of skywave and groundwave field strength calculations, and to encourage interference reduction efforts between stations. Proposed: technical assignment standards.

Under the adopted rules, skywave field strength will be predicted using a formula rather than as is done now, with a series of graphical curves. The new formula takes into account many more variables, and thus should provide more accurate predictions of nighttime field strength. Because the extent of interference-free nighttime service from a station is calculated using these predictions, calculated service areas (and coverage maps) will change.

## CONSULTANTS CORNER

The accuracy of the groundwave field strength predictions will be improved through the use of new propagation curves. Groundwave field strength has been predicted using a set of curves that was created in part by using graphical curve-fitting techniques, which contain some inaccuracies. A new computer program allows generation of the curves entirely by mathematical calculation, increasing their accuracy.

### Grandfather protection

The most significant of the adopted rules are those designed to encourage interference reduction between AM stations. This covers areas including "grandfathering" radiation rights.

Today, when an AM station goes dark and its license is deleted, the radiation rights are maintained for one year for those wishing to file an application for a replacement station. This policy has led to the perpetuation of AM stations that cause or receive interference because many were authorized at a time when interference rules were less strict.

Under the new policy, replacement stations must be brought up to today's technical standards; in many cases, this will mean no replacement is possible.

FCC rules have prohibited the acceptance of one application contingent on the approval of another, since such speculative applications were deemed to increase the Commission's administrative burden. The rules are being changed to permit contingent applications that would bring about a reduction in overall AM interference or increase the areas of interference-free service.

### Creative engineering

In the past, a station proposing a power increase would be subject to competing applications. Now, applicants filing contingent applications will be protected from third parties.

This opens up possibilities for some creative engineering to improve AM facilities. Station owners are falling into

two camps: those who want to pay other stations to reduce coverage or go dark so they can expand coverage, and those who are hanging it up and want to be bought out.

We need a matchmaking service to bring these folks together. Perhaps something corresponding to a "Lonely Hearts" ("Broken Parts"?) column in the Broadcast Equipment Exchange:

"Midwest 250-watt low-band daytimer seeks dominant, generous, first-adjacent facility for mutually rewarding relationship. Interests include music, talk, news, sports, pre-sunrises

and post-sunsets. No indecency."

With the proposed 50 kW power limitation for Class III stations, we may enter an era where a station's coverage could correspond to the depths of its pockets. Hence, the Commission is concerned that some level of service remain in the area that used to be served by the station being modified or shut off.

### As they come

The FCC will determine if this test is met on a case-by-case basis—the amount of AM interference that will be eliminated will be weighed against the num-

ber of AM and FM services that remain in the areas losing service.

Though the rules just discussed have been adopted, their effective date has been stayed pending the outcome of the proceeding regarding the proposed technical standards. Next month, we'll look at those.

■ ■ ■

Steve Crowley is a registered professional engineer with the consulting firm of du Treil, Lundin & Rackley, Inc., 1019 19th Street NW, Third Floor, Washington, DC 20036. He can be reached at 202-223-6700, or by FAX at 202-466-2042.

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I had one occasion to call your service department for an answer to a question I had on a minor problem and I received some friendly and accurate advice. Incidentally, the minor problem resulted from a severe lightning strike at our studios, the Ramko board survived it nicely!

I would recommend the xl SERIES audio consoles to anyone with a small budget who is looking for "big" quality.

Very Truly Yours,  
Maynard R. Meyer  
General Mgr./Chief Engineer

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**RAMKO RESEARCH**

# Europe's Satellite-Style Radio

(continued from page 35)

ters are still owned and operated by the Federal Government through the German Federal Postal Service.

This arrangement provides well-engineered, reliable RF plants, but also limits the amount of audio processing that can be done by individual stations. High-performance American-made processing gear, notably the Orban Optimod family, is becoming popular. But such equipment can only be installed in the studios and FM stereo composite processing is not possible.

Programming on the RTL Network is evolving in a CHR direction with an up-

tempo mix of international and German music. There is a good mix of oldies, with the target audience being mainly upscale professionals in their 30s. Music scheduling is handled by MusicScan software from Milwaukee, WI.

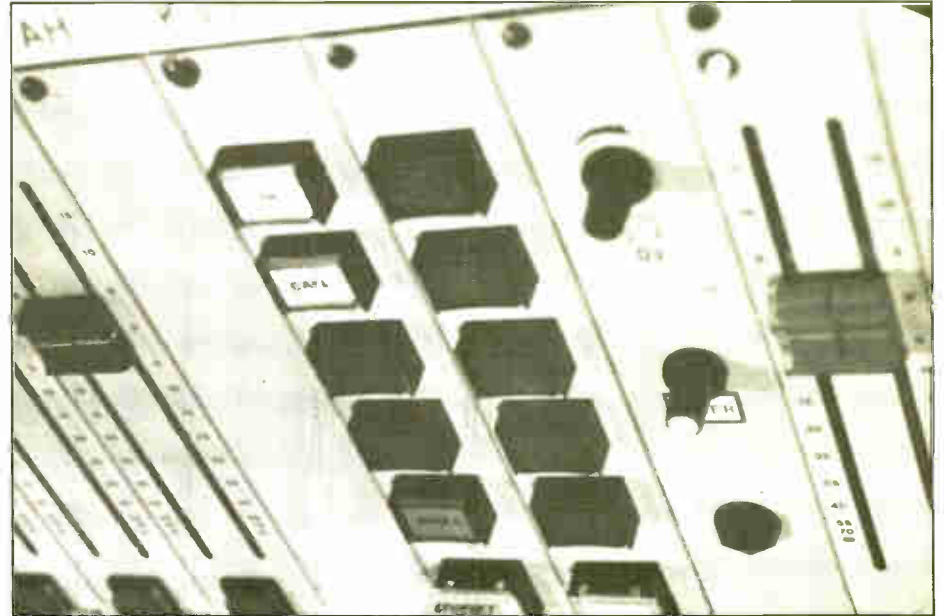
### Affiliates acquire downlinks

As with American satellite-delivered music formats, new RTL affiliates are responsible for acquiring and installing their downlink and interface equipment. The RTL engineering staff provides support and assistance as needed.

Affiliates can run the format on an audio console with an operator, using re-

mote cart machine starts and a network audio muting relay, or they may choose to install a fully automated system as

With private radio stations providing more and more competition to the established government stations throughout Europe, plus the expansion of Western European broadcasting companies into Eastern Europe, there will no doubt be great opportunities for North American equipment manufacturers, engineers



A network cue control panel is provided in the console of both the main and backup network control rooms.

three stations have already done.

Future plans for the RTL Network include expansion beyond the state of Baden-Wurttemberg, possibly into Eastern Europe as new markets open there. It is also likely that a second format could be added as the original offering grows and reaches maturity.

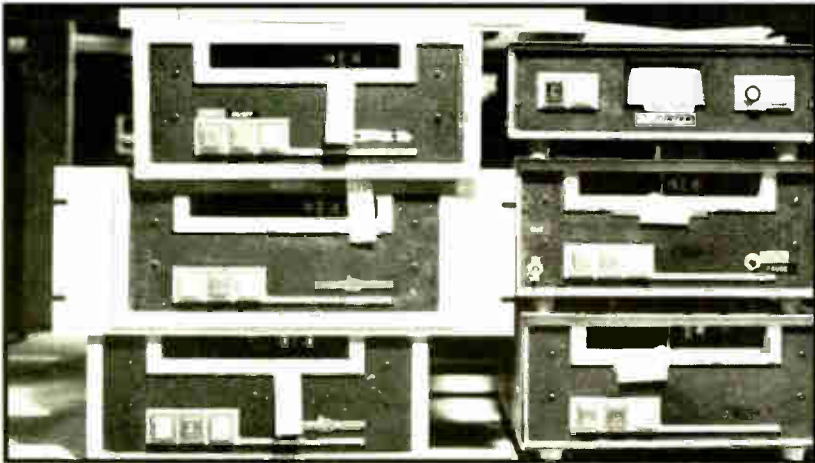
and programmers on the continent in the years to come.

■ ■ ■  
Fred Holub is an independent broadcast consultant based in Sacramento, CA. He was previously CE of Unistar Radio Network and specializes in satellite programming and interface. He can be reached at 916-920-8501.

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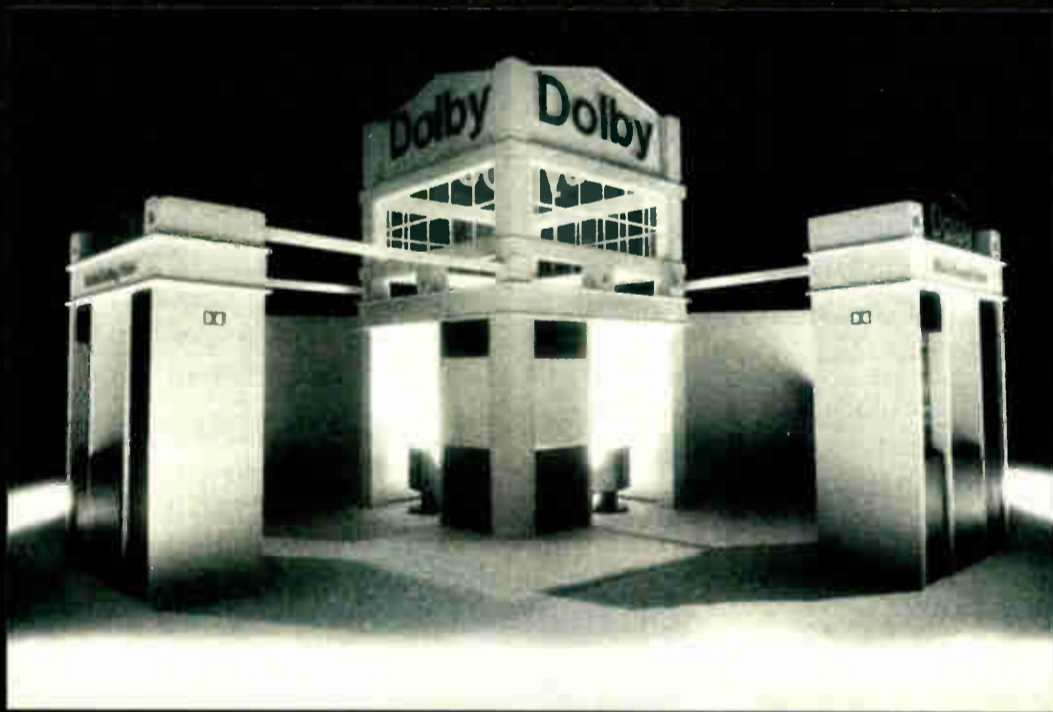


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# BUYERS GUIDE

Reel-to-Reel Recorders and DAT

## Testing Panasonic's New DAT

by Joseph Magee, President  
Magee Audio Engineering

**Los Angeles CA** The recording of jazz and classical performances puts particular demands on the mastering medium. Because the majority of people who listen to the literally hundreds of recordings I've made for NPR, American Public Radio and other broadcast outlets are concert-goers themselves, the sonic quality of my master tapes is of paramount importance.

### USER REPORT

Add to that requirement my need for relatively portable, easy-to-use and cost-effective hardware and it is easy to see why DAT recorders have become my primary mastering medium during the past year.

#### Evaluation opportunity

Being fully familiar with the Panasonic SV-3500 Pro-DAT, a machine I now use on all of my jazz and classical broadcast assignments, I was particularly interested to evaluate a pre-production sample of the new SV-3700 deck.

Featuring a high-precision, one-bit analog-to-digital front end with 64x oversampling, a redesigned DAT transport for easier tape loading, and a full-function wireless remote, the new SV-



The SV-3700, pictured here with the author, got a workout recording the LA Philharmonic Concert Series.

3700 offers radical improvements over its predecessor.

I had the opportunity to put the SV-3700 through its paces during late August, while taping and editing several performances of the Los Angeles Philharmonic at its summer home, with conductor Simon Rattle, for the *LA Philharmonic Concert Series* that I record and produce for NPR and APR. (Incidentally, these programs, which have aired since July of this year, are probably the first NPR concert series to be uplinked exclusively from DAT master tapes.)

Setting up the SV-3700 is simplicity it-

self, with a standard signal I/O of +4 dBm (-10 dBm output is also available) corresponding to a peak-meter scale reading of -18. Rear-panel AES-EBU and IEC 958—"S/P DIF" compatible—digital I/Os are also featured.

Although I prefer the extended length meter panel of the SV-3500, the SV-3700's metering was easy to read even in low lighting conditions. Headphone monitoring was also of high quality, with sufficient output level.

Front-panel transport controls are well laid out and easy to use, and are color coded for easy identification. I prefer the

SV-3700's new beige color scheme, compared to the SV-3500's austere black.

Because I need to audition the tapes prior to the digital editing and post-production stages, the SV-3700's shuttle control is very useful for locating to various sections of a DAT tape, and offers up to  $\pm 15\times$  play speed in Play mode, and  $\pm 3\times$  times in Pause mode.

Fast Forward and Rewind speeds are also  $250\times$  play speed; double clicking the FFW/REW buttons selects an "Ultra-wind" speed of  $400\times$ , to provide end-to-end searches for a 120-minute DAT tape of only 27 seconds!

Other controls for auto/manual recording of PNOs, Start/Skip and End IDs are clearly labeled and very easy to use, as are the End Search and Renumber functions. I found the three second Fade In and five second Fade Out features to be of restricted use, primarily because of the relatively large steps that result in audible level transitions.

Although I prefer wired remotes—which are easy to find on the console and do not need to be aimed at the machine—the SV-3700's wireless model does offer more functions than the one supplied with the SV-3500, including direct access to individual PNOs, Counter/Timer Display and Program Play modes.

#### Tale of the tape

In terms of recording quality, I found the sample SV-3700 Pro-DAT to be out-

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by Joseph Magee,  
Magee Audio Engineering

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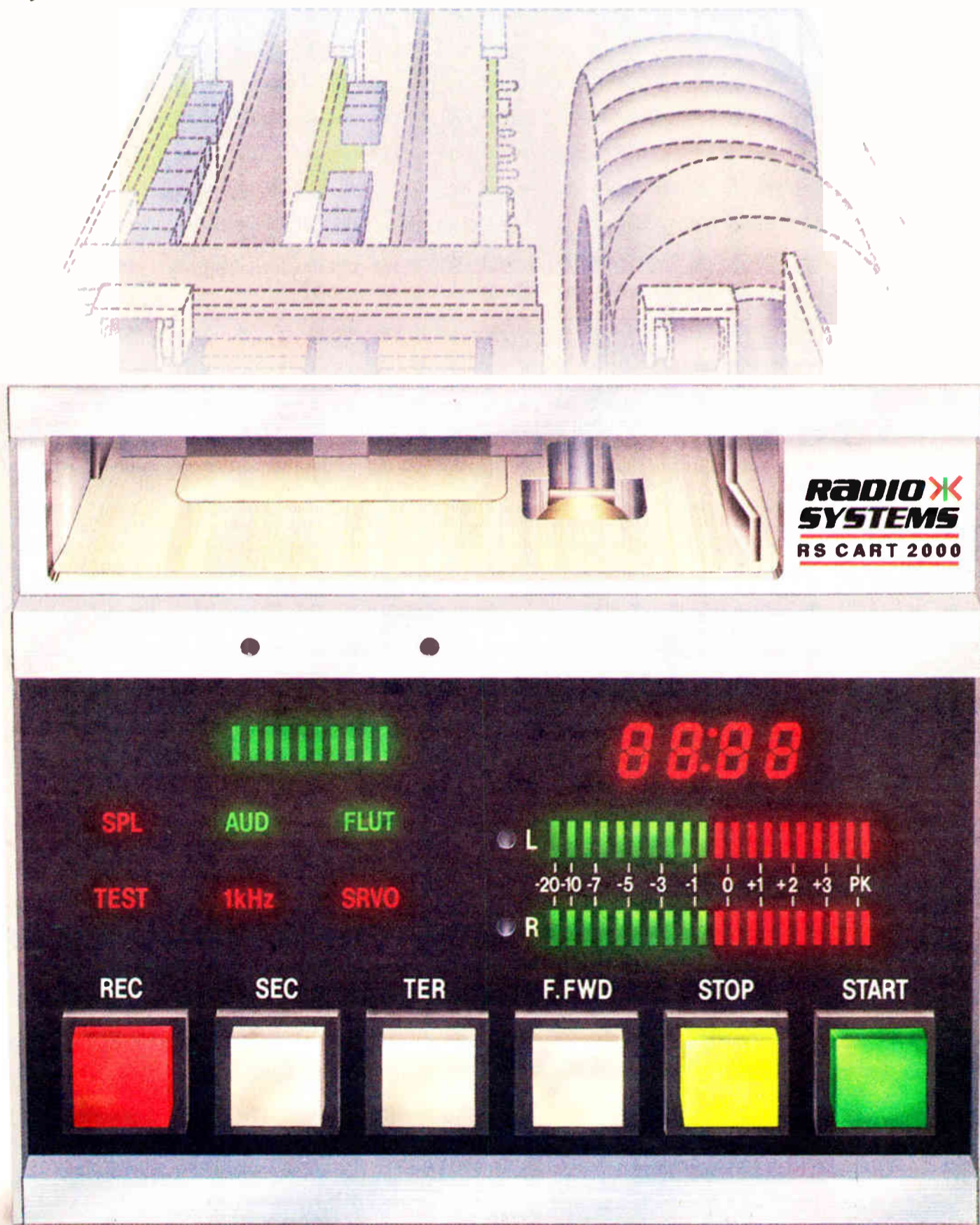
Next, build it to last. That means long life heads, 1/2" thick deck plate, direct drive Nidec motor, massive toroidal power supply, newly designed positive cart hold-down and guidance systems, and precision head-block assembly.

Finally, distinguish it with features no other unit has. The RS-2000 is the first cart machine to offer flutter correction, splice finder, and timer on all models.

But features aren't important if the engineering isn't top-notch. The RS-2000 was created by industry-renowned design engineer Mike Sirkis. So this "new" machine carries more than a decade of cart machine experience.

One last note: since the RS-2000 is built, sold and supported exclusively by Radio Systems, it carries one more trademark—VALUE. Every RS-2000 model is very affordable.

Call toll-free today for details.



# Sony Unveils PCM-7000 Series

by Clayton Blick, Mktg Mgr  
Sony Business and Pro Group

**Teaneck NJ** Sony has been one of the leaders in the development of digital audio equipment since 1977, when the introduction of the PCM-1, the world's first PCM processor, ushered in the digital era. In 1983, a prototype rotary head DAT was designed by Sony even before a worldwide standard had been agreed upon.

## TECHNOLOGY UPDATE

At the 1990 NAB convention in Atlanta, Sony showed the PCM-7000 series of professional DAT machines. The units, designed for studio use, feature timecode and electronic editing capabilities.

The series includes the PCM-7050, PCM-7030 and PCM-7010 professional DAT recorders and the RM-D7300 professional DAT edit controller; the machines are scheduled for delivery early in 1991. The recorders and controller have potential applications throughout the professional audio community, including the TV/radio broadcasting and film/video post production markets.

## Panasonic

(continued from page 41)

standing. Of all the DAT machines that I have experienced, the new SV-3700 offers the smoothest high-end response, with stable stereo imaging.

From prior experience with DAT recorders, I have found that the type of tape used in these machines is critical. In my experience, Panasonic-brand DAT tapes are the most reliable and produce far lower error rates than any other type I've used. (To display interpolated error rates on the SV-3700, you simply press the Counter Mode, Counter Reset and Pause buttons; pressing Counter Mode once more shows errors per second for the A+B heads, and then the A head.)

All in all, the new Panasonic SV-3700 Pro-DAT is highly recommended for all recordings where outstanding sonic integrity, ease of operation and reliability are essential.

■ ■ ■

*Editor's note: For more information on the SV-3700, contact Ron Tomczyk at Panasonic: 201-348-7183, FAX: 201-392-6485, or circle Reader Service 103.*

Sony DAT recorders, options and controller permit flexible system configurations to meet the broad requirements of TV and radio broadcast and production applications.

At 3.81 mm, the DAT tape width is similar to that of a standard audio cassette but the tape speed is slower—8.15 mm/sec. By adopting the rotary head system, where the tape is wound around the tape head at an angle to the surface of the head, the relative speed is high at 3.133 m/sec.

This allows for a recording density of 114 Mbits per square inch, with 1300 MB of data storage capacity on a 120-minute tape.

To increase operational flexibility, each recorder has been designed to permit timecode recording. All models feature a flexible parallel remote interface, external synchronization and memory start facilities. The addition of a high-speed search function also enables the DAT machines to be used in computer controlled automation tasks.

The PCM-7000 series offers an economic solution to often expensive projects because of the relatively inexpensive nature of DAT hardware and technology. In addition, Sony engineers have ensured that tape running costs are minimized by employing a high density recording facility in the design of the recorders.

### Specs speak for themselves

The series exhibits the superior specifications associated with digital audio recording including error correction, 90 dB dynamic range, frequency response from 20 Hz to 20 kHz, and wow and flutter below measurable limits. Phase distortion is almost completely eliminated by adopting a 64x oversampling digital filter for A-to-D conversion. The D-to-A converter block uses an 8x oversampling FIR filter for restoring the audio signal without introducing phase distortion.

Each model is equipped with a fluorescent display which includes SMPTE/EBU timecode and audio OVER signaling indicators. The display also gives complete information on sampling frequency, timecode, synchronization, emphasis and all of the fault conditions detected by the recorder's self-diagnostic system.

Because the series is available in a variety of configurations, users can tailor the system to their individual needs. The PCM-7050 is recommended for use as the recorder and the PCM-7030 almost equals the PCM-7050 except in its editing capability. The PCM-7010 is Sony's

most affordable professional DAT recorder and is ideally suited for less demanding applications.

### RM-D7300 editing controller

The RM-D7300 editing controller is connected to the nine-pin serial remote interface of the PCM-7050/7030 and provides comprehensive control over both

functions include start/skip/end ID recording and memory search (frame order, trim by jog dial).

Sony currently markets and sells several DAT products including the TCD-D10PRO, low-cost professional DAT recorder for use in remote location digital recording applications, the PCM-2500 studio DAT recorder and PCM-2000 professional portable DAT recorder. Additional products for use with Sony DAT equipment include the BVG-200 portable timecode generator/reader, 60-, 90- and 120-minute digital audio tapes and



The Sony PCM-7000 series was introduced at the 1990 NAB show in Atlanta.

automatic editing and transport operations.

a range of supporting accessories.

■ ■ ■

The features of the unit's editing system include memory search (jog dial), memory rehearsal, insert, auto edit, crossfade, assemble/insert edit and spot erase. For ID insert, the RM-D7300's

*Editor's note: For more information on the PCM-7000 series, contact Clayton Blick at Sony Business and Professional Group: 201-833-5745, FAX: 201-833-9645, or circle Reader Service 85.*

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# Reel Decks Mature, DAT Grows

by Alex Zavistovich

**Falls Church VA** In the broadcast environment, reel-to-reel recorders have the advantage of mature technology.

## INDUSTRY ROUNDUP

That market dominance, however, is being chipped away at by digital audio tape (DAT). With the exception of some pioneering spirits like WMTR-FM in Toledo, OH, the country's first all-DAT

station, DAT recorders have still not found a place on-air. They are, however, seeing increased acceptance as mastering recorders.

### New versus mature

DAT proponents accept the fact that certain limitations—inability to edit the tape, for example—are preventing DAT from gaining ground in broadcasting. And certainly, the controversy surrounding DAT and its potential in digital piracy also has cast a shadow over the technology. But at least one supporter believes that more broadcasters will take advantage of the

benefits of DAT, in time.

In the realm of reel-to-reel recorders, Dave Bowman, Director of Professional Dealer Products for Studer, said the "analog product and market is mature." Although he acknowledged that the demands made of 2-channel 1/4" decks and multitrack machines are different, he maintained, "Things are well defined now and there are no real new requirements."

Still, there are some characteristics

**"If the cost of DAT went down, you might find it being used over cassette."**

that users expect in such machines. Chief among those is what Bowman, borrowing a word from the computer industry, termed "connectability." That is, how one piece of equipment "talks" to another.

"We've defined what the box needs to do," said Bowman, "but common communications seems to be a big deal of late." Other desirable features include interfaceability—common control systems—and speed and synchronized operations, useful when working with multiple machines or in video production.

Although developments in reel-to-reel players are no longer revolutionary, Bowman added that one of Studer's A807 recorders offers a feature previously unavailable in other machines. On the market for six months, the new recorder

is a 4-track 1/2" format, with center channel timecode. The configuration provides the potential of two stereo pairs with the timecode, he noted.

### Turning to DAT

Among industry experts, DAT's principal limitation is one of editing. Some speculate that if there were technology to enable cost-effective editing of the medium, its use in broadcasting would increase appreciably.

Tim Schwieger, VP of marketing for Broadcast Supply West, admitted that "reel-to-reel is the only gig in town for editing." However, he has noticed that sales of the product are down somewhat, which he attributes to people "not going analog in the final step."

"In broadcasting, people have accepted DAT as a mastering recorder and for archiving purposes, where no editing is required," Schwieger said. He acknowledged, however, that DAT recorders are not being used on-air and that people are still most frequently dubbing to cart for production. Its primary use, he said, is in the field.

Inroads made in DAT's price and features are changing some people's minds about the format, Schwieger commented. He added that tape transports have become more user friendly and that many machines now have cuing and balanced inputs and outputs.

In the end, Schwieger speculates that use of DAT in broadcasting will increase with the increased acceptance of the medium by consumers.

"With consumers having DAT, the cost of portable units will go down," Schwieger explained. "DAT is the perfect alternative to cassette. You can't edit on cassette either, but we are selling hundreds of them. If the cost of DAT went down, you might find it being used over cassette."

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# Tascam on Right Track with TSR-8

by Dave Holmes, President  
Holmes Productions

**Stockton CA** After four years of hard work in an 8'x8' cubical I built in my garage, it was time to move up in the

than using the standard LED meters (like on the 38) the TSR-8 utilizes bargraph LEDs, giving you a much more accurate peak level. Tascam also decided to include on-board dbx Type I noise reduction. This feature alone makes it superior

three hands, the world of multitracking was a welcome relief.

### Clean-sounding production

Since I've built my new studio, and started using the TSR-8, many of my peers have commented how clean the production sounds. I must give credit to the dbx noise reduction.

Tascam has really made a big move with the birth of the TSR-8. I have always liked their gear, but this product exceeded my expectations. Taking advantage of the real-time counter versus the standard reference counter saves time, and with the two memory location functions, finding strategic points on the tape is a breeze.

I also went for the RC-408 remote control, which makes it possible to have the TSR-8 located out of arm's reach and gives me more room for equipment that needs to be close to me. Every function that's needed is on the remote control, so there's never a need to touch the machine.

There are many other attractive features on the TSR-8. For instance, the input for SMPTE/EBU devices makes it possible to "chase" video and provides a connection to interface with computers and MIDI.

I'm not sure whether Tascam originally designed the TSR-8 for the musician, or for use primarily in radio and television audio production. All I know is that it will easily work well in either application, at a price that really gives the competition something to think about.

### Paid for itself

If you've always wanted a multitrack machine and thought you could never afford it, think again. I figure I have saved so much time with the TSR-8, and have reached such a level of quality production that the TSR-8 has paid for itself.

Commercials that in the past would have taken me hours to produce, or some that were not possible to do in the

first place, are now actually fun, and I make good money doing them.

If there was one thing I would change on the TSR-8, it would be to see maybe three or four more memory location functions, in addition to the existing two already on the machine.

You'll also find the little things make the unit attractive: a complete schematic and maintenance manual with every machine, and a price that can't be beat.

■ ■ ■

*Editor's note: For more information on the TSR-8 multitrack recorder, contact Ken Hirata at Tascam: 213-726-0303, FAX: 213-727-7656, or circle Reader Service 129.*



The Tascam TSR-8 has paid for itself in time saved and results obtained.

wonderful world of production—I decided to build a new, larger studio.

The original studio utilized a Tascam 32 and a Tascam 22-2 machine, along with an ancient Sony TC-353-D quarter-track. Although originally I had planned to move up to a 4-track, after careful consideration, I decided that 8-track was my destiny.

What to do? I needed a new board and I needed an 8-track ... that I could afford. I'd had my eye on the Tascam model 38, and was ready to buy one, but when I talked to John Reed at PAS, he changed my mind. I'm glad he did.

### Impressive choice

John suggested I purchase the new Tascam TSR-8. He told me about all the added extra features and said I would be impressed. Needless to say, I was.

The overall cosmetics on the TSR-8 are completely different from the 38. Rather

to the 38.

The TSR-8 is controlled by a microcomputer, which makes the punch-ins flawless. Along with 12%± pitch control, rehearsal function and repeat programs and other various "trick" goodies, the TSR-8, in my book, is without a doubt the best machine on the market in this price range.

## USER REPORT

Currently, I am using the Tascam M-512 console, which adapts perfectly to the TSR-8. I recently did a number of spots for a local air show, which had numerous voice changes, sound effects and music changes. After sweating for years mixing spots like this "live," with four cart machines, two turntables and

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# KUOW Lauds Studer's A807

## Seven Reel-to-Reels Used to Edit News Actualities And for Recording and Playback of Programming

by Terry Denbrook, DE  
KUOW

**Seattle WA** When KUOW was adding additional tape editing stations in 1988 we started looking for new tape recorders.

The Studer A807 was a main contender, as KUOW had been using Studer B67s since 1980. Studer had proven reliable and factory assistance had been excellent on the few occasions when we did have a problem.

### Two formats

The Studer A807 comes in two basic formats: a console version with the VU meters and volume controls on a over-

## USER REPORT

bridge and a rackmount/portable version with the VU meters under the heads. Only the latter machine has microphone level inputs.

All the machines come with a built-in monitor amplifier and speaker. This was important to us because they are often used as standalone editing stations. The recorders can be either 3.75-7.5-15 or 7.5-15-30 ips, as well as mono and half-track stereo. A 4-track machine is also available.

Options include mono playback on stereo machines, European style tape cutting scissors, tape marker, better splicing blocks (one comes with the machines but it is not as rugged or as convenient as the optional ones) and a synchronizer interface.

The Studer A807 provides the standard professional features such as

balanced in and out, as well as some that are not so standard, such as microprocessor control with assignable function for many of the machine's push-buttons. Multiple autolocate functions include return to zero and return to the last place the tape was started.

There is also an independent lap timer. The A807 also has a shuttle spooling mode with a variable speed control, an edit mode which removes the brakes and allows easy rocking of the reels, and a library wind function to provide better tension than the high speed wind when preparing to store a tape.

A less common feature on the Studer recorders is "Fader Start." When a voltage is applied to the fader start pins on the parallel remote plug, the machine goes into the play mode, turns off the built-in monitor speaker and locks out both the push-buttons and the serial and parallel remote controls until the voltage is removed. This makes sure no one accidentally stops a tape while it is playing on the air.

### One of each

The Studers had all the features we desired so we decided to buy two of the A807s to see how they would work for us. We purchased one rack mount unit and one console unit, both with the optional scissors, tape marker and splicing blocks.

Instead of screwdriver adjustments, the A807 uses a microcomputer with memory to adjust the alignment. You align each function by stepping to the function you want to align. You then depress Raise or Lower buttons to make the adjustment. A reading appears on the counter display to show what the function's alignment value is. This allows you to come back to a previously used value

which is just about impossible to do with screwdriver adjustment.

The Studer A807 can store two different sets of alignment values for each speed. This allows easy change between two tape types.

The microcomputer audio alignment can also be done with input on an RS-232 serial buss. This allows complete au-



Studer's A807 series provides all the standard pro features, plus some extras.

dio alignment, except for azimuth, to be done using an automated test set such as the Audio Precision System One. We have the test set but are waiting for updated software to start automated alignment of our machines.

At KUOW the Studer tape recorders have been used to record programs from NPR and other sources. They are also used to play back programs on the air as well as to the public radio system through our uplink. Most importantly, they are used by the news department to edit news actualities that have been recorded in the field.

We record on cassettes in the field and

then dub the actualities to reel-to-reel for editing. The A807 has worked very well for us in this function. They add no noticeable noise when making the dub. They are easy to operate and edit with, which is important to us because some of our news tape editing is done by volunteers who have little experience with reel-to-reel recorders.

### Sticky button

The only real problem we have had with the machines are the push-buttons on the machines that are mounted horizontally. The push-buttons are in two parts: the actual controlling part and the part that is pushed, which is part of the front panel.

On the machines that are used for editing, the "dust" from the marking grease pencil gets in between the buttons and the surrounding part of the

## All the machines come with a built-in monitor amplifier and speaker.

front panel and gets sticky enough to stick in the down position. The button down is hard to see as there is not a lot of travel to the buttons.

Cleaning the button assembly has always fixed the problem. If you used the optional Studer tape marking method with ink marker you probably would not have the problem.

After using the first Studer A807s for a year we bought additional machines, but without the scissors or tape markers—our production people did not use them. We did get them with the optional splicing blocks, which are major improvements on ease of use over the standard ones.

Currently, we own seven of the Studer A807s and will buy more when we need more editing stations or our old Studer B67s need replacing.

Editor's note: For more information on the A807 reel-to-reel recorder, contact Dave Bowman at Studer: 615-254-5651, FAX: 615-256-7619, or circle Reader Service 30.

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# ASC Introduces Tape Handler

by **Ronald Newdell, President**  
**Accurate Sound Corporation**

**Menlo Park CA** Accurate Sound Corporation introduced at the September AES show the AS-100, a new tape handler patterned after the popular Ampex ATR-100 design.

## TECHNOLOGY UPDATE

The AS-100, with its up-to-date microprocessor control design, has numerous added features and has eliminated many of the cumbersome manual load requirements and service difficulties encountered with the ATR-100.

Previously, in order to tension the servos, it was necessary to push the stop button while holding and then jerking the supply reel. Now, with just a push of the load button, the reels slowly take up the slack in the tape until the servo arms are correctly positioned and the tape is automatically tensioned.

■ ■ ■

*Editor's note: For more information on the AS-100 tape handler, contact Ron Newdell at Accurate Sound Corporation: 415-365-2843, FAX: 415-365-3057, or circle Reader Service 69.*

The fully microprocessor controlled transport electronics will include an IEEE 488 computer interface buss as well as an RS-232 buss. Extensive diagnostics are available to facilitate the transport's maintenance.

The AS-100 user interface will be identical to the ATR-100 so that timecode synchronization can be achieved using the capstan reference frequency.

The microprocessor design will allow software control of all parameters of the transport, including tape tensioning. This will allow tailoring the reel tensions from start of reel to end of reel for special tape tensioning curves. Programmable tension is especially important for long term storage or archiving of master tapes. Also, software can be written to interface the transport to any computer.

You will notice that no mention as yet has been made regarding the signal electronics. Considerable thought, however, has gone into the proposed audio electronic design to ensure that the original sonic qualities of the ATR-100 are not lost, and are, in fact, improved.

This new AS-100 transport has been designed for use in a variety of applications. In addition to a studio master recording system, the transport will also be used in the pancake evaluator and as a high speed slave transport for cassette and reel-to-reel duplication. Because of its superior tape handling qualities, a cassette slave is planned that will dupli-

cate at a speed of 300 IPS.

David Manley with Vacuum Tube Logic has indicated an interest in using the new AS-100 transport with a new vacuum tube record electronics design.

This combination of the microprocessor controlled transport with David's new vacuum tube record electronics will produce a studio mastering recorder of unique design.

**People The Davis Communications Group, Inc.** recently announced the promotion of Cindy Edwards from order administrator to inside sales manager for radio products. The company also promoted Keith Arnett from a district sales manager position to VP of marketing for Davis Communications. Carol Broughton has been hired as the company's graphics designer and Kim Ferrell is Broadcast Services' new order administrator.

**AKG Acoustics, Inc.** has announced the promotion of Dave



Ogden to the position of product manager, and the appointment of Scott Heineman to product manager, dbx Professional Products and Orban Broadcast and Professional Products. Ogden began his career with AKG

Acoustics as sales manager, digital products division, in 1986. He worked his way up to become sales manager of Pro Audio, M.I. & Broadcast in 1987. Prior to his latest promotion, he was western regional manager. Heineman served as senior service technician and customer service specialist with Otari Corporation.

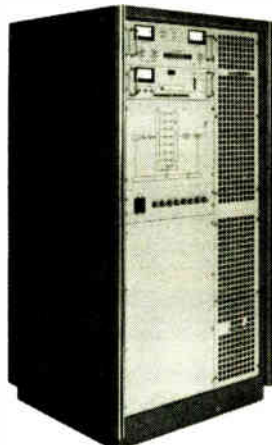
**Audio Animation Incorporated** has named David Ball as its applications engineer. Formerly, Ball was production director, creative services director and announcer for WIMZ in Knoxville, TN. Additionally, James Ruse has been named Audio Animation's product manager. Ruse previously worked for Midwest Audio Marketing of Chicago.

**Harris-Allied Broadcast Equipment** has made several position appointments in its efforts to restructure, a move which became effective 1 July 1990. Gustavo Ezcurra was named VP, Harris Allied worldwide sales, and Marvin Nickel was appointed VP, operations for Harris-Allied Broadcast Equipment's Richmond, IN operation.

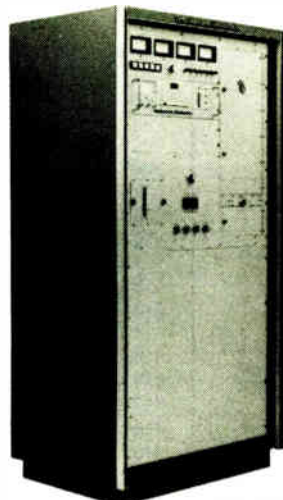
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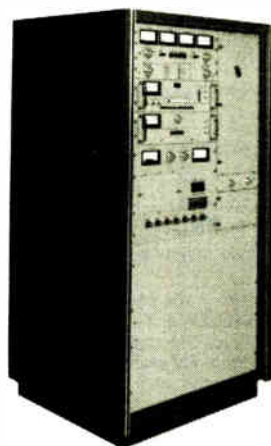
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# Autogram's Newest Pacemaker

**Pacemaker 618 Offers Six Pots and 18 Inputs, for Budget-Conscious Broadcasters Seeking Quality**

by Jim Laird, CE  
Autogram Corporation

**Plano TX** The Pacemaker 618 is the newest addition to Autogram's popular series of consoles that includes the PM 1032, PM 828 and PM 648. Designed with maximum value in mind, the 618 complements the famous Autogram family that began with the IC-10 console back in 1975. (And, yes, the IC-10 is still being manufactured and will be as long as customers demand it.)

## TECHNOLOGY UPDATE

The 618 has six pots and 18 inputs; the initial five pots have two inputs each while the last has eight. All inputs are electronically switched with only DC on any front panel selector. Penny & Giles long-throw faders and Shadow switches are used.

Connections are made using the plug-gable miniature screw terminal system; no special tools are required, not even a pair of crimpers. Front panel assemblies plug in and connect to the motherboard with ribbon cable. On the mother-

board are the plug-in active boards including the isolated microphone pre-amp, the dual input, the multichannel, and all output boards. Changing a board takes only seconds.

### "Bullet-proof" construction

All Pacemakers have the standard Autogram engraved front panel. The engraving will endure no matter how much abuse the panel has to take. "Bullet-proof" construction is typical of Autogram consoles and Pacemakers are no exception.

While the console is designed to rest on top of studio furniture, it can be sub-mounted to provide a lower profile. The compact size, 27" x 22" x 9", allows installation in almost any studio.

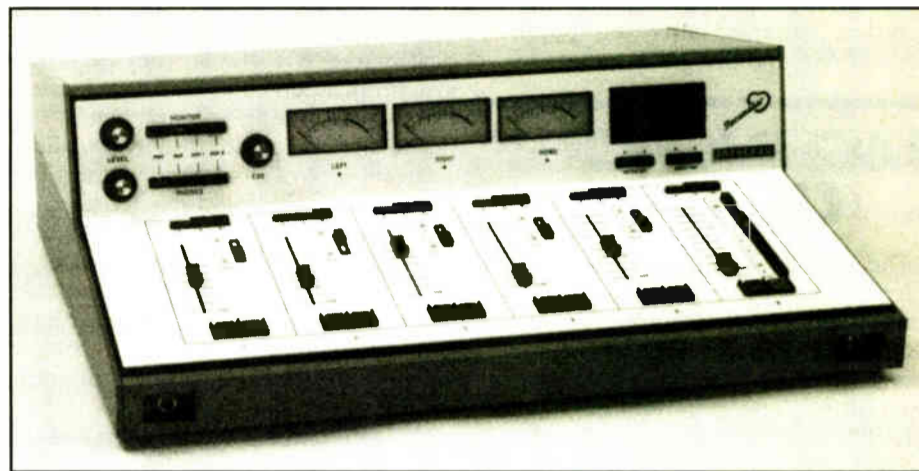
Momentary and continuous open-collector control outputs are associated with each input and control follows input selection. For interfacing equipment that requires a dry contact, Autogram manufactures the RP-16 relay panel with 16 relays and a regulated 24 V power supply.

While the Pacemaker 618 is stereo, a switchable mono output is available to give the sum of either the Program or Audition output busses. The mix-minus bus, selectable from the front

panel, is monaural and functions as a post-fader mixing buss delivering a program level telephone feed. Two VU meters can be switched between program and audition; a third monitors the mono.

pedance phones as well. As in all Autogram consoles, the headphones and monitor have separate selector switches and gain controls.

Muting is provided for the monitor driver and cue amplifiers via two independent mute busses also programmed by DIP switches. You can have a microphone on the "A" input and a cart on the "B" input and muting will follow. Two relays are provided



The Pacemaker 618, from Autogram.

With the variation of studio equipment, it is indeed a challenge to interface audio levels. Each input (including the two auxiliary monitoring inputs) has individual programmable termination, 10 or 20 dB pads, and precision multiturn gain trim pots. The electronically balanced inputs can accommodate levels between -20 and +20 dBu and will accept unbalanced consumer gear.

All console outputs are electronically balanced and are adjustable from 0 dBm to +8 dBm with buffered metering.

### Cue to phones

Incorporated in the Pacemaker is the automatic cue-to-phones (CTP) monitoring function. Programming DIP switches allow CTP to be enabled for any console input. With CTP enabled you hear cue through the left headphone while monitoring the selected program on the right headphone. A separate cue amplifier is included to drive an external cue speaker.

The headphone and cue amplifiers are rated at 2 W rms into 8 ohms and have sufficient voltage available for high im-

pedance warning lamps, skimmers, etc.

The microphone pre-amp board has four isolated amplifiers that boost the microphone output to balanced line level for patching into any input or external processing equipment.

### Clock option

An optional autoclock or autcount unit may be installed in the PM 618. The autoclock provides time-of-day, count up timer, outdoor temperature and day-date while the autcount is a time up counter. The autoclock provides communication which allows several autoclocks to be connected, all sharing the same time and temperature information. The clock can be synchronized to networks or WWV.

The Pacemaker 618, Autogram's lowest priced stereo console, (\$4995 list) is being built with the same integrity and intensive care that all Autograms receive.

■ ■ ■

*Editor's note: For more information on the PM 618, contact Jim Laird at Autogram: 214-424-8585, or circle Reader Service 112.*

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| D. Combination AM/FM station | F. Recording studio             |
| A. Commercial AM station     | G. TV station/teleprod facility |
| B. Commercial FM station     | H. Consultant/ind engineer      |
| C. Educational FM station    | I. Mfg, distributor or dealer   |
| E. Network/group owner       | J. Other _____                  |

- |                         |                           |
|-------------------------|---------------------------|
| <b>II. Job Function</b> |                           |
| A. Ownership            | D. Programming/production |
| B. General management   | E. News operations        |
| C. Engineering          | F. Other (specify) _____  |

- |                                  |            |            |
|----------------------------------|------------|------------|
| <b>III. Purchasing Authority</b> |            |            |
| 1. Recommend                     | 2. Specify | 3. Approve |

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| 002 | 024 | 046 | 068 | 090 | 112 | 134 |
| 003 | 025 | 047 | 069 | 091 | 113 | 135 |
| 004 | 026 | 048 | 070 | 092 | 114 | 136 |
| 005 | 027 | 049 | 071 | 093 | 115 | 137 |
| 006 | 028 | 050 | 072 | 094 | 116 | 138 |
| 007 | 029 | 051 | 073 | 095 | 117 | 139 |
| 008 | 030 | 052 | 074 | 096 | 118 | 140 |
| 009 | 031 | 053 | 075 | 097 | 119 | 141 |
| 010 | 032 | 054 | 076 | 098 | 120 | 142 |
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| 014 | 036 | 058 | 080 | 102 | 124 | 146 |
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# RS 1000 Automation

by William Coppage, CE  
WMCU

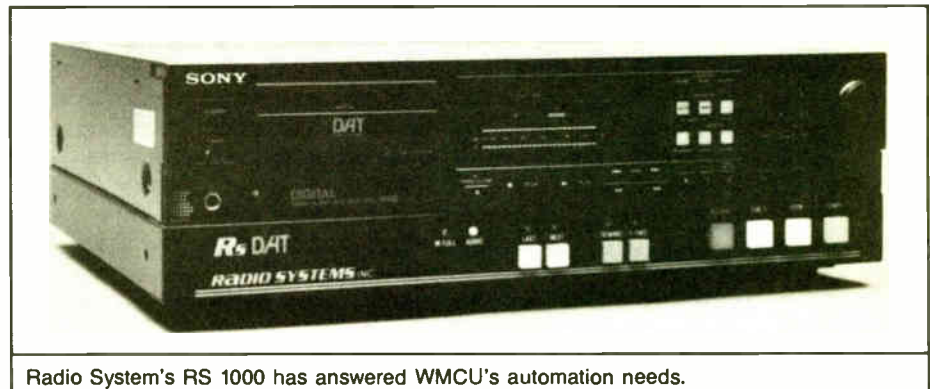
**Miami FL** WMCU has been using automated programming for over 15 years. Our automation changed form several times as technology improved. Much of our music came from older vinyl recordings and the quality often left something to be desired.

In the last few years, however, with the advent of the compact disc, 95% of our music now comes from these high quality recordings. We felt that it was time to make a change from the old 1/4" 2-track magnetic tape to something that would allow us to reproduce the quality of the CD for use in our automation system. While attending the National Religious Broadcasters convention of 1989, our station manager Steve James was thoroughly impressed by the quality of the digital recordings and the ease of operations of the Radio Systems RS 1000

ble was used for the data connection. Radio Systems supplied a special IGM EPROM, which was necessary for use with our Sentry format FS12-B. Also, it was necessary to use an inexpensive data latch for each machine. Each latch required a simple jumper between pins 8 of the input and output connectors. The latches plug directly into the rear of the FS12-B.

## USER REPORT

The features of major interest to the broadcaster include balanced audio in and out, adjustable output level for audio and logging printer, connection for remote control and connection for BCD information from an automation system. In summary, since converting our automation systems to the RS 1000, we



Radio System's RS 1000 has answered WMCU's automation needs.

digital audio tape machine. We purchased four of these units—three for use in the automation system and one for production purposes.

The DAT machines were installed in the automation system in the space left after removing one of the old reel-to-reel tape decks. Each machine requires two cables: one for data and the other for audio start and e.o.m. Eight conductor ca-

have found that our station sound is exceptionally uniform and we have been able to achieve the quality of reproduction so necessary in a competitive radio market.

Editor's note: For more information on the RS 1000 DAT, contact Paul McLane at Radio Systems: 609-467-8000, FAX: 609-467-3044, or circle Reader Service 40.

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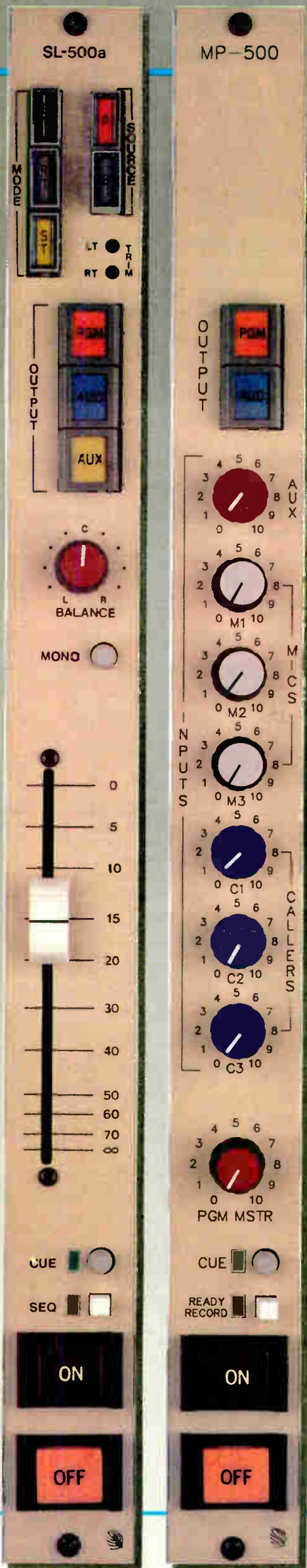
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