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Remembering
The Shadow
...the radio
original,
see p. 27



Vol 18, No 15

Radio's Best Read Newspaper

July 27, 1994

PRODUCT EVALUATION

Denon Radio Combines RDS/CD

by Ken C. Pohlmann
Hammer Laboratories

MIAMI At first glance, the Denon DCT-950R is just another high-end car receiver. It has all the perks you'd expect in a contemporary, high-end head unit.

The \$729 unit includes a CD player with 20-bit digital filter with 8-times oversampling and noise shaping, dual 18-bit D/A converters, 30 radio station presets (18 FM and 12 AM), automatic station memory system, clock, high power output (four channels rated at 20 watts into 4 ohms), CD changer control, detachable front panel, and optional wireless remote control.

But a closer look reveals a feature lacking in most other heads: RDS (Radio Data System). Or, as Denon calls it, "Smart Radio." The RDS information is transmitted via a 57 kHz sub-carrier located on a station's main signal. RDS capabilities include call letter display, station selection by format, scrolling text messages, traffic alerts, emergency alerts, and alternate frequency switching.

Three buttons labelled "RDS SEEK," "AF-PTY" and "TA/PS" provide the RDS functions. Using them, you can find stations broadcasting RDS data, view their program service name and program

type, and search for stations with a particular program type. In addition, you can receive AF (alternative frequency) broadcasts. When signal conditions fail, the unit will automatically switch to another station broadcasting the same program on another frequency. This is accomplished by using either an AF list or PI code, which are broadcast within the RDS data.

The signal strength level at which AF

searching begins can be manually set: Press and hold the AF/PTY button, and the "AF LEV n" display appears where n varies from 0 to 7 and indicates signal strength. Levels can be adjusted by using the Preset 1 and 2 buttons.



The TA (Traffic Announcement) function lets you scan for traffic info; simply hit the TA/PS button to engage the TA function. The tuner automatically stops when it receives an

RDS station with traffic info. The volume of the announcement can be varied with the volume knob, and that level is stored for subsequent announcements. The volume returns to its original level when the announcement ends. The function can be set so that when listening to CD playback, the disc is paused whenever an announcement is received. Finally, the RDS lets you receive emergency alert broadcasts.

There are 15 other buttons on the DCT-950R's front panel, and most of them provide the familiar car receiver features. For example, you'll find buttons for power on, tuner on, and band select, CD play/pause, disc eject, tuner search and seek, track select and fast forward/reverse, mute, preset scan, local/mono, and panel detach. Six buttons provide

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Wolfman Jack Brings 'Funky Richness' to D.C.

by Alan Haber

Part I of II

WASHINGTON It's Friday the 13th, and Wolfman Jack is howling "Alright!" He's wailing into his microphone with pure abandon, running on psychic adrenaline: "It's Elvis time!"

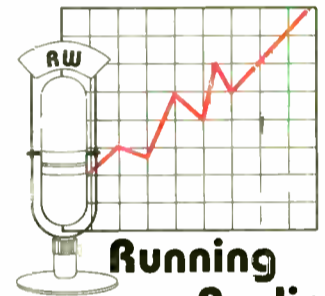
The Wolfman's forehead is overrun with sweat; a bandanna, tied tightly around his head, soaks up his intensity as the guitar, then the piano, then the bass guitar (a-thumpa, thumpa, thumpa), and the drums on "Burning Love" kick in, and the King begins pouring out his soul: "Lord Almighty," he sings from his heart, "I feel the temperature risin'..."

The Wolfman leans back in his chair at the Washington, D.C., Hard Rock Cafe and closes his eyes, coming back down to earth from somewhere high up above, from the place to which he holds the sole deed, knows all the roads and where they lead. The Wolfman is presiding over his kingdom, transplanted to the nation's capital, and transformed into his lair, his personal stomping grounds.

Test of time

Wolfman Jack has stood the test of time—thirty years' worth, to be exact. His latest gig finds him spinning his favorite stacks of wax—the platters that matter—every Friday night live from the Hard Rock Cafe on oldies radio WXTR-FM (XTRA 104) in Waldorf, Md. (Washington). With his friend and manager Lonnie Napier on his right, and XTRA jock Marilyn Thompson on his left, the Wolfman is, on this Friday night, signalling the start of the weekend with a howl, in a way that would put poor old Larry Talbot to shame.

"I love doing live radio, that's my



Running Radio
See pp. 13-28

favorite thing to do," the Wolfman said. Attired in the finest black fashion—he might even be called the Man in Black, if the name weren't already taken. "I'll tell ya, some folks like to play golf, go huntin', go fishin'—I want to do live radio," he howled. "That's my sport."

In his blood

Radio was in the Wolfman's blood even when he was a young man growing

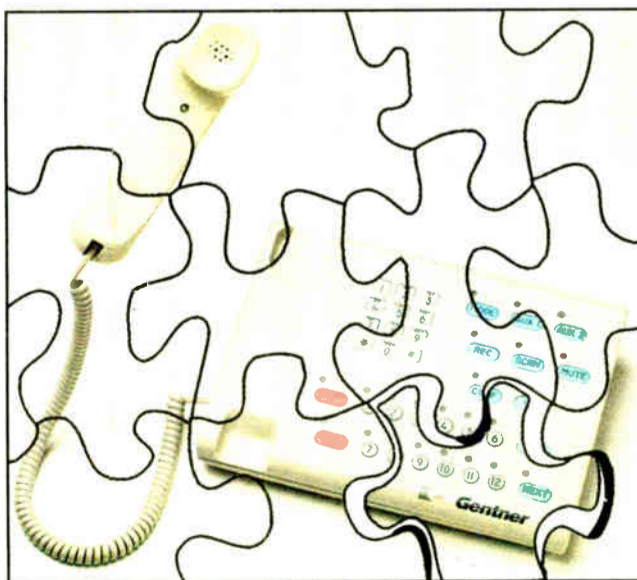


Wolfman Jack (r) and manager Lonnie Napier at the Washington, D.C. Hard Rock Cafe.

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up in Brooklyn, N.Y. The then "kinda middle class" Wolfman-to-be used to practice being a disc jockey in the coal bins in the two-story apartment house he lived in with his family. "I'm a radio freak from way back," he volunteered, as if by explanation.

The disc jockeys of the day, from John

continued on page 14 ▶

NEWSWATCH

EBS Ruling On FCC Schedule

WASHINGTON The FCC had planned to pass new Emergency Broadcast System (EBS) regulations at its June 29 meeting, but the item was not ready due to last-minute details, including further review of proposed cable TV rules, said Helena Mitchell, chief of the FCC's EBS office. At press time the EBS item was not on the July 14 FCC meeting agenda.

The proposed rules are expected

to require broadcasters to upgrade their EBS facilities using one of a number of new technologies field tested by the FCC in 1993. They are also expected to remove the requirement for a 24-hour EBS operator on-call at broadcast stations.

Mitchell said the item has not been changed or delayed due to complaints brought by the National Association of Broadcasters earlier this year about mandated broadcaster spending related to the new EBS rules.

The new FCC rules have been

crafted in cooperation with the National Weather Service, the Federal Emergency Management Agency and the National Oceanic and Atmospheric Administration.

Vice President Al Gore plans to hold a press conference together with representatives of the four agencies to promote the expanded alerting system as soon as the FCC completes its proposed reform. Gore has given the commission until August to pass the item, Mitchell said. Otherwise, he

plans to hold the press conference without the commission.

House Passes 'Info Highway' Bill

WASHINGTON The House of Representatives passed legislation to create a National Information Infrastructure (H.R. 3626 and H.R. 3636) on June 28, several months after both bills had been marked up by the Energy & Commerce and Judiciary Committees.

The delay in bringing the bills to the floor was caused by last-minute differences over common carrier issues between the two committee chairmen and

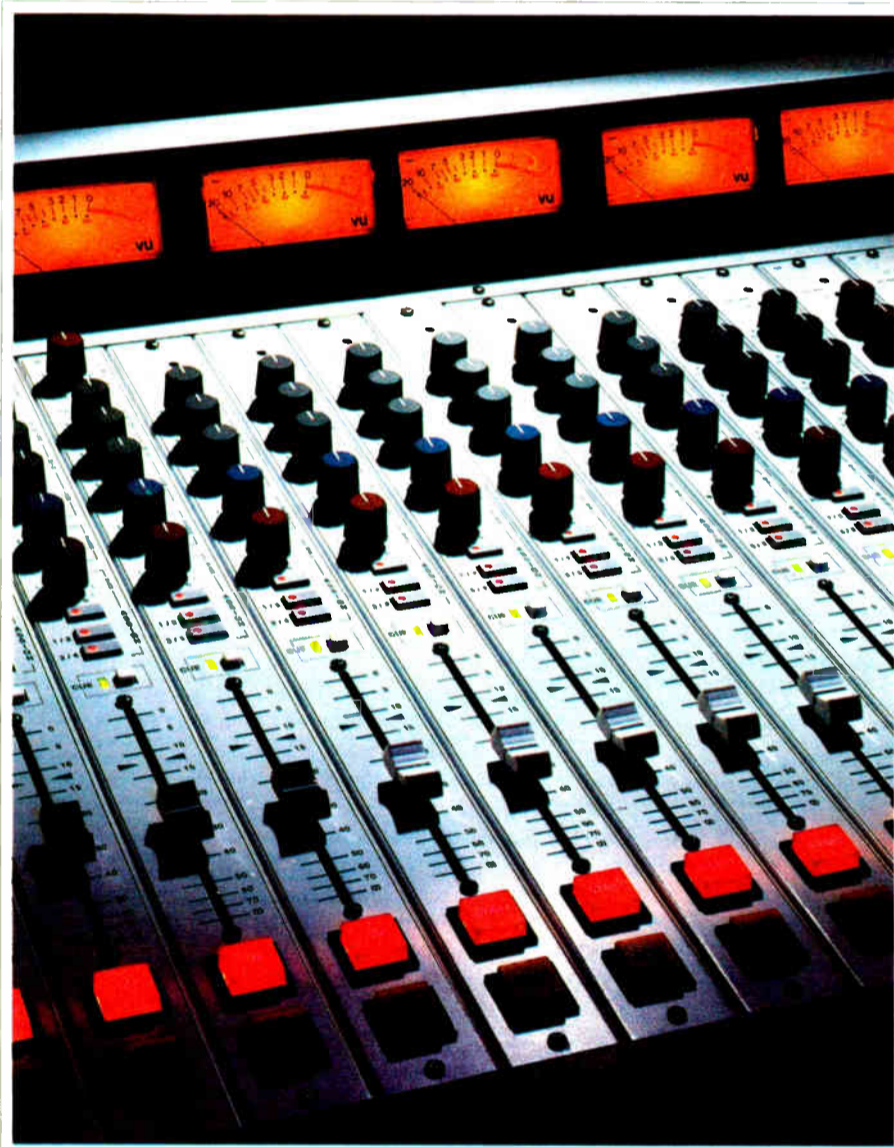
primary authors of the legislation, John Dingell (D-Mich.) and Jack Brooks (D-Texas). A compromise was struck before the bills reached the Rules Committee, and the legislation ultimately passed the full House by voice vote.

The two bills are widely considered the most extensive rewrite of communications law since the 1934 Communications Act. A "spectrum flexibility" provision of H.R. 3636 allowing TV stations to use future licensed HDTV frequencies for various data transmission and other new high-tech services is among the most significant broadcast-related sections of the bill.

There is still time to pass an NII bill before the end of the current session, although time is growing short. At press time, the Senate Commerce Committee had not yet marked up its NII bill (S. 1822). Less than six legislative weeks remain before the Congress is scheduled to

continued on next page ▶

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Mono modules have both mic and line inputs: mic for recording and line for track playbacks. Subgroup channels provide fader control for record levels and also have a second

track playback path for really quick sessions. And of course the MR-40 has an on-air type monitor section, complete with control room, headphone and studio outputs, plus all the necessary muting and tally functions you'd want. It even has a built-in cue speaker and power amplifier.

Small format doesn't mean we've cut corners either: all audio switches are gold contact; assign buttons are LED illuminated; all ICs are double burned-in, and all circuits are double-tested—we don't take any chances with reliability! The MR-40 is a perfect blend of excellence in engineering and sensible size. It's just right for 4-track analog and digital work stations—it can even back up your on-air console! So contact Audioarts.

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PRODUCT EVALUATION

At Home with Latest Crop of RDS Tuners

by John Gatski

WASHINGTON The growth of RDS (Radio Data System) in the U.S. has been painstakingly slow. So far, only about 170 FM stations use the 57 kHz digital subcarrier technology.

Receiver and tuner companies have been equally (if not more) slow to bring U.S. RDS models here—despite the fact that most of them have produced the European version for nearly ten years. Most companies say they want more broadcasters on the

air before they commit to RDS products.

Denon, however, has been the exception. The company has jumped into RDS with its proverbial both feet. It offers two home/studio tuners, TU-650RD and TU-380RD, both of which are evaluated here, a couple of home receivers, and three car receivers.

Denon also has committed thousands of dollars worth of RE RDS encoders and TU-380RDs to about 40 FM stations as part of a national RDS promotion effort. Most of them are National Public Radio (NPR) stations.

The products

My evaluation of Denon's two home/studio tuners consisted of a several week audition in my home studio. An added bonus to my trial was a Delco prototype RDS car cassette/AM mono/FM stereo receiver. RE America graciously donated one to use in the comparison, as did Denon with the TU-650RD and TU-380RD.

The TU-650RD was introduced in 1993 and looks similar to the TU-680NAB wideband AM stereo/FM stereo tuner. Retailing for about \$400, the tuner features a non-scrolling, basic eight character RDS display, selectable IF wide/narrow band control, and a non-RDS labeling feature that allows you to put station call letters in the presets. Other features include RF attenuator, coax or terminal AM/FM antenna connection and one set of RCA output jacks. The TU-650RD is rack-mountable.

The TU-380RD is a \$339 retail home/studio tuner that looks similar to the TU-650RD but is not quite as sensitive in its tuning (but hardly noticeable in my setup). The tuner features 64 character scrolling RDS display, RF attenuator, and 40 standard presets. The rear panel is similar to the TU-650RD, and the unit is rack-mountable.

The Delco RDS cassette receiver prototype probably is not the exact version

General Motors customers will get when they order it with their new wheels, but it will be similar. The unit features a "sort-of" RDS text scrolling feature (one static block at a time on Delco's two-line display), 15 watt per channel amplifier, Theftlock, 18 station presets, CD changer control, and automatic Dolby B for cassette play.

In the studio

I did not feel like modifying my VW to try out the Delco in a mobile environment, so I used it as a home tuner. I customized the wiring harness so I could fire a couple of speakers and power the radio with a DC power supply.

For my user tests of the three tuners, I connected the two Denons to my home studio preamp/amp system and mounted the supplied dipole antennas in similar positions to assure equal reception. Because the Delco had a provision for a car antenna, I custom-made a wire dipole that did a pretty good job. The intent of this evaluation was not to determine precise sensitivity, but to study the RDS functions. (By the way, both tuners and the Delco sounded very good.)

Luckily, the Washington, D.C., area had three on-the-air RDS stations: WGAY 99.5, a soft rock station; WHFS 99.1, a modern rock station; and WETA 90.9, a classical/NPR station.

For those who are not familiar with RDS,

I'll summarize some of functions that have been standardized for U.S. use:

✓ **Text Functions.** Every station can transmit its call letters and text message, such as slogan or message. Longer, scrolling messages, such as slogans, can be transmitted, but only the scrolling text receivers can receive those messages. These receivers also are capable of receiving artist and song title information from stations that have such software for their RDS encoders.

✓ **Format Information.** Each station's RDS encoder transmits a PTY code that is based on its format. There are 31 PTY codes that include all of the major formats and cover most of the minor format variations. The emergency alert and traffic alert functions also have a PTY code.

The PTY code information allows an RDS tuner to recognize the station's format and display that information to the listeners. For example, if a listener is driving through an unfamiliar area and there are RDS stations, the format—along with station call letters and text message—can be displayed on the receiver display.

A listener also can search out stations by format. You select the format via a button on your receiver, hit search and away it goes, seeking out every rock, country or whatever format you are looking for—including news and public stations.

continued on page 10 ►

NEWSWATCH

► continued from previous page
adjourn in early October.

House Members Are Against Spectrum Fee

WASHINGTON A bipartisan group of 86 House members—44 Republicans, 41 Democrats and one Independent—signed a letter to Leon Panetta, Director of the Office of Management and Budget, asking the Clinton Administration to drop its plan to charge broadcasters "spectrum royalty" fees to fund implementation of the General Agreement on Tariffs and Trade (GATT) treaty.

The Clinton Administration plans to raise \$4.8 billion over five years from FCC licensees to make up for tariff shortfalls that are expected to be caused by GATT. Four members of the House Ways and Means Committee began distributing a letter among their colleagues in June. It calls for broadcasters to be exempt from the fees because they would not directly benefit from GATT and because they would be unable to pass the additional expense on to their customers as easily as other FCC licensees (RW, July 13).

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It Was the Right Time; It Was the Wrong Gear

WASHINGTON Broadcasters often look back on the early days of radio and recount the stories of Sarnoff, Armstrong and de Forest. Tales are often told of the great broadcast facilities that have been licensed since day one (KDKA Pittsburgh being widely accepted as the first).

I often love to talk about the past in this very column. It's fun. **RW** readers constantly ask for more nostalgia and radio history, and I do my best to oblige.

Just a few years ago, Tom Lewis wrote



about the medium's inception in the widely acclaimed, "Empire of the Air," a wonderful book that was turned into a PBS documentary. Imagine my surprise to discover (just last week), that in all of radio's reminiscing, one of its pioneers has gone largely unheralded.

Unearthing the past

Michael Adams, faculty advisor to KSJS-FM at San Jose State University in California, has written, produced and directed an hour-long documentary, "Broadcasting's Forgotten Father, The Charles Herrold Story." Due to air on PBS stations in 1995. Adams' video essay is thought-provoking and informative.

The program consists of a carefully orchestrated blend of still shots, narration and recreations. Adams sets the

opening stage with America of the 1920s—an America where prosperity was within your grasp and good times were the rule of the day.

It was to be the dawn of the Hollywood era, as well as the pivotal decade for radio. In 1920, Charles Herrold had already ceased his five years of regularly scheduled broadcasts in the San Jose - San Francisco area.

Why doesn't anyone know about Charles Herrold? Why is his story lost? Adams sets out to answer these questions, and, in the process, reveals a hardworking, intelligent, inventive man who went about the business of radio much like you do today.

Born in 1875 in northern Illinois, Charles Herrold was the son of Civil War Captain William Herrold and his wife, a school teacher and Bible lecturer. In 1885, William Herrold moved his family to San Jose, where he acquired a prune farm (yes, a prune farm) and over the years designed and patented a variety of farming implements.

The house William built for his family still stands today. Behind the house, atop the barn, William constructed an observatory with his son Charles. This observatory was Charles's first love, but

in 1895, the year he entered Stanford University, the only astronomy professor on staff left the university. So Charles declared a physics major, specializing in electricity and the wireless.

Wireless instruction

The next several years were good for Herrold. He eventually dropped out of Stanford and moved to San Francisco. There he spent much of his time inventing mechanical devices. He became the chief engineer for a wireless company. When the great earthquake of 1906 hit San Francisco, Herrold lost everything.

Undeterred, and brimming with optimism, Herrold established the Herrold

Wireless College of San Jose. There, between 1909 and 1917, he trained people as wireless operators and successfully promoted the new technology to the youngsters of the Bay area. By 1911, 200 high school boys had joined the local wireless club.

Herrold wanted more than just to be a teacher, however. He was swayed by the experiments made by Fessenden and de Forest. He devoured "Looking Backward," a utopian novel that envisioned a future entertainment center for the home,

emanating from a wireless box.

In 1913, the 38-year-old Herrold married an 18-year-old San Jose woman. Sybil Herrold joined her husband on the air from the Wireless College as the first female disc jockey on the air in the U.S.

But I'm jumping ahead. Concurrent with his teachings, Charles designed a

wireless, spark-gap transmitter (using a telephone as his model) to broadcast from the school. Convinced that it would

It was Herrold's intent to build a program with mass appeal that would have a loyal audience.

never fully succeed, Charles and his assistant, Ray Newby, invented the "arc fone." Based on the principal of the design of a street lamp, Charles put six arcs in a series and, by 1912, patented the different pieces of his invention.

Little Hams

Picture yourself broadcasting from a studio that doubled as the transmitter. The microphone (live), in series with the transmitting voltage, had to be water-cooled during operation. Talk about electric radio! Between the years of 1912 and 1917, Charles, Sybil and their son Robert broadcast every Wednesday night.

The "Little Hams" program, so called because you had to build your own receiver to tune it in, was a carefully structured entertainment program that featured music and entertainment. Herrold struck a deal with a local music store: He would borrow the records, play them and return them. The store needed the records back because it would invariably sell out after the program. Hmmm—an interesting concept.

It was Herrold's intent to build a program with mass appeal that would have a loyal audience. He constructed and installed listening devices in public places. He was audible from 50 miles away in San Francisco.

Local press reports from that period revealed mixed emotions about the wireless transmissions. The San Jose daily newspaper editor deplored the fact that broadcasting could undermine the ability of live performances to draw crowds.

After the war

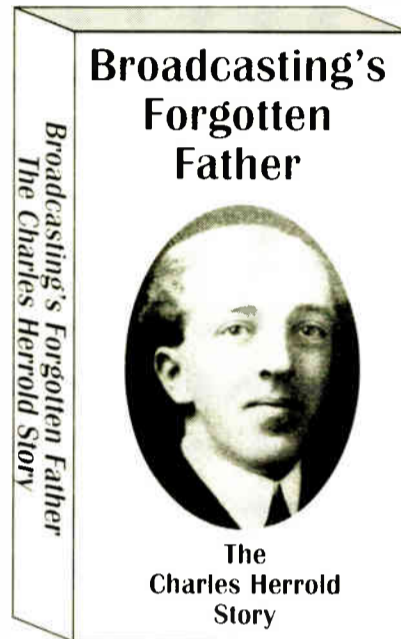
After World War I, radio became a regulated entity. The manufacturers of radio receivers, RCA and Westinghouse, e.g., prevailed with their vacuum tube technologies over the mechanical arc fone.

Herrold was ahead of his time, but using the wrong technology. He did not belong, like Sarnoff and Frank Conrad, to a big company (RCA and Westinghouse, respectively). And he lived in a small town.

His arc fone obsolete, Herrold applied for and received a license to operate KQW in San Jose. Herrold was nearing 50 years of age. His wife left him in 1924 and remarried a year later. In 1925, a struggling Herrold struck a deal with the First Baptist Church in San Jose whereby he transferred the license of KQW to them and remained on staff as their chief engineer.

Inexplicably, something went wrong, and Herrold lost his job soon after the deal was struck. Herrold spent his last few years selling blocks of radio air time to sponsors. At one point, KQW paid homage to Herrold with a one-hour story about his life. He was portrayed by Jack Webb.

In 1948, Herrold died of heart failure, largely ignored by the world he had helped connect. Look for the documentary and watch it. It is well worth getting acquainted with one of radio's forgotten fathers.



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Tower lessons

Dear RW,

That sure looks like our tower at KRTK(FM) near Cleveland, Texas, next to your nice article on tower upkeep. (See story and photo in RW, June 29, page 34.) The antenna is a Jampro, but the tower was made by Central Tower. We put it up in the summer and fall of 1992.

We recently had a plumb-and-tension done and the results were interesting. The upper guys were close to their normal tensions, but the lower 18 guys (27 total, 1,000-foot tower) were an average of 30 percent low.

The anchors had not been properly back-filled and compacted so we had a few T-shaped swimming pools behind the anchors.

I guess the moral of the story is, old towers are not the only ones that need a fair dose of TLC. I'm fairly new to tower maintenance, so I learned a lot from this little escapade.

A.R. Parker, chief engineer
KRTS(FM)-KRTK(FM) Houston

Please preserve

Dear RW,

Imagine some people have an old Packard sedan in fairly good condition. What would you think if they were to trash it just because it's old? You would probably think they lost their senses.

Something similar is happening in our industry. Not long ago I learned of the recent demise of an RCA BTA 250D and an old Federal FM transmitter. I have a hard time believing that bozo engineer who took out the 250D couldn't have found a ham radio operator who would have loved to have had it to get on 160 meters.

I'm tired of hearing, "You should have been here a couple of years ago when we trashed that one." You may be surprised to learn that there is a small fraternity that does collect these old boxes, including just about everything from the mic to the tower beacon and in the rack, especially if it has tubes or is over 25 years old.

How much to ask for a particular piece is dependent upon what you have and what condition it is in. With large items like transmitters, you will be ahead if you sell it for the amount it takes to have it hauled away, and save the amount it takes to get it hauled. I often drive two or more days to get to them.

Before you owners of old and rare equipment get the itch to pitch, contact me (612-631-5005 between 11 p.m. and 7 a.m.; 621-5000 if you would like to leave a message during the day) or Mike Dorrough (818-999-1132, days). Chances are that we or someone we know will be interested in what you have.

Scott Todd, Skylight
Satellite Network,
Stacy, Minn.

Correction

In the July 13 RW, the page 9 article, "Station Allegedly Left Unattended, a reference was made to the M Street Journal's report that Wisconsin Voice of Christian Youth planned to buy WXOL. According to Vick Eliason, vice president of the Wisconsin Voice of Christian Youth, his network had only informal discussions with WXOL management about a possible purchase and that no agreement or contract had been signed.

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**Next Issue of
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Embrace The Opportunity

Whenever a new technology appears on the scene, broadcasters and consumer electronics manufacturers play a guessing game among themselves that invariably involves chickens and eggs. Neither wants to be the first to take the chance on a big high-tech investment before the public demand is well established.

This issue's RDS Roll Call and accompanying stories demonstrate that the "who-will-take-the-lead?" issue has passed for Radio Broadcast Data Service. Six consumer electronics companies are now selling RBDS receivers, and many of those companies offer multiple varieties, from portable stereo systems to home receivers to—most importantly—car receivers.

Many broadcasters are also turning to RBDS. The latest count of 170 stations with encoders installed approaches twice the estimated total at the end of 1993. Forty of the most recent installations are by National Public Radio affiliates—more evidence of non-commercial broadcasting's traditional willingness to experiment with new technology.

But broadcaster acceptance is below the anticipated level for 1994, which was widely expected to be the pivotal year for RBDS growth. About three percent of currently licensed FMs have RBDS. It will take decades to reach 50 percent if broadcasters buy encoders at the rate they bought them during the first half of this year.

However, it seems a safe prediction that RBDS growth will speed up considerably.

Along with the introduction of new receivers, broadcasters will be attracted by the new advertising sales opportunities, the chance to enter potentially lucrative paging and global positioning businesses, and the station promotion possibilities offered by data transmission.

The FCC is not likely to mandate RBDS in its forthcoming rewrite of Emergency Broadcast System regulations, but RBDS warning systems will be one of the available options. Many stations could open up potential RBDS revenue streams and fulfill the FCC's EBS requirements in one stroke.

Broadcasters must now decide the future of RBDS and, by extension, the future of data broadcasting in the DAB era and beyond. Embrace the opportunity.

—RW

GUEST EDITORIAL

RDS Is Radio Compatible

by Brett G. Porter

There's been a lot of talk lately about high speed data transmission using FM subcarriers as becoming the new wave of radio's future.

Engineers should always be thinking about tomorrow, but before broadcasters sacrifice current, revenue-producing available technology for some uncertain future, a little reality check is in order.

Yes, the NRSC has begun to look at proposals for high speed data. But a recent guest commentary in *Radio World* (June 1) focused on only one of three proposals before the committee. The implication was that these unproven, high speed data "proposals" would in some way replace existing technologies like RDS. That is simply not true. Just take a look at the facts.

RDS (the U.S. standard is called RBDS) conforms to an international standard which has already been used for many years in Europe. It was specifically chosen because of its non-interference to a station's main channel audio signal.

RDS receivers are already in production and are shipping today, and this includes consumer models from the likes of Delco, Denon, Onkyo and Grundig, among others. Several companies also are manufacturing RDS encoding, decoding and test and monitor equipment.

Contrary to the recent opinion expressed in the pages of RW, RDS is not a limited technology and can of course be used (and has been successful-

ly used) for paging and applications such as stock quotes.

Even more importantly, RDS has a number of advantages of special concern to broadcasters. It has an extremely robust data stream and has been shown to work well even at 100 mph on the Autobahn in Europe. It boasts a hearty signal with low injection rates—about three percent, according to the standard's recommendation. Its built-in error checking and correction plus its redundant transmission of information make its reception extremely dependable, even under adverse broadcast reception conditions.

The 57 kHz subcarrier of RDS tucks in neatly about the L-R frequency and below the 67 kHz subcarrier which is in wide use among broadcasters today. And it in no way interferes with broadcasters using their other subcarriers to increase revenues.

And consider the myriad uses of RDS possible right now: station ID, format ID, automated tuning by format, program info display, advertiser info, real-time traffic advisories—all directly and immediately benefiting a radio station and increasing its service to its listeners.

Contrast that with the auxiliary benefits being proposed by the high speed proponents: paging, weather, sports and other reasons to tune away from a radio station's main channel.

Technically, the high speed data proposals are on uncertain ground as well. Proponents claim non-interference with the main channel, but this has yet to be tested. Proponents claim reliability, but

RDS has already shown its data rate to be a dependable one—with high speed, we simply don't know.

In addition, widespread processing practices in force at a majority of broadcast stations these days make variable injection systems (such as the Japanese L-MSK) particularly unlikely to succeed.

In short, high speed data is a nice idea which remains unstandardized and unproven, with several years after any agreed-upon standard before equipment will be available and even then uncertainty about its widespread acceptance among—or even real-world benefits to—broadcasters or consumers.

But as you can see from the growing numbers of stations already adopting RDS and from the equipment on the market today, RDS is an existing technology of immediate and direct benefit to stations.

At the very least, any new technology which comes along will be likely to co-exist with RDS. MSI offers both 4800 bits per second (bps) data subcarrier equipment designed for 67 and 92 kHz applications and RDS/RBDS standard products. FM stations are in the enviable position of having beneficial existing technologies they can use today while contemplating new ideas which may come about tomorrow.

The caveat is not that stations hitch their futures to the "wrong" technology, it's that they get into the game early in order to reap the benefits from as many technologies as they can as soon as they can. With RDS, their timetable is today.

□□□

Brett G. Porter is software manager at Modulation Sciences Inc. and can be contacted by calling 800-826-2603; outside the U.S., call 908-302-3090.

RBDS ROLL CALL

The following is **Radio World's** quarterly listing of RBDS stations, equipment and receiver manufacturers, and service providers. If you would like to be included in the next listing, contact John Gatski at 703-998-7600.

RBDS Equipment Manufacturers/Distributors

AEV (Encoder)

Via Saviolo I/E
40017 Le Budrie
Di S. G. Perisceto
Bologna, Italy
+39-51-95-02-49

Reader Service 121

Bradley Broadcast (Encoder)

8101 Cessna Avenue
Gaithersburg, Maryland 20979
Contact: Art Reed
800-732-7665

**Reader Service
186**



Broadcast Electronics (Encoder)

4100 North 24th St.
P.O. Box 3606
Quincy, Illinois 62305
Contact: David White
217-224-9600

Reader Service 29



Broadcast Supply Worldwide (Encoder)

7012 27th St. West
Tacoma, Washington 98406
Contact: Tim Schweigert
800-838-0110

Reader Service 79

Circuit Research Labs (Encoder)

2522 W. Geneva
Tempe, Arizona 85282
Contact: William Ammons
800-535-7648

Reader Service 105



Harris Allied (Encoder)

3712 National Road West
Richmond, Indiana 47374
Contact: Scott Beeler
800-622-0022

Reader Service 143

Modulation Sciences (Encoder/Monitor)

12A World's Fair Drive
Somerset, New Jersey 08873
Contact: Art Constantine
908-302-3090

Reader Service 33

**modulation
sciences**

RDS Diagnostix (Test/Decoder)

74 Hanover Road
Mountain Lakes, New Jersey 07046
Contact: Boyd Baker
201-334-7858

Reader Service 106

RE America, Inc. (Encoder)

31029 Center Ridge Road
Westlake, Ohio 44145
Contact: John Casey
216-871-7617

Reader Service 209



Rohde and Schwarz (Encoder)

4425 Nicole Drive
Lanham, Maryland 20706
Contact: David Stephenson
301-459-8800

Reader Service 124

SCA Data Systems (Encoder)

Suite 350, 225 Arizona Avenue
Santa Monica, California 90401
Contact: Corinne Weber
310-576-0655

Reader Service 47

Teli AB (Encoder)

14980 Nunashamn
Sweden
Contact: Marc Roman
+46-8749-6600

Reader Service 51

Tectan (Encoder)

Box 27157
Concord, California 94527
Contact: Judy Pendleton
800-TECTAN-1

Reader Service 135



VG Electronics (Encoder)

Theaklen Drive Hastings
East Sussex TN34 1YQ
England
Contact: Bev Marks
+44-424-446888

Reader Service 185

RBDS Receiver Manufacturers (with current U.S. models)

Axcess (Paging)

6620 Riverside Drive
Suite 200
Metairie, Louisiana 70003
Contact: Bobby Adams
504-887-9800

Reader Service 206

Delco (Car)

1 Corporate Center
Mail Station CT-16A
Kokomo, Indiana 46904
Contact: Gil Porter
317-451-0658

Reader Service 53

Denon (Car/Home)

222 New Road
Parsippany, New Jersey 07054
Contact: Stephen Baker
201-575-7810

Reader Service 142

DENON

Grundig (Portable)

3520 Haven Ave., Unit L
Redwood City, California 94063
Contact: Dan Johnson
415-361-1611

Reader Service 113

Modulation Sciences (Data)

12A World's Fair Drive
Somerset, New Jersey 08873
Contact: Art Constantine
908-302-3090

Reader Service 66

Onkyo (Home)

200 Williams Drive
Ramsey, New Jersey 07446
Contact: Fred Maxik
201-825-7950

Reader Service 37

Philips Car Stereo (Car)

9600 54th Avenue N.
Minneapolis, Minnesota 55442
Contact: Bob Trench
800-524-6638

Reader Service 139

Pioneer (Car)

2265 East 220th St.
Long Beach, California 90810
Contact: Ed Sachs
800-PIONEER

Reader Service 101

RBDS Service Providers

Access/Spartan (Paging)

6620 Riverside Drive, Suite 200
Metairie, Louisiana 70003
Contact: Bobby Adams
504-889-9800

Reader Service 43

DCI (Global Positioning)

20045 Stevens Creek Boulevard, Suite 2A
Cupertino, California 95014
Contact: Ron Haley
408-446-8350

Reader Service 125



Coupon Radio (Information Services)

10 Rockefeller Plaza
New York, New York 10020
Contact: David Alwadish
212-595-1313

Reader Service 168



Sage Alerting (EBS)

700 Canal Street
Stamford, Connecticut
Contact: Gerry Lebow
203-357-1464

Reader Service 85

SATX (Data Broadcast Software)

Milestone Technologies
2221 Mariner Circle
Raleigh, North Carolina 27603
Contact: Miles Beam
919-856-0700

Reader Service 35

Specialized Communications (Music Information)

1638 153rd St. SE
Bellevue, Washington 98007
Contact: Allen Hartle
206-641-9043

Reader Service 9



Terrapin (IVHS Services/Diff-GPS)

11958 Monarch Street
Garden Grove, California 92641
Contact: David Kelley
714-898-8200

Reader Service 219

If you would like to feature your company's logo and information on the RBDS Roll Call page, contact your Radio World sales rep.

RBDS Stations

STATION	FREQUENCY	CITY	STATION	FREQUENCY	CITY	STATION	FREQUENCY	CITY	STATION	FREQUENCY	CITY
ALABAMA			WMYZ-FM	95.7	New Orleans	WNYC-FM	93.9	New York	WMMR-FM	93.3	Philadelphia
WRJM-FM	93.7	Geneva	KCIL-FM	107.5	Houma				WRTI-FM	90.1	Philadelphia
ARIZONA			MASSACHUSETTS			NEW MEXICO			WPLY-FM	100.3	Philadelphia
KKFF-FM	92.3	Phoenix	WBUR-FM	90.9	Boston	KKOB-FM	93.3	Albuquerque	WXPN-FM	88.5	Philadelphia
KSLX-FM	100.7	Scottsdale	WGBH-FM	89.7	Boston	NORTH CAROLINA			WDUQ-FM	90.5	Pittsburgh
CALIFORNIA			WBOQ-FM	104.9	Gloucester	WUNC-FM	91.5	Chapel Hill	WRTI-FM*	97.7	Reading
KLOV-FM	88.1	Long Beach	WBCS-FM	96.9	Newton	WCXL-FM	104.1	Kill Devil Hills	TENNESSEE		
KPCC-FM	89.3	Los Angeles	WMUX-FM	106.7	Boston	NORTH DAKOTA			WYPL-FM	89.3	Memphis
KTWV-FM	94.7	Los Angeles	MARYLAND			KNOX-FM	94.7	Grand Forks	TEXAS		
KCRW-FM	89.9	Los Angeles	WHFS-FM	99.1	Annapolis	OHIO			KEAN-FM	105.1	Abilene
KHCP-FM	104.1	Modesto	WXVY-FM	102.7	Baltimore	WOUB-FM	91.3	Athens	KNLE-FM	88.1	Austin
KNPR-FM*	88.1	Ridgecrest	WETH-FM*	89.1	Hagerstown	WGUC-FM	90.9	Cincinnati	KTTX-FM	106.1	Brenhane
KSFM-FM	102.5	Sacramento	MICHIGAN			WVXU-FM	91.7	Cincinnati	KTEX-FM	100.3	Brownsville
KPBS-FM	89.5	San Diego	WIOG-FM	102.5	Bay City	WVWK-FM	94.1	Cincinnati	KAYD-FM	97.5	Beaumont
KYXY-FM	96.5	San Diego	WLLZ-FM	98.7	Detroit	WCPN-FM	90.3	Cleveland	KOXY-FM	94.1	Beaumont
KEAR-FM	106.9	San Francisco	WKQI-FM	95.5	Detroit	WGAR-FM	99.5	Cleveland	KYKR-FM	95.1	Beaumont
KALX-FM	91.7	San Francisco	WJLB-FM	97.9	Detroit	WENZ-FM	107.9	Cleveland	ERA-FM	90.1	Dallas
KKSF-FM	103.7	San Francisco	WQRS-FM	105.1	Detroit	WKSU-FM	89.7	Cleveland	KILT-FM	100.3	Houston
COLORADO			WDBM-FM	88.9	East Lansing	WLTF-FM	106.5	Cleveland	KUHF-FM	88.7	Houston
KMLH-FM	100.3	Denver	WKAR-FM	90.5	East Lansing	WLWQ-FM	96.3	Columbus	KOOI-FM	106.5	Jacksonville
KCFR-FM	90.1	Denver	MINNESOTA			WDFM-FM	98.1	Defiance	KYKX-FM	105.7	Longview
CONNECTICUT			KBEM-FM	88.5	Minneapolis	WKRJ-FM*	91.5	New Philadelphia	KKMY-FM	104.5	Orange
WSHU-FM	91.1	Fairfield	KNOW-FM	91.1	St. Paul	WKKO-FM	99.9	Toledo	UTAH		
WPKT-FM	90.5	Hartford	KSJN-FM	99.5	St. Paul	WGTE-FM	91.3	Toledo	KSOS-FM	106.9	Ogden
DISTRICT OF COLUMBIA			MISSOURI			WKRW-FM*	89.3	Wooster	KSOS-FM*	92.1	Salt Lake City
WAMU-FM	88.5	Washington	KYYS-FM	102.1	Kansas City	WHIZ-FM	102.5	Zanesville	KSOS-FM*	96.7	Salt Lake City
WETA-FM	90.9	Washington	NEVADA			WOUZ-FM	90.1	Zanesville	KSOS-FM*	98.3	Utah County
WGAY-FM	99.5	Washington	KKLZ-FM	96.3	Las Vegas	WGLE-FM	90.7	Lima	VIRGINIA		
FLORIDA			KNPR-FM	89.5	Las Vegas	OREGON			WLTJ-FM*	95.7	Norfolk
WSPF-FM	90.1	Ft. Myers	KNPR-FM*	88.7	Boulder City	KYTE-FM	102.7	Newport	WNVZ-FM	104.5	Norfolk
WAOA-FM	107.1	Melbourne	KNPR-FM*	91.7	Beatty	KOPB-FM	91.5	Portland	WESR-FM	103.3	Onley
WLRN-FM	90.3	Miami	KOMP-FM	99.3	Henderson	KKRZ-FM	100.3	Portland	WKOC-FM	93.7	Virginia Beach
WMIH-FM	93.1	Miami	KNPR-FM*	88.7	Indian Springs	KMCQ-FM	104.5	The Dalles	WCDX-FM	92.7	Richmond
WMFE-FM	90.7	Orlando	KNPR-FM*	89.5	Laughlin	PENNSYLVANIA			WASHINGTON		
WDCI-FM	105.9	Orlando	KNPR-FM*	88.7	Moapa Valley	WRTI-FM*	97.1	Allentown/Bethlehem	KUOW-FM	94.9	Seattle
WJFT-FM	89.1	Gainesville	KNPR-FM*	88.7	Pahrump	WITF-FM	89.5	Harrisburg	KMPS-FM	94.1	Seattle
WQWW-FM	107.3	Pensacola	KNPR-FM*	88.7	Pahrump	WRVW-FM	97.3	Harrisburg	KRPM-FM	106.1	Tacoma
WFLZ-FM	93.3	Tampa	KNEV-FM	95.5	Reno	WNCE-FM	101.3	Lancaster	* Translators		
GEORGIA			KNPR-FM*	88.1	Scotty's Junction	WFLN-FM	95.7	Philadelphia			
WSTR-FM	94.1	Smyrna	KNPR-FM*	105.1	Searchlight	WHYY-FM	90.9	Philadelphia			
WABE-FM	90.1	Atlanta	KLUC-FM*	98.5	Las Vegas						
WCLK-FM	91.9	Atlanta	KFMS-FM	101.9	Las Vegas						
WKLS-FM	96.1	Atlanta	KEYV-FM	93.1	Las Vegas						
ILLINOIS			KRRR-FM	105.5	Las Vegas						
WCIL-FM	101.5	Carbondale	KOMP-FM	92.3	Las Vegas						
WLRW-FM	94.5	Champaign	KEDG-FM	103.5	Las Vegas						
WBEZ-FM	91.5	Chicago	KFBI-FM	107.5	Las Vegas						
WXRT-FM	93.1	Chicago	KYRK-FM	97.1	Las Vegas						
WLS-FM	94.7	Chicago	KLNR-FM*	91.7	Panaca						
WNUA-FM	95.5	Chicago	KTPH-FM*	91.7	Tonopah						
WDBR-FM	103.7	Springfield	KEYV-FM*	103.5	Laughlin						
WGFA-FM	94.1	Watseka	NEW JERSEY								
INDIANA			WFPG-FM	96.9	Atlantic City						
WVPC-FM	99.7	Frankfort	WKDN-FM	106.9	Camden						
WENS-FM	97.1	Indianapolis	WBGO-FM	88.3	Newark						
WZPL-FM	99.5	Indianapolis	WFME-FM	94.7	Newark						
WITZ-FM	104.7	Jasper	WNNJ-FM	103.7	Newton						
WZVZ-FM	92.7	Kokomo	WPAT-FM	93.1	Patterson						
WVMI-FM	100.5	Kokomo	WADB-FM	95.9	Point Pleasant						
WMRI-FM	106.9	Marion	WCHR-FM	94.5	Trenton						
WLEZ-FM	102.7	Terre Haute	WBSS-FM	97.3	Millville						
IOWA			NEW MEXICO								
KOEL-FM	92.3	Oelwein	KKOB-FM	93.3	Albuquerque						
LOUISIANA			NEW YORK								
WGGZ-FM	98.1	Baton Rouge	WAMC-FM	90.3	Albany						
KFXV-FM	96.7	Morgan City	WZRQ-FM	102.3	Albany						
WLMG-FM	101.9	New Orleans	WHTZ-FM	100.1	New York						
			WNEW-FM	102.7	New York						

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On the Road with an RDS Receiver

► continued from page 1

access and programming for station presets as well as CD repeat, intro scan, disc scan, random playback, and disc changer. One knob, a rarity in today's all-button heads, controls volume as well as bass, treble, fader, and balance.

A LCD display provides all the typical alphanumeric for tuner and CD functions, as well as the all-important RDS information. RDS messages consist of a eight-character alphanumeric display. On this model, the display is static, and radio text is not available. Perhaps that's because of the extra cost it would entail (or the lawyer's reluctance to put eye-catching displays where drivers can see them).

On the bench

The DCT-950R did not have any problems on the test bench. The CD player measurements were very good. The FM tuner also fared well. Usable mono sensitivity was 14.3 dBf, and 50 dB quieting sensitivity was 21.6 dBf; adjacent channel selectivity was 15.2 dB and alternate channel selectivity was 88.1 dB. THD+N was low in both stereo and mono; S/N was low in mono (72.1 dB) but somewhat higher in stereo (53.8 dB). THD+N was low in both cases.

FM frequency response was excellent, deviating by less than 1 dB. Channel separation, AM rejection, image rejection, and AM frequency response were about average, or better than average. The power amplifier inside the unit was surprisingly peppy; output power at 1 percent THD+N measured 15.4 watts into 4 ohms. Lacking an RDS generator, I was not able to specifically test for crosstalk of RDS signals into the stereo main channels.

Installation of the DCT-950R did not pose any problems. It was an easy matter to slip its mounting sleeve into a DIN opening in my dashboard and secure it by bending tabs.

In use

Wrench jockeying completed, I popped in the front panel and hit the road. Basic operation of the DCT-950R is easy. There is no question that a knob is better than a rocker button, and, in this case, the ability to select the knob's function by clicking on it was simply great. One bug: The treble control did not work on the review unit. CD playback was excellent, audio quality was outstanding and the transport was quick to find selected tracks. The unit did not skip even when traversing bumpy roads. CD player ergonomics were good as well.

The all-important tuning buttons are the only round ones on the panel and are offset for tactile identification. While seek tuning was quite easy, I found manual tuning to be frustrating. The tuning buttons must be held for at least two seconds to engage it, and then the unit slowly steps through frequencies, but it is very easy to miss the frequency you are looking for. Entering presets was uneventful—find the band of your choice, tune to the station, then press and hold a preset.

Reception was quite good. The tuner was able to lock on and pull in some marginal signals, particularly after manually switching the radio to monaural. Stop light fades were about par for the course, but multipath seemed better than

most tuners. Best of all, given good signal conditions, audio fidelity was excellent, with very low noise and distortion. FM frequency response seemed to be superb—a fact verified by the test bench.

My attention then focused on the RDS functions of the DCT-950R. I hit the RDS SEEK button and discovered that there are currently two RDS stations in Miami: WTMI (93.1) and WLRN (91.3). The Seek function found them, and displayed

their Program Service (PS) call letters: "WTMI" and "WLRN - FM." Next I hit the AF/PTY button twice to enter the



DCT-950R

PTY (Program Type) mode, then pressed and held the button. The display responded with the station's program

type; in this case, "CLASSICAL" and "PUBLIC." There are 24 other format displays, including NEWS, SPORTS, TALK, SOFT ROCK, TOP 40, JAZZ, COUNTRY, and LANGUAGE. The entire catalog can be reviewed by pressing the preset 1 and 2 buttons.

After finding the format type you are interested in, you can perform a format search: Press the RDS SEEK button and the tuner will find that type of station, at the next highest frequency. I was able to ask for a PUBLIC station, and the tuner tuned to WLRN. PTY seek time was about 35 seconds. In addition if you have a NEWS station on preset 4, and you are in the PTY mode, you can hit preset 4 and RDS SEEK to find another NEWS station.

continued on page 27 ►

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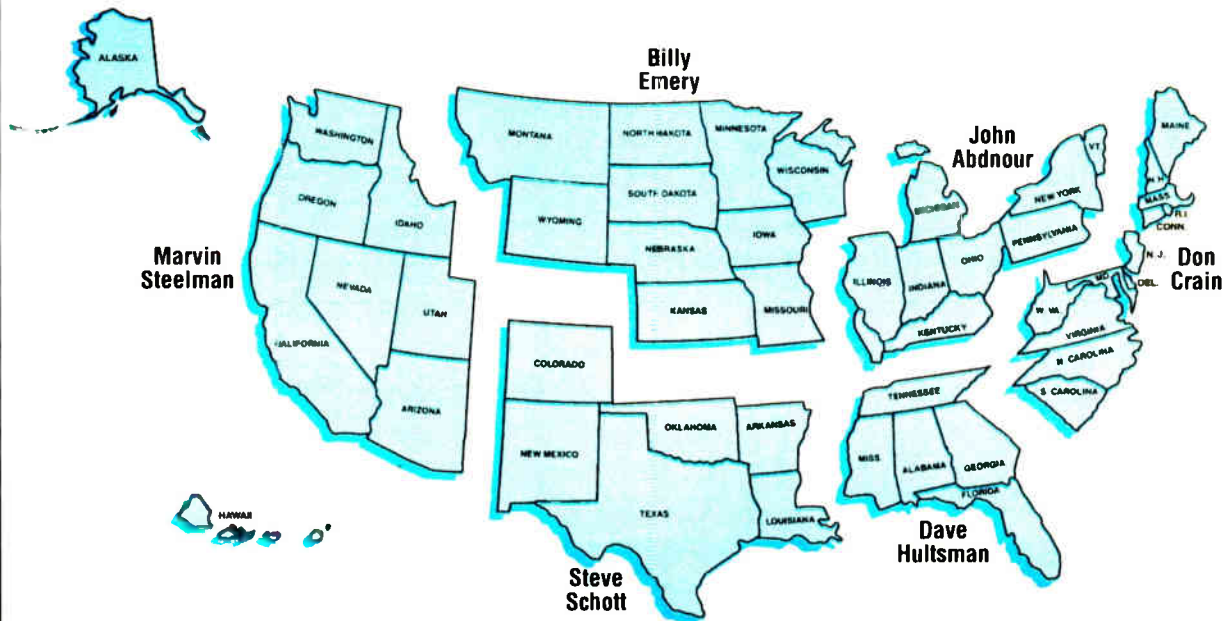
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The Latest in RDS Home Tuners

► continued from page 3

✓ **EBS/Traffic alerts.** With RDS, stations (or government agencies) can automatically interrupt regular programming with local traffic or emergency alerts. RDS is one of the technologies being examined by the FCC as a replacement for current EBS technology.

Other RDS features include transmission of station time (for synchronization purposes), alternative frequency switching, GPS and paging.

I have seen a lot of RDS receivers at CES and NAB shows and always have liked the ability to view the extra information. However, when you see it in your home or car environment, it is much more impressive. In fact, within a few minutes of sampling a call letters display, I became so accustomed to RDS that going back to a normal frequency display became abnormal—it seemed outdated.

Readily visible

The Delco radio's display was the brightest and should be easy to read in the car. The TU-650RD has large letters with three-level dimmer. The TU-380RD has one brightness level and the letters were a bit smaller than the 650, but I did not mind since the TU-380's ability to scroll made it more desirable.

The TU-380RD's scrolling feature is activated by the RT (radio text) button. It takes a few seconds for the scrolling text to load into memory, then it continuously scrolls until you turn the function off. One note: Sometimes if my reception was marginal or weak (as with WHFS), some letters were missing from the text on the first pass. On its second pass, the text was intact. This also occurred with the Delco.

All three stations had a text message pertaining to their format. For example, WHFS brags that it is "Washington and Baltimore's only modern rock station, WHFS 99.1."

As previously mentioned, the Delco

receiver will display scrolling text as two-line blocks—each block activated by a push of the message button. It works okay if the station sets up the text to break when a word breaks, as WGAY does with its message. However, the other messages broke in the middle of words—making the messages nearly incomprehensible. I am told that the Delco production models may have a more accurate scrolling text display.

Search functions

When searching for an RDS station on the Denon TU-650RD, you push the RDS button. The first push displays RDS. (The second push is for format scanning.) You then hit the scan keys up or down.

The TU-380RD has a SEARCH button that works the same way as the 650's RDS search function. The Delco does not seek out RDS stations unless you designate a format.

Searching for stations by format on the Denons is the same process as finding an RDS station. Push the RDS button twice on the 650 to get PTY Search, push the SHIFT/PTY button until the desired format is located, and punch the up or down search button. On the 380, you punch the SEARCH button twice to get PTY Search, locate the format with the SHIFT/PTY, and hit seek up or down button. The tuners will then scan the band until the format is found.

The 650 first displays the frequency, then the format, and, lastly, the slogan or short message. To later verify format, you have to push the RDS button twice to PTY search. With the 380, the display first indicates frequency, then the call letters or short slogan. To verify frequency, hit the display button twice.

The Delco required a couple more steps. First push in the ALT button, which puts the radio in the RDS mode. Then rotate the manual tuning knob, which doubles as the format list button in the RDS mode. Once the desired format

is dialed in on the display, punch the forward or backward side of the FORMAT SEEK button, which is the normal seek button in the non-RDS mode.

After the desired format is found on the Delco, the display first flashes frequency, then short slogan and format. After a few seconds, the format is replaced by the time. To verify format, the ALT button must be pushed twice.

a brisk nine seconds. The Denons, however, took at least three times longer. The 650 logged in at 27 seconds while the 380 ambled in at 33 seconds. The 650 began scanning almost immediately; the 380 went into a time-consuming "load-up" process. Both Denons displayed frequencies as they scanned. From 88.5, the Denons scanned through every receivable FM station searching for RDS data, and the 380 started at the beginning of the band—even when I scanned from 99.1 to 99.5. Once you have entered RDS stations in presets, however, those stations



A sampling of RDS tuners:
Denon TU-650RD (top); Delco Prototype (middle); Denon TU-380RD

To compare format seek times, I devised a little test to see which tuner could search out an RDS or a particular type of format the quickest. My test was to set each station on 88.5 and format search a soft rock station, WGAY—or "Easy99.5."

The Delco made the trip up the band in

are displayed first (and quickly) in the search mode.

The TU-380RD's "pokey" search mode is not an scathing indictment of the tuner. If you use the tuner exclusively, you get accustomed to its processing speed. Kind of like owning a Yugo. You don't mind its acceleration as long as you don't compare it to a Corvette.

Summary

Overall, I like all of these tuners/receivers. But I actually preferred the TU-380RD. The scrolling capability combined with good performance and great price, likely to be in the \$250-\$300 range, will make it a basic RDS monitor for the management types or engineers. The TU-650RD was nice before the 380 came out, but I think it is now outdated without scrolling text.

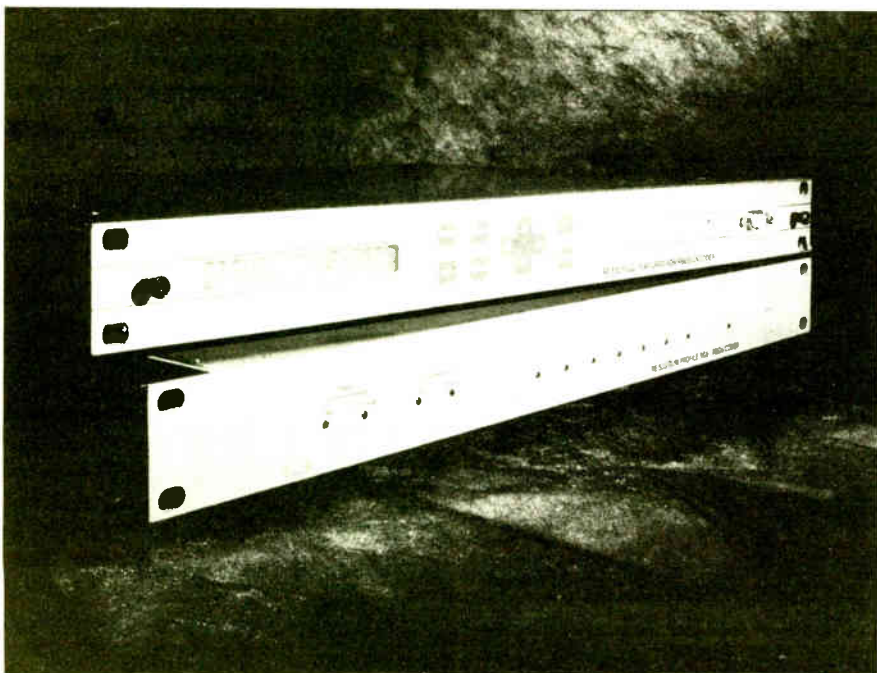
It is not really fair to compare the Delco in a home environment, but I was able to judge its RDS capabilities. Some of them are superior to the TU-380RD—especially format scanning speed. But the scrolling display seems like it was only an interim step to give the early versions some scrolling capability. I hope the customer versions are full-scrolling units.

In my experience with these products, RDS' implementation is logical and should be a viable technology bridge to DAB. Judging by these early tuners from Denon, Delco and a few others, at least they are serious about the technology in the U.S.

□ □ □

For more information about the Denon tuners, contact Denon at 201-575-7810. Delco can be reached at 317-451-0655. 🌐

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Circle (174) On Reader Service Card

World Radio History

Sony Supports Jazz Radio Programming

Pro DAT PlusT Utilized in On-Air Production of "JazzSet"

by Frank Beacham

NEWARK, N.J. Two nationally broadcast jazz programs—"JazzSet with Branford Marsalis" and "Portraits in Blue" with Bob Porter—have entered sponsorship agreements with Sony's Professional Media Division and will make heavy use of the company's DAT tapes for production and mastering.

Under the agreement, Sony is providing each of the show's producers with a year's supply of its Pro DAT PlusT digital audio cassettes for use in both production and on-air applications. Also included in the contribution are Sony HF Type I and UX high-bias audio cassettes. Both programs are produced at WBGO-FM in Newark, New Jersey and are broadcast on National Public Radio.

"JazzSet," a weekly hour-long program heard on 201 NPR affiliates, features live recordings of top jazz performers in venues around the country.

Marsalis, a saxophonist and leader of the "Tonight Show with Jay Leno" band, is the program's host. The entire production process of "JazzSet" is carried out on the DAT format, from live direct-to-DAT remote recordings to DAT editing and finished products uplinked through NPR's satellite service.

A segment for JazzSet was recorded at Caesar's Palace in Las Vegas during this year's NAB convention with trumpet player Terence Blanchard and his quartet, backed by a 39-piece orchestra. The concert, which also featured vocalist Jeanie Bryson, was a tribute to the late singer Billie Holiday on her birthday. It was recorded direct-to-DAT and sent via satellite directly to NPR stations.

The live recording, handled by A-1 Audio Inc. of Las Vegas, was mastered on a Panasonic DAT recorder and backed up on an Alesis ADAT using Sony's standard S-VHS video tape. Although the recording medium was simple, the microphone placement was not.

"Every instrument was individually miked," said Tony Caporale, general manager of A-1 Audio. "We utilized 38 inputs on the Yamaha PM4000 console for the orchestra. Sennheiser 409s were used on Blanchard. We used a Shure Beta 58 on Jeanie. AKG 414s and a Crown PZM was used on the piano. We close-miked the violins with Isomex lavaliers. A new AKG 408 and Sennheiser 440s were


used on the drums."

"Portraits in Blue," a weekly hour-long program hosted by Bob Porter and heard on more than 40 NPR affiliates, uses the DAT format primarily for working in the studio with the host's large personal collection of jazz records.

A freelance record producer and consultant, Porter brings 30

years' experience in jazz to a program that features a mix of vintage jazz and blues recordings. "People who are in the record industry have precious little time to listen to things for pleasure," said Porter. "I deliberately set out to listen to my old records on 'Portraits' and use DAT as a reference media. For archival storage and temporary dubs, DAT is an excellent source."

Gary Lue, operations director at WBGO, said that DAT has

been a crucial element in the station's rescue of many vinyl and acetate jazz recordings. He noted that WBGO on-air personality (and drummer) Kenny Washington has transferred many of his vinyl jazz recordings to DAT for on-air playback purposes. 



Terence Blanchard

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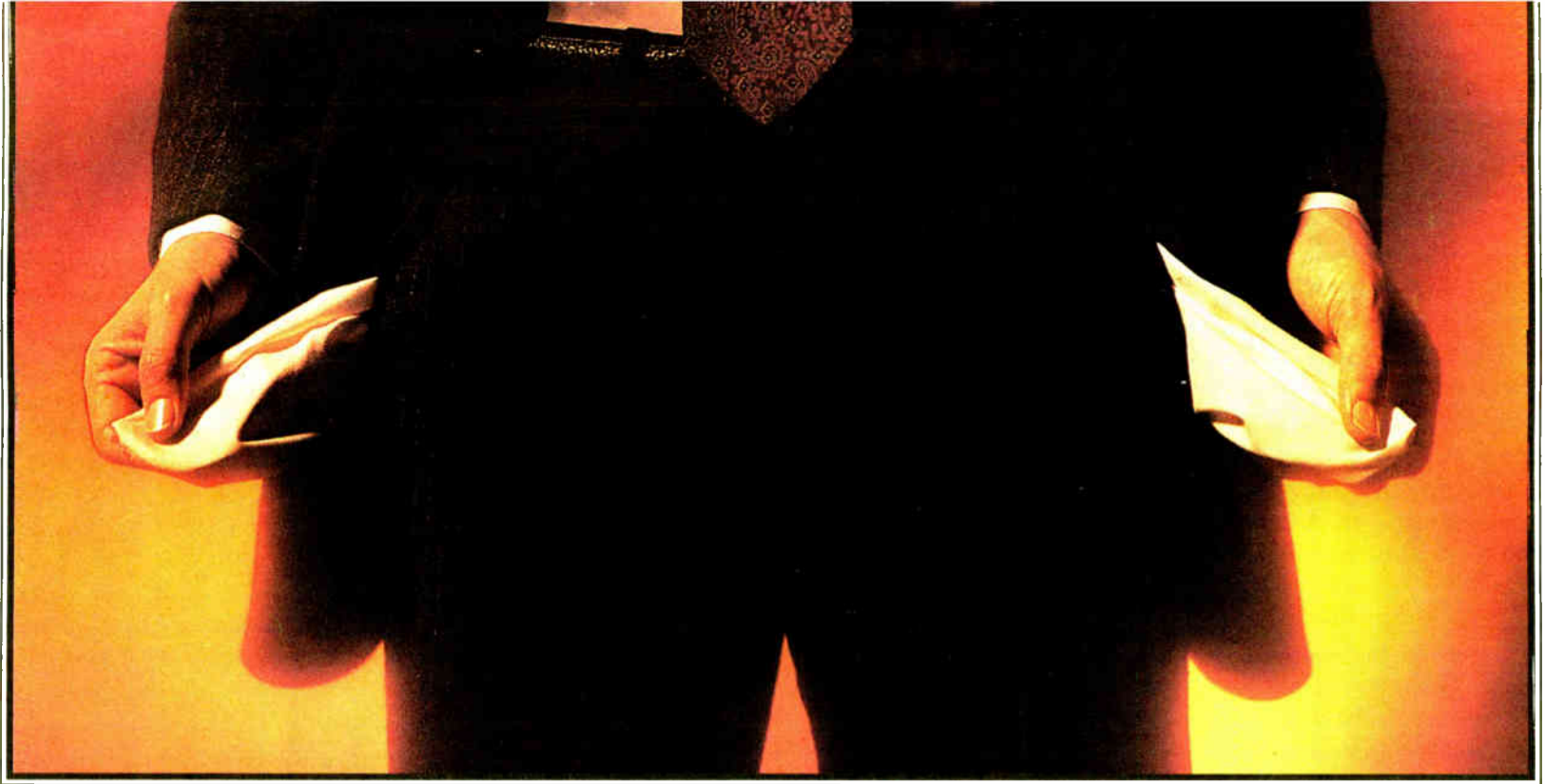
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Circle (218) On Reader Service Card
World Radio History

MANAGER'S NOTEBOOK

Rate Performance: When Enough Is Enough

by Sue Jones

BURKE, Va. Have you ever heard (or thought) one of the following? "I'll fire that SOB if he is late one more time!"

"She can't get her work done because she is on one personal phone call after another." "None of the equipment is getting fixed around here anymore. We never see the engineer. What's he doing?"

You could fire the person on the spot with an angry outburst. You may feel gratified and everyone will know that you are the boss. However, the downside is that your disgruntled former employee may decide to sue the station for wrongful discharge. He or she might have an ironclad case because you have not advised him of the problem or given him an opportunity to make the changes in his performance.

You could do nothing and hope the problem will resolve itself. It will not. In fact, it will most likely get worse. You can take corrective action.

Ideally speaking

In the ideal world, everyone does his or her job perfectly with little or no supervision. In the real world, some employees fail to meet the requirements and expectations of the job. How you handle poor

performance problems will make the difference of "saving" an employee or dismissing him or her. If dismissal is the only remaining choice, the manner in which you do the task may result in a lawsuit or help the person learn from his or her mistakes and move on to another position.

Analyze the problem

You may be justifiably angry at the employee's performance but do not attack the person. Rather, take a look at the position description and job expectations. Then look at the employee's overall performance compared with the job description and expectations. Is this person failing to perform in all areas or just some areas? How many areas of sub-standard performance are there? Has the employee been told about this weakness? Can it be corrected with some supervisory oversight?

Most employee performance problems have root cause in one of three areas:

1. **Personal Problem.** A staff member may have done a great job in the past but the performance has begun to slip over a period of time or has declined rapidly. Could this person be experiencing some personal problems that may include a family member or finances?

Could this person be fighting substance

abuse? It may be a temporary problem that could be eliminated with some professional assistance or counseling.

2. **Training.** Have you provided all of the background information specific to your station and training this employee needs to do an acceptable job? You could have an experienced, high-producing sales person who is having difficulty with your station's computer system. It could be a result of inadequate training for it. Does your staff member have the formal training to meet the requirements of the job?

What to expect

3. **Job Expectations.** Do your staff members know the station's expectations for their positions? These are generally found in position descriptions or conveyed verbally by the supervisor. They should be given to the employee on the first day of employment or the day he or she starts a

new position at the station.

Your engineer could make microphone processing changes without informing the air staff. He could be patting himself on the back for initiating an improvement and be completely unaware that the air staff is ready to strangle him.

4. **Mis-match for the Position:** Even with careful interview screening, people are placed in jobs that do not hold their interest or are not a good match for their specific skills and abilities. Before you dismiss this employee, consider other positions in the station that might be more suitable for his or her skills. If you do not have a vacancy in that area, do you know a station with an opening for that skill?

Remember to focus on the situation, issues or behavior patterns, not on the person. All performance related discussions should be held in a private place

continued on page 23 ►



— Mercury Awards Gala in N.Y. —

LANY Music, a Los Angeles-based advertising agency, walked away with the coveted \$100,000 Radio-Mercury Gold Award at the third annual Radio-Mercury Awards for radio advertising. The spot that earned the agency this honor is "Cover Me," an R&B-inspired music commercial for Levi's 501 Jeans created for FCB/San Francisco. At a black-tie ceremony held June 15 at New York's Waldorf-Astoria Hotel, CBS's Charles Osgood and WABC TalkRadio host and former New York City Mayor Ed Koch presented LANY Music with the award and a check for \$100,000.

LANY Music was one of ten advertising agencies, production companies and radio stations that shared a total of \$200,000 in cash prizes awarded to 1993's best radio advertising. In addition to the \$100,000 Radio Mercury Gold Award for the best radio commercial of the year, \$20,000 Radio-Mercury Gold Awards and \$5,000 Radio-Mercury Silver Awards were also presented.

Pictured above (from left to right) on stage at the Waldorf are: Presenter Charles Osgood; Fern Ramos and Mark Vieha of LANY Music; Ed Koch; and Levi Strauss & Co. Senior Vice President Bob Caplan.

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Thirty Years of Wolfman Jack

► continued from page 1

Richbourg at WLAC in Nashville to Alan Freed at WINS in New York City, had a profound effect on the young Robert Smith, the once and future Wolfman Jack. "What they did for me, man, is like what I do for the folks out there," he said intently. "You just make a person feel good. You feel good when you're listening to that kind of radio. It makes you want to jump and shout, you know?"

Disc jockey fever changed him from regular old Robert Smith to the wild and wooly, howling specimen known as Wolfman Jack—the one-of-a-kind disc jockey's disc jockey. To hear him tell it, "There's nobody

doing what I'm doing, man."

He proudly said he's in "the happiness business. It's like a religion to me. I love those folks out there when they're gettin' off. It gives me the biggest thrill of my life, to watch people smilin' and gawkin'... you understand?"

Daddy Jules

Pre-Wolfman Jack, Robert Smith started out at a little black music 1 kW daytimer in Newport News, Va. There, he was Daddy Jules, the only white disc jockey playing those proverbial stacks of wax, noon to sign-off. It was as Daddy Jules that the Wolfman said he "started cultivating

that, you know, funky richness of what I do." He had gained "a tremendous education in the rhythm and blues music field" by this time, which was all the ammunition he needed to continue forging on.

He used to invite all the kids up after school—"black, white, didn't make no difference"—from about three to six o'clock. Daddy Jules would play the kids' requests on the air, and the



Wolfman Jack and singer Tom Jones

kids would dance and have a great time.

Subsequently, the station sold and Daddy Jules saw R&B wagging its tail on the way out the door, making way for a soft jazz/blues format—and Roger Gordon, Robert Smith's new air personality.

"Roger Gordon talked a little bit like Daddy Jules, you know, but he was playing that nice, clean @#%&!," which included Count Basie, Frank Sinatra, and Joe Williams. On Sunday afternoons, he'd also play Jimmy Smith and Jimmy McGriff. Much more Wolfman Jack-like.

Exit... Roger Gordon

But Roger Gordon was not long for the world. He became Big Smith with the Records after going country at a station in Shreveport, La. "I still sounded a little bit like Daddy Jules, but I'm playing country music," he said. "I was playing that kick-ass country music." And dreaming about his next stop, south of the border: XERF, the legendary 250 kW clear-channel powerhouse in Mexico, beaming a rich stew of music and merchandising to just about anywhere you could imagine in North America.

"Birds would fly around the tower and die, man, that's how powerful it was," he said, laughing, thinking about XERF. "If you did the show from the radio station, the RF that drifted around the station, it was like you smoked a joint, you know."

Certainly, the whole XERF experience, during which Robert Smith became Wolfman Jack, was intoxicating to the man. Money was perhaps the biggest intoxicator because there was so much of it coming in from merchandising. And what merchandising there was: baby chickens for sale. And some of the Wolfman's own products, like Wolfman Jack roach clips, which cost about \$7.50 to make and sold for \$9.50.

And then there was the Wolfman's own sex pill product, Florex. "I made a deal with these people in Mexico City to bottle up these little pills for me, about a hundred pills in each bottle, and all it was aspirin and candy," the Wolfman said. "So at least when you put it in your mouth, it tasted good, you know? You could pop a lot of 'em, you know, and it wouldn't hurt you."

"I was doing like 10,000 bottles a day, off this one radio station," he noted. About six months later, the government put a stop to the Florex parade, but the Wolfman, as usual, had the last laugh.

"(After) I took it off the air," he said, "it sold for another three years at the tune of about 10,000 orders a month."

□ □ □

(In part two, Wolfman Jack talks about being, for about a split second, a radio station owner; speaks his mind about shock radio; and gives two classic examples of the power of radio—Wolfman Jack-style. Stay tuned).

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See your Gentner rep today, or call 1-800-945-7730 and make your life easier with the TS612. After all, that psycho's still on line two.



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PROMO POWER

Mining Those Old-Time Voices for Good Radio

by Mark Lapidus

WASHINGTON Once upon a time in a market far, far away, there were only a few dominant stations. These two or three AM top 40 stations attracted teens like nothing before or since.

FM still stood for "find me." These stations had incredible personalities with descriptive names. You didn't want to turn the station off because you were afraid that if you did, you'd miss something important. How many stations can make that claim today?

DJ reunion

You can... if you take on the challenge of organizing your market's first DJ reunion. Unfortunately, this promotion doesn't work for every format. It seems to work best for oldies stations, although there's no reason why this couldn't be presented on a classic rock station and on some country and AC outlets.

If the majority of the music you play regularly is more than 15 years old, or if you want to profile a "flashback" weekend, this could be for you. Like most blockbuster promotions, a DJ reunion takes considerable lead time to orchestrate. Allow yourself a minimum of three to four months to put it all together. If you're not a local to the market where you're going to execute this concept, you'll need to work closely with several natives.

Begin by identifying the radio stations that had the most impact. Define the number of years you're going to cover. For example, most oldies stations would pick 1964 - 1972 with a little spill over on each side. A classic rock station would focus on 1967 - 1978.

After you've selected the stations, compile the longest list you can of the key personalities. From that list, pick four to serve as primary anchors. One of these four can then be drafted to serve as the "special projects coordinator" for your weekend. This person will assist you in tracking down as many personalities as possible and in making the initial contact.

It's important to have a face-to-face meeting and work out general strategy with the person you pick for this position. Yes, a fee is appropriate in exchange for their services. Pick a target date and work backward, developing a time line of what is supposed to happen by what date.

Who does what

Make sure that all the key players at your station understand the role that they're going to play in the execution of the reunion. Let's break it down into categories: Sales — Money is generally at the top of everybody's list, because of its importance in preparing a budget.

Your sales manager and general manager will come up with a sponsorship package after the promotion director gives them the number of liners, promos, IDs and sponsorship credits. To generate additional revenue, have your DJ reunion talent do live commercials within the show or during the pre-promotion period.

Discuss a marquee sponsor that will be in all the mentions and location sponsors from where you'd do live remotes. Programming: With the help of your key

DJ, assign the talent definite air slots.

Solicit local radio junkies and your reunion DJs for old airchecks, commercials and jingles. Have your production director edit the airchecks and commercials into short "time capsules" to be aired continuously throughout the weekend. These pieces of the past will really make your reunion sing, so they should be aired at least three times per hour.

Use those old station jingles in the pre-promote and after every few songs during the weekend. Edit these old jingles with your own, marrying your calls to the heritage. Think about any specialty shows that you may want to air during the weekend. Perhaps there was a great request show that you'd like to revisit, or a soul patrol hour.

Promotion: After devising your station's own on-air pre-promotion campaign, decide how you might bring more listeners through the door using other media. This event translates very well in a print ad. Many people will recognize the names and faces. If you've picked the right stations and personalities, there's a tremendous come that these

Taped bits of the past will really make your reunion sing.

folks used to cover.

Include your sponsor in the ads as part of the package. A few weeks before the event, get the message out to all the news crews in television, newspapers and magazine. Hit them up again just before you begin. Discuss inventing a "DJ Hall of Fame" at your local Hard Rock or town hotspot. Put 20 to 30 names on a

Noticias CBS Americas, the first daily radio news service produced by CBS Americas and UPI, premiered to a national audience on Monday June 27 at 6 a.m. ET.

Pictured moments after the first broadcast are (seated, l to r) Mariella Isaac and Eduardo Salinas, morning drive anchors; (standing, l to r) Armando Trull, news director, Noticias CBS Americas; and Gustavo Szulansky, executive producer, CBS Americas.

The twice hourly, Spanish-language newscasts originate live from UPI headquarters in Washington, D.C., and are heard on 46 stations in the U.S., reaching more than 80 percent of the U.S. Hispanic population. News is gathered from UPI's bureau in Miami, and from correspondents in more than 30 cities around the world.



ballot and let your listeners and advertisers vote on who will be inducted.

Schedule a special ceremony, complete with trophy presentation. Other items for your time line include: travel arrangements for those coming in from out of town; signage at any remote locations; food and beverage for talent on-site; assignment of promotion assistants and hiring of a photographer/videographer.

Additional tips: Whenever possible, have two personalities broadcasting at a time. It's much easier for DJs to reminisce with another person from the same era. The talent will love broadcasting side by side with those that they used to compete against. Each show requires a producer. This person tells the talent what they're playing or doing next, gets them to wrap up when they're going on too long and feeds them topics.

The producer also tells them when to play the "time capsule" segments you've pre-produced and when it's time

to go to the phones. Take a lot of phone calls. You'll be amazed at how many emotional highs you'll hit when your listeners call in with their own memories... As I indicated above, consider doing much of this from different remote locations. It will be easier for talent to concentrate on what they're doing if they don't have to operate your equipment, plus the crowds will generate a lot of excitement for them.

Make certain to tape your entire weekend. Use sound bites from the weekend to remind your audience about what fun they had. You may wish to compile a "best bits" tape either for giveaway or sale. You'll also need these tapes to put together your pre-promote for your second annual reunion. In fact, if you'll excuse me, I have to go listen to a few airchecks I just uncovered from 1963.

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Mark Lapidus is the Director of Marketing for Liberty Broadcasting. Liberty owns WHFS(FM) and WXTR-FM in Washington, WMXB(FM) Richmond, Va., and WGBB(AM)-WBAB(FM) Long Island, N.Y.

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Theater of the Mind a Stage for Ads

by Nancy Branson

CLEARWATER, Fla. Radio means many things to many people: music, news and talk, weather, sports, special events, public service and education. It means action and immediacy. But to businesses all over the country, radio is an advertising medium that gets results.

Despite the fact that millions of people are listening and responding to the radio every day, there are still some who are not convinced of its effectiveness. The fault lies partially with the industry for not telling the radio story properly—for not convincing potential advertisers that TV

hasn't killed radio. The real success story of this exciting medium is that when people really hear and analyze it, they can't wait to put it to work.

How it began

In the late '30s, there were approximately 400 radio stations in the United States. These stations were mainly local, operating as network outlets, carrying news, soap operas and family shows, such as "Amos and Andy," "Fred Allen," "Bob Hope" and "Kate Smith." In addition, remote broadcasts from clubs and hotels featured live music from the likes of Benny Goodman and Glenn Miller.

That was radio circa 1938—400 stations entertaining and informing the country. Revenues were good, even as the country was pulling out of the Depression. Manufacturers and retailers were using radio more and more to advertise their products.

Kraft Foods found that when a young singer named Bing Crosby came on the air for one hour on Thursday and talked about its cheese, retailers could hardly keep their shelves stocked on Friday.

The Johnson Wax Company noticed the same thing on the Wednesday, following a 30-minute "Fibber Magee" show Tuesday night. Radio was on its way.

Through World War II our nation was kept up-to-the-minute on happenings throughout the world.

Those who buy and/or sell radio wage a constant battle to impress upon prospects and clients that radio does go everywhere. And they are equally concerned with what it does after it gets there. Everyone in the business has a stake in the function of audio communication.

The most powerful form of communication is by far the spoken word. From the moment of birth, the voice is the strongest force for conveying both information and emotion. Adolph Hitler made this observation: "The power that has always started the great religious and political avalanches in history has been the magic of the spoken word and that alone."

Words can paint pictures

There is a vocal majority saying that adding voice to video constitutes the ultimate medium through which to communicate. No one can argue the success and power of television, but it has many problems. There are times when pictures not only add nothing but actually get in the way.

The radio drama can evoke emotion and prompt the listener to paint a far more intricate picture in his imagination than any TV or motion picture could paint for him. For example, I've seen pictures of Normandy Beach on D-Day but never one that had the same impact as George Hick's rendition on radio. The shots of the Hindenberg disaster are amazing, but the effect of the announcer breaking down and crying is astounding.

But the classic example is Orson Welles' "Men from Mars." About 11 minutes into that historic broadcast, listeners went berserk. In the rural regions of the country, people literally took to the hills. In the more sophisticated urban

The most powerful form of communication is by far the spoken word.

areas, grown men got up on rooftops and hollered down to the crowds that they saw monsters moving around, and everyone believed it.

Mark Hamill of "Star Wars" fame thought radio had a special kind of magic, especially after repeating the role of Luke Skywalker for National Public Radio: "I've listened to cassettes and tapes of old radio shows, but I'm sorry to say I'm just a child of television. It's a shame. There is so much you can do using only your imagination — things that would be financially impossible on TV."

Vast offerings

And from the point of view of the advertiser, particularly the small one, it costs. Radio keeps pounding away, offering listeners a vast array of entertainment and information at home or away. No other medium, whether TV, newspapers, magazines or billboards, goes everywhere and can offer the convenience and immediacy of radio, from both a listening and advertising standpoint. So, despite the arrival of television, advertisers returned to radio.

Since the late '30s, the number of radio
continued on page 21 ►

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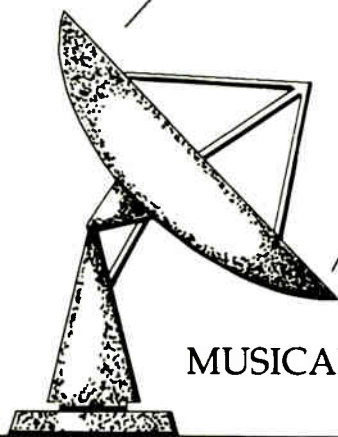
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Radio Can Harness the Power of Groceries

by Bob Harris

DALLAS There is "gold in them thar hills" for enlightened radio stations willing to prospect for food manufacturer money.

The following is a case study and an example of how some of my "Power Concepts of Grocery Marketing" come into play. More than a year ago, the regional sales manager for Ore-Ida Foods called, inquiring about sports and entertainment incentives we offered to food manufacturers.

At the time, I was trying to sell a luxury suite at Texas

Prospecting for grocery money requires time, patience and the right tools.

Stadium for the Garth Brooks concert. (One of my best "grocery-related" sales in radio was the \$25,000 schedule I sold to a food broker tied to the entertainment use of a Texas Stadium luxury suite for a Paul McCartney concert.)

Ore-Ida did not buy the suite, but we helped the manager acquire six good tickets to see Garth so he could entertain one of his customers, the frozen food buyer at a major grocery chain. Many radio stations have access to good concert tickets at face value, so you can begin building food manufacturer relationships with the tools you have at hand.

Building relationships

My next sale to Ore-Ida was three trips to the Super Bowl in Atlanta. Again, he wanted to entertain a trade customer and reward his local food broker. My profit on the Super Bowl trips was minimal, but my relationship with Ore-Ida was building. I was helping the Ore-Ida regional sales manager solve his problems. Any station in the United States can help a manufacturer buy Super Bowl trips, as there are many reliable sources.

During this period, I was trying to convince Ore-Ida to do a local marketing program. Finally, in April of this year, I was given the opportunity to present my local marketing credentials to the Ore-Ida regional sales manager and his Dallas food broker.

They were reluctant to spend their MDF (market development fund) money because they require guaranteed performance with those dollars. However, the manager was willing to ask for incremental funds from marketing if I could develop a program concept he liked.

I wrote a one-page proposal for Ore-Ida that the regional sales manager presented, along with point-of-sale

posters that I had produced for an earlier Birds Eye program, at the Ore-Ida annual sales meeting in late May.

About two weeks later, I got a call from the Ore-Ida regional sales manager, telling me his request for incremental funding was approved. He was given \$40,000 to run a local marketing program in Dallas and Houston in September. About 75 percent of that total budget will be spent in radio.



We are now putting the program together, a free video rental with an Ore-Ida proof of purchase. In addition to radio time on two stations in each market, we will design and produce three-color POS posters, plastic shelf-talker danglers and static clings for freezer cooler doors.

Now let's look at this case study and see how some of the "Power Concepts of Grocery Marketing" come into

play. Please remember that developing new business from food manufacturers and food brokers is very different than most other radio new business efforts. You will not succeed unless you understand and use these concepts.

I discussed the first four power concepts in the RW June 1, column: No. 1 - Push Marketing; No. 2 - Moving Cases; No. 3 - Incremental Funding; and No. 4 - It's not for everybody.

Power concept No. 5: It takes a long time

As you can see from the Ore-Ida example, my prospecting and selling began more than a year ago. Even from the proposal date, April, to the on-air date, September, is a six-month period.

Patience is key

This is par for the course. It just takes a long time for things to happen in this industry, and there is virtually nothing you can do to speed things up. There is almost no way to put a program on the air in much less than six months.

Power Concept No. 6: Performance

In this case study, I mention that Ore-Ida must get guaranteed performance for its MDF money. This means that it must get a guarantee from the grocery chain that a certain number of cases will be bought, or that the brand will get a display or be featured in the grocer's ad. Performance is the cases being bought, the displays or ad features. The manufacturer knows that all of these things guarantee that a certain amount of product will be sold.

Without this guarantee of performance, the money won't be spent in this way by the manufacturer. The Ore-Ida

regional sales manager told me point-blank, if he did not get incremental funding he would not spend his MDF money to run this program. The reason is there is no guarantee that my local marketing program will sell enough cases to justify the expense from his regular MDF money.

Yes, there is a "gold mine in them thar hills" for radio stations from food manufacturers, but your prospecting efforts must include the proper tools.

□ □ □

Bob Harris is a Dallas-based sales and marketing consultant to the food manufacturer, food broker and radio industries. He will deliver his "Power Concepts of Grocery Marketing" seminar, complete with slides and actual local grocery marketing examples, at no charge, to any radio trade association.

He can be reached at Harris Marketing Group, 3422 Flair Drive, Dallas, TX 75229; telephone: 214-902-8552; fax: 214-956-9885.

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04-THE LADY IS A TRAMP FRANK SINATRA W/ LUTHER VANDROSS -(322)-320/C7

10-I'M IN THE MOOD (East 87th Mix) - CECE PENISTON -(400)-353/F1 -A

11-A DEEPER LOVE (C&C Hot Mix) - ARETHA FRANKLIN -(441)-439/C10 -A

12-ROCK & ROLL DREAMS COME TRUE (Radio) -MEATLOAF-(359)352/F4-B

13-(LAY YOUR HEAD ON MY) PILLOW - TONY TONI TONE -(435)-428/F23-A

14-MR JONES - COUNTING CROWS -(429)-427/C15 -B

15-DESIRE (EP VERSION) - EN VOGUE -(351)-344/F12 -N

FORMAT - CUTS
AC: 02 - 04
CHR: 10 - 17
COUNTRY: 20 - 25

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20-WHERE WAS I - RICKY VAN SHELTON -(306)-259/F14-N

21-TRYIN' TO GET OVER YOU - VINCE GILL -(343)-341/C17-B

22-LIFE #9 - MARTINA MC BRIDE -(359)-352/F15-B

23-(Who Says) YOU CANT HAVE IT ALL - ALAN JACKSON -(324)-321/C18 -A

24-IDA RED - ASLEEP AT THE WHEEL
With/Jody Nix-Huey Lewis-Willie Nelson-Ran Benson
(302)-300/C17-A

25-ALREADY GONE - TANYA TUCKER -(415)-408/F14-A

PROGRAM SYNDICATION

ABC Radio Networks: Broadcasts six full-service line networks. Paul Harvey News and Commentary. The ESPN Radio Network, long-form programming including "American Country Countdown," "American Gold with Dick Bartley," "Rock & Roll's Greatest Hits," "Rick Dees Weekly Top 40," and Tom Joyner's "Movin' On." Syndicated Morning shows including: The Tom Joyner Morning Show and Moby in the Morning. ABC offers 11 ABC/SMN 24-hour music formats. ABC News, sports, talk shows and daily and weekly features. *For information, contact Darryl Brown at 212-456-5200, or circle Reader Service 157.*

Accu-Weather Inc.: Exclusive Accu-Weather Forecast is used by more than 100 radio stations to provide listeners with highly accurate local forecasts presented by top broadcast meteorologist personalities. Many stations charge premium spots for Accu-Weather sponsorship, and surveys show that the Accu-Weather name and service is a valuable promotional tool. *For information, contact Sheldon Levine at 814-234-9601, ext. 400, or circle Reader Service 171.*

American Comedy Networks: Along with a one month trial period, ACN offers 10 features a week that include song parodies, interactives and ongoing serials. In addition, ACN supplies a 19-CD set with 1,044 classic ACN bits. Affiliates will also receive 10 custom drop-ins each month. *For information, contact ACN at 203-384-9443, or circle Reader Service 10.*

American Urban Radio Networks: Offerings include "USA Music Magazine" and "Night Talk." AURN is African-American owned and operated with more than 200 affiliates in the United States and Caribbean. *For*

information, contact C. Otley at 212-486-4255, or circle Reader Service 128.

Broadcast Programming: Supplier of consulted music formats and related products to locally-programmed radio stations. BP provides more than 1,000 stations with a variety of 24-hour music formats (including country, AC, CHR, easy listening and others), CD production and music libraries (including the Chartbreakers Weekly Hit CD Music Service), research, client consulting and digital programming systems for live, live-assist and automated stations. *For information, contact Edith Hilliard at 800-426-9082, or circle Reader Service 162.*

Business Radio Networks: Business-driven news and information programming. *For information, contact Skip Joeckel at 719-528-7040, or circle Reader Service 111.*

CBS Radio Networks: More than 250 news and information programs each week. Nationally distributed programs include "The House of Blues" and "The House of Blues Breaks," "The Gil Gross Show," and "The Late Show with David Letterman's Top Ten List." Extensive play-by-play sports coverage is provided by CBS Radio Sports, including Major League Baseball, NFL, NCAA Basketball and the Winter Olympics. CBS Americas provides a daily news service, Noticias CBS Americas, plus entertainment and sports features, live sports coverage of MLB and NFL games. *For information, contact Nick Kiernan at 212-975-6085, or circle Reader Service 73.*

Children's Satellite Network: A 24-hour radio format, Radio Aahs, delivered via satellite featuring contemporary family programming. *For information,*

contact Chris Botto at 612-926-1280, or circle Reader Service 60.

COPRA Media Productions Inc.: Produce/distribute weekly four-hour radio program. "Class Reunion" features hits of the '50s, '60s and '70s, and spotlights artists of the era via personal, in-depth interviews. Lots of trivia and fun. Available on a barter basis as market exclusive on DAT, Ampex 456, and TDK Metal cassette. Compatible with automation systems. *For information contact Dave or Linda Cowley at 800-985-COOL, or circle Reader Service 67.*

Crowley Broadcasting: "Steve Crowley's American Scene," a three-hour, Saturday morning radio show featuring live in-studio expert guests, live remotes and listener call-ins. The theme of the show is how current news personally affects the common listener. *For information, contact Ben Avery at 703-352-3787, or circle Reader Service 75.*

Dick Brescia Associates: Programming offerings include the daily, two-minute "Walter Cronkite's Twentieth Century" that looks back on significant events on a particular date in history; the 54-minute "When Radio Was..." that includes classic radio shows from the '30s, '40s, and '50s, like "The Shadow," "Lights out" or "Great Gildersleeve," and "Stan Freberg Here!" a two-and-a-half minute satirical comedy program. *For information, contact David West at 201-385-6566, or circle Reader Service 32.*

Dow Jones & Co. Inc. Broadcast Services: Offers "The Wall Street Journal Report," business news in 18 two-minute newscasts covering breaking financial news at the 00:50 mark every hour between 5:50 a.m. and 9:50 p.m., ET. Also offers "The Dow Jones Report," consumer news designed for music formats, up to 16 one-minute newscasts focusing on money trends at the 00:45 mark every hour between 5:45 a.m. and 8:45 p.m., ET. *For information, contact Anne Su at 212-416-2380, or circle Reader Service 84.*

Focus on the Family: A daily, 90-second feature with psychologist and best-selling author Dr. James Dobson. Each segment offers advice and encouragement on the real challenges of the 1990s, such as building a strong marriage, single parenting, dealing with divorce, raising healthy, well-adjusted children and more. *For information, contact Bob Dobbs at 719-548-4501, or circle Reader Service 93.*

Globe Music Productions: Provides traditional easy listening music that features seven days of music without repeats. 50/50 mix of vocals and instrumental. Format available in three different convenient packages on a part barter basis for additional savings. Format "C" starting at only \$239. Attention given to quality and service. *For information, contact Jeff W. Shepherd at 703-344-3283, or circle Reader Service 150.*

Halland Broadcast Services Inc.: Music Libraries on CD, including "Rock 'n' Roll Graffiti" oldies from 1954 to 1969, 1,229 songs on 50 CDs; "Seventies Gold," AC/CHR gold, from 1970 to 1979, 545 songs on 30 CDs; "The Eighties Plus," AC/ Hot AC/CHR from 1980 to 1993, 888 songs on 51 CDs, and "Halland Hot Country," 712 songs on 34 CDs, through 1993. *For information, contact Steve Steinberg at 800-HALLAND, or circle Reader Service 114.*

Independent Broadcasters Network: Live 24-hour talk programming delivered via three different satellites. No cost, no fees, on a barter basis. Full content audio, no dead air—25 hosts ready for your station. *For information, contact Steven Wiegner at 813-573-4402, or circle Reader Service 205.*

Jones Satellite Networks: JSN unveiled its seventh format on March 1—The Team Sports Network, a live, 24-hour sports/talk format, a joint venture with WTEM(AM) SportsRadio 570 in Washington, D.C. The Team uplinks live from WTEM and focuses on talk and entertainment with high-profile personalities and guests, call-ins and up-to-the-minute information on all facets of the world of sports. *For information, contact Mike Tyler in Colorado at 800-453-5663, or circle Reader Service 36.*

Major Networks: 24-hour satellite provider of six formats plus a talk network. *For information, contact Chris Devine at 312-755-1300, or circle Reader Service 120.*

Media America Inc.: Distributor of "Pulse of the Planet," a two-minute award-winning feature on innovations in science and technology and their impact on quality of life. Free of charge on reel-to-reel or cassette without commercials. Also, "Up Close," a premier music/interview series for rock radio distributed on CD and "Hip Hop Flava," a two-hour weekly program hosted by Philadelphia Power 99's Stanley T. Distributed on tape on a barter basis. *For information, contact Robert Drucker (Pulse of the Planet) or Frank DeSantis at 212-*

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Personality sports/talk... you'll be a big fan!

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The highest quality live programming, 24 hours a day, seven days a week. Fully researched music and hand-picked major-market personalities, in seven unique formats created to do only one thing: to win. Ask any affiliate. There's a reason why JSN is America's fastest-growing radio network.



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MRN Radio: Live broadcast of NASCAR stock car racing from speedways across America. More than 50 events like the Daytona 500 from the Daytona International Speedway. Plus daily and weekly news and telephone talk programs. For information, contact John McMullin at 904-254-6760, or circle Reader Service 163.

North America Network: A radio broadcast agency that produces and distributes audio news releases, public service announcements, news lines, and short-form programming/vignettes. Also provides celebrities and experts for on-air interviews. For information, contact Lisa Brusio Coster at 800-NAN-2875, or circle Reader Service 89.

NASDAQ: Provides stations with news and information relating to the NASDAQ Stock Market. For information, contact Cameron Brown at 202-728-8379, or circle Reader Service 70.

National Association of Realtors: For information, contact Walter Molony at 202-383-1177, or circle Reader Service 158.

The Nashville Record Review with Crook & Chase: A weekly top 40 country music countdown program. Hosted by TNN's Crook & Chase. Four hours long, on CD, includes the hits, interview segments, personalities and more. For information, contact Jeff Lyman at 615-871-6725, or circle Reader Service 136.

NSE Radio: Offered to individual radio sta-

tions by satellite, the NSE Radio Network is a 24-hour adult contemporary format targeted towards the 25-54 adult audience. For information, contact Don Garrard at 716-381-0620, or circle Reader Service 137.

Post Modern Radio Network: The nation's first all-alternative radio network, offering the most unique programs in the new music field. All weekly shows are offered on a barter basis and delivered on CD. For information, contact John Soltyz at 800-737-9099, or circle Reader Service 180.

Premiere Radio Networks: Programming includes five comedy networks, a number of Countdowns, and various other programs like "News from the Boonies" which presents bizarre yet true stories from around the world, or "Premiere Radio Anti-Jingles."

For information, contact Ed Mann at 818-377-5300, or circle Reader Service 98.

Prime Sports Radio: A 24-hour national sports information network set to launch in September. PSR will be the source for timely breaking sports news for today's busy fan, as well as the place where the serious sports fan will be taken behind the headlines and given an in-depth analysis of the day's big stories. For information, contact Gary Wendt at 214-401-0972, or circle Reader Service 211.

RPM Inc.: Top Hits U.S.A. CD service featuring current releases from AC, CHR, and country formats delivered weekly or monthly. Also broadcast CD music libraries in various formats including AC, CHR, Country, Solid Gold, Rock/AOR and Classic Rock categories. continued on page 21 ▶

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No repeats in 7 days
Targeting 25-54 yr. old
Smaller library available for stations on a budget
Starting at \$239.00

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- ★ Heard as a weekend feature on Oldies, A/C, Country and Newstalk stations!

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Reader Service No. 201

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Welcome to the KXXX information line...

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Press 2 for local ski up-dates

brought to you by Big O tires

Press 3 now for an operator

Press 4 to leave comments about KXXX programming



finally, an answering system that has more, for less

FEATURES

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Reader Service No. 69



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Reader Service No. 161



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★ GRINDING THE GEARS

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▶ Commercials are logged and may be rotated & day-parted, the choice is yours!

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Pres. Clinton sound-alike computer vocabulary available!!

Then call **DC PRODUCTIONS** before your competitor does!

▶ **(800) 789-3472**

Reader Service No. 23

► continued from page 19
gories. For information, contact Tom Krikorian at 800-521-2537, or circle Reader Service 190.

Sports Byline USA: A daily, national radio sports talk show that includes interviews with guest celebrities, toll-free listener call-ins from across the nation and many topical sports-oriented features such as "Olympic Preview and Updates," "Baseball Magazine," "Sports Trivia" contests and so forth. For information, contact company at 415-434-8300, or circle Reader Service 202.

Standard Broadcasting: Standard Broadcasting Network's programming include "Homecare with Jeff Williams, in which listeners call in with electrical problems, tool advice and other home maintenance information and "Nutz & Boltz", a live interactive talk program that discusses car problems and includes auto news and sound effects. For information, contact Barbara Sparks at 800-283-4147, or circle Reader Service 214.

Advertising Works On-Air

► continued from page 16

stations has grown from 400 to more than 9,000, and revenues are at unbelievable highs. They have grown every year, and ad dollars have increased each year as we continue to see new faces as corporate owners on the radio scene. And many of the merchandising giants have come back stronger than ever to the most convenient and inexpensive way of telling their story.

Recently, a client with a huge advertising budget asked me if I really felt radio could do the job. I told him I couldn't actually sell his product for him, because his sales staff is ultimately responsible for that, but a great commercial on appropriate stations would be heard by thousands of people. His message can run over and over to reach the same audience, or in different time slots and on many different stations to reach specific audiences, as stations are now so specialized.

There are now approximately five million radios in use in this country, with the average household having six, not including the automobile. Radio serves individuals wherever they go. Radio is here to stay, and the advertisers, from the neighborhood veterinarian to the huge corporation, are getting more for their advertising dollar than ever. This is radio 1994.

Ask your family, friends and colleagues who said "a picture is worth a thousand words." I always thought it was Confucius. I checked Bartlett's "Book of Familiar Quotations" and other sources, but couldn't find it. It doesn't matter, though, because I don't believe it.

You give me an allowance of 1,000 words, and I can take with me the Lord's Prayer, the Hippocratic oath, the 23rd Psalm, a sonnet by Shakespeare, the preamble to the Constitution and Lincoln's Gettysburg Address, with enough words left over to write the greatest 60-second radio commercial you've ever heard. I wouldn't trade any of that for any picture on this planet.

□ □ □

Nancy Branson has more than 25 years experience in radio, television, publishing and music. Her career in radio includes stints at radio stations, and in 1985 she founded Branson Broadcast, a media advertising placement and copywriting services firm. She can be reached at 1237 McMullen Booth Road, Clearwater, FL 34619; telephone: 813-725-3182.

RUNNING RADIO

SRN Radio Network: Sports programming, talk programming, music formats on a cash and barter basis. For information, contact Mike Talir at 314-423-4182, or circle Reader Service 177.

Sun Radio Network: All-talk, service-oriented talk on weekends. Available on a barter basis. For information, contact William Wardino at 800-572-9204, or circle Reader Service 217.

Superadio Network: For information, contact Rich O'Brien at 508-626-2000, or circle Reader Service 147.

Syndicom: Offerings include "Red Neckerson," one-minute comedy editorials for all formats; "Sound Bite Trivia," "Kaleidophonic Jazz," a three-hour weekly program with emphasis on contemporary jazz representing all eras and styles of jazz in low-

key format. Support service include promos, IDs, flipcharts and graphics. Automated, live or live-assist., and "Country Phonics," two-hour weekly feature of progressive, acoustic and bluegrass styles with country rock, western swing, oldies, comedy and cajun. Automated or live-assist. All offerings on a cash basis. For information, contact Mike Hesser at 805-543-9214, or circle Reader Service 220.

Sheldon Radio Network: "Howard Sheldon's Radio Signs," world-famous radio astrologer provides three 50-second features, four daily astrological sign forecasts, each in changing order. For information, contact Mary Gaines at 818-761-6159, or circle Reader Service 14.

Unistar Radio Networks: Distributes news, sports, CNN, CNBC, 24-hour formats, specials, and more. For information, contact Ed Salamon at 800-225-3270, or

circle Reader Service 127.

USA Radio Network: Top and bottom of the hour news, sports, business and commentaries. The "USA Radio Daily" with Al Ross—news/talk, capsule stories of daily news, health developments and sports, blended with personality, humor and conversation. For information, contact Becky Henson at 800-829-8111, or circle Reader Service 213.

WOR Radio Network: Basic network feeds, transmitted on Satcom C5, Transponder 23 and SEDAT Channel 21 include "Dr. Joy Browne," "The Dolans" and "Gene Burns." For information, contact Rich Wood at 212-642-4533, or circle Reader Service 81.

Westwood One: For information, contact Laurie Peters at 310-840-4383, or circle Reader Service 151.

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STATION SERVICES

News and Services for Business, Programming and Sales

Big Band Jump Celebrates 10 Years

ATLANTA The two-hour weekly program, Big Band Jump, will celebrate 10 years of syndication in September. Hosted and produced by Don Kennedy, the program is now heard on roughly 200 radio stations in the U.S. and Canada.

The program began locally as a one-time presentation on a college FM in Atlanta, but drew such a response that a listener suggested syndication. It is now available on a barter basis.

Big Band Jump features Big Bands and vocalists, along with background information.

For information, contact Don Kennedy at 1-800-377-0022; or circle **Reader Service 19**.

Euro Hits Come States-Side

ALBUQUERQUE, N.M. KBE "Broadcasting By Design" is consulting on the North American release of The European Hit Survey radio program, which originates from Amsterdam, Netherlands.

The two-hour, weekly show, hosted by Euro-DJ Bobby Sicilia, features pan-European hits, artist interviews and European lifestyle and entertainment news. It is to be available in the U.S. on a barter basis.

For information, contact Karl Baehr in

New Mexico at 505-828-0488; or circle **Reader Service 62**.

Focus Is on Technology For New Service

CONCORD, Calif. August 1 marks the debut date for "Focus on technology," a monthly radio features service. Destined to cover computers, sports, consumer issues, business, entertainment, medicine, new products and innovations, terminology and so on, the service is available for \$1,000 per month (lower rates available for smaller markets and groups stations). Stations signing up this year are guaranteed no increases in rate for the next five years.

Station receives 20 packaged stories each month, ranging from 60 seconds to three minutes in length. There is no obligation to air any of the stories.

For information, contact John Bondon at 510-946-7075; or circle **Reader Service 71**.

Blanquita Cullum Talk Show Available

RICHMOND, Va. Former White House liaison, Blanquita Cullum announced the syndication of the "Blanquita Cullum Radio Talk Show." A nineteen year veteran of broadcasting, Cullum is set to launch nationally with an

issue-driven program featuring noted authors, national leaders and personalities.

The program airs from 3 p.m. to 6 p.m., M-F, on Satcom C-5; transponder 23; SEDAT Channel 47.

For information, contact Karen Shank at 804-675-0300; or circle **Reader Service 159**.

Family Holiday Series Returns

PHILADELPHIA Former First Lady Barbara Bush will host the family reading series, "Mrs. Bush's Story Time," on ABC Radio Networks for the fifth consecutive year. The program features Mrs. Bush with stage, screen and sports celebrities as well as special cartoon guests reading their favorite children's stories.

Co-produced by the Children's Literacy Initiative and ABC Radio News, this year's program welcomes the Compaq Computer Corporation and the Compaq Foundation as a new sponsor.

For information, contact Kim Richmond at 214-991-9200; or circle **Reader Service 191**.

"Travel Report" to Air on NBC

LOS ANGELES Laura McKenzie, the noted travel media entrepreneur, signed a two-year deal with NBC/Westwood One/Mutual Broadcasting to broadcast her "Laura McKenzie's Travel Report" on the network's "America in the Morning" program. As writer and reporter, McKenzie's deal also calls for her to launch a one-hour feature block of travel programming on weekends in the fall. Included in the features will be a segment on celebrity travel experiences.

McKenzie is host and co-host, respectively, of the nationally televised "Travel America," and "American Adventurer" series as well as writer and publisher of Laura McKenzie's Travel Report.

For information, contact Ken Amoroso at 213-850-8140; or circle **Reader Service 216**.

Energetic Music Releases Sports and Action No. 2

SEATTLE Energetic Music's newest release, "Sports and Action No. 2" features live scorching guitars, thunderous drums, kickin' bass, killer synths and punchy brass—all 100 percent digitally recorded. Its 10 cuts are upbeat and action-packed, excellent for all those action-oriented productions. Song

lengths range from 3 minutes and 20 seconds to 10 minutes.

Free catalogs featuring the company's 22 compact discs with more than 21 hours of sound, are available.

For information, contact Sandy Klem at 206-467-7101; or circle **Reader Service 97**.

Improve Your Bottom Line

BURKE, Va. Personnel position descriptions improve your staff's performance and help close legal loopholes that could leave you exposed to costly labor litigation. Basic set of 10 most common broadcast position descriptions on diskette in Word Perfect for just \$48, plus \$4 for postage and handling.

Customized descriptions and policy manuals are also available. Send for free compliance worksheet and services brochure. To order diskette descriptions, send check or money order to Performance Management, 5655 Mt. Burnside Way, Burke, VA 22015; telephone: 703-323-0491; fax: 703-323-8942.

Brownfield Talk Show Hits the Airwaves

JEFFERSON CITY, Mo. The Derry Brownfield Show, hosted by nationally-syndicated talk radio show host Derry Brownfield, hits the airwaves this month. The one-hour live talk radio program with listener call-ins airs from 10 a.m. to 11 a.m., Central time.

Derry is a founder of the Brownfield Network, a division of Learfield Communications. Learfield Studios produces the program. On his new show, Derry discusses current events and other topics, such as free enterprise, property rights, the work ethic and ecological myths.

For information, contact Chuck Zimmerman at 314-893-7200; or circle **Reader Service 102**.

Chris McWade Moves to CCM

BOSTON After five years as general sales manager for WZOU/WJMN 94.5 radio in Boston, Chris McWade has decided to leave his post and take on the role of director of sales and media for Consumer Media Marketing (CCM). CCM, a division of Team Enterprises Inc., is a media buying service formed at the beginning of this year.

For information, contact Janet Prenskey at 617-484-5151; or circle **Reader Service 74**.

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A-1 It's a two hour weekly barter **BIG BAND SHOW** heard on nearly 200 U.S. Stations, plus the Swiss Network and Canada.

Q: ANYBODY CARE?

A-2 Millions of Listeners over **NINE** Syndicated Years! Nice Listeners, too!

Q: WHAT DO I DO?

A-3 Phone 1-800-377-0022 for Audition and Pitch. (under 18 not admitted.)



Handle Performance Problems at Work

► continued from page 13

where it cannot be overheard. For each of the steps discussed below, be sure to advise the employee what the next step will be if performance does not improve.

Discuss the problem with the employee to determine the basis of the problem. Once you understand the cause, it will guide your choice of corrective action. If you suspect the problem may need professional help or counseling, bring appropriate information and telephone numbers to the meeting to give to the employee.

If you have differing views of the job expectations, advise the employee that your expectations will supersede his or hers. Make sure that the employee leaves the discussion with a clear understanding of what your (station's) expectations are for the position.

Verbal warning

After discussing a problem with an employee and there is no improvement, the next step is to give a verbal warning. In this discussion, make sure that you explain exactly what the staff member is doing wrong or failing to do. Also, be sure to explain what the staff member must do to bring his or her performance up to the acceptable standard.

Implement a performance improvement plan. This is a formal written warning of serious performance deficiencies. It should include a definition of the problem or problems. In addition, it should give exact corrective action(s) the employee must take to correct the problem(s). List any things that you can do to assist the employee to improve performance.

Make sure that you give a time frame for the employee to correct the problem(s). Generally 30-40 days is adequate for someone to demonstrate improvements. The final evaluation date should be incorporated in the document. You may wish to have a half-point date to check progress.

The document should also state that the

employee's performance must meet acceptable levels or the staff member will be terminated. The supervisor and the employee should sign and date the plan.

The performance improvement plan should be accompanied with a standard performance evaluation covering performance on all of the job requirements.

Be prepared

Be prepared for an emotional response. Try to anticipate how the person will respond. It may be anger, hostility, crying or any combination of these. Your response should be controlled and professional. If you lose your temper, you

will lose control of the situation. None of us think straight if we are emotionally charged. Usually we say things that we may later regret, especially in court.

If you set a mid point check date, be sure to follow up on that day and check the progress to date. Make suggestions for any midpoint corrections.

If the employee does not reach the expected performance level, terminate the employee. If the performance level is achieved, praise him or her for achieving the goal. Encourage the employee to keep up the good work. If the employee has made a genuine effort and you think he or she can reach the goal with more

time, extend the performance improvement time for a few more weeks.

Following these steps to correct poor performance takes time and effort. You may save an overall good employee who may appreciate your guidance in a particularly difficult time for him or her. As a result, you may have years of continued high performance from that employee.

You may be frustrated at the time it takes to complete the review and performance improvement plans. But when you consider the time, money, and effort a lawsuit takes, this method is far cheaper and is managing for success.

□ □ □

Sue Jones is a Senior Manager at Computer Data Systems Inc. in Rockville, MD. She can be reached at 703-323-0491.

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October 19—

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November 16—

Station operations: What innovative managers are doing to improve performance and the bottom line.

December 14—

Business outlook: An assessment from group owners and industry executives of the last 12 months and their expectations for 1995.

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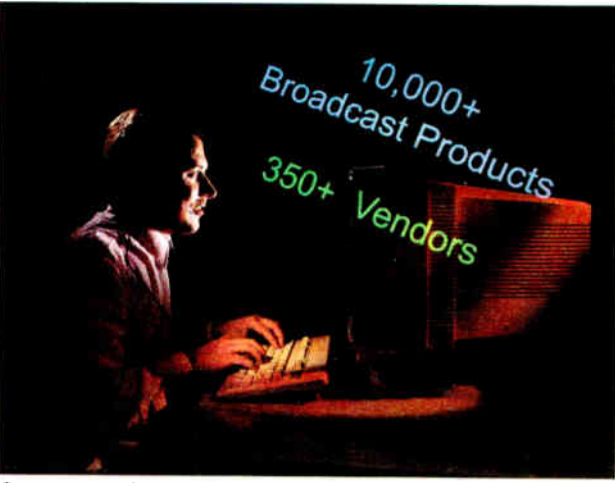
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Hollywood Revives Radio Classic

by Richard W. O'Donnell

HONOLULU The Shadow, radio's invisible crime fighter, has made a comeback. Hollywood revived him in a movie that opened earlier this month—one of those high-budget films with special effects and beautiful people.

Alec Baldwin stars as Lamont Cranston and Penelope Anne Miller plays the charming Margo Lane.

"The special effects in this film are great," producer Charles Glenn says. "The audience is going to love them. We



Bret Morrison as The Shadow in a publicity photo.

have turned out a film we believe will appeal to both new and old 'Shadow' fans."

The film may gross many millions in the months and years ahead, and there may even be several sequels. Hollywood

turns out a sequel at the drop of a hat these days.

But it is doubtful that this latest cinema Shadow will come close to matching the legendary radio superstar of decades ago.

Legacy

"The Shadow" wrote the rules and regulations of the modern super hero. Most of the others arrived on the scene in the 1930s. "The Shadow" was in the pulp magazines in the 1920s and became a radio star in short order.

Zorro and the Scarlet Pimpernel were both around before The Shadow, but one went galloping around on a horse in Mexico, and the other was rescuing people from death in France. They both opposed evil governments, but neither was a crime fighter.

Batman, Superman and the rest might have been able to do their own things, even if The Shadow had not paved the way. They are super heroes, and super heroes perform miracles. But The Shadow was first.

In case you have forgotten (or are too young to have known): "The Shadow, Lamont Cranston, a man of wealth, a student of science and a master of other people's minds, devotes his life to righting wrongs, protecting the innocent and punishing the guilty," as the announcer explained each week.

"Using advanced methods that may ultimately become available to all law enforcement agencies, Cranston is known to the underworld as 'The Shadow'—never seen, only heard, as haunting to superstitious minds as a ghost, as inevitable as a guilty conscience."

While in the Orient, Cranston acquired his "ability to cloud men's minds" so they could not see him. He never reveals exactly how it works. (Presumably, all of those "law enforcement agencies" are still trying to figure this technique out.)

The original "Shadow" programs were on the air for 24 years, mostly on

Sundays at 5 p.m., Eastern Time. Blue Coal was the prime sponsor for a number of years. (John Barclay was the famous Blue Coal announcer.) The

first show aired Aug. 10, 1930.

The Shadow's real name, by the way, was not Lamont Cranston—it was Kent Allard. For some reason, Allard, in one of his early radio cases, needed a name in a hurry, so he borrowed the name of a close friend who happened to be away on continued on page 33 ▶

Going Mobile with RDS

▶ continued from page 9

I was not able to test the alternative (AF) or traffic alert (TA) functions because the stations were not transmitting such information.

As most readers know, RDS' 57 kHz subcarrier (the third harmonic of the 19 kHz stereo pilot tone) transmits data at a rate of 1.2 kbits/second. Theoretically, it is possible that crosstalk from this signal could interfere with the stereo main channel. However, this has not been a problem in Europe, where RDS has been available for a decade, and did not present a problem in my listening. Specifically, I listened intently to both RDS stations and did not hear any artifacts.

As one would expect, RDS performance deteriorated when signal strength began to fail. To test this, I attenuated the signal at the antenna, gradually weakening the received signal. The RDS data was reliable even with degraded audio reception but failed when the audio signal was audibly poor. The RDS data did not err in any way, it simply vanished. On the

positive side, if signal strength momentarily failed, the unit's memory retained the current RDS display.

Summary

The DCT-950R is an excellent contemporary CD receiver. Its CD and tuner sections are first rate, with outstanding measured and audible audio performance. While ergonomics are okay, they could be improved, particularly for manual tuning. The RDS functions worked very well. Given a reasonable signal strength, data reception was quite reliable and various functions such as format search worked flawlessly. While lack of radio text will disappoint some customers, the RDS features are quite worthwhile and greatly add to the radio's utility and convenience. In short, RDS makes this excellent receiver even better. For more information, contact Denon at 201-578-7810.

□□□

Ken Pohlmann is director of music engineering at the University of Miami in Coral Gables, Florida.

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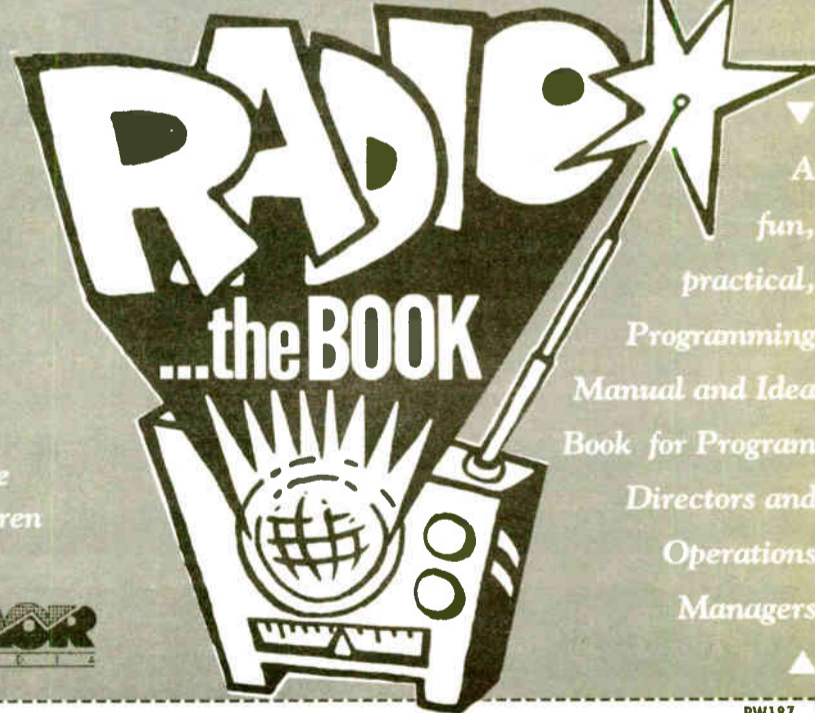
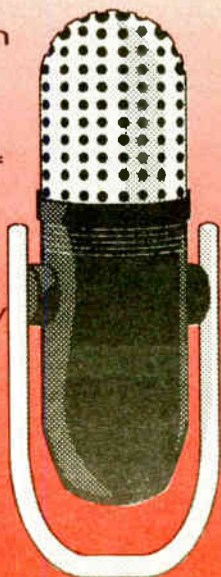
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UPLINK

Syndicated Programming Works Locally

by Karl Baehr

ALBUQUERQUE, N.M. There was a time when a station I worked at ran every countdown known to mankind. The logic was that (a) if we ran it, no one else would have it and (b) we could hire minimum wage "button pushers" all weekend long. Naturally the weekend numbers plummeted and no wonder.

This time out, I'm going to talk about special feature programming, effective use of special feature programming and ten things you can do right now to improve your station's usage of special features.

Is it good?

First of all, don't assume that special features are "write-offs." Sure, most of this type of programming is offered on a barter basis, but those are their commercials, not yours. If you are running a barter program that is not locally sponsored, you're wasting your air time.

Any program that hits the air on your station should have a local sponsor. National countdowns with well-known hosts can offer revenue-generating opportunities for you. Package them up for sponsorship. In most cases, the hosts of these programs will be more than happy to cut liners for these sponsors, a nice plus.

If your network runs special programs, these too can offer local sponsorship opportunities and should. Work with your network to get a promotional/sponsorship package for its special programming put together for your market.

Evaluate the special programming you now have on the air. Be honest, be critical. Ask yourself, "As a listener, is this programming a turn-on or a turn-off? Is it a reason to listen to the station or a reason to change stations?"

What you must keep in mind when considering special programming for your station is your audience. Sounds simple, I know, but with the huge variety of available programming not on your network, you can afford to be choosy and cannot afford to take a risk at turning listeners away for a program that is out of place on your station.

Flow charts

Make a flow chart of your station's day-to-day programming. Network and local feeds, news, special features (long and short), personalities, times, etc. Now what's missing? What do you have too much of? Are there any holes that can be filled with a special program? What type

of program? Here are a few thoughts.

Short-form health programs, entertaining news/events calendars or reports, music/movie reviews, ecology "green" programs, artists interviews. Long-form countdowns, "plain wrap" or generic countdowns, news/event forums that wrap the week's events, dating programs, psychics and specialty programs, such as dance-oriented, nostalgic or other segmented programming, can all

Any program that hits the air on your station should have a local sponsor.

be good if programmed correctly.

What you do not want is to have too much of one thing. If your network runs a countdown, be very careful if you run another one. An idea here is to make the network countdown your primary national countdown, as it is hosted by one of your (network) personalities.

Then acquire a generic countdown that can be done locally as a live broadcast from a nightclub or other venue. The "Mix 106 Top 20 Live at the Pub," something like that. This creates an event that provides not only revenue-generating sponsorship but the other advantages of an event promotion—every week. The nice part about it is that if you find the right syndicator, it will do all the work for you from scripts to providing the music cuts and ranks.

Evaluate

As you go through your evaluation process (remembering who your audience is), don't be afraid to stretch a little bit every now and then. There are some great programs out there that may not be everyday, mainstream stuff for your listeners but that they would love hearing in weekly capsules.

An example is the European Hit Survey, a weekly two-hour tour through Europe's hottest hit music. This show is unique because it does not focus on one type of music or chart. It is a survey compiled from the music charts of 12 different countries. For more information, contact Sound & Stations USA at 214-444-2525.

Did you ever think you'd hear/see country music on VH1? Did you ever think you'd hear Garth Brooks cover a KISS tune? It is true that country music has "crossed over" in a way to a different audience.

Today's country is hipper, flashier and better than ever. You may find that some type of contemporary country survey would work on a weekend at your AC station. There are generic versions of this type of programming available that can again create an event promotion.

There is a station here that runs a disco music program on Friday afternoon. The PD there is an old buddy of mine, and naturally I gave him a hard time about it when they started the program. I would have bet big money that it wasn't going to fly. I was wrong. The show has been very well-received and continues to draw

a growing audience.

A nice stretch for your station may be an "unplugged" type of program done locally, or a jazz brunch at a local restaurant or hotel on a Saturday or Sunday.

Special programming

Schedule special feature programming with your audience in mind and please do not schedule countdown programs back to back. It is risky going from canned to canned, much less rehashing a bulk of 10, 20, 30 or 40 songs for another several hours. Short-form stuff can add to your station's presentation during the broadcast day. Weekly features and other long-form programs may be best left to the weekend.

Familiarize yourself with what's out there. There are several good industry resources for this. A good place to start of course is with your network. What specialty programming, long- or short-form, do they offer? Can you get it in generic form? Look here in RW for syndicators. Call them, get their information and show demos. Feel free to call me. I would be glad to steer you to several top drawer syndicators.

Make sure you can fit any special features, long or short, within your network's windows. If it comes up long or short from a stop set or hourly block, you will need to address that. Padding a program that is too short isn't hard. If the program runs long and you don't have a computer, you'll need someone there to manually run the program and then return to the network. Don't plug in a program and let the network step all over it.

Also, with regards to delivery, how is the program supplied? Satellite feed? CD, DAT, reel? Make sure you have the ability to receive the program.

Get input

Discuss any plans for running outside specialty programs with your network. Get input from your contacts there. He or she may have an affiliate who ran the same or similar program that could provide valuable insight.

Don't believe demos tell the whole story. If you listen to 20 different demos, they will have two things in common: (1) they all sound great, and should, and (2) they all preach success with the program. Any time I've been involved with the development of a syndicated program, I have suggested that step two is to provide a potential affiliate with a complete, uncut example of a recent show. If you are impressed with the demo, ask to hear a show in its entirety before making a final decision.

Before you take on someone else's program, ask yourself, "What would it take for us to do this ourselves?"—a legitimate but often forgotten question. If you can do it on your own, make the show sound good and keep all the avails, plus get that all-too-important local focus and flavor, why not go for it on your own?

As always, I'm happy to talk with any of you regarding ideas for special programming. I look forward to hearing from you. See you next time for a look into the production room.

□□□

Karl Baehr is president of KBE "Broadcasting By Design," a radio consulting firm providing support services for satellite radio stations and produces the Actual Radio Measurement (ARM) electronic survey system. He can be reached at 505-828-0488; or fax: 505-821-4226.

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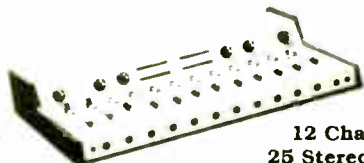
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Global Alliance Is Key Strategy

by James Wood

BERKSHIRE, England Much like the automobile and space industries, major broadcast manufacturers in America and Europe are forming strategic alliances.

There are good, sound reasons for the collaborative efforts, whether they come about through takeovers, mergers, sharing of technology or marketing agreements.

Strategic alliances offer several advantages that extend from research and development to production, marketing and the all-important sales and service.

The first

The first major U.S. broadcast manufacturer to adopt such a strategy was the Harris Corp.

Harris Allied, headquartered in Quincy, Ill., became unique in the broadcasting world. It could supply broadcasters with every item needed to set up a complete radio or television station, along with systems integration capability wherever the facility may be: the U.S., Latin America, Europe or anywhere else in the world.

Even today it is doubtful whether any other manufacturer in Europe has quite the same degree of capability to provide around-the-clock support to broadcasters.

It is the result of a legacy of commercial broadcasting in the United States where down time, or off-air time, is measured in more serious terms than in the state-controlled radio stations that are a feature of European broadcasting.

To sustain these operations, Harris Allied established offices in Miami to serve Latin America and a European radio distribution business based in Cambridge, England. Another distribution center will be based in Kuala Lumpur to serve broadcasters in the Asia-Pacific rim region.

Recently, Harris Allied opened its first office in mainland Europe, at Cergy-Pontoise, just outside Paris.

Others involved

The acquisition of the ABB transmitter manufacturing business by the French giant Thomson-CSF has made Thomcast the world's largest broadcast transmitter manufacturer whether measured by staff size or by gross sales. But Harris is the one competitor that Thomcast is watching and for whom it has much respect, because it too competes across the entire spectrum of radio and TV broadcasting.

At present Harris Allied is not the same size, nor does it have the sales of Thomcast, but it is getting closer as it makes more strategic alliances.

On this same theme, one of the interesting happenings in 1991 was the association between Harris Allied and Radio Industries Zagreb (RIZ) of Croatia. RIZ is the largest transmitter manufacturer in Central Europe with an exemplary history in the business of manufacturing transmitters and systems for radio communications and broadcasting.

The association between Harris and RIZ has been limited to Harris Allied supplying RIZ with its DX modules and other basic items that enable RIZ to construct high-power, all solid state transmitters. This, however, forms the nucleus of its high-power transportable radio stations installed in standard ISO containers that are transportable.

RIZ also is strong on building static radio stations with powers from 5 to 2,000 kW, a market in which it does have competitors, notably Thomcast and Continental Electronics Corp. of Dallas, Texas.

The potential in marketing between Harris and RIZ is very promising, certainly for Harris. Not only does it open a new market for Harris to supply DX modules, but there is a technology transfer in that Harris gains useful information in the highly specialized transportable radio station field.

A further gain for Harris is that it obtains a foothold into Central Europe. Its strategic importance should not be

overlooked. At the center of east-west relations, RIZ follows a policy of complete integrity and neutrality with its many customers, a high percentage of which are in Arabic countries.

Results in place

Significantly perhaps, Harris found its first customer for the static version of the DX300 300 kW medium wave transmitter in Slovenia, which borders Croatia to the north. This new transmitter replaced an old 600 kW medium-wave transmitter with Radio Ljubljana, a deal that did not include RIZ.

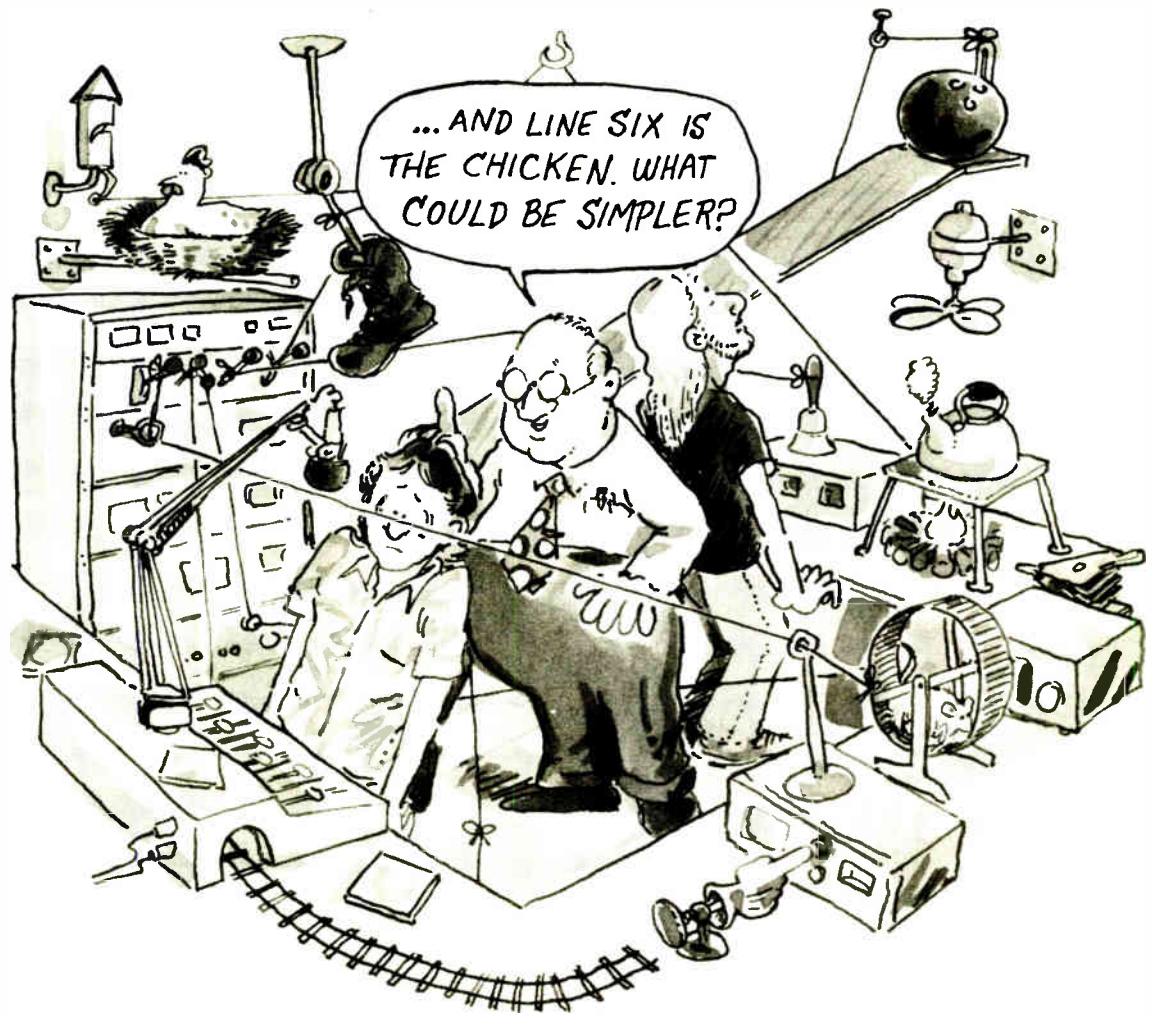
Darko Cvjetko, managing director of RIZ,

recently commented on the business arrangement. "So far, we are pleased," he said. "Our 100 kW solid state, 100 kW transportable MW station has been very successful, and this has been followed with a 300 kW version, the world's first 300 kW broadcast transmitter in a transportable role."

Harris is the largest transmitter manufacturer by far in North America. The product range was increased with the manufacture of medium-wave transmitters with output powers to 2 MW carrier power. The only product line that Harris does not have is in shortwave to 500 kW.

Another major transmitter manufacturer that appears to have concluded a working partnership with another entity is GEC Marconi Communications of Chelmsford, England. Marconi's fortunes went uphill

continued on page 35 ►



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Small Business to Get Shot at PCS

by Randy Sukow

WASHINGTON The FCC has given companies that qualify as "small businesses" under the commission's definition, including many radio stations, a special opportunity to bid in auctions for 10-year broadband personal communications services (PCS) licenses. Those auctions are planned for November or December of this year.

Earlier this year, small businesses were granted preferences in order to compete for narrowband PCS licenses (RW, May 18). (At press time, auctioning of those licenses was expected to start July 25.)



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The FCC's most recent action gives many of those same businesses a better chance to enter a more advanced form of PCS service that has much higher data capacity and, therefore, more revenue potential.

But as some commissioners warned, the broadband risks will be much greater as well.

Big difference

The difference between narrowband and broadband PCS is like the difference between a sheet of paper and a ream.

Narrowband PCS services, which are being established in the 900 MHz band, are expected to include fairly simple digital communications services, such as two-way paging, electronic text transmission and mobile faxing.

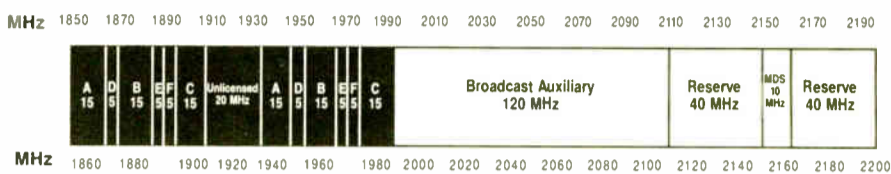
Broadband PCS, which is planned for frequencies near 2 GHz, will be capable of delivering two-way voice, picture-phone, graphics, video games and practically all other services planned for future fiber optic infrastructure, and with all of it receivable on wireless mobile receivers.

"Industry estimates project that mobile telephony holds the promise of serving 100 million subscribers in a decade and is expected to be a \$50-billion industry in 10 years," FCC General Counsel William Kennard said. "It will radically change the way Americans communicate."

The types of services that are likely to be delivered by narrowband will be similar in their capability to the types of data transmission services available through FM subcarriers and, eventually, digital audio broadcasting. Broadcasters looking to add an interactive dimension to those services could more easily integrate narrowband PCS into their business plans.

At the same time, broadband could be a risky venture. "(Broadband PCS auctions) could well cause the Gold Rush of '94," Commissioner James Quello said. But he warned investors, especially those that do not qualify for small-business or

Figure 1.



Shaded areas are frequencies allocated for broadband PCS. Bidding for frequencies in regions "C" and "F" is reserved for minority/women-owned and small businesses.

minority preferences, that they will be committing very large sums without having a perfectly clear picture of how big the PCS market will be and how quickly it will grow.

The auction prices for broadband licenses may range from tens of thousands of dollars in small population centers to tens of millions in the largest.

Commissioner Susan Ness warned that there will be "those unscrupulously wishing to take advantage of consumers in the form of get-rich-quick schemes... Broadband PCS is not a place to earn phenomenal returns on your retirement fund."

But for broadcasters and all other small businesses willing to take the financial risk and commitment in time, the FCC's revenue estimates are impressive.

The gross revenues of PCS companies eligible for small-business and minority preferences alone are projected to eventually reach \$12 billion a year. FCC Chairman Reed Hundt said: "That would be one and a half times the total gross

revenues of the top 100 African-American-owned businesses today."

Building blocks

"What we're proposing today is almost the reverse of what we did a decade ago with cellular telephone service," said Robert Pepper, chief of the FCC's Office of Plans and Policy. The cellular lotteries tended to protect incumbent telephone

companies and delayed licensing to entrepreneurs who eventually made the cellular service a success, he said.

Besides provisions to encourage small-business entry in to PCS, there are further provisions to aid companies owned by women and minorities. "In the long and tragic history of inequality between races and genders in this country, there has never been any single economic opportunity fairly available to women and minorities greater than this opportunity," Hundt said.

Out of the 120 MHz just below 2 GHz that is blocked off for broadband PCS, 40 MHz have been designated "entrepreneur blocks" where only small businesses and minority-owned companies will be eligible to bid. That 40 MHz will accommodate approximately 1,000 broadband PCS licenses, Kennard said.

Pioneers on hold

One lingering bit of controversy attached to both the narrowband and broadband PCS proceedings has been the question of "pioneer preferences." Under a policy developed in the late 1980s designed to encourage companies to risk funds to test new technologies, the FCC set aside PCS frequencies for four companies before bidding—three broadband pioneers, including Cox Enterprises, and one narrowband pioneer, Mobile Telecommunications Technologies Corp.

The commission is still studying a petition to reconsider those allocations, and there is not yet any timetable for a decision on that decision, Kennard said last month.

The pioneer preferences were questioned by Representative John Dingell (D-Mich.), chairman of the powerful House Energy and Commerce Committee. In May, Dingell directed the commission to answer several questions relating to charges that the allocations far exceeded the value of the allocations and that the FCC had not followed proper public notice, comment and *ex parte* procedures.

"Those awards must be based on hard scientific data and must be granted pursuant to the rigorous enforcement of the commission's rules so as to protect the consideration of the merits of the applicants from political and lobbying pressure," Dingell said. "The (Oversight and Investigations) Subcommittee is not satisfied that the commission's consideration and procedures met this test."

Kennard later sent a lengthy reply, with a detailed account of the commission's actions in the pioneer preference awards and claiming the FCC staff "uncovered no misconduct by the commission in these proceedings."

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Movie Casts a Shadow of Former Radio Self

► continued from page 27

a trip around the world.

Evidently, the producer of the show liked the name and decided to keep it. But future shows failed to reveal what happened to the real Lamont Cranston.

Many voices

In the beginning, The Shadow was the "invisible narrator" of a series of crime stories. He lurked in the background, while the central characters acted out the story line. Then a young actor with a magnificent speaking voice took charge.

"Orson Welles was the first one to do The Shadow as an integral part of the story itself," said another former Shadow, Bret Morrison.

"Before Welles, there were a lot of actors who played the part when The Shadow was

sort of a narrator. He was like Raymond on Inner Sanctum. He never appeared in the story. Welles changed all that. He made the invisible Shadow the key character on the show," Morrison said in an interview shortly before his death in 1979.

Morrison held the role for 13 years, longer than any other actor. His eerie Shadow-style laugh sent shivers racing up and down the spine. The laugh was The Shadow's trademark. Villains trembled when they heard it, and even good guys got a little nervous.

Other actors who played The Shadow over the years included John Archer, Steve Courtleigh, Bill Johnstone and Grayson Enlow. Character actor Victor Jory played The Shadow in a low-budget 1940s movie serial. Jory emoted his way through 12 chapters wearing a black hat and cape that make him look more like Dracula than a good guy.

Margo was billed as Cranston's "faithful companion," which raised a few eyebrows. She was an unmarried girl cavorting around the world with a wealthy bachelor. But The Shadow was a noble and pure crime fighter, so Margo and Cranston were generally given the benefit of the doubt.

Lively plots

"Agnes Moorehead was the first Margo Lane," Morrison said. She played opposite Welles. Grace Matthews played Margo longer than any other performer, and Marjorie Anderson and Gertrude Warner held the role.

"The plots were so complicated I often had difficulty figuring them out," Matthews said. "After the show, I'd go home and ask my husband, who was supposed to be listening, to explain what had happened. He was a baseball fan though, and kept switching between the game and The Shadow, so he seldom knew what was going on. He usually gave me an elaborate explanation of what had hap-

pened. I'm certain his explanations weren't accurate. He was more interested in baseball."

"The Shadow," for the most part, featured ghosts, goblins, vampires, werewolves and maniacs, plus a splendid assortment of mad scientists intent on destroying civilization. The mood was eerie, and most of the action took place in the dark of night. Organ music, a haunting old classic called "The Spinning Wheel," was featured.

Academy Award winning actress Mercedes McCambridge appeared on several episodes as either an innocent young girl or an evil character. Ruth Gordon, a Broadway star in the 1930s and '40s, would appear whenever a part was available to supplement her income in the days when there were no Sunday Broadway performances.

Hollywood actress Kay Francis, known as "the queen of the lot at Warner Brothers" in the early 1930s, was a regular listener and once appeared on "The Shadow" as a lark.

She visited a rehearsal of the show while in New York to promote one of her movies and was offered the part of an old crone who needed young blood to stay alive. Francis accepted the part but insisted that she be listed as Frances Kaye, so that Warner Brothers would not find out.

Keenan Wynn,

Alan Reed and Mandel Kramer all played Shrevie, the friendly cabbie at some time, and the other regular character, Commissioner Weston, was played by a number of performers, including Ted deCorsia, Santos Ortega, Kenny Delmar and Dwight Weist.

The shows were performed before a live audience in New York's Longacre Theatre and later moved into a studio around the time when Matthews was expecting a daughter. The show was taped during the last years, which accounts for most of the shows heard in syndication today.

"Do you know," Morrison said, "that there were people who actually believed there was a character known as The Shadow, and that he had the power to make himself invisible. I remember we used to get letters from people who wanted to know why The Shadow was doing radio shows when he could be over in Korea fighting the enemy. Those people really believed The Shadow was for real."

Television drove most favorite radio programs, including "The Shadow," off the air. Then came the great revival.

Near tragedy

"The Shadow" can be heard weekly on a number of stations today. Most of the shows are transcriptions of the old radio shows, which feature Morrison.

"I first heard about it from a Chicago station," said Morrison. "They sent me a

copy of one of their shows, and asked me to identify the actors on it. This was to make certain the performers received their residual payments."

Morrison obliged by supplying several names, but it was often difficult. "The actors would double up in roles," he said.

Ironically, the old shows were almost lost forever in the late 1950s, according

to Van Christo, a Boston advertising executive and proponent of vintage radio program revivals.

It is doubtful that the new, cinema Shadow will match radio's legendary superstar.

Christo tells the story of Charles Michelson, a New York radio executive, who purchased a large package of used tapes he intended to erase and reuse. The tapes were actually in an incinerator when Michelson found them. Those tapes, as it turned out, were transcriptions of "The Shadow."

"The engineers started rubbing the old shows off the tapes," Christo said. "Finally, by chance, somebody happened to listen to one of the tapes and discovered 'The Shadow' shows were on them. By then, about 80 percent of the tapes had been rubbed clear. Quite a few of the

old Shadow adventures were lost." After hearing a few of the tapes, Michelson sent inquiries to radio stations across the nation to see if they were interested in reviving the old show. He was "overwhelmed by the response." Thus did the great Shadow revival begin.

"Lamont Cranston and Margo Lane have to be considered the godparents of the old-time radio generation of today," said Christo, who has introduced young New England listeners to "The Great Gildersleeve," "Life of Riley," "The Green Hornet," "Henry Aldrich," "The Lone Ranger"

and many other favorites of yesteryear. "Several shows have followed in their footsteps. But 'The Shadow' shows were the ones that led the way in the revival, and captured the attention of young America. It was 'The Shadow' shows that made your young people realize how wonderful old-time radio used to be."

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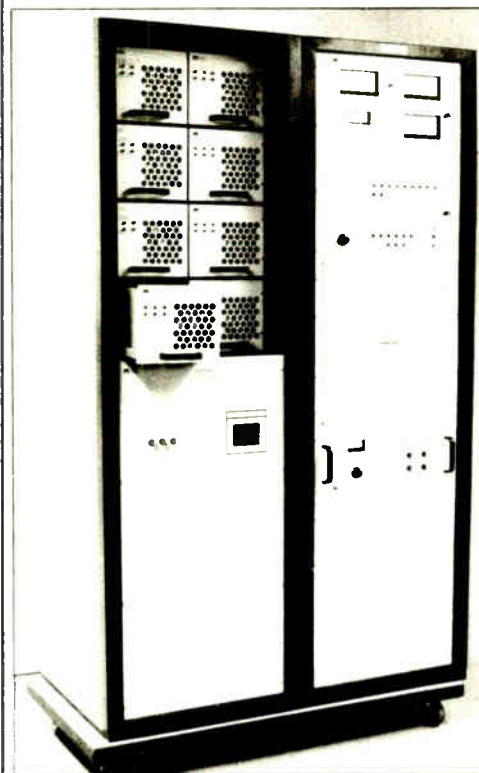
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Richard W. O'Donnell is a semi-retired writer living in Honolulu, who formerly wrote an "off-beat" news column for the "Boston Globe." He can be reached at 808-456-8578.



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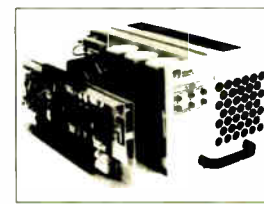
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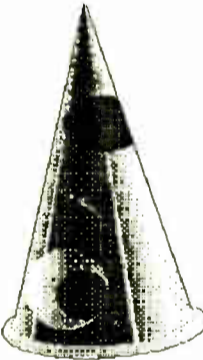
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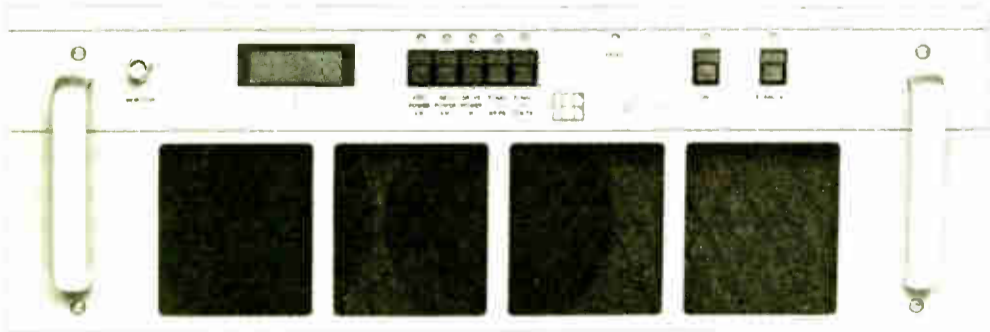


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World Radio History

Engineer Groups Meet

DENVER The trend among national TV and radio trade associations toward consolidation of some meetings and membership services (This trend is most visible in the organization of the World Media Expo to be held in Los Angeles this fall) is beginning to be felt on the local level.

The local chapter of the Society of Broadcast Engineers (SBE) is banding together with the Denver-area Society of Motion Picture and Television Engineers (SMPTE) and Society of Cable Television Engineers (SCTE) to organize a series of joint informational meetings to cover issues of mutual interest to radio, TV and cable TV transmission and production engineers.

The responsibilities of engineers in all telecommunications media are overlapping in an increasing number of areas, said

SBE member Fred Baumgartner, engineering manager, KDVR(TV) Denver, who is a primary organizer of the Denver-area meetings.

Baumgartner uses his own experience at KDVR as an example. The station recently began distributing its signal via satellite to cable systems throughout Colorado and beyond, and he spends more time dealing with cable engineers than with other broadcasters, he said.

Engineers in all communications industries are also finding common ground as digital program production, data compression and transmission systems become more commonplace.

All three organizations will enjoy cost

benefits by occasionally meeting together rather than separately, according to the organizations

"I'm sure if this is successful, it will be done in other areas," although Denver is a somewhat special case because there are unusually strong chapters of all three organizations there, Baumgartner said.

The "S(B+CT+MPT)E" meetings, as some engineers call them, will begin this fall with "An Overview of Changing Regulation and Technology in Telecommunications," to be held on Sept. 20 at 12-3 p.m.

Other meetings are scheduled to follow every other month:

Nov. 16, 1994—Compression: Theory and Practice of the State of the Art, 5-8:30 p.m.

Jan. 19, 1995—Transmission and Testing (RF, fiber, audio, video and data), 9 a.m.-3:30 p.m.

March 17, 1995—The State of Audio (DBS, AES/EBU, Surround Sound and more), 12-3 p.m.

May 21, 1995—The State of the Profession, 5-8 p.m.

All meetings will be held at NCTI building at Mineral and Broadway in downtown Denver.

Each society is taking reservations from its own membership. Reservations can be made for individual meetings or the entire series. Engineers who do not belong to any of the groups will be admitted if space permits.

A task force of members from each organization is looking for presenters on telecommunications topics to participate in the meetings. Those interested should contact Baumgartner at KDVR, 303-595-3131, or Steve Johnson at Time Warner Cable, 303-799-5621.

Transmitter Companies Eye Europe

► continued from page 31

after it won the much-prized contract from the USIA for the Voice of America modernization program now in its third year.

The B6128 500 kW shortwave transmitter with which it won the VOA tender was superseded with the B6128S. This is equipped with a solid state switching modulator in place of the tube-fitted modulator. For the new solid state modulator, Marconi went to Continental Electronics Corp.

By all accounts, this is a highly successful design of modulator that uses IGBT technology. Cross transfer of technology such as this between two major transmitter companies makes sound sense. There is no merit in investing in research and development to duplicate an excellent design. Continental sold a large number of its modulators to broadcasters and OEMs.

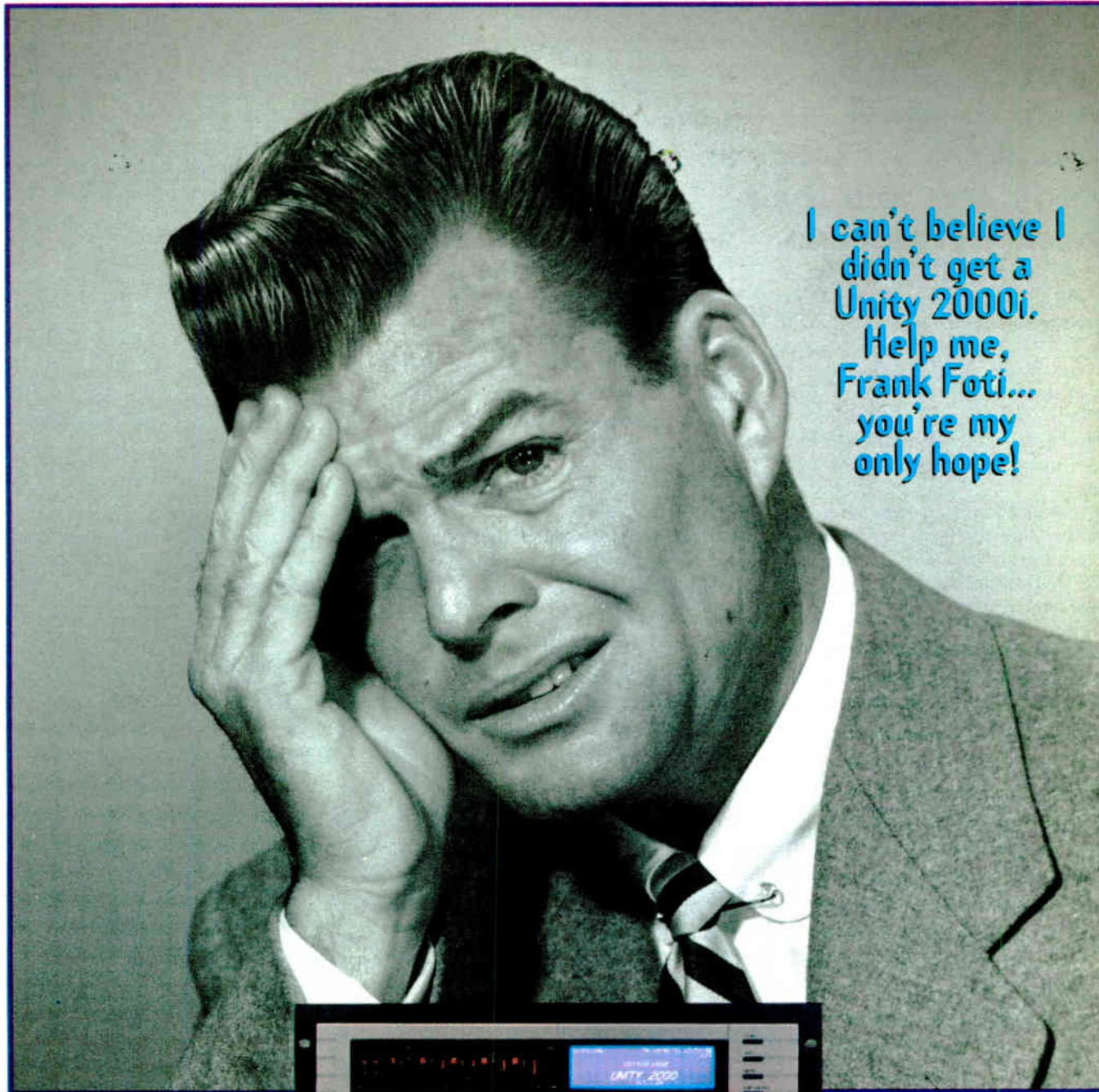
The one company in the big league of transmitter manufacturers that seems to be going it alone is Telefunken Sendertechnik. This Berlin-based company can claim, with justification, to be the leader in technical innovation. It has an excellent transmitter product line, extended last year to include DAB transmitters.

Telefunken is owned by the mighty Daimler Benz group that takes in many activities, including Mercedes Benz, the engineering group AEG, Deutsche Aerospace and others. Until last year, Telefunken was a subsidiary within AEG and, up to then, was called AEG Telefunken. Now the transmitter company is part of the high technology company structure under Deutsche Aerospace. This is a strategic shift with which Jurgen Graaf and his team are very happy.

The newest transmitter product to come out of Telefunken is the S4105 500 kW shortwave transmitter, successor to the much-acclaimed S4005 that has been in service with major broadcasters like the BBC World Service and, of course, in use in large numbers with Deutsche Welle.

□□□

James Wood, a regular contributor to *Radio World*, is a consulting engineer and a writer on high-power AM based in Berkshire, England. He can be reached by telephone at +44-344-54938.



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World Radio History

WORKBENCH

Modification for Studer CD Remote

by John Bisset

SPRINGFIELD, Va. If you own one of the older Studer A725 compact disk players, you may want to consider a minor modification.

This player has a lockout feature that disables the front panel switches when the player is operated by remote control. It is a useful feature in the control room because it prevents the jocks from accidentally bumping a front panel button, or

Route the wires to J-1. IC pin 5 connects to J-1, pin 11. IC pin 6 runs to pin 13 of J-1.

While you are soldering, replace R-16, an 820-ohm resistor, with a 47k-ohm resistor. This change is necessary because the transistor in the opto-isolator does not have enough gain to overcome the 820 pullup resistor.

Once modified, a momentary closure from the remote control connector pin 2 to ground will put the machine in PLAY, just like pushing the PLAY/NEXT switch. This assumes you've already jumped pins 5 and 6 together in the remote control connector. Once the machine is in play, the front panel buttons can still be used to control the machine's operation.

The only drawback to this modification is that the remote play button also duplicates the "NEXT" function. If the remote start button is pushed a second time, the machine will advance to the next track. This is unavoidable because Studer chose to assign both functions to the same push-button control.

On a lark, I sent for a couple of rolls of free film from the Seattle Filmworks. The rolls arrived with a really neat brochure about a new Seattle Filmworks service, Pictures on Disk!™. They will transfer a 24-exposure roll of 35mm film to either a 3.5- or 5 1/4-inch computer disk for just \$3.95, or will make up a custom disk of your favorite photos for \$9.95.

Tell your general manager or sales manager about this service. It could be useful for sales presentations when they are

developing pitches via computer disk. Not only does it portray the station as high-tech, but it shows pictures of how many listeners your station draws for a remote which is a lot more impressive on a 13-inch color monitor than in a presentation booklet.

Your promotions director will like this

the idea there. Someone on the management team may see the value of your suggestion and take your side. There is strength in numbers.

Let me know how it works.

For engineers who want to brush up on antenna theory, there's a new Texas Association of Broadcasters (TAB) book to consider, the second edition of "The Practical Antenna Handbook" by Joseph Carr. The first edition has become the

Many stations need to repair managers' backward attitudes about engineers and their pocket protectors.

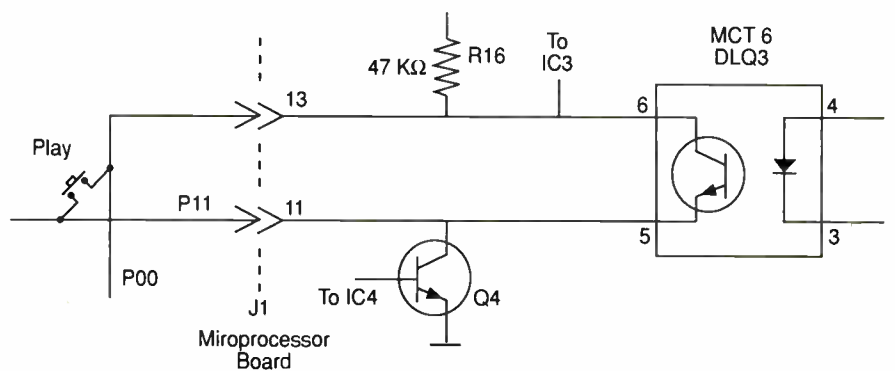
removing a CD while it is playing. In the production room, however, this feature can be frustrating.

The circuit shown in Figure 1 uses an opto-isolated transistor to bridge the front panel play button. This enables the machine to be started by remote control without using the built-in "fader-start" feature.

The modification is made to the microprocessor board, the board with the remote control connector. Remove IC MCT6/DLQ3, an opto-isolator located near the remote control plug. Solder in an eight-pin IC socket and replace the opto-isolator in the socket, bending up leads 5 and 6 so they are not in the socket.

Solder two lengths of wrap wire or equivalent fine insulated hookup wire to pins 5 and 6. Note the polarity of the transistor in the opto-isolator—it is important.

Figure 1.



Front panel push-button lockout can be defeated on Studer A725 CD players by paralleling the start switch.

idea too. Pictures from the disk can be imported into word processing documents to enhance your station's newsletter. Instant shots from your last big giveaway or client party are easily incorporated into the newsletter or sales promotional piece.

You can even dazzle the agencies by using your computer modem to deliver presentations with pictures to other computers.

If you'd like more information on Pictures on Disk!, call Seattle Film Works at 1-800-445-3348. Ask for the free introductory pack, and don't forget to tell the operator you read about it in **RW**. You may also circle **Reader Service 77**.

Some may wonder why I have included a sales-oriented tip in *Workbench* with the usual soldering and fixing-of-things information. Perhaps this tip does fall into the "fixing-things" category. Many stations need to repair their managers' backward attitudes about engineers and their pocket protectors.

Much has been written on the need for engineers to become team players, but many do not know how to play the game. Tips like this show your management that you are thinking of more than just tubes and transistors.

Explain how a small investment in computer diskettes can improve the station's image. Ask the sales secretary how long it takes to prepare a presentation booklet for a sales call. It should be obvious that the idea will save the station money.

Wonder how your idea will be accepted? If your station has periodic meetings of managers or department heads, present

antenna bible to radio amateurs, but there is plenty of good information for broadcasters as well, even if they are not hams.

If you like *Workbench*, you'll like the projects described in this handbook. For those who know nothing of electro-magnetic fields and wave propagation, or who simply need a refresher, the book is worth the price of \$26.95.

The section on FM signal ducting is invaluable, especially if you have ever tried to explain the problem to a skeptical general manager. In addition to easily explained theoretical material, the book is filled with practical applications that you can build.

At a remote the other day, I was reminded of a duct tape tabu. An intern had taped some cables to the floor to prevent tripping. A fourth cable needed to run in the same direction, so he laid the cable down over the existing duct tape and proceeded to run another length of tape over it.

I could have let him finish and then let him try to separate the two pieces of tape, but I wanted to get home some time that day. Getting wires out of duct tape sandwiches is one of those mistakes you are guaranteed to make only once.

Keep a couple of cans of WD-30 handy for cleaning the duct tape residue off the cables after the remote is completed. Thoroughly soak a rag with the WD-30 and pull the cable up through the rag. The gummy residue will vanish.

The WD-30 also worked well on the client's metal door frame, which had been duct taped open. Take care when removing tape from painted surfaces.

□□□

John Bisset is a principal with Multiphase, a contract engineering and special projects company based in the Washington, D.C. area. He can be reached at 703-323-7180. Fax submissions to 703-764-0751. Printed submissions qualify for SBE certification credit.



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INSIGHT-ON-RULES

EPM Problems Remain for AM Stations

by Harold Hallikainen

SAN LUIS OBISPO, Calif. All AM stations should now have equipment performance measurements (EPMs) on file to demonstrate their compliance with the requirements of FCC Rule 73.44, the NRSC "RF mask" standard. These measurements should have been completed by the June 30 expiration date of the "presumed compliance" measurement exemption of 73.44(e).

But there continues to be confusion on some parts of the rule, and I still receive phone calls on EPM.

Clarification

From now on, AM stations must run an EPM each calendar year with no more than 14 months between measurements (see 73.1590(a)(6)). Some believe the measurements are required once every 14 months, allowing the month of the measurements to advance a couple months each year, eventually resulting in a calendar year with no measurements.

I believe the FCC wants to walk into a station and see measurements for two calendar years, unless they were to ask for it now, immediately after the exemption expiration. Reports should be kept for two years, according to 73.1590(d).

There is considerable confusion regarding the carrier reference level to be used in AM EPM measurements, as described in 73.44(d). The commission's staff tells me that when making occupied bandwidth compliance determinations, the actual measured carrier level should be used as a reference.

When making harmonic, intermod or other spurious radiation measurements, the measurement frequency is removed from the carrier frequency so far that it is assumed the directional array has substantially different directional characteristics from those at carrier frequency. In these cases, the reference should be the carrier level that would result if the transmitter were driving a nondirectional antenna.

If, for example, a directional 10 kW station has a major lobe gain of 6 dB over nondirectional, the second harmon-

ic (which is removed from the carrier by more than 75 kHz) would have to be 80 dB below the nondirectional carrier, or 86 dB below the actual carrier, as radiated by the directional array. It is not specifically stated in the rules, but it makes sense to measure in the major lobe within the one kilometer specified in 73.44(d).

Interference levels

Many callers say it is impossible for them to make an EPM in the field due to interference from other stations. They cannot even measure at a transmitter output tap because other stations' signals come "back down" the antenna system.

One suggestion has been for stations in an area to agree to shut down with just one up at a time to run the measurements. But this does not seem to be the best solution.

It takes at least 10 minutes to run the measurements on one station, due to the peak hold requirement. Stations with more than one pattern must run measurements on each pattern, which increases the measurement time even more.

Measurements could require shutting down stations for a few hours in the middle of the day, in order to avoid skywave interference. This seems unlikely. It is even more unlikely for stations along borders where there is interference from stations in other countries.

About all I can suggest is to do the best you can. Do the field measurements, explain away all the interfering signals in your report and, if necessary, try measurements with the transmitter operating into a dummy load.

If it is impossible to demonstrate that the station is in compliance using the FCC's procedures, talk with the commission to determine what to do next.

FM EPM

Rule 73.1590(a) lists circumstances under which FM stations must also conduct EPMs. If you have installed a new transmitter, a new stereo generator (or perhaps a digital STL that includes a stereo generator as part of the receiver) or a sub-carrier generator including RBDS and paging within the past two years, that

report should be on file at the transmitter or at a remote control point.

The rule uses the term "upon installation" of the new equipment. This probably means that the measurements are completed during installation of the equipment, demonstrating compliance before beginning regular operation with the new equipment.

FM-occupied bandwidth and spurious radiation limits listed in Rule 73.317 are much less detailed than the AM limits. For example, the FM section does not specify where the measurements are to be made:

in the field? by a transmitter operating into dummy load? It also does not specify the spectrum analyzer resolution bandwidth, peak hold time, or video filtering.

This will be a topic for a future column.

□ □ □

Harold Hallikainen is president of Hallikainen and Friends, a manufacturer of transmitter control and telemetry systems. He also teaches electronics at Cuesta College, San Luis Obispo. He can be reached at 805-541-0200. He can also be reached on internet at ap621@cleveland.freenet.edu.

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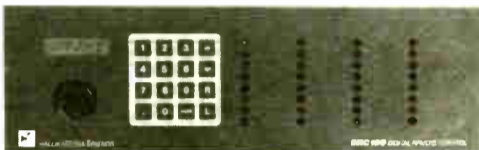
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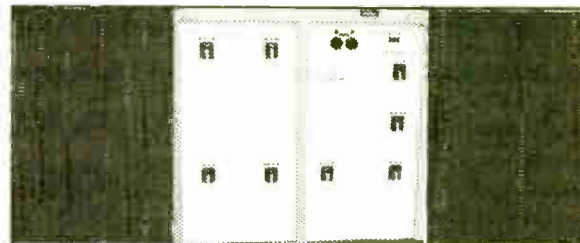
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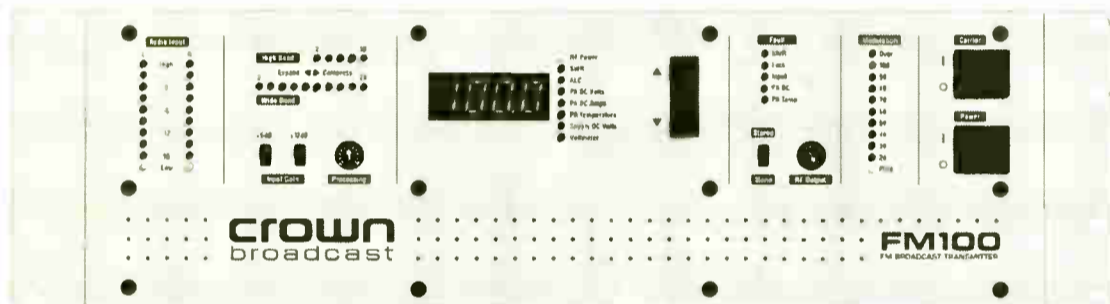
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FEEDLINE

T1 Links Travel Where STLs Do Not

by W.C. Alexander

DALLAS During our company's, (Crawford Broadcasting's), rapid expansion over the past few years, I have found myself time and again in the unenviable position of needing a frequency for a studio-to-transmitter link in a crowded urban market. More often than not, no frequencies are available for the path between our new studio and transmitter.

Another problem I often run into is finding a place for satellite antennas. In addition to some C-band usage, Crawford has its own Ku-band network that requires a 2.4-meter receive antenna or, in some instances, a rather large uplink antenna. It is becoming more and more difficult to obtain a building permit or zoning to install such an antenna where it can be seen.

Many of our satellite antennas are located at transmitter sites as a way around the restrictions. But it is often difficult to transmit the audio back from, or out to the satellite terminal.

Wired alternative

We have opted for high-capacity real-time linear T1 (or DS1) telephone service. Using a single T-carrier, we can easily deliver four discrete channels of high-fidelity audio in both directions. We purchase the high-capacity path from the telephone company and can control what we put on it, which gives us a large number of options. We can even send a composite baseband plus two more channels of audio, which leaves our audio chain essentially the same as it would have been using a composite STL (less the noise, of course).

A typical setup for one of our stations uses four 15 kHz channels in each direction. On the STL side, two 15s are used for program STL audio. The other pair is used to feed the Ku-band satellite uplink. On the TSL side, two 15s are used to feed satellite audio to the studio and the other two are used to feed air monitor (right off the transmitter modulation monitor) back.

A typical T1 path consists of five parts: the T1 line provided by the telephone company, a channel service unit (CSU) and the customer-supplied terminal equipment on each end. The T1 line and all its

equipment—up to and including the telco "demarc"—are the property and responsibility of the telephone company. In some instances, the channel service units can be leased as part of the phone company package, but usually they are customer-supplied. All terminal equipment is the customer's responsibility.

Cost effective

T1 rates vary widely from location to location. We pay as little as \$400 a month in the Pacific Northwest to as much as \$600 in the Midwest. A single 15 kHz equalized line in most locations will cost a minimum of \$120 per month. Multiply that by eight (four in each direction) and you can see that even in the most expensive location we come out way ahead. Installation rates are usually around \$1,000, a one-time charge.

How much does a T1 terminal equipment cost? It is about the same as the cost of a typical composite RF STL system, which is downright affordable in my book.

Besides the cost savings, T1's advantages are many. First, it is a 1.544 megabits-per-second digital link, which means the quality will be on par with or better than the digital RF STL links currently on the market. Noise will be limited by the thermal noise in the analog devices on each end of the link, not by the signal-to-noise ratio and desired-to-undesired signal ratio of the RF link.

The user can configure the terminal equipment to what is needed. If you wish to change your system from two 15 kHz, one 10 kHz and one 3 kHz audio channel to a composite and two 15 kHz channels in one direction, you need not call the telephone company; the configuration of the system is totally up to you.

Troubleshooting can be done, for the most part, by the user. Only the most serious cases will require telephone company involvement.

When you order T1 service, you will specify AMI (alternate mark inversion) or B8ZS (binary eight-bit zero substitution) line coding, D4 (super-frame) or ESF (extended super-frame) framing and density. Get the proper values for these parameters from the terminal equipment manufacturer. It helps to have a telephone

number at each end of the link so that telephone company engineers can find the appropriate cables.

Keep in mind that several pricing schemes are offered by most telephone companies. Month-to-month is the most expensive. Usually, contracts for three, five or seven years or longer are available at considerable savings.

I usually enter into the longest term contract consistent with the remaining term on our studio building lease.

Installation

Setting up a T1 link can be as easy as "plug-and-play" or very difficult. Usually it is somewhere in between. The first step is to connect the channel service units (CSUs) to the T1 line to see if they will talk to one another. Following the manufacturer's instructions, you can remotely "loop back" the other CSU and obtain an acknowledgement by way of an LED flash on the local CSU.

Next, connect the terminal equipment to the local CSU and set it in local loop back. This will allow you to send data to the local CSU and have it looped back through the local CSU to the terminal equipment. You can then monitor what you are transmitting on the STL side of the terminal equipment from the TSL side. This test verifies that the local terminal

equipment and CSU are working.

To see if the T1 itself is working properly, turn off the CSU local loop back and perform a remote loop back on the remote CSU. This will allow you to send the STL signal all the way through the T1 to the remote CSU and back, monitoring it on the TSL side of the local terminal. If all is well, you can probably assume that

A typical (T1) setup uses four 15kHz channel in each direction.

the local terminal equipment, local CSU, T1 and remote CSU are working properly. Failure of any of these tests should indicate of the defective compo-

nent. All tests should then be repeated from the other end.

The last step is to remove all loopbacks and see how the system works all the way through. All STL and TSL channels should be checked for proper operation. It has been my experience that once you get to this point, you can look forward to years of trouble-free operation. Telcos know how to do T1; it is their life-blood.


With all the Ts we now have in operation, I cannot recall having telco trouble with any of them beyond the initial installation and setup.

T1 is becoming a very viable alternative to conventional STL/TSL systems. It is affordable, flexible and reliable. Keep it in mind before you call your local frequency coordinator for an STL frequency next time the need arises.

□ □ □

Cris Alexander is director of engineering for Crawford Broadcasting. He can be reached at Box 561307, Dallas, Texas 75356.

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CD-ROM Simplifies Marketing Tasks

by Richard Mertz

FAIRFAX, Va. Say the word "multi-media" to your general manager and the responses you will most likely get are:

"Why should I buy this toy for your computer?"

"How is this piece of equipment going to add to my bottom line?"

"If you want to listen to CDs, turn on the station."

No, I do not have a bad attitude about general managers. These responses are quite reasonable for anyone who is charged with the financial responsibility of running a business. A good general manager will think twice before shelling out \$300 for a multimedia system that is just for show.

You can get double speed drives for under \$175 at the computer supermarkets, and they are even cheaper at computer flea markets and Ham radio fests, but that is not the point. General managers want to know how this device is going to enhance the quality of the air product.

What can a CD-ROM, with or without the sound card, do to help increase sales?

Marketing tool

Unless all the account executives have great agency lists, they are out on the street marketing the radio station to existing and future advertisers. Many sales departments rely on "cold calls" or other methods to drum up new business.

One way of marketing is via the U.S. Postal Service. Most stations maintain lists of former, current and potential advertisers. Each time the sales department has a promotion or even a "sale" on commercial time, announcements are mailed to companies on the list.

These lists often require years of work and effort to assemble. CD-ROM can be used to drastically cut the time it takes to generate new lists.

Say the station's co-op manager needs to contact all the candy shops in the area for a special promotion with a new candy manufacturer. He whips out the yellow pages and types in the names and addresses into his word processor. Unfortunately, the phone book does not list zip codes.

There is much you can do to shorten this process.

Digital Directory Assistance Inc. sells the "Phonedisc USA," a CD-ROM disk I liked so much, I bought it myself. It comes in separate business and residential versions. A 1-800 directory is also available. You will no longer need those old, outdated phone books. Recycle them.

The CD Phonedisc database contains information provided by the Database America Companies. It contains over 9.5 million business phone numbers that can be searched by type of business, phone number, area code, zip code and address.

What if an account executive wants to

contact all the department stores in a neighboring community? He simply uses the function keys to select business type and presses enter. All the businesses in the selected category come up on screen.

Mailing lists

If you need a mailing list, go through the steps described above and press print. Out come your labels. There is a small hitch, however. The software license limits the number of printed lists you can generate in a month. For small mailing lists, this is all you need. For an additional fee, this limit can be expanded. All in all, it is not a bad deal.

I use the database to find phone numbers for businesses located in other states. It beats calling the directory assistance operator whenever I need a hotel's

local telephone number.

You will need 512 K of RAM and a hard disk with 500 K available to install CD Phonedisc. The CD-ROM must use Microsoft's CD-ROM extension. MAC owners can use the same disk on System 6.0.5 or with more than 2 megs of RAM.

Phonedisc USA Business sells over the counter for about \$50, not bad if the sales department can turn the contacts into advertising revenue.

If you want first-hand information, visit your local computer store. While you are there, you may find some other interesting titles. There are almanacs, dictionaries and other references available on CD-ROM that may be great sources of information for your morning team.

□□□

Richard Mertz is a principal at the consulting engineering firm of Suffa and Cavell, Fairfax, Va. He can be reached at 703-591-0110 or through CompuServe, 73020,3026.

OFFBEAT RADIO

Cupid Working His Magic On an FM's Night Shift

by Dee McVicker

SALISBURY, N.C. Romance is in the air, or on the air rather, for single people in the Carolinas meeting courtesy of WRDX(FM) Salisbury. The station, known as Beach 106, began shooting Cupid's arrows in April, after owner and general manager Tom Harrell discovered an interesting fact about his audience.

"Between 46 and 47 percent of my listeners are single," Harrell said, based on numbers from the station's database of listeners in approximately 13,000 households in the Charlotte and Greensboro/Winston-Salem markets.

WRDX's Carolina Singles Network regularly airs during the 10 p.m.-to-midnight time slot. The station plays voice personal ads and listeners are invited to call a 900 number for more information (at \$1.95 per minute).

Earlier this year, Harrell was looking for new ways to reach his station's listeners, as he has always done since acquiring WRDX and co-owned WSTP(AM) in 1956. The first thought that occurred to him once he had decided to pursue the on-air dating idea was to be certain it would be a service valued by the entire community and not a plaything for pranksters.

"I did not want to run any kind of network that would deal with pimps and prostitutes... because I'm still in the South. They don't call this the Bible Belt for nothing," he said.

As the Carolinas' "official radio station of the Society of Strangers," an organization of 16,000 members in the affluent 25 plus demographic, WRDX had a reputation to uphold, said Harrell.

To protect that reputation, Harrell established a working partnership with "Carolina Singles," a local singles magazine read by over 100,000 singles throughout the Carolinas. Thanks to the partnership, WRDX is able to pre-screen all ads.

Harrell also had to be careful not to offend WRDX's loyal listeners, the shag music buffs who tune in to hear the station's "rhythm and beach" format. Instead of billboard advertising the personals, they are integrated into the flow of the music, in clusters of three or four voice

personal ads between the songs.

"Carolina Singles" and WRDX promote each other and share the 900-line revenue. Just how successful is the dating service? Replied Harrell, "You just consider this: I run this from 10 until midnight. Do you know of many stations, outside of the top 20 markets, that are making revenue at night?"

If you provide the right service, the station's success will naturally follow, Harrell said. "So much of the stuff today is bombast, hype and garbage... Who cares? Nobody, because everybody is tuned into his own personal radio station, the call letters of which are WIIFM—What's In It For Me?"

Highly targeted listenership marketing is the way to serve the market, he said. "I've owned this station since I was in my early 20s, (when) if you wanted to be an operator you were close enough to the market to experiment. I honestly believe that the direction of radio in coming years will go more and more toward direct marketing and if you want proof of that, listen to any of the networks," he said.

WRDX's database was generated from a station publication some years ago. It currently stores profiles of listeners in 13,000 households that include their incomes, personal properties and professions.

The database is updated and augmented through incoming calls to the station's toll free listener lines, which give weekly music events and other information pertinent to shag buffs and those interested in "rhythm and beach." Harrell estimates that the station takes approximately 195,000 calls a year.

"If I have an Arbitron number, I just have a general understanding of my audience. I know there's potential, but I'm kind of like Sam Walton (of Wal-Mart). I'm intensely interested in the people in my store and what they want," Harrell said. "That's the relationship I want with my listeners."

□□□

Dee McVicker is a free-lance writer and regular contributor to RW. She can be reached at 602-545-7363.

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LBP Citation C-85 8-Pot Stereo Console	Rebuilt	\$ 1,995
BE 5300B Stereo 3D w/tones	Rebuilt	\$ 1,595
Quantum QM-168 8 Track Console	Tested	\$ 595
Otari MX-5050 B-II Custom Roadcase	Used	\$ 95
Marti MW-500 STL Booster/Repeater	Rebuilt	\$ 1,295
Andrew 96.7MHz FM Isocoupler	Used	\$ 495

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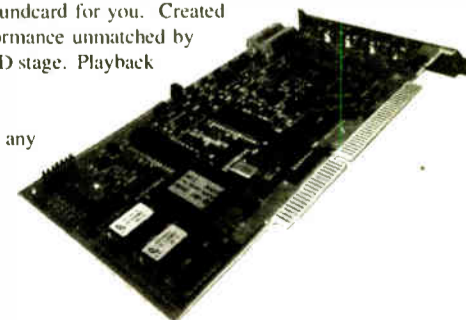
Software Audio Workshop (SAW) is a professional production tool for manipulating and crafting audio on your PC computer using the Windows Operating System. SAW allows you to record and edit 16 Bit Resolution CD and DAT quality SoundFiles at sampling frequencies up to 48KHz on your computer's hard drive with ease. SAW creates 8 Tracks in Software and digitally combines them into a Stereo Output which plays through a compatible sound card. SAW is capable of this feat due to its extensive use of 386 32Bit-Register Assembly Language coding. This coding also means that screen redraws are virtually instantaneous even when scrolling and zooming! SAW can sync with SMPTE and MIDI in addition to being able to generate SMPTE Time Code as the master. SAW along with a pair of CardD Plus audio cards installed on a pair of 486 class machines networked together can easily replace all your reel-reel, cart, and DAT machines in BOTH your production and on-air studio!

When sound quality is your top priority, Digital Audio Labs' CardD Plus is the soundcard for you. Created specifically for professional recording applications, this card delivers sonic performance unmatched by "multimedia" soundcards. The CardD Plus features dual 64X oversampling in the A/D stage. Playback is handled by dual 18-bit converters with 8x oversampling.

The CardD Plus comes complete with a Windows 3.1 driver, and can be used with any Windows-compatible sound editing software such as SAW. Using SAW will allow simultaneous record/playback.

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Innovative Quality Software's SAW	\$ 519.00
Digital Audio Labs Card-D Plus	\$ 649.00
SAW + Card-D Plus	\$ 1099.00



AUDIO PRODUCTION...WTS

ADC 96 & 144 Pr TT patchbays, excel cond, 1 rack space, 3 rows of 48, top 2 rows normalled, \$149, 96 is 2 row normalled, \$129 (you remove old wiring) or we totally refurbish w/new front panel, ready to install, \$199-229. TT cords up to 10 per bay at \$9 ea, reg \$13.95, also 1/4" bays. Audio Village, 619-320-0728, or Fax 619-320-2454.

AUTOMATION EQUIPMENT

Want To Sell

Automated Bdct Cntrls, incl audio controller, decoder mem controller, pwr sup, gd for parts, \$400/BO. S Carter, WJNT, 1985 Lakeland Dr, Ste 212, Jackson MS 39216. 601-366-1150.

ESP-1 automation sys w/brain, DS-20 switcher, bi-directional Carousels (4), PDC digital clock, power supply, encoder w/2 mono video monitors, printer, no racks. R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

IGM Instacarts 48 tray mono (2) w/direct access MOS programmer w/manuals, \$600. N Lyda, WHKP, POB 2470, Hendersonville NC 28793. 704-693-9061.

MEI Control 3; MEI-Satmaster; MEI 100MP24; MEI 100MP48. E Monksie, WLP/WROZ, 1996 Auction Rd, Manheim PA 17545. 717-653-0800.

SMC Otari (3), R-R, PB w/built-in tone sensor. R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

SMC 25 Hz tone generator; SMC 25 Hz tone decoder. R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

SMC, Otari R-R (3), DP-2, PDC 5 clock, DS-20 switcher, mono PB units (2); 350 RS Carousels (3), working when removed, \$1800/all or will part out. V Richardson, WWST-FM, 8419 Kingston Pk, Knoxville TN 37919. 615-693-1020.

SMC MSP-12 inc DAS-12 audio switcher; 721 dual play cart decks (2); 450 Carousels (2); upright SMC racks (2); power supply; keyboard & monitor, all manuals inc, \$4800/BO. R Freeman, KSEK, 1604 E Quincy, Pittsburg KS 66762. 316-232-1340.

Smartcaster digital automation system, complete, 5 hrs record time, \$3000. G Kauffman, KCLN, 1853 442nd Ave, Clinton IA 52732. 319-243-1390.

SMC MSP-1 2000 event controller, SMC-450 stereo Carousels (4), UI-1 satellite interface, log printer, rolling racks (2), \$995. D Kelly, KWPN, Box 84, West Point NE 68788. 402-372-5423.

Systemation Superswitch; Otari ARS-1000 stereo PB reel; Conex 25 Hz generator, as package or sep. R Haney, KLAQ/KROD, 4141 Pinnacle #120, El Paso TX 79902. 915-544-8864.

Want To Buy

NBC/Mutual tone decoder wanted. J Condon, WKDR, 388 Shelburn Rd, Burlington VT 05401. 802-862-8255.

CART MACHINES

Want To Sell

ITC misc spare circuit brds, xfrms & parts, reasonable prices. D Tonelli, Aquarius Audio, 679 Calmar Ave, Oakland CA 94610. 510-444-3094.

ITC mono R/P (2); ITC stereo R/P (2). R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

ITC 99B stereo RP elsa (4); Audicord Moducart 100; ITC Delta stereo record amp. J Phillips, 414 Washington Ave, Defiance OH 43512. 419-782-8591.

Scully 8300 triple decker, mono play, \$750. M Basso, KCAR/KGAP, Clarksville TX. 903-427-3861.

Tapecaster X-700, X-700RP, (3) stereo, \$200; 1 R/P in gd cond, \$300. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4003.

BE 5300C mono triple deck, PB, master needs rebuilding, \$300/BO. P Bossert, KSPK, 516 Main St, Walsenburg CO 81089. 719-738-3636.

ITC encore R/P, mono in wrking cond, \$250. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4203.



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ITC Delta players, mono (3), VGC, \$650. K O'Malley, WTKR, 804-446-1328.

Optimod 8100A, good condition, still wrks, \$2500. J Bacon, KTAN, POB 2770, Sierra Vista AZ 85635. 602-458-4313.

Spotmaster 505 BR, rack mount, mono, play only with secondary cue detector, good condition, \$75 + s&h/COD; Spotmaster 505B table top compact, mono, play only, good condition, \$75 + s&h/COD. G Gibbs, KMNS/KSEZ, 901 Stueben St, Sioux City IA 51102. 712-239-3966.

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(408) 363-1646
FAX (408) 363-0957

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

Want To Buy

Audi-Cord DL series. R Van Zandt, WWGN, 15 Walnut Hills, Springfield IL 62707. 217-487-7711.

ITC, BE, Fidelipac cart machines: single, triple, mono, stereo, play & record/play. Call M O'Drobinak @ 619-758-0888.

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Want To Sell

Ampex 351 tube stereo hi-speed; Tascam 40-4; Technics 1520. J Phillips, 414 Washington Ave, Defiance OH 43512. 419-782-8591.

Ampex 351, \$300 cash or bank check. C Sigmon, WBZK-AM, POB 398, York SC 29745. 803-684-4241.

Otari MX 50/50 Mark III-8, 8 track, mod from rack mt, w/manual, \$1500. G Anderson, GEE Wizz Prod, 2005 Laurel Lane, Plano TX 75074. 214-423-2005.

Teac X-2000R (3) R-R mac, 10.5" reels, 1/4 trk stereo, dbx I NR autoreverse, \$600 ea/\$1500 all 3 + shipping. WDFH-FM, 21 Brookside Ln, Dobbs Ferry NY 10522. 914-693-3963.

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Telex 36 NAB cart deck w/rack mt, new factory boxes, no electronics, \$100; Telex 36 in cabinet, no electronics, \$35; PB amp for above, \$25. E Davison, POB 7167, Springfield IL 62791. 217-787-0800.

Viking 76 mono 7" open reel deck, \$35; Tape-Athon 707-7 & 10 R-R w/autoreverse, one 7", one 10", also spare parts, \$35; 10" tapes, mono circa 1970, 6 hr/reel, \$5 ea. E Davison, POB 7167, Springfield IL 62791. 217-787-0800.

Ampex, mono tube PB amp, \$85. R Perrine, The Imagination Industry, 2475 State Rd, Cuyahoga Falls OH 44223. 216-929-3712.

ITC 770, PB only, 2 trk stereo, 10.5" reels, 7.5 & 15 ips, BO. Ampex 350, PB only, 2 trk stereo w/solid state electronics, BO. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4203.

Otari 5050 MK III-8 trk, heads excellent, \$2450. Wayne Gunn 619-320-0728.

Ampex, mono tube PB amp, \$85. R Perrine, The Imagination Industry, 2475 State Rd, Cuyahoga Falls OH 44223. 216-929-3712.

ITC 770, PB only, 2 trk stereo, 10.5" reels, 7.5 & 15 ips, BO. Ampex 350, PB only, 2 trk stereo w/solid state electronics, BO. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4203.

Otari 5050 MK III-8 trk, heads excellent, \$2450. Wayne Gunn 619-320-0728.

Otari MX5050-8, 8 trk R-R, uses 1/2" tape, inc CB-110 remote cntrl and 8 trks of DBX 180 R/P noise reduction, \$4000/BO. R Haney, KLAQ/KROD, 4141 Pinnacle #120, El Paso TX 79902. 915-544-8864.

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FAX: 1-408-739-0809

Tascam 38, 1/2" 8 trk, open reel, \$1100. P Cibley, Cibley Music, 138 E 38 St, New York NY 10016. 212-986-2219.

Technics 1520, taken out of service 2 yrs ago, needs cleaning, BO. D Vick, WRDV, Roanoke VA 24015. 703-343-4444.

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16 track 2" \$3450, MCI JH110C-8 \$2800, 110C-8 play only \$500, ATR800 mono or Tascam 7300 or 2502 \$600 ea, MCI Locator III \$1195, Tascam 52 2 trk \$1200, Ampex AG350 electr \$50/ch. W Gunn 619-320-0728.

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

Recordex 6 cassette rewriter \$100; Tascam 40-4 4 trk 10" in flight case w/free dbx \$750; MRL new short test tapes \$39 for 1/4" to \$199 for 2". W Gunn 619-320-0728.

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

Want To Buy

Alesis ADAT, in perf cond. W Whitney, POB 2411, Overland MO 63114. 314-428-8430.

Otari 5050BII remote control. M Harrington, POB 7610, Little Rock AR 72217. 501-223-9056.

TEAC A-3300 SX, 2 trk; also RC-120 remote control unit. D Palmer, Dynamic Sound Prod, POB 239, Isleboro ME 04848. 207-734-6484.

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

Ampex tube recorders and mixers. W Gunn, 619-320-0728.

Tascam 58 1/2" 8 trk wanted to buy or trade for Otari 5050 MK III-8 or...? Wayne Gunn 619-320-0728.

CD PLAYERS

Want To Sell

Denon DCM 950; Shure D600 J Phillips, 414 Washington Ave, Defiance OH 43512. 419-782-8591.

IBM RT-PC 60 programs, adv operating interactive systems, will trade. R Suracci, Fine Art Productions, 67 Maple St, Newburgh NY 12550. 914-561-5866.

Want To Buy

Apple 660AV or 840AV; Amiga 4000. R Suracci, Fine Art Prod, 67 Maple St, Newburgh NY 12550. 914-561-5866.

COMPUTERS

Want To Sell

Hewlett Packard, Compaq, Hyundai 286 PC's (25), w/1 mb RAM and monochrome monitors; various dot matrix printers, modular active hub, other accessories avail; will sell in bulk or individually, BO. S Koblum, WRRK, 7 Pkwy Center, Pittsburgh PA 15220. 412-922-9290.

Creative Labs Soundblaster 16 ASP, 16 bit card for IBM compatibles, \$100. P Cibley, Cibley Music, 138 E 38 St, New York NY 10016. 212-986-2219.

Want To Buy

Tandy 6000HD w/at least 1 floppy drive. Mel Crosby, 408-363-1646, FAX 408-363-0957.

CONSOLES

Want To Sell

Altec Lansing 250 SU 10 chnl tube type, can be wired for stereo w/manual, \$300. N Lyda, WHKP, POB 2470, Hendersonville NC 28793. 704-693-9061.

Arrakis Modulux counters, 4 studios, short U, Long-L (2), Unbalanced U, can be reconfigured, BO you pick up. E Monksie, WLP/WROZ, 1996 Auction Rd, Manheim PA 17545. 717-653-0800.

Fostex 2016 line lvl mxr, or aux effects mxr, new, \$125. D Tonelli, Aquarius Audio, 679 Calmar Ave, Oakland CA 94610. 510-444-3094.

Harris Medalist Gold 12 chnl, current mod w/manual, (2); Sparta spot mono board. J Phillips, 414 Washington Ave, Defiance OH 43512. 419-782-8591.

Newcomb KX6A tube 6x1, 5 low imp mic ins, 600 ohm bal out, rack mt, \$35. E Davison, POB 7167, Springfield IL 62791. 217-787-0800.

ADM ST-160 II, 4 trk, EQ mods, 1x8 stereo selects, 4 trk mix, docs & extras, BO. J Book, WOC, 3535 E Kimberly, Davenport IA 52807. 319-344-7000.

Autogram IC-10 stereo, factory rebuild, never installed, new wiring harness, switches, program keys, program modules, new monitor modules, perfect cond, \$5000. R Haney, KLAQ/KROD, 4141 Pinnacle #120, El Paso TX 79902. 915-544-8864.

Gates Gateway, 8 chnl, mono console w/spare pwr supply, monitor, amp, \$600/BO; Gates Producer, solid state, 4 chnl, \$750/BO. J LoPresti, WGSR, 111 Avalon Dr, Warner Robins GA 31093. 912-929-4904.

Russco 505, \$350. J Arzuaga, WQOZ, POB 980, Quebradillas PR 00678-0980. 809-895-2725.

Shure M67 and M67s, remote mixers, mint cond, \$150 or will trade for M68, M63 and M62V. J Arthur, DVS Communications, RD 1, Belfast NY 14711. 716-365-8870.

WE 23C 5 chnl console. W Davies, Virgo Prod, 5548 Elmer Ave, N Hollywood CA 91601. 818-761-9831.

Ramko DC5AR 5 channel mixers, vgc, \$175 each. 916-725-2434.

Want To Buy

Pacific Recorders BMX II, need 2 mic modules, will trade for line modules. A Bishop, WMAX, 412 State St, Rochester NY 14608. 716-232-8870.

Stereo console; any make. R Osborne, WMOV/WFYZ, Box 667 Ravenswood WV 26164. 304-273-2544.

BE S250 5 chnl w/manuals. M Skinner, KFMD, 801-628-1000.

DISCO-PRO SOUND EQUIPMENT

Want To Sell

Aphex studio clock converts analog sound to MIDI infor, \$299; Lexicon PCM 60 digital reverb, \$425. R McMillen, Super Duper Audio Duplicating, 1634 SW Alder St, Portland OR 97205. 503-228-2222.

EMPLOYMENT

To place ads in this section, use the ActionGram form. To respond to box numbers write Radio World, PO Box 1214, Falls Church, VA 22041. Attn: _____

POSITIONS WANTED

19 yrs bdct exp, 10 yrs asst, seeks AM/FM any format, DJ, prod exp, FCC, Gen/Radar, Marine, Ham & Rest. C Hamlin, 606-523-0901.

Combo manager, sales, PD, CE, anncr, prod, Tampa Bay area, coastal FL or powerful signal in gd area, 30 yrs exp. Bill, 813-844-3823.

Work ethics generation, 20+ yrs career as GM, sales and consulting exp. C Manson, 904-837-9777.

Country DJ w/13 mos exp seeks FT on-air pos, willing to relocate, west pref. F Albaugh, POB 505, Torrington WY 82240. 307-532-2670.

Mature, recent grad seeking on-air shift, copywriting, prod, any fmt, will relocate. Dale, 405-634-8794.

Nice guy, solid friendly voice, plenty of exp in all facets of radio, speak a bit of Spanish. 408-283-9141.

Radio Vet w/morning & PD exp, gt voice, prod, personality looking for aggressive country stn in TX. Brian, 602-753-6848.

Ratings need a boost? Young, energetic, mouthy, willing to relocate, seek position w/AOR stn. Karen, 405-691-3924.

Will work for food, and a little cash too, great on-air presence & prod skills, will relocate anywhere in US and Canada. Todd, 405-321-8425.

You have nothing to lose, shake up your market, 21 year major/secondary market veteran for prog or mgmt. Guy, 601-867-2023.

Engineer w/FM duopoly exp seeks FT CE or ACE pos, exp building & maintaining studios & xmtr sites, currently employed, will relocate. Kent, 219-747-2836.

Just out of school, seeking on-air, production, sales, have positive attitude, work well w/others. Brian, 405-372-2364.

Young, eager, wet-behind-the-ears grad, ready to commit to sports & prod for stn in TX or OK area. Steve, 405-634-5208.

Christian bdcter seeks small/med mkt, NW pref, 27 yrs exp, 17 yrs radio, 10 yrs Muzak, all depts. E Puchalsky. 909-881-3812.

Engineer/technician w/18 yrs exp seeks field pos w/bdct manufacturer, willing to travel domestic/abroad. G Howe, 217-586-3741.

Talk show host & morning drive news anchor combined, avail now. D Diamond, 901-761-5577.

ABOUT OUR EMPLOYMENT SECTION

HELP WANTED: Any company or station can run "Help Wanted" ads for \$1.50/word or buy a display box for \$60/column inch. Payment must accompany insert, use your MasterCard or VISA; there will be no invoicing. Blind box numbers will be provided at an extra charge of \$10. Responses will be forwarded to listee, unopened, upon receipt. Call 800-336-3045 for details.

POSITIONS WANTED: Any individual can run a "Position Wanted" ad. FREE of charge (25 words max), and it will appear in the following 2 issues of Radio World. Contact information will be provided, but if a blind box number is required, there is a \$10 fee which must be paid with the listing (there will be no invoicing). Responses will be forwarded to the listee, unopened.

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Staff Engineers: San Diego duopoly seeks Engineers with 5+ years radio experience in AM/FM transmitters, studio maintenance, & interfacing w/high profile Morning Shows. Excellent pay & benefits! Rush resume with references to: PAR Broadcasting, 5745 Kearny Villa Rd., Ste M, San Diego, CA 92123. Attn: HR Director-ref#EN0294. Deadline: 08/10/94. EOE.

RADIO ENGINEERS: Major growth group is looking for qualified engineers. Experience required, high power AM/FM transmitters, DA's, computers, FCC rules, component level repair. Minimum 2 to 5 years, FCC license, SBE. Reply to: Radio World, POB 1214, Falls Church, VA 22041. Attn: RW-94-7-27-1RW.

Inspirational Christian FM network in Upstate NY is seeking both afternoon drive host and news director that are positive, team-oriented, and ministry-minded. Competitive salary and benefits. Send resume & demo tape to: Family Life Network POB 506, Bath, NY 14810

Group of 4 radio stations in Hudson Valley region of NY state seeking experienced chief. Knowledge of RF, studio maintenance, digital audio a plus. Good pay & benefits. Call Eric at 518-828-5006.

DISCO-PRO SOUND EQUIP...WTS

Emilar EW15-8, 15" woofer, new, \$50/Best Offer. E Davison, POB 7167, Springfield IL 62791. 217-787-0800.

JBL 8306 pr of wall mount 2 way speakers, new, \$75. D Tonelli, Aquarius Audio, 679 Calmar Ave, Oakland CA 94610. 510-444-3094.

Speakers pr self enclosed; Audimetrics mike boom, 41" reach with 12" pro-base, new. R Williams, WIOV, 44 Bethany Rd, Ephrata PA 17522. 717-738-1191.

UREI 539 1/3 oct room EQ (4), \$250 each; Crown MX-4 crossovers, 4 band active, (4) \$195 each; Crown VFX2A crossovers, perfect condition, \$150. R McMillen, Super Duper Audio Duplicating, 1634 SW Alder St, Portland OR 97205. 503-228-2222.

Realistic MC-1800, 2 way speaker, 8" woofer, VGC, (3), \$50. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4203.

Soundcraftsman, pro model, graphic octave EQ, like new, \$200; Marantz 3200 stereo preamp, good condition, \$125. F Virtue, Virtue Audio & Video, 8809-11 Rising Sun Ave, Philadelphia PA 19115. 215-763-2825.

Technics SH9010 5 band parametric EQ, stereo, rack mt, \$200. E Davison, POB 7167, Springfield IL 62791. 217-787-0800.

Whirlwind Medusa, 50' multipair snake, 16 balanced inputs w/XLR connectors and 4 unbalanced outputs, \$125. R Haney, KLAQ/KROD, 4141 Pinnacle #120, El Paso TX 79902. 915-544-8864.

Want To Buy

JBL 4312 monitor speakers. M Harrington, POB 7610, Little Rock AR 72217. 501-223-9056.

ARP 2600 synthesizer, other makes considered. Analog sequencers. G Wons, LBPH, 919 Walnut St, Philadelphia PA 19107. 215-925-3213.

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LIMITERS

Want To Sell

Valley People Gain Brain II, new modules (2), no boxes, \$90 ea/ or BO + shpg. M Shea, Precision, POB 723, New York NY 10276. 212-989-3684.

CBS Labs Audimax 443 auto lvl cntrl, tube type w/manual, \$150; Dynamic Presence Equal 450 w/manual, \$150. N Lyda, WHKP, POB 2470, Hendersonville NC 28793. 704-693-9061.

CBS Audimax 444, auto lvl cntrl. R Williams, WIOV, 44 Bethany Rd, Ephrata PA 17522. 717-738-1191.

MAP II; CRL SEP 800; PMC-300; Orban 424A; Modulimiter; DAPS; Aphex II. J Phillips, 414 Washington Ave, Defiance OH 43512. 419-782-8591.

Moseley TFL-280, SCA limiter, BO. E Monskie, WLP/WROZ, 1996 Auction Rd, Manheim PA 17545. 717-653-0800.

Orban 8100 factory tuned, exc cond, \$2499. J Katz, 396 Buckley, San Luis Obispo CA 93401. 805-541-8798.

Cutting Edge Vigilante, approx 1 yr old, \$2200. J Michaels, WCO/WKLL, POB 549, Sparta WI 54656. 608-269-3100.

Inovonics 230 mono, 8 band compressor/limiter, recently calibrated, \$250. A Anello, 1915 W Waters Ave #1, Tampa FL 33604. 813-933-6009.

BBE 422, sonic maximizer, adds presence + definition to sig, stereo, \$250; Aphex aural exciter type C, stereo, just rebuilt by Aphex, \$200. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4203.

CBS Audimax III, stereo limiter, \$75. R Perrine, The Imagination Industry, 2475 State Rd, Cuyahoga Falls OH 44223. 216-929-3712.

Orban 81000A/XT2 w/manuals, updates. M Skinner, KSGI, 210 North 1000 East, St George UT 84770. 801-628-1000.

Spectra Sonic 610, compressor/limiter, gd cond, \$275. J Addie, WLTL, 708-579-3749.

Want To Buy

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

MICROPHONES

Want To Sell

Shure SM48 perf cond, w/clip & case, \$45. S Russell, Russell Stud, 60410 Klett Dr, Decatur MI 49045. 616-782-9258.

Shure SM80-LC. R Williams, WIOV, 44 Bethany Rd, Ephrata PA 17522. 717-738-1191.

Shure 514 dyn mic w/12" barrel (2), \$20 ea or both for \$35. E Davison, POB 7167, Springfield IL 62791. 217-787-0800.

Manley Labs CR3A, new, \$795 w/shockmount, windscreens & case, no risk trial in your studio. Also have used mics & everything else. Get our catalog! Liberal trade policy too. Audio Village, 619-320-0728.

Want To Buy

Mic fishpole, 2 /12 - 12'. R Suracci, Fine Art Prod, 67 Maple St, Newburgh NY 12550. 914-561-5866.

New non-commercial FM needs EV 666 mic w/connectors, donations greatly appreciated. WDFH-FM, 21 Brookside Ln, Dobbs Ferry NY 10522. 914-693-3963.

Shure SM-5B. J Mauk, KMJ/KSKS, POB 70002, Fresno CA 93744. 209-266-5800.

Shure SM5B in gd cond. B Barry, WAMB, 1617 Lebanon Rd, Nashville TN 37210. 615-889-1960.

EV RE 20 mic. M Skinner, KSGI, 210 North 1000 East, St George UT 84770. 801-628-1000.

Sennheiser MD 421, want 4. R Van Zandt, WWGN, 15 Walnut Hills, Springfield IL 62707. 217-487-7711.

77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights & audition lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.

Neumann U87s, KM84s, AKG 451s, EV RE20s, Sennheiser 421s. W Gunn 619-320-0728.

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

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McMartin TBM 1005D FM rebroadcast receiver, new, for rebroadcasting, simulcasting, translators or monitoring of RF, modulation, or injection. ALSO: (used) AM/FM modulation monitors, Buy or Sell, Repair & Calibrate McMartin, Belar. Call Goodrich Ent Inc., 11435 Manderson St., Omaha, NE 68164. 402-493-1886 fax 402-483-6821

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Want To Sell

Burk TC-B exc cond, w/manual, \$1200. L Hunt, KMLV, 102 W Main St, Madisonville TX 77864. 409-348-9200.

Gates remote cntrl & metering system RDC-10AC w/manual, \$200; TFT 7610-R digital remote ctrl sys, w/manual, \$300. N Lyda, WHKP, POB 2470, Hendersonville NC 28793. 704-693-9061.

Martl RMC2-AXT (A), AXT 10, nds step-per relay (furnished), \$350 cash or bank check. C Sigmon, WBZK-AM, POB 398, York SC 29745. 803-684-4241.

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Moseley aural STL PCL303, Moseley TRC-15 remote control, TRX only & RPT25#700, BO. C Ratliffe, Long Pine Rec, 325A N 6th St, Albermarle NC 28801. 704-982-6141.

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Want To Buy

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Burk TC-8, telephone speech unit, for use w/Burk TC-8. L Hunt, KMVL, 102 W Main St, Madisonville TX 77864. 409-348-9200.

Gentner VRC-2000; Marti STL-10 stereo system. R Van Zandt, WWGN, 15 Walnut Hills, Springfield IL 62707. 217-487-7711.

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Want To Sell

Drake ESR 2220, tunable receiver with stereo subcarrier audio receiver, good condition, \$100/ Best Offer. S Carter, WJNT, 1985 Lakeland Dr Ste 212, Jackson MS 39216. 601-366-1150.

Scientific Atlanta 7300 & 7325, in good working order, or will part out, \$2995. Paradis Broadcasting, POB 69, Alexandria MN 56308. 612-763-3131.

Microdyne 1100 PCDR (5) SCPC demod, Best Offer, Scientific Atlanta 2.8m dish/pedestal only, no electronics, Best Offer you pick up. E Monskie, WLPA/WROZ, 1996 Auction Rd, Manheim PA 17545. 717-653-0800.

Harris 6528, video receiver, \$300; Janeil AP-1000, antenna positioning syst, \$50. K Carpenter, KPGM, 601 W Collins, Casper WY 82601. 307-266-4203.



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Wegener 1866 FM 2, subcarrier rcvr, for audio and data, BO. J Book, WOC, 3535 E Kimberly, Davenport IA 52807. 319-344-7000.

Equatorial Micro Earth Stn, C-100 w/30" antenna & 5100 controller w/man, \$400. N Lyda, WHKP, POB 2470, Hendersonville NC 28793. 704-693-9061.

Wegener 1601, with 2 Panda Cards II, 1610 tone decoders 1645 & 1646, 1606-21 rcvr, excellent condition, \$1250. K Crosthwait, WTNN, 13206 Buttermilk Rd, Knoxville TN 37932. 615-690-8807.

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Want To Buy

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STATIONS

Want To Sell

AM/FM in MS college town, possible owner financing, \$435,000. D Ganske, Hawkeye Radio, 5546-3 Century AVC, Middleton WI 53562.

5 kW AM, Daleville AL, terms or cash. E Carroll, WTKN, POB 81 Daleville AL 36351. 205-894-6530.

N CA FT AM 1000W, non-directional, ABC affiliate, w/wo 5 prime acres, FM possible. 510-547-4388.

FM permit, 25,000 W in midwest, \$40,000. D Ganske, Hawkeye Radio, 5546-3 Century AVC, Middleton WI 53562. 609-831-8708.

FM, midwest, prflw sig, new equip, med mkt, great potential, \$125,000 down, owner financing @ 8%, \$450,000. D Ganske, Hawkeye Radio, 5546-3 Century AVC, Middleton WI 53562. 609-831-8708.

LPTV, 5 yrs old, license renewed 1988, on cable, makes profit, 3 acres, mobile home, equip, cash only, BO. N Davis, 904-892-4038.

Want To Buy

AM/FM or LPTV, w/at least 51% control, prefer SE but will consider other. B Coleman, Coleman Communications, 114 Circle Dr, Rocky Mt NC 27804. 919-443-7870.

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Seeking SE Coastal AM/LMA or will help fix your AM. Vacation Radio, 68 Pt Comfort Rd, Hilton Head SC 29928.

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Otari ARS-1000 DC reels (17), BO. E Monskie, WLPA/WROZ, 1996 Auction Rd, Manheim PA 17545. 717-653-0800.

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Jazz LP collection, 1209 pieces, min bid, \$10,500; also Big Band LP collection, 1279 pieces, minimum bid, \$13,000; both collections excellent condition, serious inquiries only. Frontier Radio Network, Box 9292, Austin TX 78766.

Scotchcart II's, 380 betw :20 & 9:30, excellent condition, \$1.75 ea; 96 slot wire carousel rack, \$90. S Bulman, First Take Recording, 16128 Orchard Grove Rd, Gaithersburg MD 20878. 301-963-7758.

Cart Carousels, 120 place (2), \$75 ea, 200 place Carousel, \$100 you pay shipping. J Michaels, WCOW/WKLJ, POB 549, Sparta WI 54656. 608-269-3100.

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McMartin 3.5 kW, upgradeable to 5 kW, on air now, excellent condition, \$9500. A Harle, POB 640, Pendleton OR 97801. 503-278-2500.

BE FM-5B, 5 kW incl FX-50 exciter, one new spare final, spare voltage rectifier/regulator, std BE spares kit, spare semiconductor kit, 3 phase, tuned to 1000.9, \$22000. W Lada, WAQY, 45 Fisher Ave, E Longmeadow MA 01028. 413-525-4141.

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Front panel knobs for RCA BTA-250-L transmitter, excellent condition. G Jaques, KSLX, 4601 N Scottsdale Rd, Scottsdale AZ 85251. 602-941-1007.

McMartin AM/FM transmitter, any model, exciter or stereo modules. Goodrich Enterprises, 11435 Manderson, Omaha NE 68164. 402-493-1886.

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TEST EQUIPMENT

Want To Sell

Avcom PSA-35A spectrum analyzer, excellent condition, case, batteries, \$1600. T Peloubet, WCKC, 334 N State St, St Ignace MI 49781. 517-631-5583.

Heathkit 12 V, 15 W, power supply; Conair 320 adj reg power supply; Conair 682, TV test pattern generator. R Williams, WIOV, 44 Bethany Rd, Ephrata PA 17522. 717-738-1191.

BK Precision 2120A Scope, 20 MHz, dual trace, like new, \$400/Best Offer + shipping; Tektronix 2337, 100 MHz oscilloscope with DVM, dual trace, factory calibrated 7/93, \$1800/Best Offer + shipping. V Richardson, WWST-FM, 8419 Kingston Pk, Knoxville TN 37919. 615-693-1020.

General Radio 1115C studio frequency oscillator. R Winqvist, POB 6668, Lake Worth FL 33466. 407-964-2496.

HP 1200B oscilloscope, almost new, \$200. K O'Malley, WTKR, 804-446-1328.

Potomac Instruments RMP 19D, digital remote metering panel, FCC type approved for use with AM antenna monitor, remote metering, compatible with AM-19 & 19D, PM-19 & PM-112 with manual, \$350. G Gibbs, KMNS/KSEZ, 901 Stueben St, Sioux City IA 51102. 712-239-3966.

TRANSMITTERS

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JVC 4-DD-5 quadraphonic disc demodulator, low hours, \$50. D Pulwers, Dave's Price Audio, 310 N Howard St, Alexandria VA 22304. 703-751-9346.

Russco Fidelity Pro TT preamps (3), good condition, \$50 each. R Haney, KLAQ/KROD, 4141 Pinnacle #120, El Paso TX 79902. 915-544-8864.

BE QRK 12C (2), QRK 12C2 (2), needs work, BO. P Bossert, KSPK, 516 Main St, Walsenburg CO 81089. 719-738-3636.

Russco Cue Master (2), 12" 3 speed TT, Shure tone arms, stereo cartridges, \$150/BO. J LoPresti, WGSR, 111 Avalon Dr, Warner Robins GA 31093. 912-929-4904.

Rek-O-Kut B-12-H 2 speed turntable with S-370 Rek-O Kut tonearm & sync motor, good condition, \$75. D Tonelli, Aquarius Audio, 679 Calmar Ave, Oakland CA 94610. 510-444-3094.

Want To Buy

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- C. Educational FM station
- E. Network/group owner
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- G. TV station/teleprod facility
- K. Radio Station Services
- H. Consultant/ind engineer
- I. Mfg. distributor or dealer
- J. Other _____

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- B. General management
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