

September 1991

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A MONTHLY NEWSLETTER FOR BROADCASTERS

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## FCC PLANS REEVALUATION OF EBS

The FCC is going to take a long overdue look at the current EBS, the present system having been in use, with only minor modifications, since 1951.

At its June meeting, the Commission began a Notice of Inquiry (NOI) into the EBS, to determine whether new technology might be used to create a different kind of alerting system, one where "receivers are activated only for emergencies of a certain type or in a certain area."

The NOI will ask whether there is a need for an updated automatic alerting system and if so, what type of new equipment or technology is appropriate. The FCC will also seek to determine if new technologies could ease the burden on licensees with respect to current EBS rules.

One additional area of interest in the NOI is whether the current 20-25 second two-tone alerting system should be replaced with smarter circuitry that can specify the exact nature and area of the emergency and trigger automatic receivers.

The Commission suggest that two types of systems are possible. One would use in-band audio as in the present two-tone alerting system; the other would use a non-audio band system such as a subcarrier.

The current EBS system is 40 years old and was originally designed to alert the public in the event of a nuclear attack. In the beginning it was known as CONELRAD (Control of Electromagnetic Radiation)

In 1975 the two-tone alerting system was adopted and the purpose was modified to include state and local emergencies.

With advances in technology and the likelihood of nuclear holocaust seeming-

ly less, emphasis is shifting more toward local or area wide type emergencies stemming from natural disasters, such as earthquakes, hurricanes, tornadoes, or as seems to be happening more and more lately, toxic chemical spills and the like.

New in-band systems likely to be looked at include the National Weather Service's WRSAME (Weather Radio Specific Area Message Encoder) and Colorado's ICEBS (Improved Colorado Emergency Broadcast System).

A subcarrier-based technology, the European-developed Radio Data System (RDS), already is being heavily promoted here as an EBS replacement and data display system for auto and home radios.

The technology already is slated for implementation in at least one area. RDS proponent Sage Alerting Systems Inc. already has been contracted to install an RDS-based alerting systems in Jefferson County Texas, an area surrounded by petro-chemical plants.

Unlike the current EBS system, the RDS-based alert can automatically trigger an alert at a member station, which will sound warnings unless it is manually overridden. Also, the RDS system does not have to interrupt normal audio during testing and non-emergency situations, as can happen with in-band systems, because the 57 kHz subcarrier is inaudible. If you want to file comments on the FCC's Notice of Inquiry (NOI) into a possible upgrade of Emergency Broadcasting System (EBS) technology, you have until Dec. 31, 1991 to do it.

The NOI's reply comment deadline is February 14, 1992.

In addressing the NOI, the FCC stated, "We seek information in two

basic areas: whether there is a need for an updated automatic alerting system in EBS to notify the public of the existence of an emergency condition, and if so, what type of equipment is most appropriate for this application."  
\*\*\*\*\*

## NAB ASKS FEDS TO OVERRULE LOCAL/STATE TOWER SITE REGS

NAB has asked federal regulators to remove arbitrary local zoning barriers that impede the best placement of broadcast towers and consumer antennas.

In comments to the FCC, NAB said "the time has arrived" for the federal government to take steps to supersede unreasonable state and local zoning laws. NAB said these laws slap a patchwork of burdensome and inconsistent restrictions on the placement of satellite dishes, broadcast transmitters, and consumer antennas.

The FCC's "licensing powers may be greatly impaired if a licensed station is not permitted to erect the tower it needs to broadcast its signal, or if the listener is restricted from employing the equipment necessary to receive such a signal."

NAB said the FCC has the authority to supersede local and state zoning laws, citing the long-established constitutional powers of federal government as well as the FCC's supreme authority to centralize the regulation of interstate and foreign communications.

Asserting that many local zoning laws undermine the greater public good, along with established free-speech rights protected by the First Amendment,

(Cont. to pg. 3)

# Editor's Notebook



**GORDY DAILEY**

The Wisconsin Broadcaster's Association, in conjunction with SBE chapters 24, 28, 80, and 112, held their annual summer meeting/exhibition on July 17 at the Holiday Inn in Stevens Point. Eighty-two broadcast engineers from around the state attended the morning and afternoon technical sessions and noon lunch.

Information on a variety of topics was presented and all of the presenters had interesting talks.

Something which I found particularly interesting was a paper by Tod Boettcher, of WTMJ in Milwaukee, on microphones. He covered the various types and the applications for which each is best suited. Much of the information was stuff that probably most of us have read about or heard before but over the years may have gotten filed in the back of the mind or just plain forgotten. Things such as teaching announcers that it isn't necessary, or even desirable in many cases, to have your mouth on top of the mic. I used to have a tough time trying to convince some of the announcers I worked with that their voice would sound more natural if they backed away from the mic several inches.

Another topic that I found quite interesting, and which can easily be overlooked, especially at smaller stations, is the hazardous chemicals found in the workplace.

The presentation of this subject was given by an OSHA representative who reminded everyone that there are some strict regulations governing the storage and handling of hazardous chemicals.

There are also some pretty hefty fines for failure to comply with the regulations.

Any chemical which can be injurious to the health or physical well being of people is considered to be a hazardous chemical and must be labeled as such. With the number of different chemicals which are used for cleaning purposes and the like in broadcast stations you would be well advised to keep up to date on the regulations concerning these items. Check with your area OSHA office for information on the regulations which apply, and remember, employers are responsible for the safety of their employees.

The final session of the day was a panel consisting of Ralph Evans of Evans Associates, Consulting Engineers, Garrett Lysiak, of Owl Engineering, Consulting Engineer and former E-in-C of the FCC's St. Paul office, and Phil Bradford, E-in-C of the FCC's Chicago office.

\*In brief the points that were brought out were:

\*There will be new modulation monitor specs coming out of the FCC.

\*Until the FAA moves it's com-

munications to the 400MHz band the interference controversy will not be fully resolved.

\*A lot of radio broadcasters are in trouble technically.

\*Approximately 66% of AM directional antennas are out of adjustment.

\*Considering all the press coverage that has gone into promoting DAB, Garrett Lysiak, not one to be shy about voicing his opinion, gave us all food for thought by asking the question "Do we really need DAB?"

All in all it was an interesting and informative day and gave engineers and managers/owners a chance to rub elbows in a rather informal atmosphere. This is the third year that the Wisconsin Broadcasters and Wisconsin SBE chapters have had this summer get-together and so far it has proven quite successful.

\*\*\*\*\*

## SCALA

SCALA now offers a complete line of antennas for aural STL/ICR links in the 940-960 MHz band. Since 1954 broadcasters have appreciated the unequalled performance and reliability of the Scala Paraflector™ and Miniflector™ antennas. Now the same Scala

quality is available in full parabolic grid antennas from 4 to 12 ft. diameter!



MODEL	GAIN (dB)	F/B Ratio	FCC Category
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PR-450CU	20.15	25	A*
MF-080	16.15	23	B*
GLF4-940	18.5	24	B
GLF6-940	21.9	26	A
GLF8-940	24.5	28	A
GLF10-940	26.5	30	A
GLF12-940	28.1	30	A

\*when vertically polarized.

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NAB said the FCC has a duty to ensure that its purposes are not frustrated at the local level. NAB called these types of 'not-in-my-backyard' zoning ordinances "discriminatory," since they hurt interstate communications, and "continue to damage the public interest."

NAB said its reform proposal is not without precedent. In 1985, the FCC took a similar action to void several local zoning laws that unfairly limited the placement of antennas used by amateur radio operators. In this vein, NAB said the FCC must close a federal loophole that today allows communities to arbitrarily limit antenna use if they impose a blanket ban on broadcast equipment.

For these and other reasons, NAB is asking the FCC to strengthen its hand and crack down on state and local zoning ordinances, "which unreasonably restrict the placement of all transmitting

and receiving equipment, including conventional home antennas. Such action is needed to ensure the continuation of free broadcasting services to the public."

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### WZAL President Dies From Electrocutation

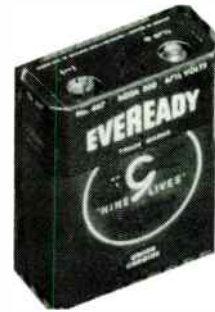
The president of WZAL-AM was electrocuted and later died after working on the station's transmitter July 10, according to local police authorities.

The Henry County Police Department said they believed Jim Devan, 43, who was listed as president, GM, and news director of the station, was accidentally electrocuted while making repairs at the transmitter site.

Devan was transported to Henry General Hospital where he later died. At press time, police said the accident was still under investigation pending an autopsy.

WZAL is a 2.5 kW station located about an hour south of Atlanta.

\*\*\*\*\*



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## CERTIFICATION UPDATE

There were more applicants for the June 1991 certification exams than ever before. This session included 298 applicants in 79 locations including Guam, Puerto Rico and Germany. The applicants by certification level include:

Broadcast Technologist 108

Broadcast Engineer AM/FM 27

Broadcast Engineer TV 89

Senior Broadcast Engineer 38

Senior Broadcast Engineer

TV/AM/FM 17 Are you due to renew

your SBE certification? There are 374

broadcast engineers whose SBE certification expires January 1, 1992. You

should receive this month of recertification letter, brochure and application. Of

those needing to recertify, 258 are

Senior Broadcast Engineers. If you are

in this category and want to upgrade to

the Professional level, remember the fee

increase effective September 13, 1991.

An application and instructions for the

SBE Professional Broadcast Engineer

certification level will be included with

the packets mailed to the senior-level

engineers.

By Helen Pfeifer & Mary Brush  
Certification

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## Broadcasters to Test Equipment to Remove the Ghosts that Contribute to Poor TV Reception

The nation's broadcasters announced they will begin field tests in mid-

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## BROADCASTERS ANNOUNCE AM RADIO CAMPAIGN

A multi-million dollar campaign to acquaint the public with new high-quality AM receivers will be unveiled during Radio 1991, scheduled September 11-14 in San Francisco, CA.

The campaign designed to promote new radios that provide listeners the significantly improved sound now being broadcast by AM stations. For AM stereo listeners, the improvements approach the sound quality of FM stereo.

Consumers will be able to distinguish the new radio receivers by the AMAX certification mark they carry. With the cooperation of the Electronic Industries Association, representing receiver manufacturers, NAB's campaign is designed to call attention to the AMAX mark and to tell radio listeners what benefits the new technology will bring for them.

"These new receivers will be great boost for AM listenership," said Ted Snider, president of KARN-AM, Little Rock, AR, and head of NAB's AM Receiver Manufacturer Liaison Task Force. "It is important that all AM stations take part to help assure that AMAX-certified receivers are a success in the marketplace."

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BROADCAST TECHNICAL SEMINARS AROUND  
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## BROADCASTERS CLINIC 1991

**NOVEMBER 6 - 7 - 8**

Broadcasters Clinic is a 3-day Technical Seminar and Equipment Exhibit for Radio and Television Broadcasters and related telecommunication engineers.

Contact Don Borchert  
Vilas Communication Hall  
821 University Avenue  
Madison, WI 53706  
for registration information

The year-long campaign starts October 1 and more than 1,100 AM stations have pledged more than one million spots promoting AMAX certified receivers. The value of the campaign is estimated at about \$20 million.

The radio spots have been produced in different formats for use by local AM stations nationwide.

To use the AMAX and AMAX Stereo certification mark, receiver manufacturers must incorporate these six technical standards into their radios:

1. Compliance with the NRSC voluntary bandwidth and distortion receiver standard IS-80. This calls for a minimum bandwidth of 7.5 kilohertz on home radios and 6.5 kilohertz on mobile radios for three years from Sept. 30, 1991.

2. Manual or automatic bandwidth control (This allows the use of narrow-band under noisy conditions).

3. The receiver must have an AM tuning capability. If the receiver is stereo, the certification mark becomes AMAX Stereo.

4. AM noise blanking, a system that significantly reduces many kinds of static.

5. External antenna capability, so that a signal can be introduced into the receiver from an external antenna in situations where the AM signal is shielded out by steel in buildings, and other factors.

6. Expanded AM band capability so that the radio can receive the new 1605 to 1705 KHz segment of the AM band.

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(Cont'd from pg. 3)

September as part of a process to select a voluntary standard that removes "ghosts" or multiple images from over-the-air and cable TV reception.

The tests will be performed with the assistance of three Washington, DC, TV stations: WRC-TV, Channel 4; WDCA-TV, Channel 20 and WFTY-TV, Channel 50. Each of these TV stations were selected because they occupy different parts of the TV airwaves: VHF, low UHF and high UHF.

NAB said selecting a single standard

(Cont. to pg. 5)

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### ST-DA3 Distribution Amplifier



**\$103<sup>95</sup>**

#### Anywhere you need...

- Audio distribution with up to 3 outputs
- Balanced or unbalanced input & outputs
- To bridge a line for local distribution
- Distribution with impedance conversion
- Distribution with gain or loss
- Inputs and outputs RF bypassed
- 1 x 3 mono or 2 x 6 stereo output

**APPLICATION:** The ST-DA3 gives you the advantages of an audio distribution amplifier PLUS you can put it where you need it! The ST-DA3 allows bridging of any audio line, adjusting the gain, and driving either high or low impedance, balanced or unbalanced loads. The ST-DA3's all DC circuitry produces the unsurpassed pure clarity, ultra-low distortion and noise for which Radio Design Labs products are known!

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- Conversion from balanced to unbalanced
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- To bridge an audio line feed
- To precisely match audio levels

**APPLICATION:** The STA-1 is a dual-channel line amplifier with bridging inputs, adjustable gain (or loss), and low impedance outputs. Each of the two identical circuits are both an electronic line transformer and a line amplifier. Hook up the STA-1 just like a pair of "audio transformers with gain!" True DC amplifiers produce unsurpassed audio clarity, high common-mode rejection, ultra-low distortion and noise. The STA-1 is perfect for any line amplification, impedance or balanced/unbalanced conversion!

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## Radio Via Fax To Be Tested

Fax-Max Services, a Montauk, NY-based communications company, has petitioned the FCC to create a new service in which radio signals could be broadcast to facsimile machines. If the advertiser-supporter service was approved by the FCC, it could allow fax machines to function like radios that provide a printout of their broadcasts. New updates, weather maps, sports scores, stockmarket reports, and public-service announcements could be transmitted on a regular basis, at much less cost than transmitting data over telephone lines.

The petition asks the FCC to make legal a new class of broadcasting services to be known as the Public Facsimile Broadcast Service (PFBS). PFBS would use at least three radio channels at about the 930-Mhz band. Fax-Max plans to begin experimental services in the New York area by October 1, and has initiated patent proceedings for a

radio receiver that accepts signals transmitted to fax machines. About the size of a cigarette pack, the receiver is intended to be attached to a fax and plugged into the phone line. According to current plans, advertisers and other companies, transmitting data would pay a per-page fee to Fax-Max. Recipients would buy the receiver, but would receive broadcasts at no charge. They could select both their broadcasts and the channels, as well as the subject categories. Information would be transmitted at regular intervals; for examples, new updates could be sent every 30 minutes. Fax-Max envisions the transmission of a broad range of services, from general hourly newspapers to specialized services like civil-service alerts or wanted poster to law-enforcement agencies.

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(Cont'd from pg. 4)

will encourage broadcasters to incorporate the ghost-canceling technology in their TV transmissions and spur TV set makers to install the complementary

technology to new television sets.

For individual broadcasters, the ghost-canceling improvements may cost from a few hundred dollars to \$10,000, depending on the existing station equipment.

NAB's partners include the Electronic Industries Association (EIA), the Association of Maximum Service Television (MSTV), and CableLabs. The NAB also will be sharing its results with the Advanced Television Systems Committee (ATSC), another umbrella group that was formed to address the common concerns of the broadcast, cable and consumer electronic interests.

The five groups that have submitted proposed standards for field-testing are the Broadcast Technology Association of Japan (BTA), Samsung Electronics, AT&T/Zenith, Philips Laboratories and the David Sarnoff Research Center/Thomson Electronics.

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## Technology Sessions Take Center Stage at Radio 1991

A day-long seminar on digital radio is among the highlights of the technology program at the National Association of Broadcasters' Radio 1991 convention, scheduled for September 11-14 at San Francisco's Moscone Convention Center.

On Friday morning, September 13, the 4th Digital Radio Station Seminar will offer presentations on equipment and software for digital audio storage and distribution. In the afternoon, discussions will focus on Digital Audio Broadcasting. CD-quality-radio demonstrations by a European group called Eureka 147 and an in-band alternative from a New Jersey company called American Digital Radio will highlight two of several events on digital audio broadcasting.

The DAB session will be part of the NAB's radio-only convention held at San Francisco's Moscone Convention Center, September 11-14. Sessions begin on Wednesday afternoon, September 11.

Other DAB activities include:

\* "Digital Audio Broadcasting: Sound of the Future," special remarks by FCC Commissioner Sherrie Marshall, Wednesday, 4:15-5:30 p.m.

\*\*"Digital Audio Broadcasting: How Will it Affect You?" (management session), Thursday, 10:30-11:40 a.m., an industry debate about DAB.

\*\*"Transitions to DAB," Saturday, 3:00-4:10 p.m., a participating session among convention attendees and DAB experts.

Also on Friday, broadcasters will learn the importance of promoting improved AM receivers at "Join the 'AMAX' Team." AM receivers that meet certain specifications may bear the "AMAX" (or "AMAX Stereo") logo. This program is sponsored jointly by NAB and the Electronic Industries Association (EIA).

On Thursday, "Radio Broadcast Data System" (RBDS) will explore the new technology which allows FM listeners to tune in their favorite stations by format, and to receive electronic message displays on their radios. U.S. standards for RBDS are currently in the works, and this session will introduce managers to the new technology.

The following sessions round out the technology program:

### WEDNESDAY

\*AM Directional Antenna Seminar, 8:00-4:00 p.m.

### THURSDAY

\*AM Directional Antenna Seminar, 8:00-5:00 p.m.

\*Gain Extra Income by Leasing Space on Your Tower, 2-3:10 p.m.

### FRIDAY

\*New FCC Technical Regulations and Your Responsibilities, 3-4:10

### SATURDAY

\*FM Translators: Decoding the New Regulations, 9:00-10:10 a.m.

\*\*"New Technology for AM and FM Radio," 10:30-11:40 a.m.

\*\*"Transition to DAB," 3:00-4:10 p.m.

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## Special IDs for FCC Visitors

The FCC is now offering Special Visitor IDs for guests of the Commission. Special IDs allow the person to enter the Commission through the 1919 M St. or 2025 M St. entrances without signing in. Request forms for Special Visitor IDs, FCC Form 210, can be obtained from the Guard Station in the lobby of 1919 M St., N.W. or from the Internal Control and Security Office, Room 411.

The IDs, which are valid for one year, are intended for U.S. citizens who use the Commission facilities three times per week or more.

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## NASA To Enter Broadcasting

The National Aeronautics and Space Administration (NASA) will launch regularly-scheduled satellite broadcasts of NASA-produced science, education and public affairs programs this month with the debut of NASA Select TV.

"It's NASA's goal to interest young people in continuing their education in math and science fields" said Carl Roberts, head of the telecommunications branch at Goddard Space Flight Center, Greenbelt, MD."

Using existing communication facilities that support space shuttle missions, NASA purchased an Odetics TCS2000 cart machine to provide automation of on-air operations and video library management. "We had everything in place except scheduling and programming management," said Roberts. "The Odetics cart machine enables us to add automation functions without significantly increasing our staff." Jeff Elliott, NASA Select TV chief engineer, added that the TCS2000

allows historical space-mission footage to be archived in the D2 format.

Programming will be designed for schools, cable TV operations and NASA employees throughout the country, according to NASA Select TV director Bill Hart. "We have more than 200 hours of programming prepared by or for NASA," Hart said. "School systems will be able to tape these programs for audio-visual presentations in the classroom. It is our hope that cable systems will pick up the programming and allocate a channel to NASA."

\*\*\*\*\*

## Revised ATV Test Schedule Released

Tests of advanced television transmission systems are beginning this month, following a revised schedule released in June.

The calendar for testing the six systems under consideration by the FCC Advisory Committee was revised in response to the introduction of several all-digital systems. Tests are be-

ing conducted at the Advanced Television Test Center facilities here, both by the ATTC itself and by Cable Television Laboratories (CableLabs).

The dates are final commitments from proponents for delivery of ATV systems, and each system must operate with the source-signal scanning format committed to by its proponent. Each HDTV system is given as estimated 33 working days for testing, while the enhanced NTSC system has 37.

-July 12 to Sept. 3, 1991: Advanced Compatible Television: David Sarnoff Research Center/ATRC.

-Sept. 10 to Oct. 24, 1991: Narrow MUSE; NHK, Japan Broadcasting Corporation.

-Nov. 14 to Jan 7, 1992: DigiCipher; General Instruments Corp.

-Jan. 14 to March 2, 1992: Digital Spectrum compatible HDTV; Zenith Electronics Corp./AT&T.

-March 9 to April 22, 1992: Advanced Digital Television; N.A. Philips Consumers Electronics Co.

-April 29 to June 15, 1992: ATVA Progressive System; Massachusetts Institute of Technology.

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## Audio Technica

Audio Technica introduced the Hi Energy ATM microphone series featuring neodymium magnets for high output level and improved signal-to-noise ratio. The ATM41HE and ATM61HE mics also feature a double-dome diaphragm, providing smooth extended high frequency response; copper clad aluminum wire voice coil for lowest mass; a floating diaphragm; and a hypercardioid polar pattern for outstanding gain before feedback.

\*\*\*\*\*

## West Penn Wire

West Penn Wire has released their high definition microphone cables. These super-flexible cables incorporate a high-density braided shield which provides superior rejection of noise, hum and radio interference. These cables are constructed of .015 inches of polyolefin insulation. Tinned copper braid provides 95 percent minimum coverage. West Penn Wire has also introduced UL-type CM-rated communications cable.

\*\*\*\*\*

## Telex

Telex has added a new diversity system to their wireless mic line. The FMR-70 receiver which features patented Pos-i-Phase true diversity circuitry is suitable for entry level professional installations. It was specifically designed to complement the new Telex WT-55 belt pack transmitter or any HT-100 series handheld mic transmitter. The system operates in the VHF band between 165 and 216 MHz.

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## GENTNER TELEPHONE PRODUCTS



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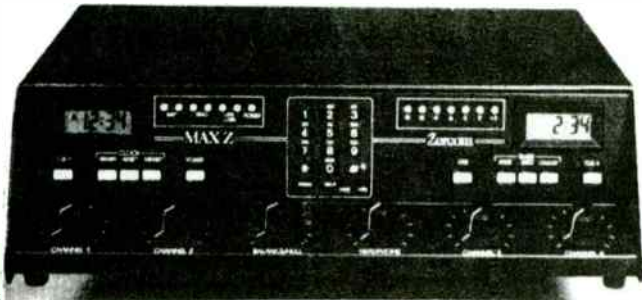
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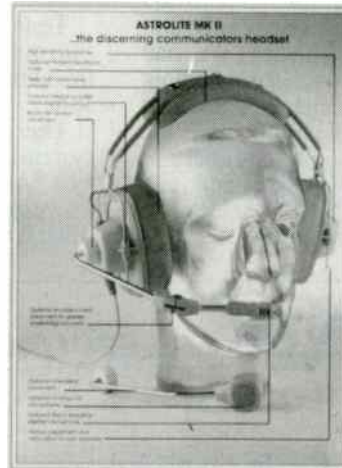
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Model 2636-G1  
w/dynamic mike  
**\$239<sup>00</sup>**

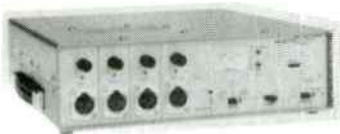
Model 2637-G1  
w/noise-cancelling  
electret mic  
**\$359<sup>00</sup>**



## MARTI

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Mono RPU  
140-180 MHz

Mobile or Portable:  
1 RPT-30/150 Transmitter

1 MCD-70C Microphone

1 700-251 Mobile Mounting Kit for RPT-30

1 ASPS-177 Mobil Antenna

1 PAV/150 Portable Antenna

Studio:  
1 CR-10/150 Receiver

1 SC-155AC Base Antenna

1 PG-2B Jumper Cable

1 K-1 Weatherproofing Kit

\*Two "N" Female connectors and 1/2" transmission line required

## TELEX

**PH-91 \$205.00**  
**PH-94 \$231.00**

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**Announcer's Headsets**  
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# BARGAINS OF THE MONTH

## PHONO PRODUCTS FOR BROADCASTERS & DJ'S

### Stanton

500EMKII cartridges . . . . .	\$ 11.75 ea.
500EEmkII cartridges . . . . .	\$ 15.00 ea.
681A cartridges . . . . .	\$ 46.60 ea.
680AL cartridges . . . . .	\$ 44.70 ea.
680EE cartridges . . . . .	\$ 34.70 ea.
680EL cartridges . . . . .	\$ 52.65 ea.
L500AL P-mount cartridges . . . . .	\$ 12.25 ea.
L680EL P-mount cartridges . . . . .	\$ 55.60 ea.
681EEE cartridges . . . . .	\$ 49.95 ea.
Model 310B preamp . . . . .	\$199.95 ea.

### Audio Technica

ATP-1 cartridges . . . . .	\$ 20.40 ea.
ATP-2XN cartridges . . . . .	\$ 40.20 ea.
ATP-3 cartridges . . . . .	\$ 31.00 ea.
ATP-12T tone arms . . . . .	\$205.00 ea.

### Shure

M44C cartridges . . . . .	\$ 15.35 ea.
M44E cartridges . . . . .	\$ 17.20 ea.
M44-7 cartridges . . . . .	\$ 15.35 ea.
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BC90 cartridges . . . . .	\$ 66.70 ea.
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### RISER-BOND Model 2901B+



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**Only \$865.00**

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# MEMO FROM METZ



## MORE ON RF NOISE AND MEASUREMENT

Since I wrote last month's column, my experiments have continued and I've been able to build an even better UHF/microwave noise generator. It's proven to be a very useful and inexpensive piece of test gear for working on pre-amplifiers and receivers.

The one shown last month was simple to build, but it had two flaws. First, it did not present a good non-reactive 50 ohm match to the receiver input. Second, due to high junction capacitance of the zener diode used, its frequency response curve was poor.

In my next design I did things a little differently. To improve the impedance match over a very broad frequency range, I added a 5 dB attenuator pad. To make the noise voltage versus frequency response flatter (and more useful in the microwave region) I used a microwave transistor as the noise source.

Choice of components and layout can be quite critical at even the lower end of the VHF band. Ordinary parts such as 1/4 watt resistors can exhibit reactance. Capacitors can be rather inductive and appear as complex series networks.

Below 500 mHz ordinary old fashioned carbon film resistors still work well. Metal film types can appear as tiny inductors and be very lossy. Above 500 mHz it's best to use chip type resistors. Common disk ceramic type capacitors are good from one to 500 mHz if the leads are short. The old timers always told me that, "if you can see the leads, they're too damn long!"

100 mil center line chip capacitors are vastly better. They have no leads at all and work well from 50 up to 4000 mHz! I have had good success using them in "dead bug" style construction. To do this, one end is sweat soldered to a tinned portion of the PC board so the body of the capacitor stands vertically. The other plate of the capacitor becomes a post-like terminal that other components can be directly soldered to.

The transistor I chose is a Motorola MRF941, a rather rare bipolar microwave transistor (I had some). A much more available substitute would be the MRF901. It is used in many UHF TV products and is available from many of the parts houses that cater to the amateur radio trade.

Both of these are "pill" style devices with X shaped leads. I used a reverse biased emitter base junction (base grounded) to generate the noise. The collector lead is left open and the base grounded as tightly to the PC board as possible.

The generator is built in part of the body of standard type "N" male connector on a narrow piece of PC stock. I put a slight taper on one end of the PC board that allowed me to screw it into the body of the connector to make a tight RF connection for grounding. The threaded cable compression fitting of the connector is not used.

The body of the generator or shield is made of a small scrap of metal tubing I found in the junk box. The plug for the cable end is made from a piece of scrap brass I turned in my lathe. I'm sure a trip to the plumbing supply store would provide some pieces just as useful.

The board itself I rather crudely "etched" using my Dremel tool to cut some isolated pads. The "N" center pin is mounted on a 3/8" piece of -14 solid wire soldered into a notch cut into the board (be sure to isolate the other side of the board as well).

The component layout is designed to reduce stray reactance.

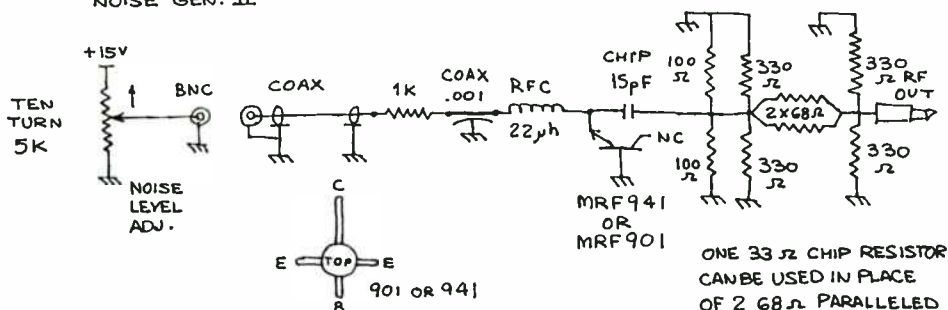
This is why I choose the symmetrical layout of the chip resistors used in the attenuator section. For example, to achieve 50 ohm resistors in parallel thus splitting the inductive reactance between them. Also note that for a 50 ohm attenuator section to work, it must see 50 ohms on each side.

So far, this noise generator has performed well. I have usable noise voltage as high in frequency as I can measure (1.5 GHz). The level control is much smoother than with the old zener model. And the VSWR is less than 1.03:1 when measured with a Narda directional coupler and a spectrum analyzer.

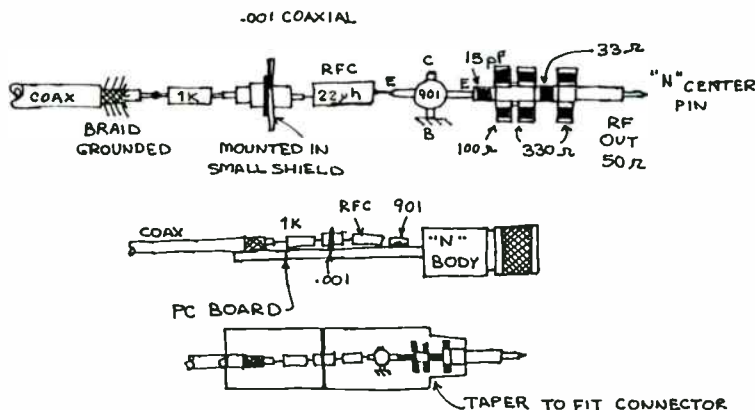
Next month I'll be writing about working with chip components a little more and discussing practical circuits for very low noise receiving preamplifiers.

\*\*\*\*\*

MEMO FROM METZ NO. 70  
NOISE GEN. II



MECHANICAL LAYOUT



## FCC ISSUES NEW FORFEITURE POLICY

The FCC, in late July, issued a notice that fines levied for violations will be much higher than ever before.

The notice came in the form of a fine schedule, listing "base" fines for a number of violations and case-by-case criteria for adjusting them up or down.

The FCC is implementing a 1989 law that greatly increased the fines the FCC could impose on broadcasters and cable operators to \$25,000 per violation per day of a continuing violation up to \$250,000. Prior to 1989, the largest fine the FCC could impose was \$2,000 per violation or day of a continuing violation up to \$20,000.

The Commission's new forfeiture standards employ a base fine, established as a percentage of a maximum fine for a particular violation—a base fine that can be adjusted upward or downward in light of the specific "nature, circumstances, extent, and gravity of the violation."

The FCC's example of how this would work is: The FCC determines a station intentionally violated FCC rules by using unauthorized equipment and, in so doing, causes substantial harm. In calculating the fine, the FCC starts with the base of \$10,000 for using unauthorized equipment. Because the violation was intentional, it increases the fine by \$7,000 (70% of \$10,000), to \$17,000, and because it causes substantial harm, it boosts it another \$4,000 (40% of \$10,000) to \$21,000.

However, having also found the station has a history of overall compliance, it reduces the fine by \$3,000 (30% of \$10,000) to \$18,000. "If the broadcaster made a specific showing that an \$18,000 forfeiture would cause substantial economic hardship, the forfeiture would be further reduced," the FCC statement says.

Shown below is the new FCC forfeiture schedule as it appeared in the Aug. 5 issue of Broadcasting magazine.

Violation	Fine
Misrepresentation or lack of candor	\$20,000
Inadequate tower lighting and marking	\$20,000
Construction or operation without authorization	\$20,000
Unauthorized substantial transfer of control	\$20,000
False distress broadcasts	\$20,000
Misuse of distress and safety frequencies	\$20,000
Refusal to permit inspection	\$18,750
Malicious interference	\$17,500
Failure to respond to FCC communications	\$17,500
Exceeding authorized antenna height	\$15,000
Exceeding power limits	\$12,500
Unauthorized emissions	\$12,500
Using unauthorized frequency	\$12,500
EBS equipment not installed or operational	\$12,500
Broadcast of indecent programming	\$12,500
Failure to comply with EEO obligations	\$12,500
Violations of political broadcasting rules	\$12,500
Unauthorized discontinuance of service	\$10,000

(Cont to pg. 13)

## FCC Clarifies Main Studio Rule

Broadcasters may be surprised at the FCC's recent clarification of its main studio rule: a main studio, at a minimum, must maintain full-time managerial and full-time staff personnel. That means the main studio must be staffed by at least two fulltime employees or their equivalent.

This is a change from 1988, when the Commission relaxed its requirements. At that time, the FCC emphasized the importance of maintaining a local presence in the community for stations that wanted to move their main studio outside their community of license but within the station's principal community contour. The FCC required "a mean-

ingful management and staff presence" to fulfill the main studio requirement.

Recently, however, the FCC spelled out its definition of the main studio rule when it found WRSF, Columbia, NC, in violation of the regulation by not having sufficient staffing.

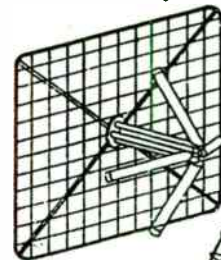
The case began in 1987, when the station requested a modification of its facilities to move its main studio from Columbia to its auxiliary studio, 51 miles away in Nags Head and beyond even the principal community contour. The request was denied by the Mass Media Bureau for failure to show that granting the modification would better serve the public interest. Later, the FCC received a complaint alleging that the

(cont. to pg. 13)



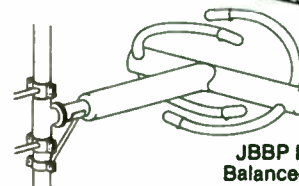
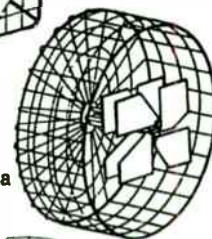
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JAHDP CP Arrowhead Screen Dipole

JSDP CP Spiral Broadband Antenna



JBBP FM Antenna Balanced Excitation

**JAMPRO** is the world leader in custom-designed, directional, CP antennas.

- With over 1600 of our penetrators delivered, more stations have penetrated their market.
  - Our custom-made directional antennas are operating world wide.
  - Full-scale antenna measurements on **JAMPRO's** all-year, all-weather test range.
  - We custom-make tower structures to duplicate your's, for optimum results.
  - Ask about **JAMPRO's** low-power educational packages.
- Give us your requirements and see how fast we produce.

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# SBE 1991 HOUSTON

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Convention  
Center

**REGISTER NOW!**

## International Representation at SBE Convention

The SBE is pleased to report that a delegation from the Philippine Chapter, located in Manila, will be attending the 1991 Convention in Houston, Texas, October 3-6, 1991. In past years the SBE has been honored to be host to our Mexican and Canadian Broadcast Engineers. The international involvement with engineers throughout the world continues to enhance the international flair of the SBE convention.

The SBE convention is well attended by Engineering and Technical Managers throughout the United States and several foreign countries. The show comprises four (4) days of intensive seminars and a very large exhibit hall. According to Show Manager Eddie Barker, exhibitors are well ahead of last year. The SBE convention is being joined this year by the annual Texas Association of Broadcasters meeting. Joint attendees are expected to exceed 3000. For additional information on the convention call the SBE convention office at 317-253-0122. SBE Vice President Richard Farquhar, representing the SBE, will deliver a presentation on "Total Quality in Broadcast Engineering" at the AMITRA Convention August 7-9, 1991 in Puerto Vallarta, Mexico.

\*\*\*\*\*

## SBE Officers Nominated

The Society of Broadcast Engineers (SBE) has submitted candidates for of-

fice and board of directors, to be voted on in September and announced at the October convention.

Nominated officers are: Richard Farquhar for president; Jerry Whitaker, VP; William Hineman, secretary; and Robert Goza, treasurer.

Nominated board of directors candidates are: Terrance Baun, Michael Fast, Paul Montoya, Tom M. Padwa, Troy Pennington, Robert Reymont and Edward Roos.

Officers serve one-year terms while the 12-member board of directors serve staggered three-year terms.

\*\*\*\*\*

## SBE Sponsors Local Education Seminars

The SBE announced today the initiation of local educational programs designed to provide quality technical presentations for SBE members. The first SBE sponsored seminar will take place in Cincinnati, Ohio on Thursday, September 5, 1991. The program on digital broadcasting will include presentations on digital radio broadcasting by representatives of the Committee on Digital Radio Broadcasting, and a seminar on digital video issues conducted by staff from the Abekas Corporation.

According to SBE Executive Director Stephen Ingram, "As an important part of the SBE Strategic Plan, local education seminars will bring low-cost, high quality programs to our members and chapters."

## New Chapters Continue SBE Growth.

Continuing the society's strong growth, three new chapters have been formed. These chapters, two local and one international again prove that engineers need the national support of SBE provided through a local chapter. New chapters include:

**Knoxville, TN**  
Chairman, Ed Martin  
Kennedy Maxwell Productions  
Vice-Chairman, Don Burgraff  
WBIR-TV  
Secretary, Ernest Sutton  
WOKI-FM

**Philippines**  
Chairman, Arcadio M.  
Carandang, Jr.  
Molave Broadcasting Network  
Vice Chairman, Carlos Saliuan  
National Telecommunication  
Secretary/Treasurer, Manuela  
Eides B. Yabut  
Broadcast World Philippines

**Southern Idaho**  
Chairman, Peter B. Hoekzema  
WTVB-TV  
Vice Chairman, Denny Lowe  
(This chapter covers the southern half of the state. During the winter, much of the chapter business will be conducted via CompuServe and a ham-net.)  
\*\*\*\*\*

## SBE MOVES

The society's phenomenal growth finally caught up with our available space. On April 1, the SBE staff moved from the old and crowded offices into new space not far from the old location. The staff, assisted by the Indianapolis chapter, completed the move on a weekend. Board member, Bill Hineman, Harold Thompson, Steve Voorhees, and John Zuber were the telephone men, moving the entire phone system in one day. Hineman also installed the facilities to support the new SBE Job Line. The muscle for the move was provided by Chapter 25 members Fred Baumgartner, Doug Carlinger, Terry Vanbibber, and Tom Weber, Chapter Chairmen. (See related story in this newsletter.) The postal address will remain the same. However, new telephone numbers are:

**SBE**  
P.O. Box 20450  
Indianapolis, IN 46220  
SBE telephone number:  
317-253-1640

Convention number: 317-253-0122  
Job Line number 317-253-0474  
Fax: 317-253-0418  
\*\*\*\*\*

Violation	Fine
Use of unauthorized equipment	\$10,000
Violations of children's TV rules	\$10,000
Violation of main-studio rule	\$10,000
Operation of unauthorized location	\$10,000
Inadequate frequency coordination	\$10,000
Failure to file information	\$7,500
Failure to maintain public files	\$7,500
Failure to properly identify sponsors	\$6,250
Violations of rules governing lotteries	\$6,250
Failure to maintain technical logs	\$5,000
Failure to maintain time-brokerage files	\$5,000
Broadcasting telephone calls without permission	\$5,000
Failure to make measurements and monitor	\$2,500
Violations of enhanced underwriting requirements	\$2,500
Failure to identify station on air	\$2,500
Failure to maintain records	\$2,500
Unauthorized pro form transfer of control	\$2,500
Miscellaneous violations	\$1,250

The amounts in the right-hand columns are the "base" fines for the given violations. They are subject to adjustments up or down by between 20% and 90% based on specific criteria. The "upward" criteria (and adjustment range): 1 egregious misconduct (50%-90%); 2) ability to pay (50%-90%); 3) intentional violation (50%-90%); 4) substantial harm (40%-70%); 5) prior violation of same rule (40%-70%); 6) substantial economic gain (20-50), and 7) repeated or continuous violation (varies). The "downward" criteria: 1) minor violation (50-90); 2) good faith or voluntary disclosure (30-60); 3) history of overall compliance (20-50), and 4) inability to pay (varies).

\*\*\*\*\*

station was operating its main studio in Nags Head anyway.

In pursuing the complaint, the Bureau asked the station to submit details on staffing, production and transmission equipment at the Nags Head studio, and job titles, descriptions and hours of all Columbia personnel. WRSF said it had a full-time office manager in Columbia and two other full-time employees, who "spend time" at the Columbia studio. In 1989, the Bureau said that did not constitute a "meaningful management and staff presence" at that location and that "a main studio must, at a minimum, maintain both full-time managerial and staff personnel." The Bureau required WRSF to beef up personnel at the Columbia studio.

WRSF asked the full commission to review the Mass Media Bureau finding. The Commission's June action upheld the Bureau's decision. Counsel for WRSF says the station will appeal the FCC ruling.

\*\*\*\*\*

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## Marino, Springer To Join NAB Engineering Team

The National Association of Broadcasters has announced that John Marino and Ken Springer will join its Science and Technology department in September.

Marino, who will assume the position of manager, technical and regulatory affairs on September 3, is currently president of Marino Broadcast Associates, Trumbull, CT. He previously served as Vice President, Engineering, at NewCity Communications in Bridgeport, CT, from 1978 to 1990. Marino's responsibilities will include policy and technical support for NAB's representation of the broadcasting industry before the FCC and other federal agencies.

Springer, who joins NAB as staff engineer, digital communications, on September 5, is currently a project leader at MITRE Corporation, McLean, VA. He was Principal Engineer with E-Systems, ECI Division, St. Petersburg, FL, from 1985 to 1990. Springer holds a B.S.E.E. from the Georgia Institute of Technology and a M.S.E.E. in Communications and Digital Signal Processing from the University of South Florida. His responsibilities will include assisting with policy and technical development of digital audio and digital television systems.

\*\*\*\*\*

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- 4-times oversampling digital filter.
- Edit guide with synchro editing.
- 20-track random access programming.
- Auto cue for cueing up to the first sound on the track.
- Repeat play for a single track, an entire disc or programmed tracks.
- Multi-function FL display with Music Matrix.
- Remote control ready, for use with selected Technics receivers with wireless remote control.



\$159.95

### SL-PG 300

#### Programmable Compact Disc Player

- MASH 1-Bit 4-DAC system helps reveal the full potential of the CD medium.
- 4-times oversampling digital filter.
- Linear motor transport
- Edit guide with synchro editing
- 23-key wireless remote with direct access 10-key pad.
- 20-track random access programming with 10-key pad.
- Auto cue for cueing up to the first sound on the track.
- Repeat play for a single track, an entire disc or programmed track.
- Multi-function FL display with Music Matrix.
- Headphone jack with volume control.



**SL-PS700** \$299<sup>95</sup>

#### Programmable Compact Disc Player

- MASH 1-bit DAC for accurate small signal reproduction.
- Digital servo system offers improved playability.
- Quiet loading mechanism helps suppress vibrations
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- Function management system for your own customized controls.
- Linear motor transport.
- Optical digital output terminal.
- Synchro Editing for linked operation with selected Technics cassette decks.
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## EI Classifieds

EI Classifieds are free to the readers of Common Point magazine. To place an ad type it on the acknowledgement card that comes with each issue and mail to us. We assume no responsibility for the condition of any of the equipment or services in these ads.

**FOR SALE:** Moseley remote control system, Model TRC 15AW. \$500. Good condition. Galen Gilbert 817-380-0229.

**WANTED TO BUY:** Receiver for Unistar Country Format. Galen O. Gilbert (817) 380-0229  
**FOR SALE:** 3-Sono Mag Model 352 Carousels; 5-Sono Mag Model 350 Carousels; 2-Audi Cord Model 101R Cart Machines; 3-Atari Reel-Reel Playback units; 7-6 ft. racks; IGM Silent Senso Unit; IGM Keypad Controller with Battery Back up; 1-Auto Gram SG 14 Sequence Drawer; 1-Auto Gram \$s 256 Memory Drawer; 1-Auto Gram AS 14 Audio Switcher; 1-Auto Gram RT-5 Network Join Clock; TBM 4500A McMartin FM Stereo Monitor. Galen O. Gilbert (817) 380-0229

**WANTED:** Older or used production libraries no longer of use to your radio station. Donate for tax credit to broadcasting college for student, non-commercial use and training. Contact Tim Collier, International College of Broadcasting, 6 South Smithville Road, Dayton OH 45431 or call (513) 258-8251 weekdays 8 AM to 3 PM EDT.

**FOR SALE:** 1987, Advanced Micro-Dynamics, TC-8 Remote Control system, \$1500.00. 150 ft. AM tower, still standing. Contact Wanda Smith (901) 989-5981.

## TALKBACK

**SURING, WI** — Enjoy your publication very much as it is very informative. Please keep sending it.

**MILWAUKEE, WI** — Keep up the good work on a fine and informative newsletter.

**WEST BEND, WI** — Great!

**BLANDING, UT** — Very helpful publication and EI's prices are great!

**MEMPHIS, TX** — Thanks for the monthly newsletter.

**AUSTIN, TX** — I read every single page. Keep the whole issue for a year and Metz's columns forever. Thank you!

**PLEASANTON, TX** — Keep Metz for '91 — he's one of the few writers who offers something for the budget zero stations.

**HOUSTON, TX** — Look forward to Common Point every month.

**WOODVILLE, TX** — Common Point gives me the info I need without bogging me down with non-essential prattle.

**SULPHUR SPRINGS, TX** — Good stuff!

**RAPID CITY, SD** — Keep CP coming!

**SALEM, OR** — Enjoy publication lots!

**ASTORIA, OR** — Nice job. Thanks

**DAYTON, OH** — Thanks!

**ASHLAND, OH** — Will there be any broadcast engineers in another 20 years. This from myself after 23 years in the business.

**WOOSTER, OH** — Thank you very muck for Common Point.

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# CD 5020

## Dual-Transport CD Player System



### Professional CD mixing at a budget price.

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#### Unique dual-transport design

The CD5020 features Numark's unique dual-transport design. This Numark exclusive gives you all the mixing benefits of two separate CD drive players but in a single 19" rack mountable enclosure.

#### Sliding pitch controls

For total beat mixing control, each transport drive features its own sliding pitch control. The unit's precision sliders and advanced control circuitry offer fast response time and  $\pm 8\%$  speed variation. The sliders combine the same responsive feel and functionality as those found on high quality professional CD players.

#### Audio Cue

When used with stereo headphones, the CD5020's Audio Cue enables you to

privately monitor music selections right from the unit's stereo headphone jack. This feature also enables you to produce a 'stutter' effect, all with just a push of a button. Separate cue level controls enable you to adjust the monitoring level of each transport for greater cueing ease.

#### Front-loading design

For increased reliability and dependability, the CD5020 features front-loading CD trays. Unlike some top-loading models, the CD5020's transport drives are never exposed during loading or unloading so there is less risk of dust and foreign matter settling on the transport drive.

#### Memory Play

With memory play, you can program

up to 24 selections on each disc for unattended playback. The CD5020 will play each selection automatically for continuous listening.

#### Repeat Play

With the CD5020's repeat mode, you can loop programmed selections for continuous playback for hours of uninterrupted listening. This feature is ideal for background music applications in restaurants, clubs, etc.

# Numark

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